```
1  /*Long Test Case - Everything Except Boolean Declaration */
2  {
3     /* Int Declaration */
4     int a
5     int b
6     a = 0
7     b=0
8     /* While Loop */
9     while (a != 3) {
10       print(a)
11       while (b != 3) {
12          print(b)
13          b = 1 + b
14          if (b == 2) {
15             /* Print Statement */
16             print("there is no spoon" /* This will do nothing */ )
17          }
18       }
19       b = 0
20       a = 1+a
21    }
22 }
23 $
```

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 2...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 4...
LEXER --> | T_ID [ a ]  on line 4...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 5...
LEXER --> | T_ID [ b ]  on line 5...
LEXER --> | T_ID [ a ]  on line 6...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 6...
LEXER --> | T_DIGIT [ 0 ]  on line 6...
LEXER --> | T_ID [ b ]  on line 7...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 7...
LEXER --> | T_DIGIT [ 0 ]  on line 7...
LEXER --> | T_WHILE [ while ]  on line 9...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 9...
LEXER --> | T_ID [ a ]  on line 9...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 9...
LEXER --> | T_DIGIT [ 3 ]  on line 9...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 9...
LEXER --> | T_OPENING_BRACE [ { ]  on line 9...
LEXER --> | T_PRINT [ print ]  on line 10...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 10...
LEXER --> | T_ID [ a ]  on line 10...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 10...
LEXER --> | T_WHILE [ while ]  on line 11...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 11...
LEXER --> | T_ID [ b ]  on line 11...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 11...
LEXER --> | T_DIGIT [ 3 ]  on line 11...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 11...
LEXER --> | T_OPENING_BRACE [ { ]  on line 11...
LEXER --> | T_PRINT [ print ]  on line 12...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 12...
LEXER --> | T_ID [ b ]  on line 12...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 12...
LEXER --> | T_ID [ b ]  on line 13…
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 13...
LEXER --> | T_DIGIT [ 1 ]  on line 13...
LEXER --> | T_ADDITION_OP [ + ]  on line 13...
LEXER --> | T_ID [ b ]  on line 13…
LEXER --> | T_IF [ if ]  on line 14...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 14...
LEXER --> | T_ID [ b ]  on line 14...
LEXER --> | T_EQUALITY_OP [ == ]  on line 14...
LEXER --> | T_DIGIT [ 2 ]  on line 14...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 14...
LEXER --> | T_OPENING_BRACE [ { ]  on line 14...
LEXER --> | T_PRINT [ print ]  on line 16...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 16...
LEXER --> | T_QUOTE [ " ]  on line 16...
LEXER --> | T_CHAR [ t ]  on line 16...
LEXER --> | T_CHAR [ h ]  on line 16...
LEXER --> | T_CHAR [ e ]  on line 16...
LEXER --> | T_CHAR [ r ]  on line 16...
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LEXER --> | T_QUOTE [ " ]  on line 16...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 16...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 17...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 18...
LEXER --> | T_ID [ b ]  on line 19...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 19...
LEXER --> | T_DIGIT [ 0 ]  on line 19...
LEXER --> | T_ID [ a ]  on line 20...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 20...
LEXER --> | T_DIGIT [ 1 ]  on line 20...
LEXER --> | T_ADDITION_OP [ + ]  on line 20...
LEXER --> | T_ID [ a ]  on line 20...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 21...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 22...
LEXER --> | T_EOPS [ $ ]  on line 23...
```

```
1 /*LongTestCase-EverythingExceptBooleanDeclaration*/{/*IntDeclaration*/
intaintba=0b=0/*WhileLoop*/while(a!=3){print(a)while(b!=3){print(b)b=1+bif(b==2)
{/*PrintStatement*/print("there is no spoon"/*Thiswilldonothing*/)}}b=0a=1+a}}$
```

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
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```

Remove the comments.

```
1 {intaintba=0b=0while(a!=3){print(a)while(b!=3){print(b)b=1+bif(b==2)
{print("there is no spoon”)}}b=0a=1+a}}$
```

Start lexing.

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
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LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
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```

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```

lastPosition	-1
currentPosition	0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
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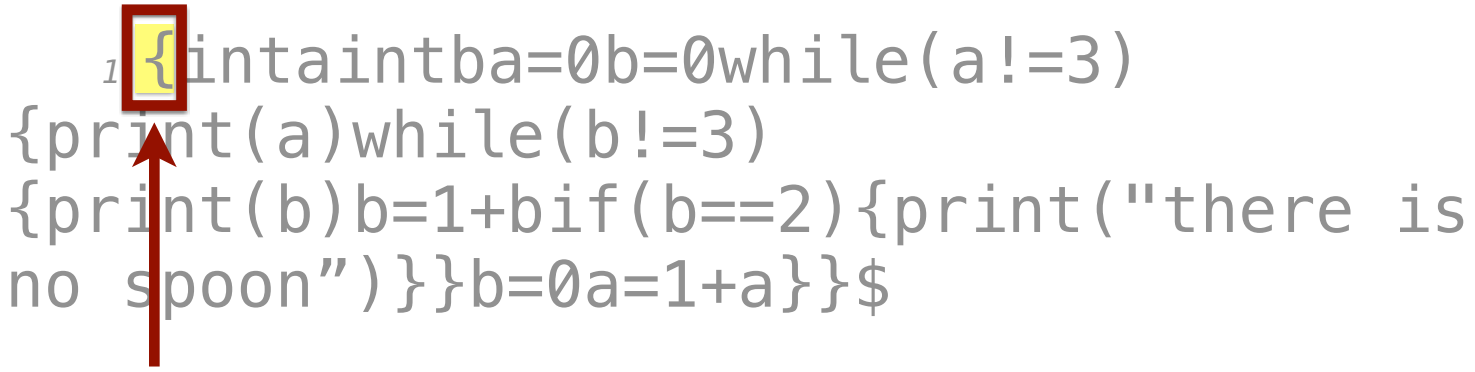
```



Not a keyword.
Not an id.
Is a symbol. Note that and its positions. → found **symbol** in positions 0-0

lastPosition 0
currentPosition 0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
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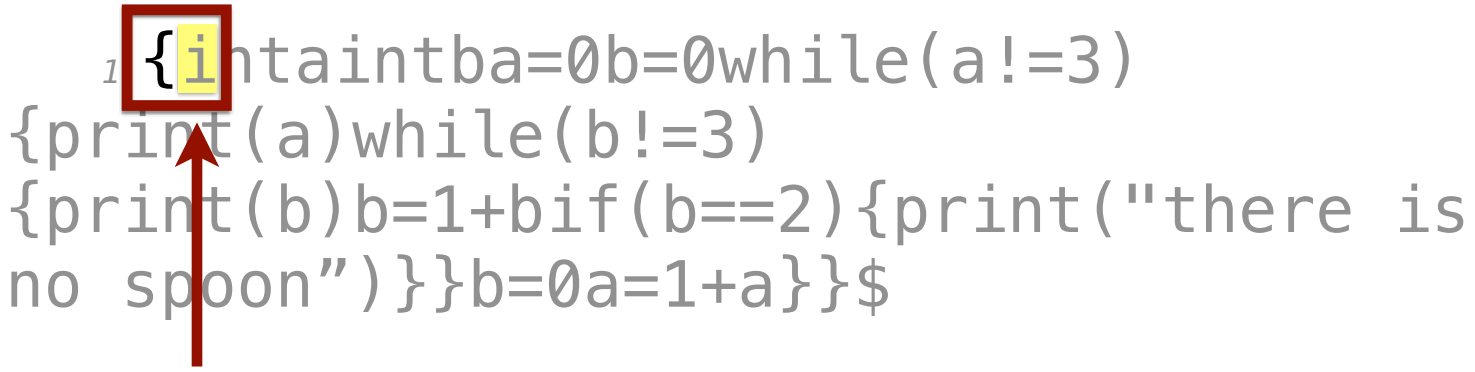
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



