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Sub: CD

Practical – 3[Batch-71]

- Write a LEX program for the well-defined parentheses.

Code:

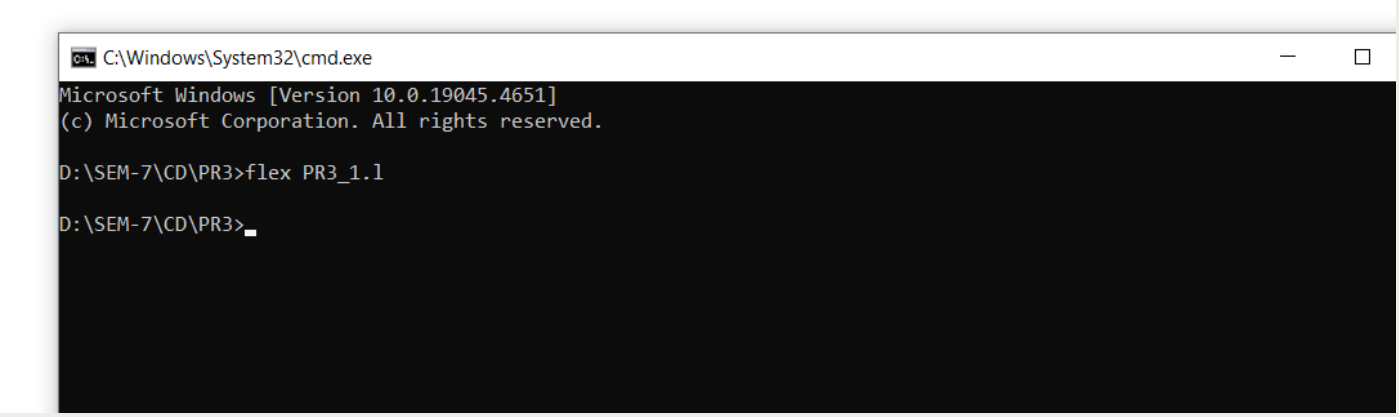
```
%{

#include <stdio.h>
#include <stdbool.h>

#define MAX_STACK_SIZE 100

char stack[MAX_STACK_SIZE];
int top = -1;

void push(char c) {
  if (top >= MAX_STACK_SIZE - 1) {
     //printf("Stack overflow.\n");
     printf("");
  } else {
     top++;
     stack[top] = c;
  }
}
```

```
char pop() {
  if (top < 0) {
     //printf("Stack underflow.\n");
     printf("");
     return '\0';
  } else {
     char c = stack[top];
     top--;
     return c;
  }
}
%}

%option noyywrap

%%

[(){}\[\]]      {
                char input_char = yytext[0];
                if (input_char == '(' || input_char == '{' || input_char == '[') {
                   push(input_char);
                } else {
                   char popped_char = pop();
                   if ((input_char == ')' && popped_char != '(') ||
                      (input_char == '}' && popped_char != '{') ||
                      (input_char == ']' && popped_char != '[')) {
                      printf("Invalid\n");
```

