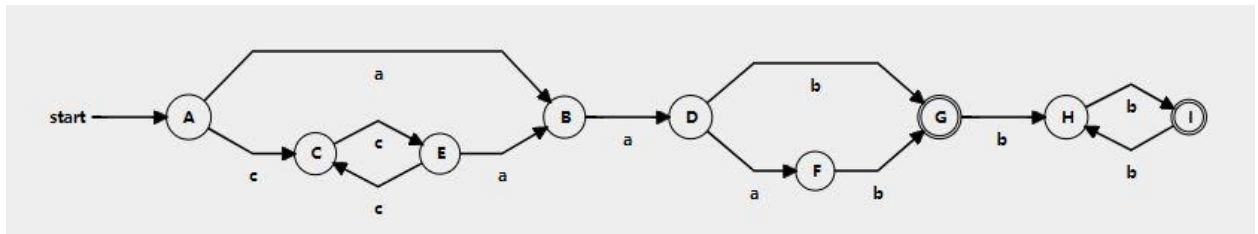Course: Compiler Design Lab
Course No: CSE332
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Section- PC-D

1) Regular expression : (cc)*(aa|aaa)b(bb)*

Code:

```
#include<stdio.h>
#include<string.h>
int main(){

for(int k=0;k<=7;k++)
{


    char str[100];
printf ("Enter a string (only with a , b & c ):  ");
gets(str);

int length,i,state=0;

length=strlen(str);


for(i=0;i<length;i++){
if(state==0 && str[i]=='a'){
state=1;
}
else if(state==0 && str[i]=='c'){
state=2;
}
else if (state==0 && str[i]=='b'){
state=9;
}
```

```
//
else if (state==1 && str[i]=='a'){
state=4;
}
else if (state==1 && str[i]=='b'){
state=9;
}
else if (state==1 && str[i]=='c'){
state=9;
}
//

else if (state==2 && str[i]=='a'){
state=9;
}
else if (state==2 && str[i]=='b'){
state=9;
}
else if (state==2 && str[i]=='c'){
state=3;
}
//
else if (state==3 && str[i]=='a'){
state=1;
}
else if (state==3 && str[i]=='b'){
state=9;
}
else if (state==3 && str[i]=='c'){
state=9;
}

//
else if (state==4 && str[i]=='a'){
state=5;
}
else if (state==4 && str[i]=='b'){
state=6;
}
else if (state==4 && str[i]=='c'){
state=9;
}
//
```

```
else if (state==5 && str[i]=='a'){
state=9;
}
else if (state==5 && str[i]=='b'){
state=6;
}

else if (state==5 && str[i]=='c'){
state=9;
}

//

else if (state==6 && str[i]=='a'){
state=9;
}
else if (state==6 && str[i]=='b'){
state=7;
}

else if (state==6 && str[i]=='c'){
state=9;
}

//

else if (state==7 && str[i]=='a'){
state=9;
}
else if (state==7 && str[i]=='b'){
state=8;
}

else if (state==7 && str[i]=='c'){
state=9;
}

//

else if (state==8 && str[i]=='a'){
state=9;
}
else if (state==8 && str[i]=='b'){
```

```c
            state=7;
        }

        else if (state==8 && str[i]=='c'){
            state=9;
        }

    }


    if(state==6||state==8){
        printf("\n   Accepted\n\n");
    }
    else{
        printf("\n   Rejected\n\n");
    }

}

return 0;



}
```

Output:

```
Enter a string (only with a , b & c ):  ccaab

    Accepted

Enter a string (only with a , b & c ):  caab

    Rejected

Enter a string (only with a , b & c ):  ccaaab

    Accepted

Enter a string (only with a , b & c ):  caaab

    Rejected

Enter a string (only with a , b & c ):  caab

    Rejected

Enter a string (only with a , b & c ):  ccab

    Rejected

Enter a string (only with a , b & c ):  cccab

    Rejected

Enter a string (only with a , b & c ):  ccaab

    Accepted

Process returned 0 (0x0)   execution time : 70.097 s
Press any key to continue.
```