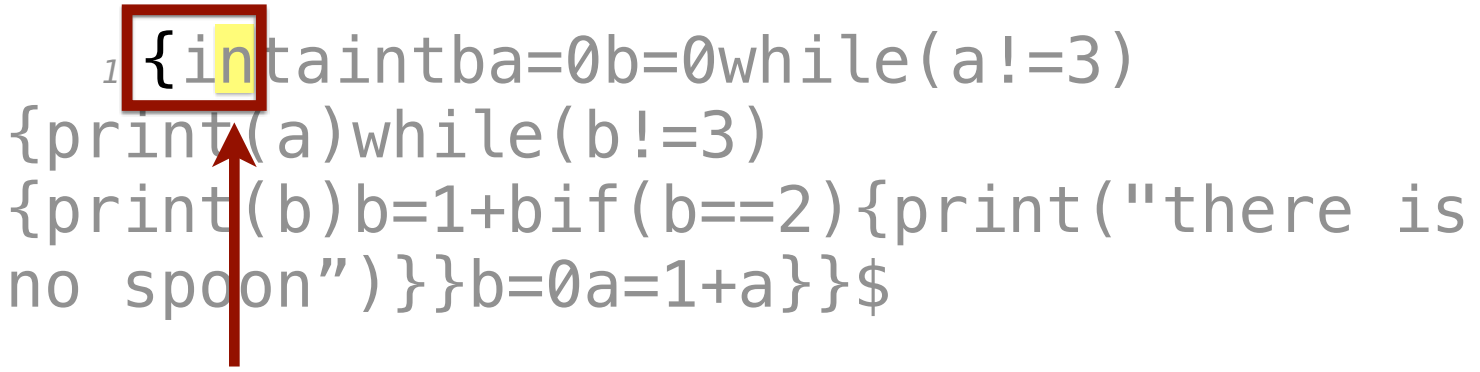
Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing. (Can we stop here?)

lastPosition	0
currentPosition	1

found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 2
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

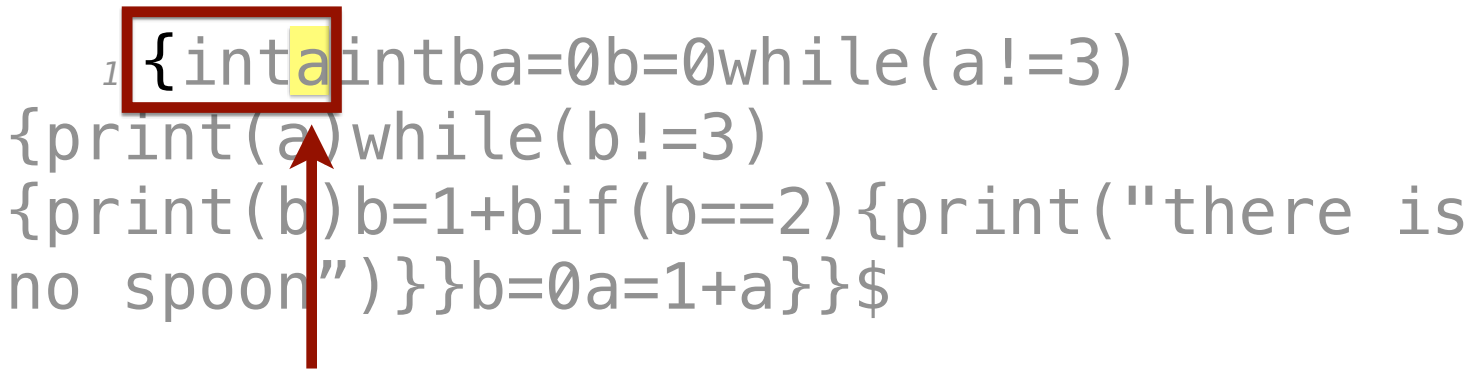
```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```

Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 3
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

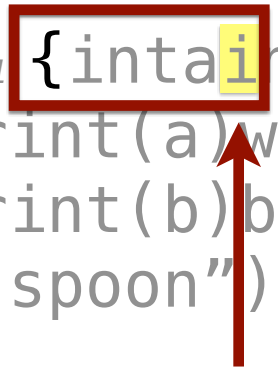


Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing. (Can we stop yet?)

lastPosition 0
currentPosition 4
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

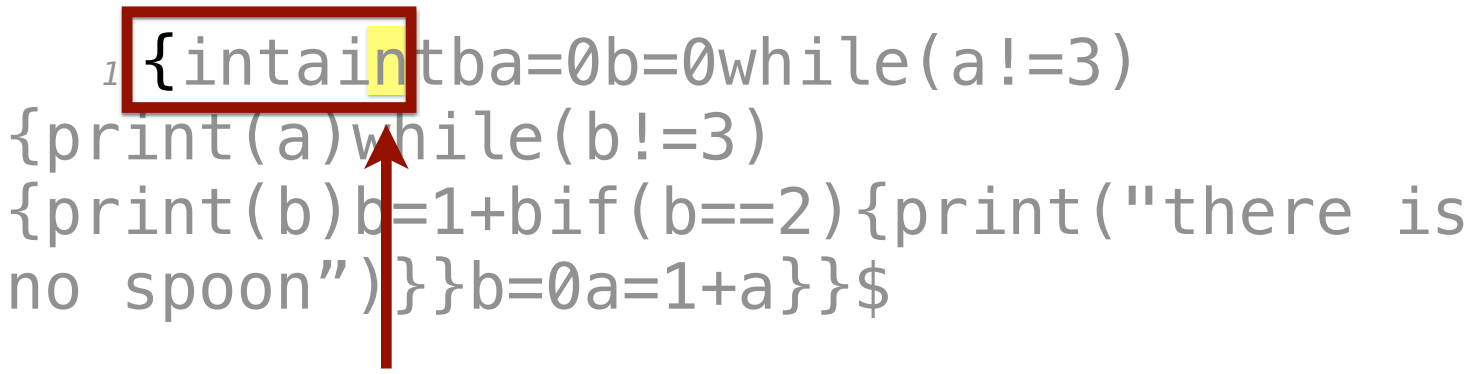


Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 5
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

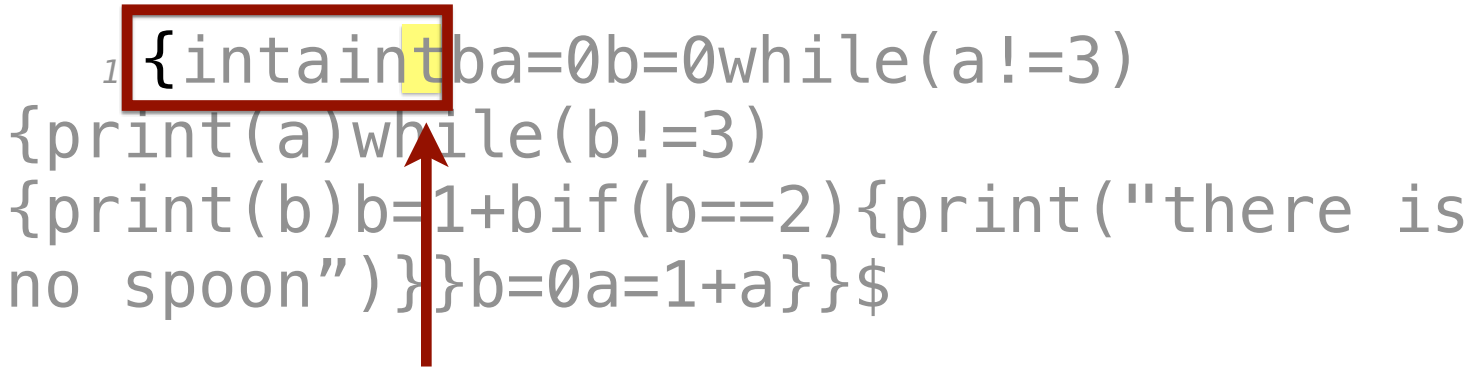


Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 6
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



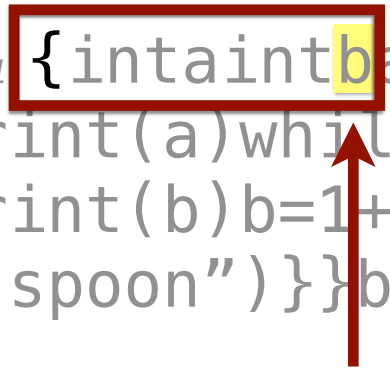
Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing. (Are we there yet?)

lastPosition	0
currentPosition	7

found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

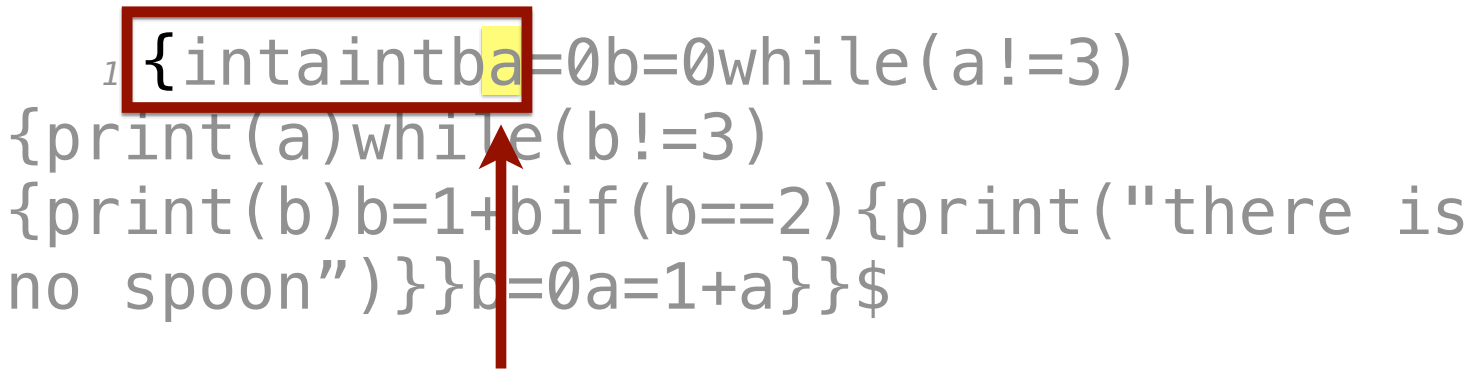


Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 8
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 0
currentPosition 9
found **symbol** in positions 0-0

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
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LEXER --> | T_CHAR [ i ]  on line 1...
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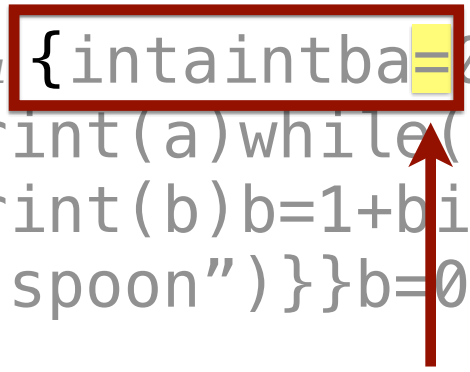
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Is a symbol !!

lastPosition 0
currentPosition 10
found **symbol** in positions 0-0

Symbols, like white space (if present and outside of quotes) mean that we can stop moving ahead and see what we've got so far.

We've got a symbol, so consume the input, emit the token, and reset the pointers.

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
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LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
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LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
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LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
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LEXER --> | T_DIGIT [ 1 ]  on line 1...
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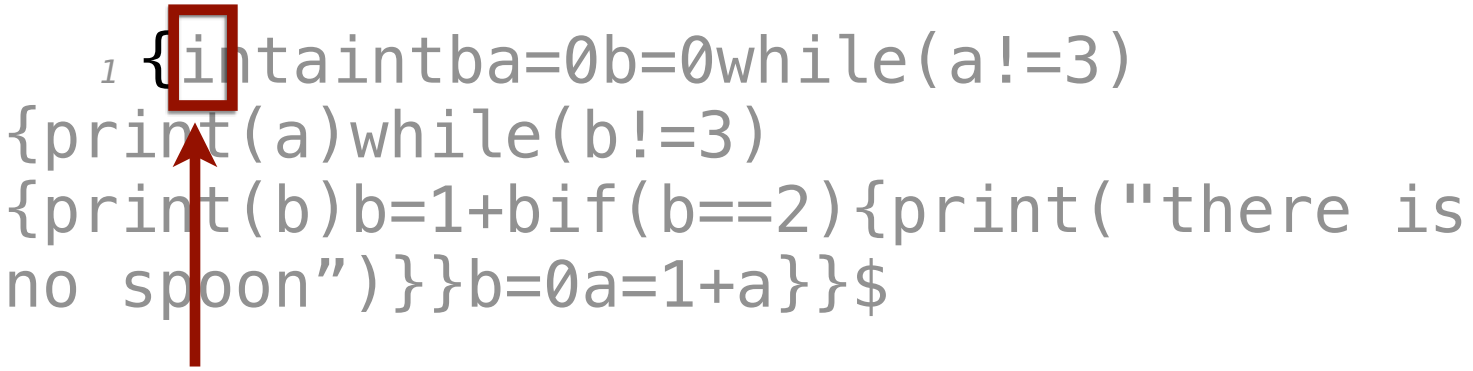
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



lastPosition 1
currentPosition 1

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
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LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
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LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon")}}b=0a=1+a}}$
```