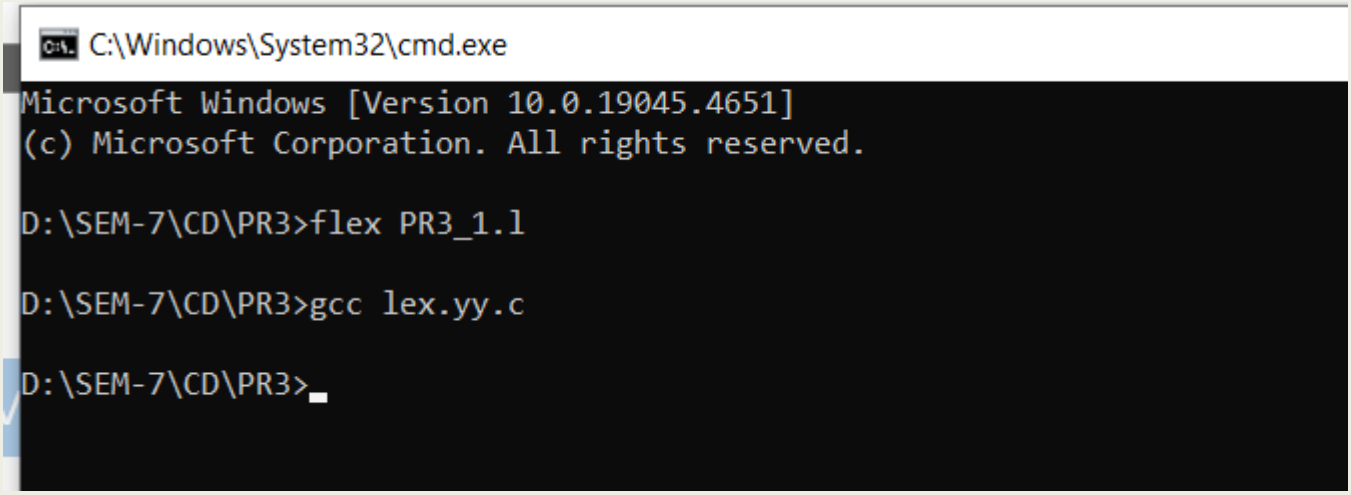
```
                top = -1; // Reset the stack for the next line
                return 0; // Skip the rest of the line
            }
        }
    }

\n          {
        if (top == -1) {
            printf("Valid\n");
        } else {
            printf("valid\n");
        }
        top = -1; // Reset the stack for the next line
    }

%%

int main(int argc, char *argv[]) {
  if (argc != 2) {
      printf("Usage: %s <input_file>\n", argv[0]);
      return 1;
  }

  FILE *inputFile = fopen(argv[1], "r");
  if (!inputFile) {
      printf("Error opening the file.\n");
      return 1;
  }
```

```
  char input_line[MAX_STACK_SIZE];
  while (fgets(input_line, MAX_STACK_SIZE, inputFile) != NULL) {
     printf("\n%s", input_line);
     yy_scan_string(input_line); // Pass the input line to the lexer
     yylex();
  }

  fclose(inputFile);
  return 0;
}
```

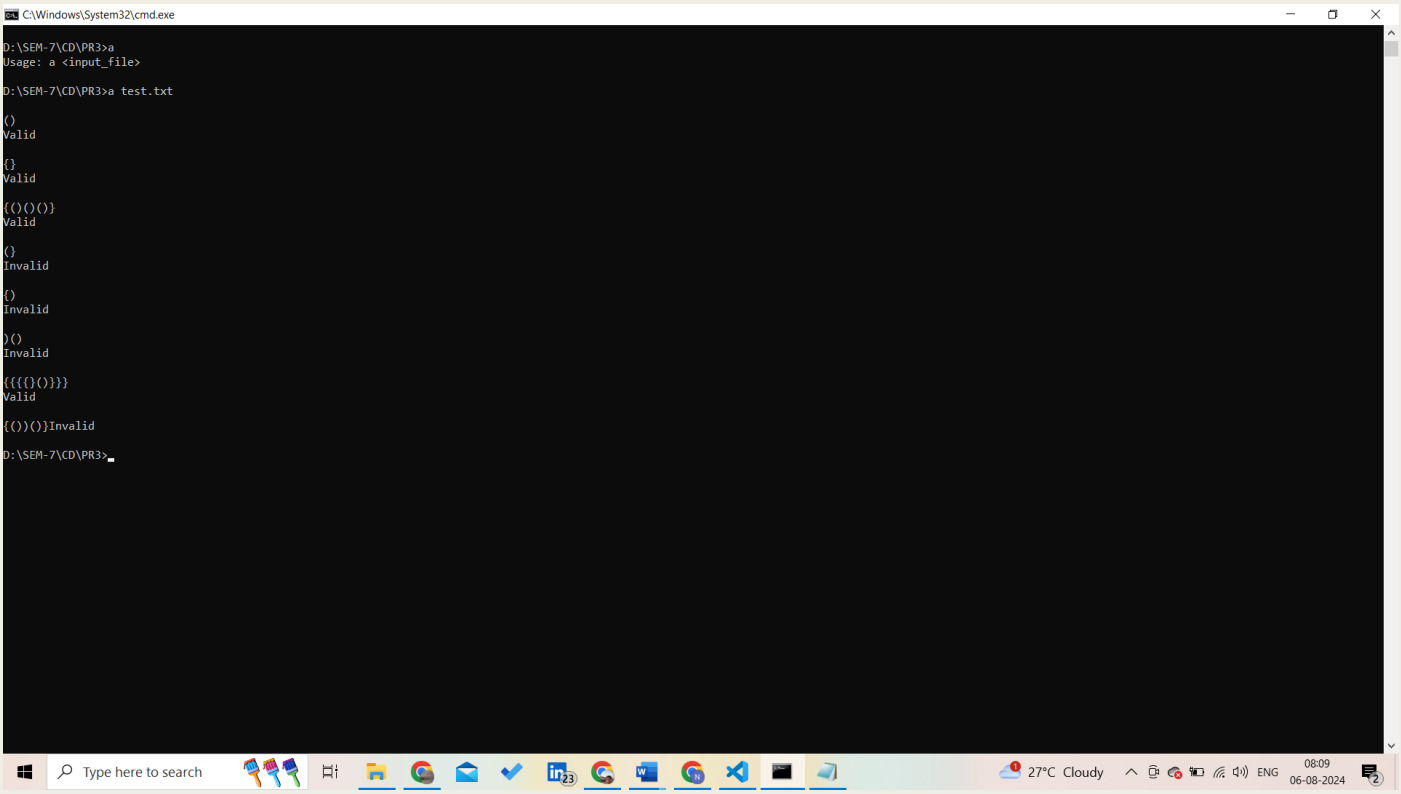
Step-1:



