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Compiler Construction Lab 5

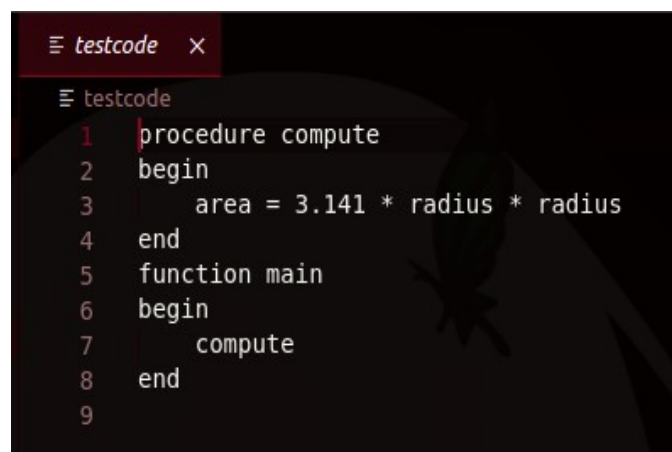
Task 1

Code:

```
%%  
(("if"|"then"|"begin"|"end"|"procedure"|"function")) {printf("A keyword: "); ECHO;  
printf("\n");}  
([+/*]) {printf("An Operator: "); ECHO; printf("\n");}  
([\n\t" ]) {}  
(([0-9]+)(.[0-9]+)) {printf("A float: "); ECHO; printf("\n");}  
([0-9]+) {printf("A integer: "); ECHO; printf("\n");}  
([a-z][0-9a-zA-Z]*) {printf("An id: "); ECHO; printf("\n");}  
  
. {printf("Unrecognized character: "); ECHO; printf("\n");}  
%%  
  
int main(int argc, char **argv)  
{  
FILE *file = fopen("testcode","r");  
if(!file){  
printf("[ - ] Can't open the file!\n");  
return -1;  
}  
yyin=file;  
while(yylex());  
fclose(file);  
printf("\n");  
}
```

Output:

Input Code File



```
testcode x  
testcode  
1 procedure compute  
2 begin  
3     area = 3.141 * radius * radius  
4 end  
5 function main  
6 begin  
7     compute  
8 end  
9
```

Terminal Output

```
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 5/Code$ flex test25.l
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 5/Code$ gcc lex.yy.c -lfl
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 5/Code$ ./a.out
A keyword: procedure
An id: compute
A keyword: begin
An id: area
Unrecognized character: =
A float: 3.141
An Operator: *
An id: radius
An Operator: *
An id: radius
A keyword: end
A keyword: function
An id: main
A keyword: begin
An id: compute
A keyword: end

scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 5/Code$
```

Task 2

Code:

```
%{
```

```
int result;
```

```
int MAXSIZE = 4;
```

```
int stack[4];
```

```
void push(int data){
for (int i = MAXSIZE-1; i>0;i--){
stack[i]=stack[i-1];
}
stack[0] = data;
}
```

```
int pop(){
int data = stack[0];
for (int i = 0; i<MAXSIZE;i++){
stack[i]=stack[i+1];
}
return data;
}
```

```
%}
```

```
%%
```

```
([+ - /*]) {
```

```

int b = pop();
int a = pop();
int result=0;
switch(yytext[0]){
case '+':{
result = a+b;
break;
}
case '-':{
result = a-b;
break;
}
case '*':{
result = a*b;
break;
}
case '/':{
result = a/b;
break;
}
}
push(result);
printf("\n%d %d %d %d\n", stack[0], stack[1], stack[2], stack[3]);
}
([\\n\\t" ]) {}
(([0-9]+)) {
push(atoi(yytext));
printf("\n%d %d %d %d\n", stack[0], stack[1], stack[2], stack[3]);}

. {printf("Unrecognized character: "); ECHO; printf("\n");}
%%

```

```

int main(int argc, char **argv)
{
FILE *file = fopen("testcode2","r");
if(!file){
printf("[-] Can't open the file!\n");
return -1;
}
yyin=file;
while(yylex());
fclose(file);
printf("\n[+] Result = %d\n\n",stack[0]);
}

```

Output:

Input File



```
testcode2
1 44 33 22 * + 1 -
```

Terminal Output

```
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 5/Code$ flex test25_2.l
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 5/Code$ gcc lex.yy.c -lfl
scolopendra@scolopendra-bytes:~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 5/Code$ ./a.out

44 0 0 0
33 44 0 0
22 33 44 0
726 44 0 0
770 0 0 0
1 770 0 0
769 0 0 0
[+] Result = 769
```