Not a keyword.
Is an id.
(Actually, it is a char. But ids are single chars in our grammar, so we can take a shortcut here and match it as an id so long as we are not inside of quotes.)

lastPosition 1
currentPosition 1
found **id** in positions 1-1

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
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LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
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LEXER --> | T_DIGIT [ 1 ]  on line 1...
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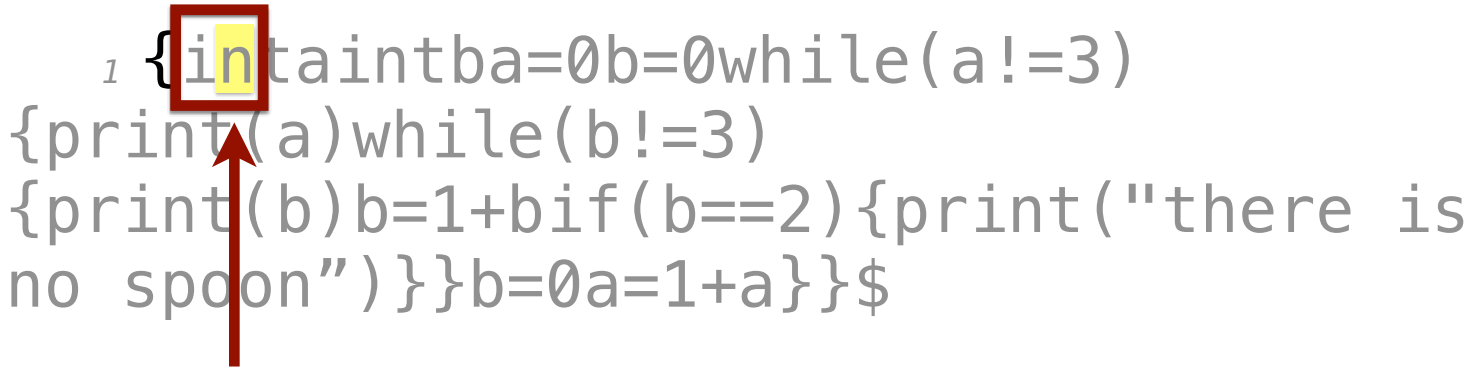
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	2
found **id** in positions	1-1

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_DIGIT [ 0 ]  on line 1...
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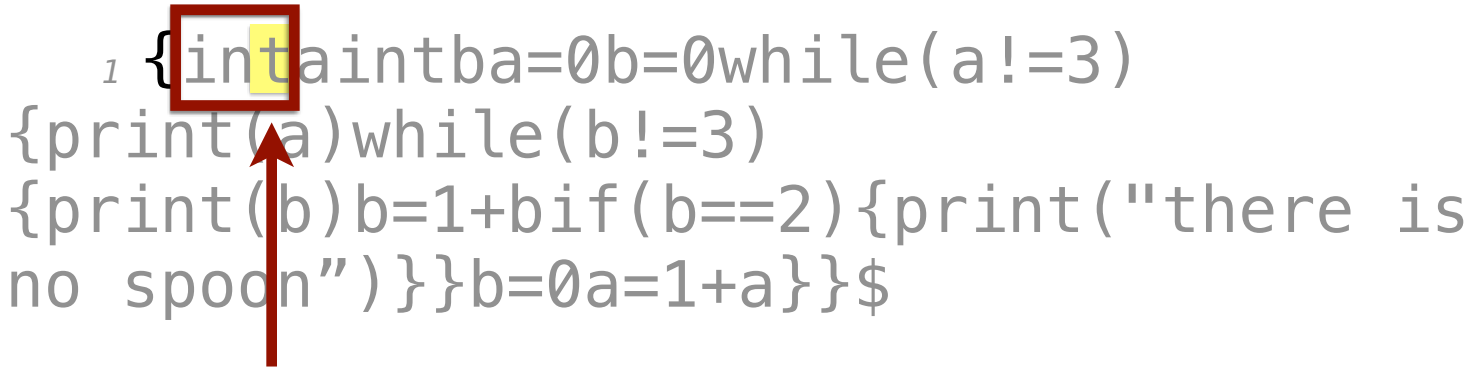

Is a keyword.