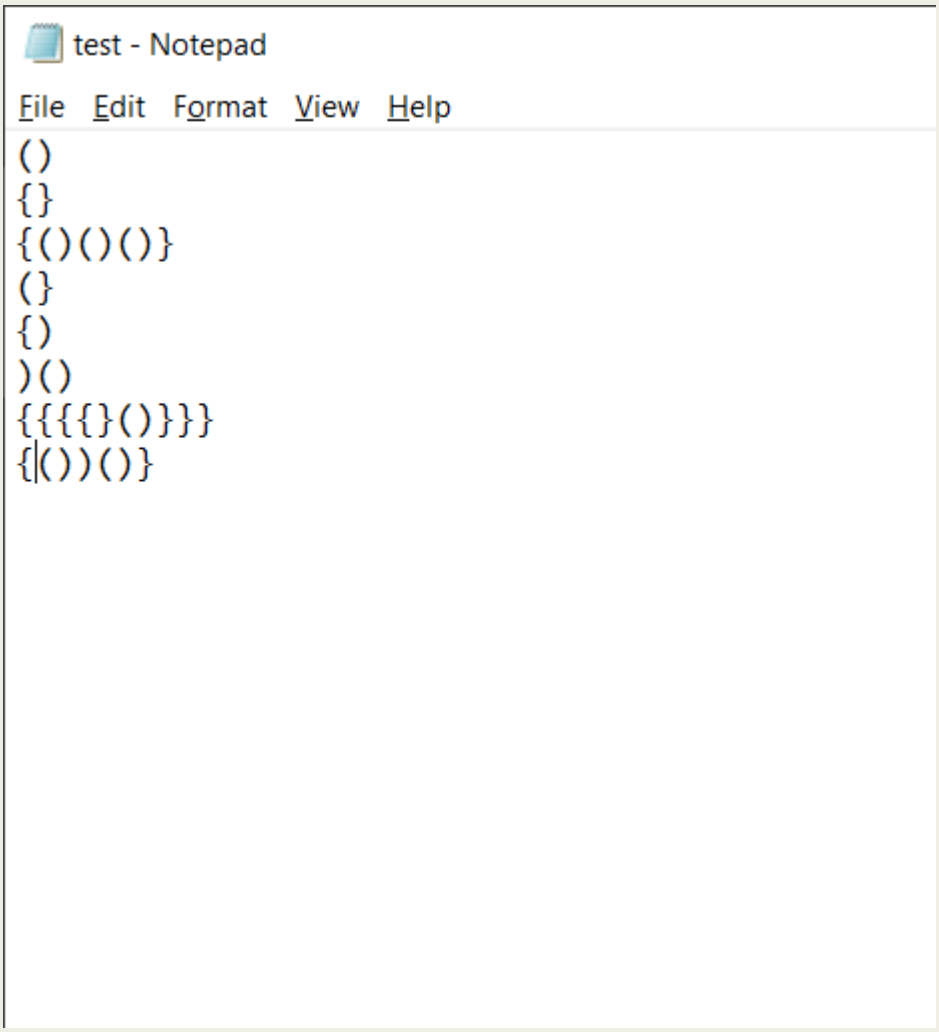
Step-2:



Step-3:


C:\Windows\System32\cmd.exe
D:\SEM-7\CD\PR3>a
Usage: a <input_file>
D:\SEM-7\CD\PR3>a test.txt
()
Valid
{}
Valid
{()()()}
Valid
(}
Invalid
{)
Invalid
)()
Invalid
{{{{}()}}}
Valid
{())()}Invalid
D:\SEM-7\CD\PR3>
Type here to search
27°C Cloudy
ENG
08:09
06-08-2024

Input:


test - Notepad
File Edit Format View Help
()
{}
{()()()}
(}
{)
)()
{{{{}()}}}
{())()}