ParserTest

Description

Please write a program to read a program source from stdin following the token definition and grammar rule at right.

If **Yes**, print each **token's type** and **the string of token** seperated by **a whitespace** " " and end with a **newline**.

If **No**, print only **"invalid input"** with **a newline**. (don't output any token!)

Your program has to check the source whether it follows the token and grammar rules or not.

※請使用 Recursive-Decent-Parsing (ch02 ppt page 20 begin) 的模式來撰寫程式，否則將不予計分。

※測試檔案的換行皆為 \n

Terminal	Regular Expression
ID	[A-Za-z_][A-Za-z0-9_]*
STRLIT	"[^"]*"
LBR	\(
RBR	\)
DOT	\.

Productions

1 program   → stmts $
2 stmts   → stmt stmts
3 stmts   → λ
4 stmt   → primary
5 stmt   → STRLIT
6 stmt   → λ
7 primary   → ID primary_tail
8 primary_tail → DOT ID primary_tail
9 primary_tail → LBR stmt RBR primary_tail
10 primary_tai   → λ

Sample Input "test_string" Test_ID **Sample Output** STRLIT " test_string " ID Test_ID	**Sample Input** illiga!id **Sample Output** invalid input
Sample Input Str. length() **Sample Output** ID Str DOT . ID length LBR (RBR)	**Sample Input** printf("HelloWorld") **Sample Output** ID printf LBR (STRLIT " HelloWorld " RBR)

program
  |
stmts
 /   \
stmt   stmts
 | /   \
STRLIT stmt   stmts
         |
       primary
        /   \
      ID   primary_tail

program
stmts
stmt   stmts
primary
primary_tail
primary_tail
ID   DOT   ID
LBR   stmt   RBR   primary_tail $
λ   λ

stmts
stmt   stmts
stmt   stmts
primary   stmt   stmts
STRLIT   ID   STRLIT   stmt   stmts
primary_tail   primary   λ
λ   ID
primary_tail
λ

stmts
stmt stmts
primary stmt stmts
primary_tail stmt primary
stmt primary_tail primary_tail
ID LBR RBR ID
printf (λ) λ Str λ λ

stmts
stmt stmts
primary
primary_tail
stmt primary_tail primary_tail
primary_tail
ID LBR RBR DOT ID LBR RBR
get (λ) . length (λ) λ λ

stmts
stmt stmts
primary
primary_tail
stmt
primary primary_tail primary_tail
primary_tail
ID LBR ID LBR STMT RBR RBR
get (length ( )) λ
λ λ

```
                          stmts
                       Stmt      stmts
                    primary
                        |
                     primary_tail ————
                                      primary_tail|
                 /     |    |    \      |        \
               ID    LBR  STMT  RBR    DOT       ID✗
              length  (    |    )       .
                           λ
```