lastPosition 1
currentPosition 3
found **int** in positions 1-3

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_DIGIT [ 1 ]  on line 1...
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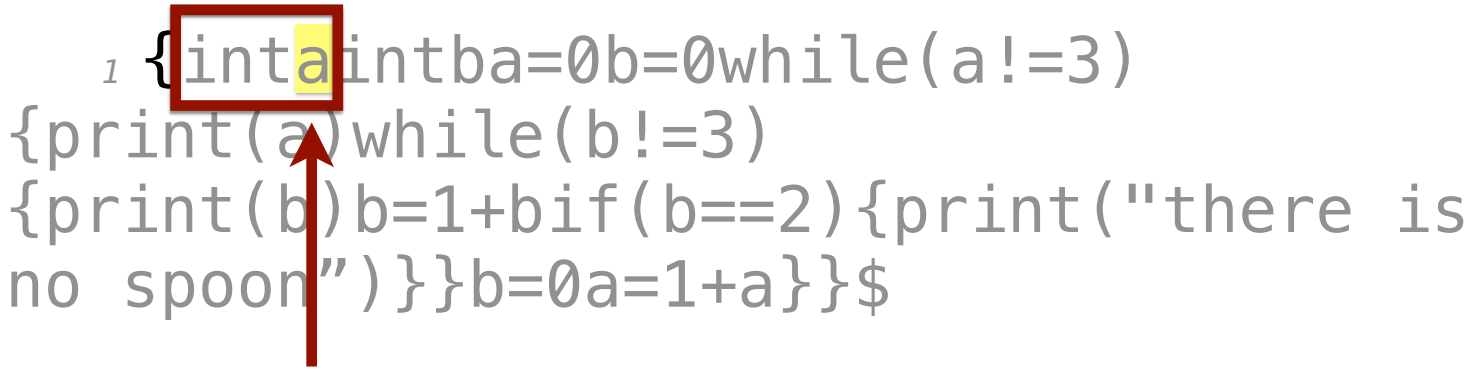
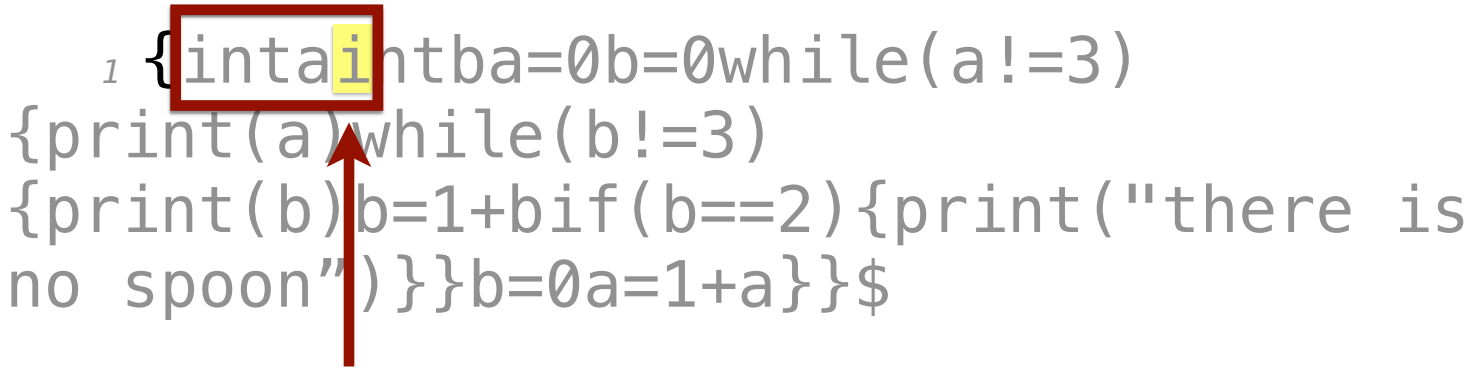
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	4
found **int** in positions 1-3	

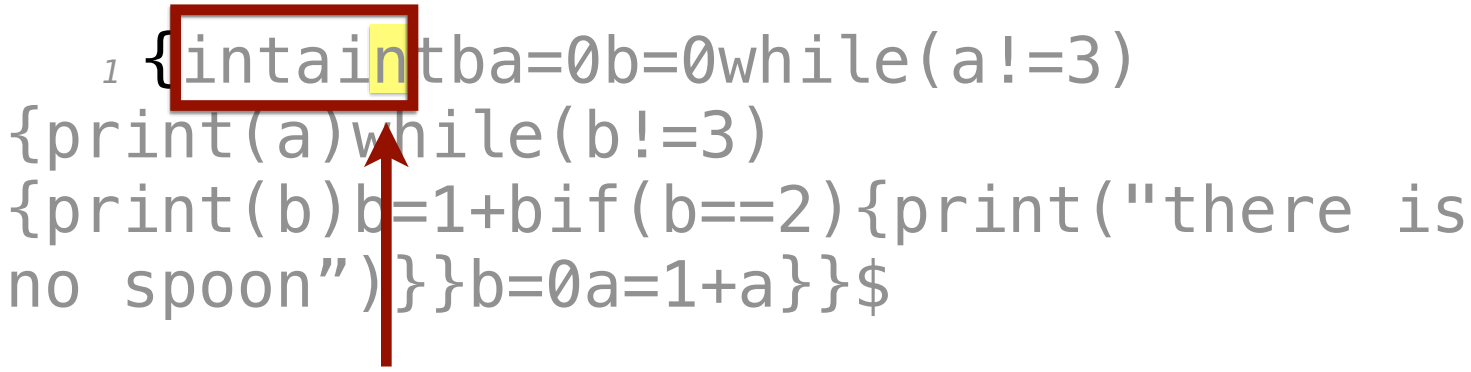
```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	5
found **int** in positions 1-3	

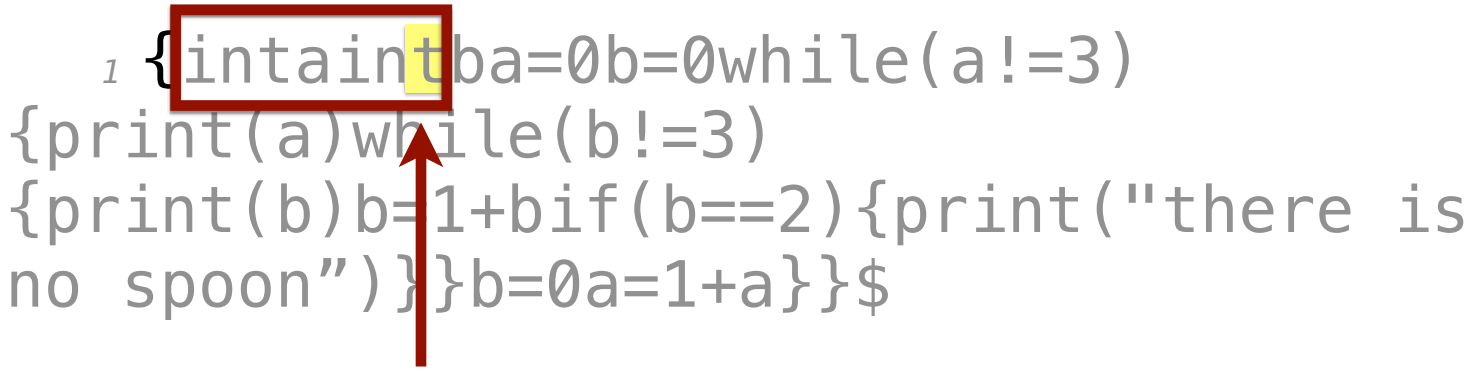
```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	6
found **int** in positions 1-3	

