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Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

B.Tech. Winter Semester 2023-24

School Of Computer Science and Engineering (SCOPE)

Digital Assignment - III

Compiler Design Lab

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Note: This is mirror of Assessment 3 submitted on 9 September, 2024 on Moodle

1. Questions

Problem 1.1.
Write a LEX code to check date is valid or not.

main.l

```
%option noyywrap
%{
int i = 0;
%}

feb (((0|1)([0-9]))|((2)([0-8])))("/")(01)("/")(([0-2])([0-9]{3}))
one (((0|1|2)([0-9]))|((3)([0-1])))("/")("01"|"03"|"05"|"07"|"08"|"10"|"12")("/")(([0-2])([0-9]
{3})) twoo (((0|1|2)([0-9]))|((3)(0)))("/")("04"|"06"|"09"|"11")("/")(([0-2])([0-9]{3}))
invalid (.)*

%%
{feb} {printf("Valid: %s", yytext);}
{one} {printf("Valid: %s", yytext);}
{twoo} {printf("Valid: %s", yytext);}
{invalid} {printf("Invalid: %s", yytext);}
%%

int main() {
yyin = fopen("input.txt", "r"); yylex();
return 0;
}
```

Output

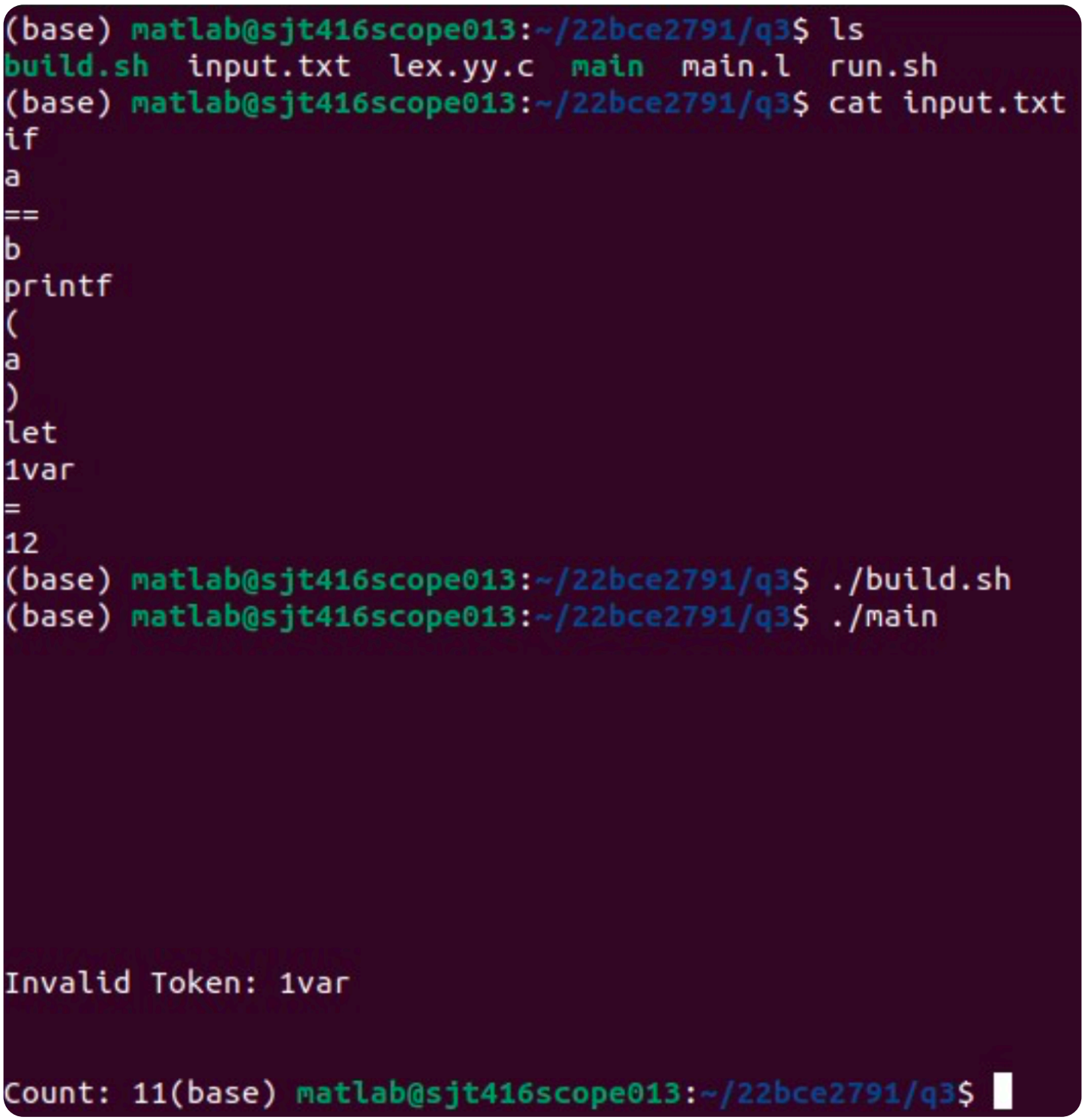
```
(base) matlab@sjt416scope013:~/22bce2791/q1$ ./build.sh
(base) matlab@sjt416scope013:~/22bce2791/q1$ vim input.txt
(base) matlab@sjt416scope013:~/22bce2791/q1$ ./build.sh
(base) matlab@sjt416scope013:~/22bce2791/q1$ ./main
Invalid: 23/02/1212
Invalid: 12/12/12
Invalid: 02/10/12121
Invalid: 31/11
Invalid: 32/02
(base) matlab@sjt416scope013:~/22bce2791/q1$
```

Problem 1.2.
Write a LEX code to count total number of tokens in a given C File.

main.l

```
%option noyywrap

%{
int ct = 0;
%}

keyword ([a-zA-Z])(([a-zA-Z0-9])*) cont ([0-9])+
op ("=="|">"|"<"|"=")
del (","|";"|"("|")")
invalid (.)*

%%
{keyword} {ct += 1;}
{cont} {ct += 1;}
{op} {ct += 1;}
{del} {ct += 1;}
{invalid} {printf("Invalid Token: %s", yytext);}
%%

int main() {
yyin = fopen("input.txt", "r"); yylex();
printf("Count: %d", ct); return 0;
}
```

Output



Problem 1.3.
Write a LEX code to count the frequency of the given word in a file

main.l

```
%option noyywrap %{
int ct = 0;
void count() {
```

```
int len = yyleng;
char token[] = "some"; int tp = 0;
for (int i = 0; i < len; i++) {
while (token[tp] == yytext[i+tp] && tp < 4) { tp += 1;
}
if (tp == 4) {
ct += 1;
}
tp = 0;
}
}
%}

invalid (.)*

%%
{invalid} {count();}
%%

int main() {
yyin = fopen("input.txt", "r");
yylex();
printf("Frequency: %d", ct);
return 0;
}
```

Output

```
(base) matlab@sjt416scope013:~/22bce2791/q2$ ls
build.sh  input.txt  lex.yy.c  main  main.l  run.sh
(base) matlab@sjt416scope013:~/22bce2791/q2$ cat input.txt
some there here
some some some here there
where is there some
(base) matlab@sjt416scope013:~/22bce2791/q2$ ./build.sh
(base) matlab@sjt416scope013:~/22bce2791/q2$ ./main



Frequency: 5(base) matlab@sjt416scope013:~/22bce2791/q2$
```