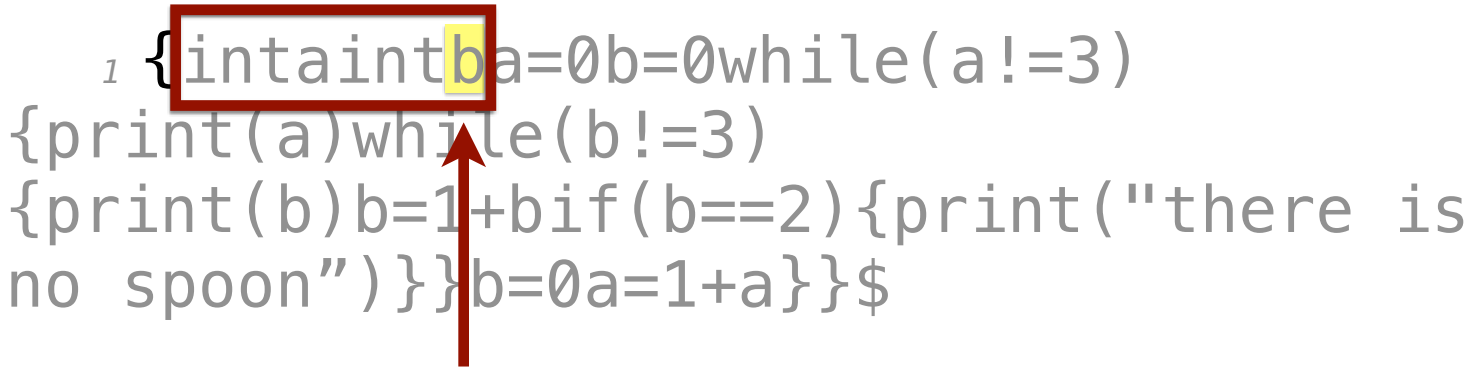
```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	7
found **int** in positions 1-3	

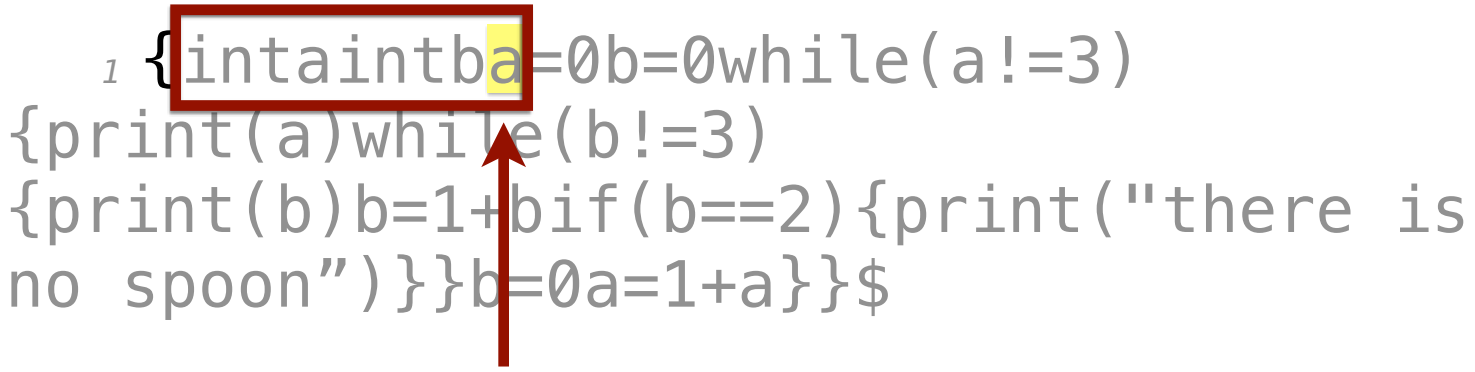
```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	8
found **int** in positions 1-3	

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	1
currentPosition	9
found **int** in positions 1-3	

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
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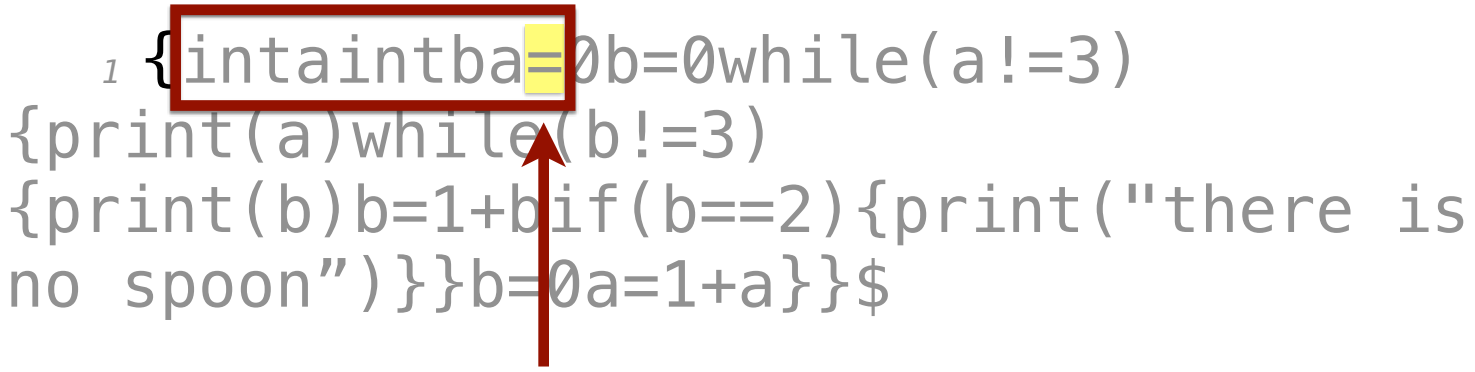
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Is a symbol.

Symbols, like white space (if present and outside of quotes) mean that we can stop moving ahead and see what we've got so far.

We've got a symbol, so consume the input, emit the token, and reset the pointers.

lastPosition	1
currentPosition	10
found **int** in positions	1-3

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
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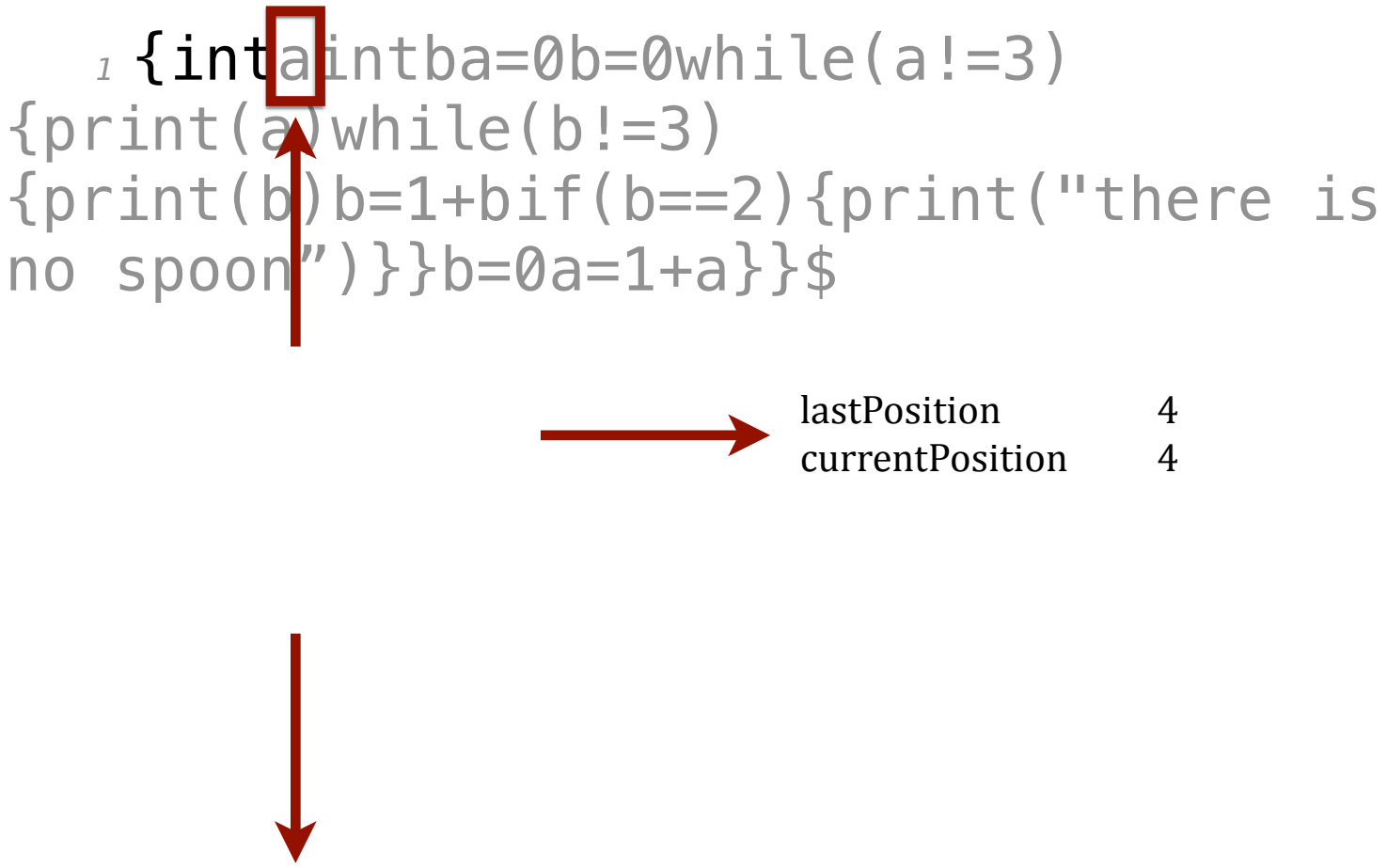
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```




```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
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LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
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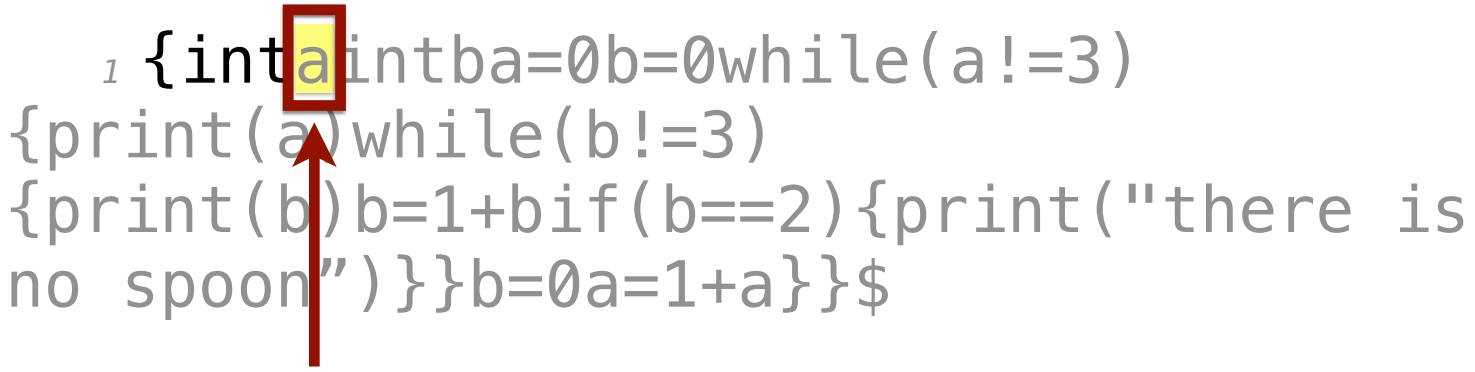
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Is an id.
(Actually, it is a char. But ...)

lastPosition 4
currentPosition 4
found **id** in positions 4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_CHAR [   ]  on line 1...
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LEXER --> | T_CHAR [ o ]  on line 1...
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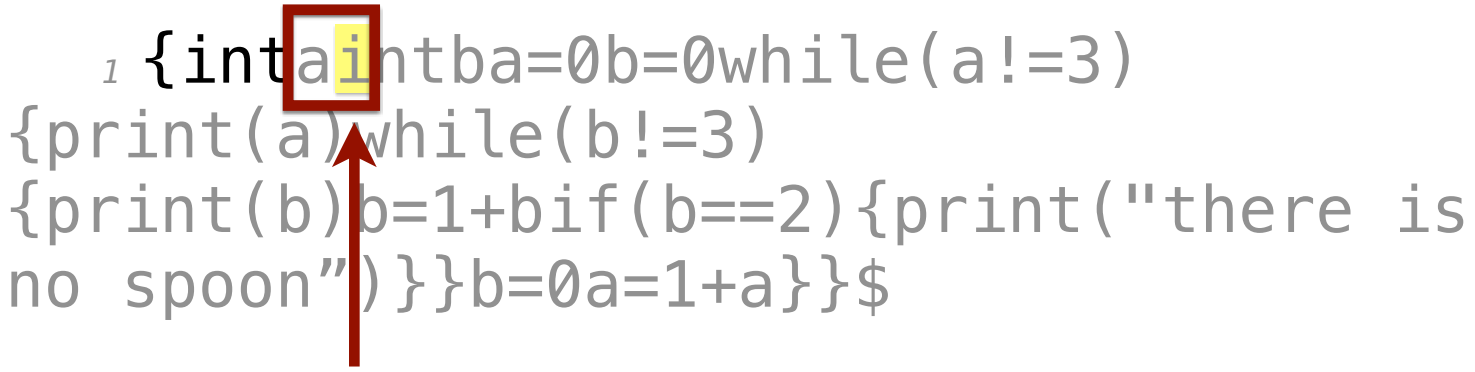
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	4
currentPosition	5
found **id** in positions	4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
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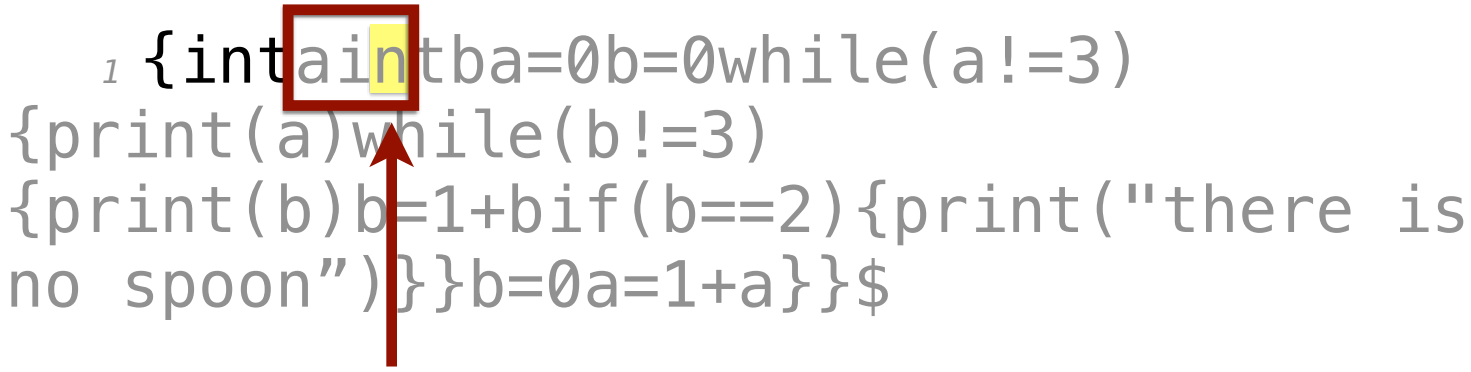
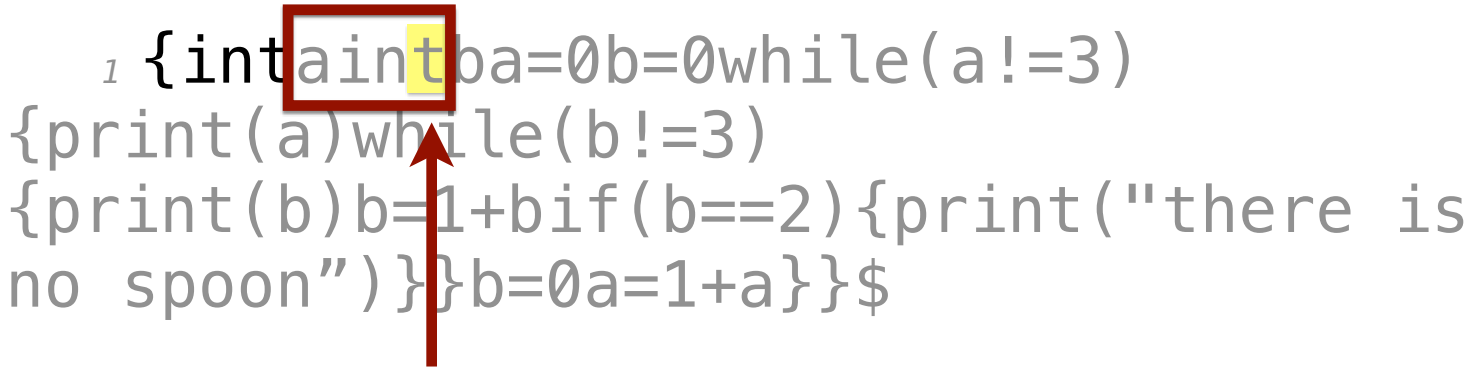
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	4
currentPosition	6
found **id** in positions	4-4

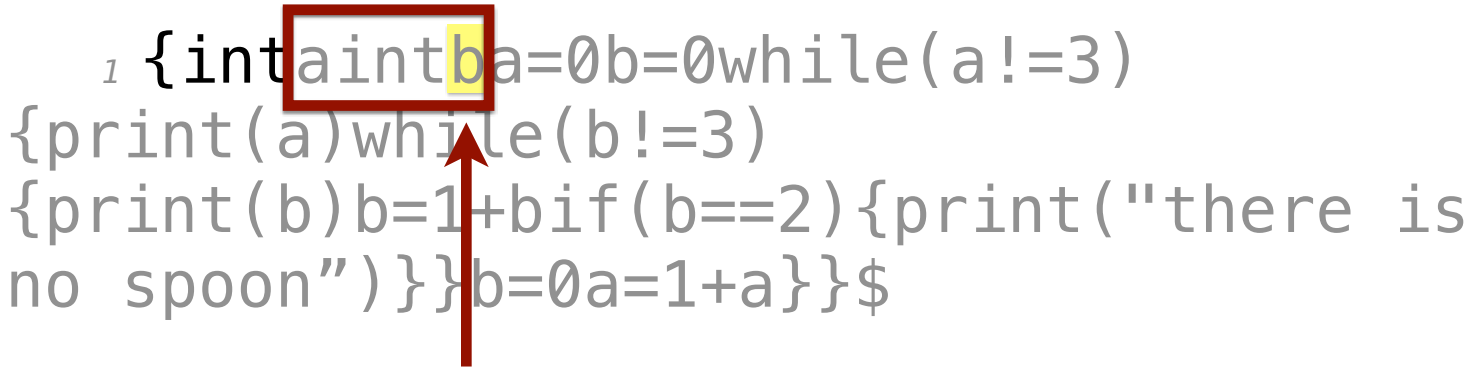
```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	4
currentPosition	7
found **id** in positions	4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

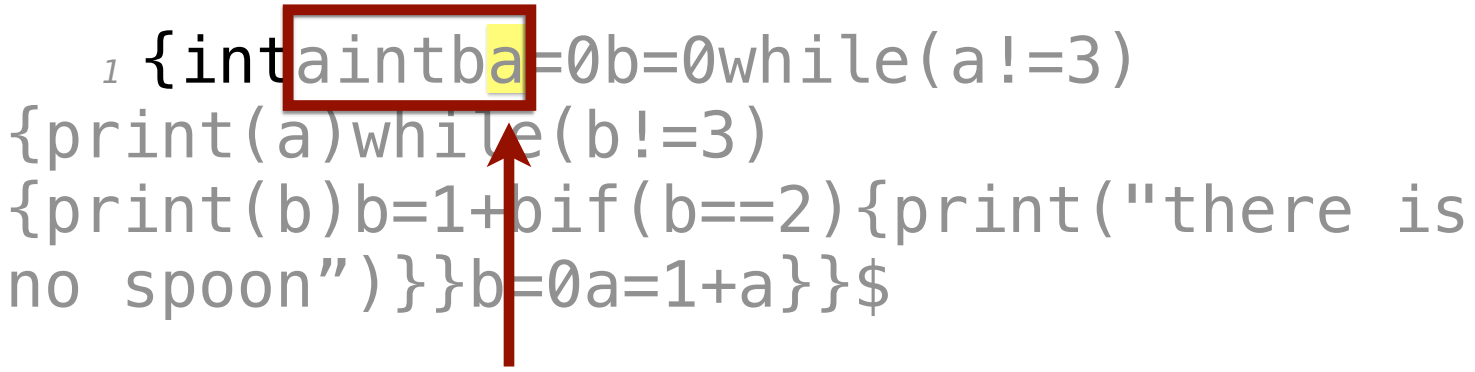


Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition 4
currentPosition 8
found **id** in positions 4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Not a digit.
Not a char.
Nothing.

lastPosition	4
currentPosition	9
found **id** in positions	4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
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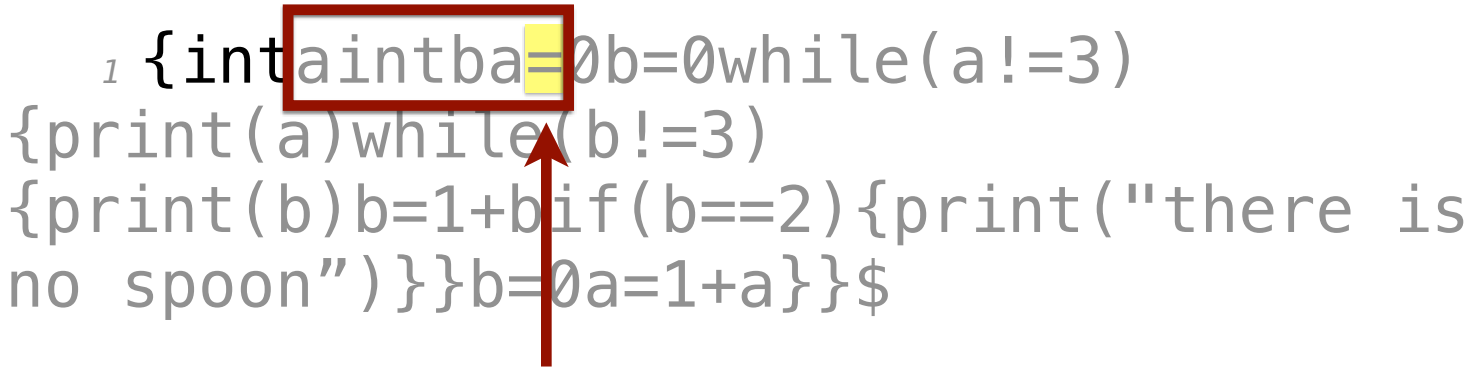
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Is a symbol.

Consume input.
Emit token.
Reset pointers.

lastPosition	4
currentPosition	10
found **id** in positions	4-4

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
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LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
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LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
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LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_DIGIT [ 0 ]  on line 1...
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LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
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LEXER --> | T_ID [ a ]  on line 1...
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LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

```
1 {inta intba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon")}}b=0a=1+a}}$
```

lastPosition	5
currentPosition	5

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_IF [ if ]  on line 1...
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LEXER --> | T_DIGIT [ 2 ]  on line 1...
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LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
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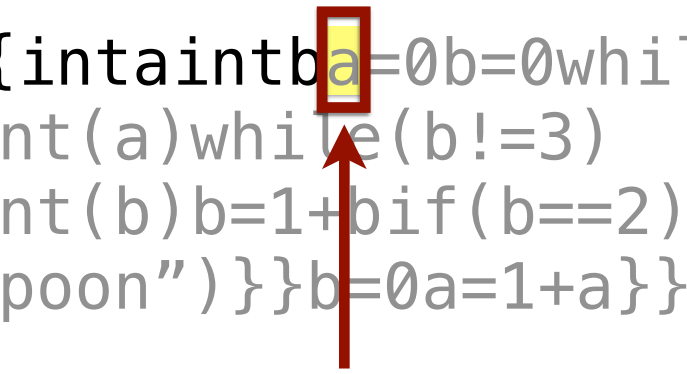
LEXER --> | T_EOPS [ $ ]  on line 1...
```


POLICE PUBLIC CALL BOX

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```



Not a keyword.
Is an id.

lastPosition 9
currentPosition 9
found **id** in positions 9-9

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_DIGIT [ 3 ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
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LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
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LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
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```

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```

Not a keyword.
Not an id.
Is a symbol.

Consume input.
Emit token.
Reset pointers.

lastPosition	9
currentPosition	10
found **id** in positions	9-9

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
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LEXER --> | T_DIGIT [ 3 ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
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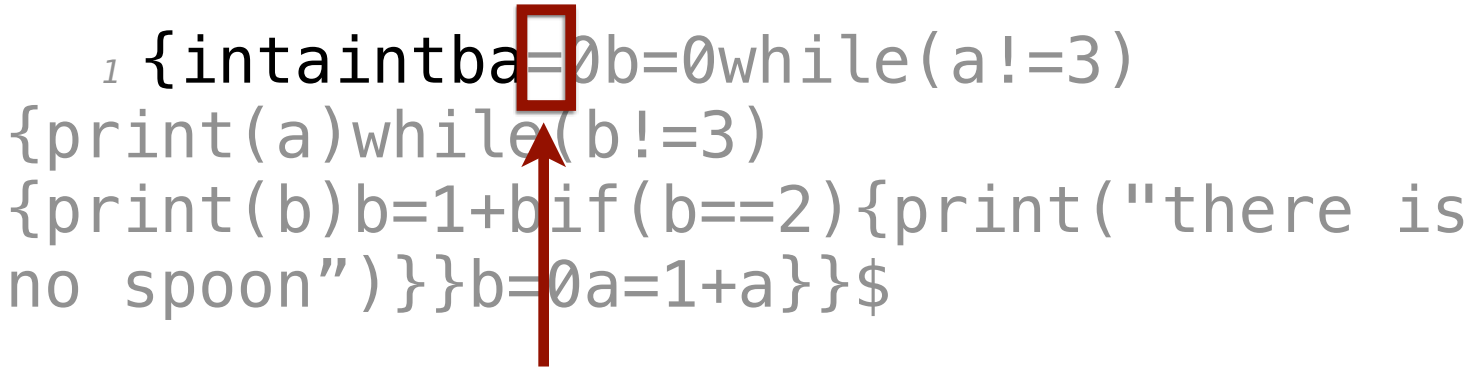
```



lastPosition	10
currentPosition	10

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_CHAR [   ]  on line 1...
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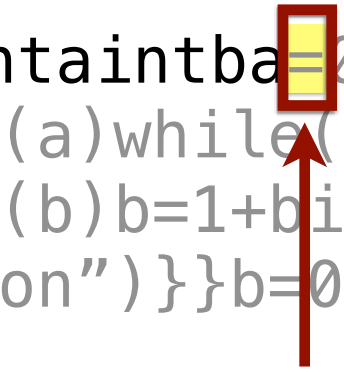
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```



Not a keyword.
Not an id.
Is a symbol. → found **symbol** in positions 10-10

lastPosition 10
currentPosition 10

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
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LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
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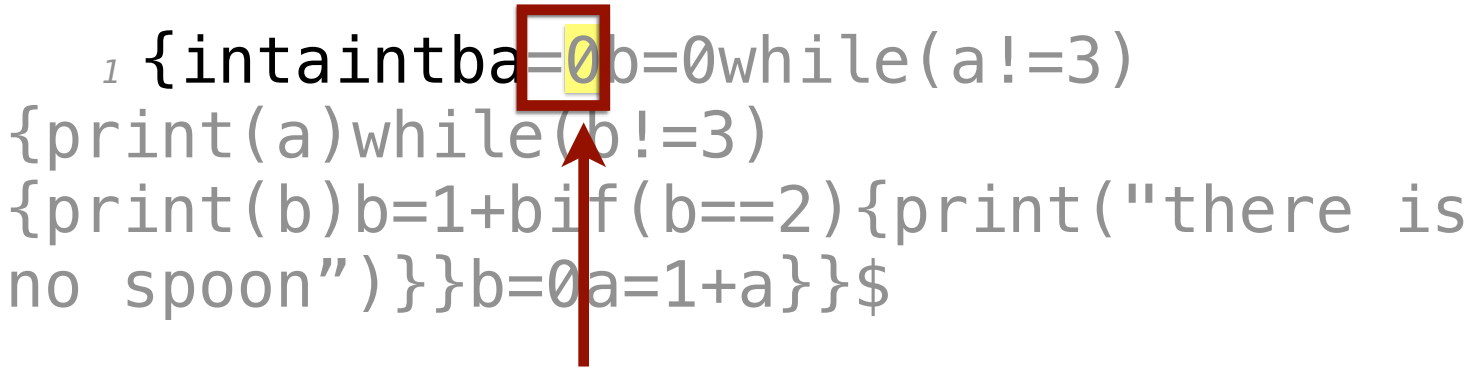
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Is a digit.

lastPosition 10
currentPosition 10
found **symbol** in positions 10-10

Remember how we wondered about stopping here? We can because there are no symbols with length > 2 in our grammar. This is either one of those symbols, or it's whatever we currently matched, or it's an error. In any case we don't need to look further.

Consume. Emit. Reset.

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
```

```
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
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LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```

```
1 {intaintba=0b=0while(a!=3)
{print(a)while(b!=3)
{print(b)b=1+bif(b==2){print("there is
no spoon”)}}b=0a=1+a}}$
```

lastPosition	11
currentPosition	11

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
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LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
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LEXER --> | T_CHAR [ o ]  on line 1...
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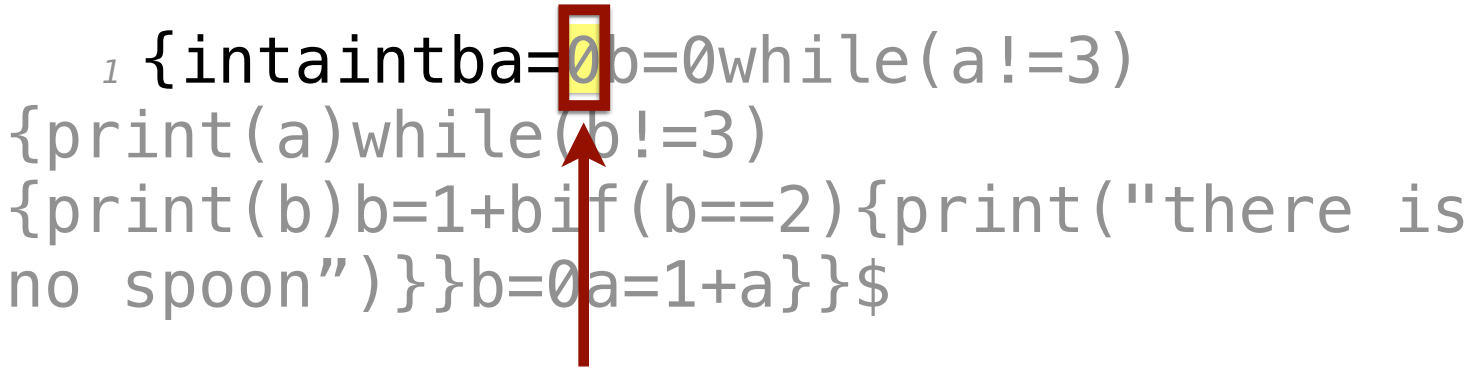
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```



Not a keyword.
Not an id.
Not a symbol.
Is a digit.

lastPosition	11
currentPosition	11
found **digit** in positions 11-11	

Digits are not part of anything else in our grammar so we can stop here.

Consume. Emit. Reset.

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
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LEXER --> | T_WHILE [ while ]  on line 1...
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LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
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LEXER --> | T_DIGIT [ 2 ]  on line 1...
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LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
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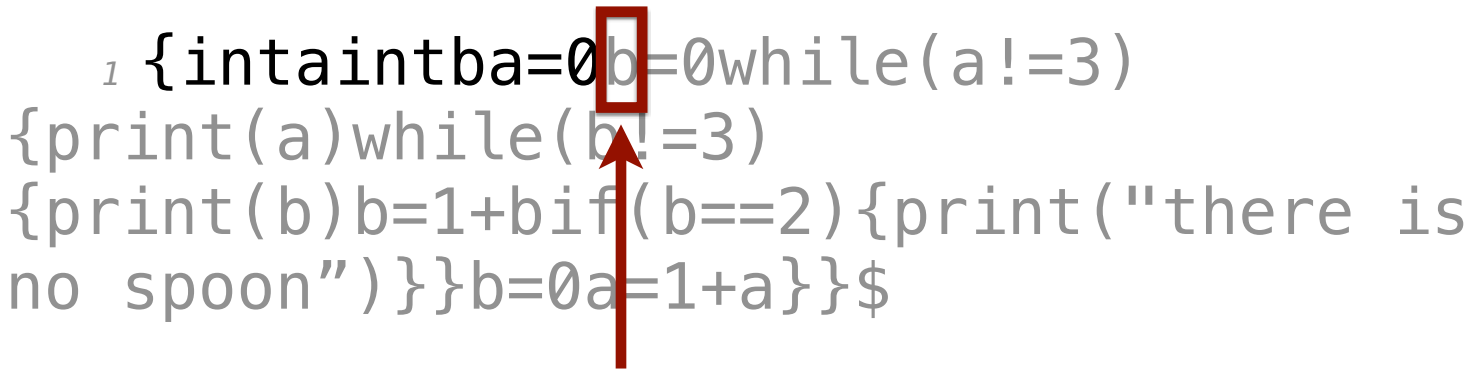
LEXER --> | T_EOPS [ $ ]  on line 1...
```



lastPosition	12
currentPosition	12

It's on and on and on on and on...
The lex don't stop until the break of dawn.

```
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_VARIABLE_TYPE [ int ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
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LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_WHILE [ while ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_INEQUALITY_OP [ != ]  on line 1...
LEXER --> | T_DIGIT [ 3 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_IF [ if ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_EQUALITY_OP [ == ]  on line 1...
LEXER --> | T_DIGIT [ 2 ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_OPENING_BRACE [ { ]  on line 1...
LEXER --> | T_PRINT [ print ]  on line 1...
LEXER --> | T_OPENING_PARENTHESIS [ ( ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CHAR [ t ]  on line 1...
LEXER --> | T_CHAR [ h ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [ r ]  on line 1...
LEXER --> | T_CHAR [ e ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ i ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [   ]  on line 1...
LEXER --> | T_CHAR [ s ]  on line 1...
LEXER --> | T_CHAR [ p ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ o ]  on line 1...
LEXER --> | T_CHAR [ n ]  on line 1...
LEXER --> | T_QUOTE [ " ]  on line 1...
LEXER --> | T_CLOSING_PARENTHESIS [ ) ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_ID [ b ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 0 ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_ASSIGNMENT_OP [ = ]  on line 1...
LEXER --> | T_DIGIT [ 1 ]  on line 1...
LEXER --> | T_ADDITION_OP [ + ]  on line 1...
LEXER --> | T_ID [ a ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_CLOSING_BRACE [ } ]  on line 1...
LEXER --> | T_EOPS [ $ ]  on line 1...
```