2)
Code:
#include<string.h>
#include<stdio.h>
#include<stdlib.h>

void linecomment();
void blockComment();

```c
FILE *f1,*f2;

int main()
{
    char c,d,e;
    f1=fopen("input.txt","r");
    f2=fopen("output.txt","w");

    while((c=fgetc(f1))!=EOF)
    {


      if(c=='$')
       {
          blockComment();

       }
        else if(c=='!')
        {
           d=fgetc(f1);
           if(d=='!')
           {
              linecomment();
           }
           else
           {
              fputc(c,f2);
              fputc(d,f2);
           }



        }

        //Line and block comment end

        else
        {
           fputc(c,f2);
        }
```
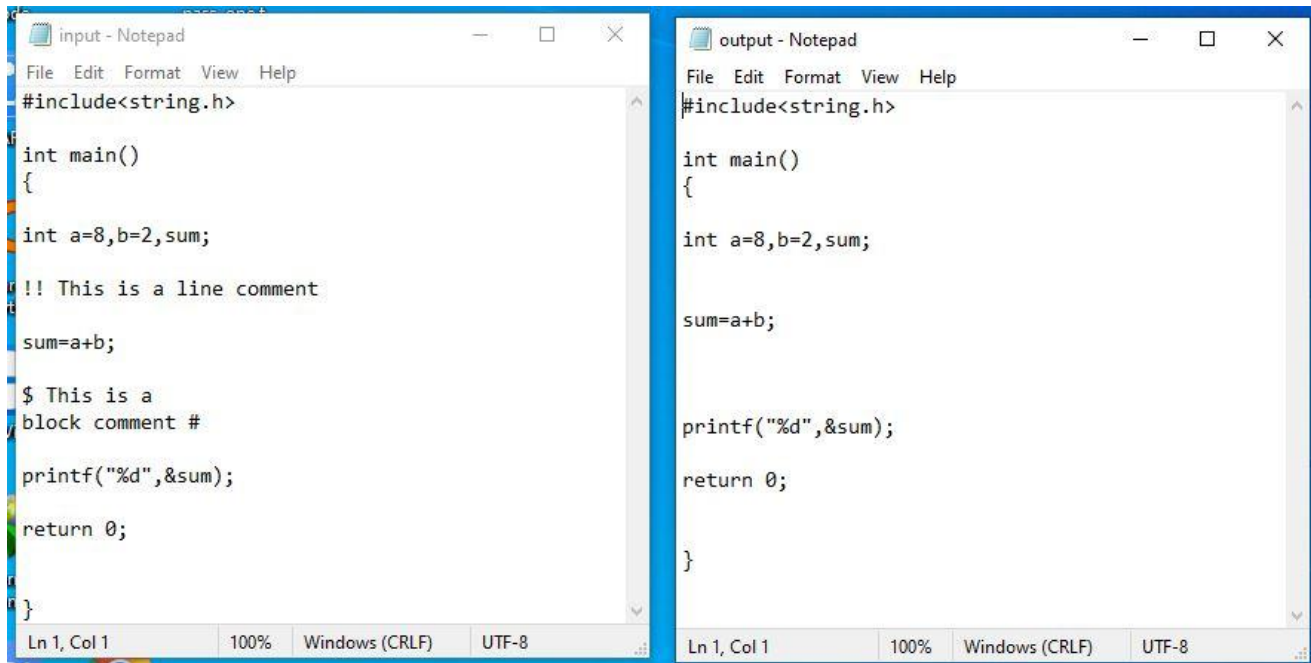
```c
    }

    fclose(f1);
    fclose(f2);
    return 0;
}


void linecomment(){
char e;
while((e=fgetc(f1))!=EOF){
   if(e=='\n'){
      return;
   }
}
}


void blockComment(){
char e;
while((e=fgetc(f1))!=EOF){
  if(e=='#'){
     return;

  }
 }
}
```

Input (input - Notepad):
```
#include<string.h>

int main()
{

int a=8,b=2,sum;

!! This is a line comment

sum=a+b;

$ This is a
block comment #

printf("%d",&sum);

return 0;

}
```

Output (output - Notepad):
```
#include<string.h>

int main()
{

int a=8,b=2,sum;


sum=a+b;



printf("%d",&sum);

return 0;


}
```

3)

Code:

```c
#include<stdint.h>
#include<string.h>

int main(){
  char s[100];
  printf("enter a string that must be contained A,C,G,T: \n");
  gets(s);
  printf("\n");
  int i,str1length=0,j,counta=0,countc=0,countg=0,countt=0;
  //Findout String Length
  for(i=0; s[i] != '\0'; i++){
    str1length++;
  }

  if(str1length >100){
    printf("Too long string\n");
    return;
  }
  for(j=0; j<str1length ; j++ ){
    if(s[j]=='A'){
      counta++;
```
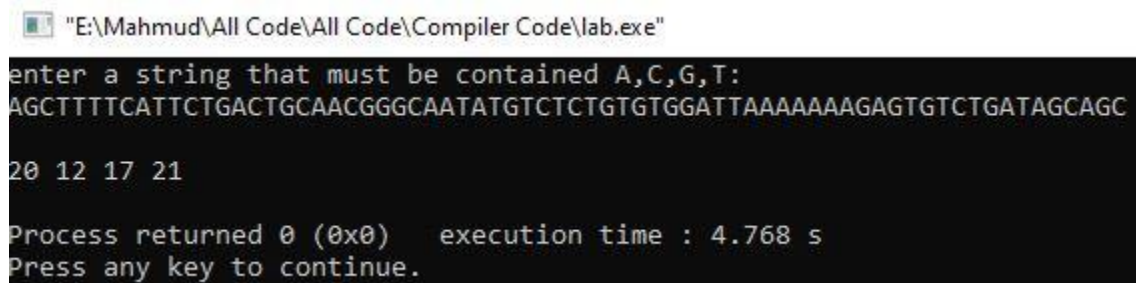
```
      }
    if(s[j]=='C'){
       countc++;
    }
    if(s[j]=='G'){
       countg++;
    }
    if(s[j]=='T'){
       countt++;
    }
  }

  printf("%d %d %d %d \n", counta,countc,countg,countt);
  return 0;
}
```

Output:

4)
Code:

```
#include<stdio.h>
#include<string.h>

int main()
{
```

```c
    for(int k=0;k<=2;k++)
    {
        char str[100];
    int i,length,count=0;

    printf("Enter the String:   ");
    gets(str);
    length=strlen(str);



if((str[0]>='a'&&str[0]<='z')||(str[0]>='A'&&str[0]<='Z')||(str[0]=='$')||(str[0]=='_')||(str[0]=='-')
)
    {
        for(i=1;i<length;i++)
        {

if((str[i]>='a'&&str[i]<='z')||(str[i]>='A'&&str[i]<='Z')||(str[i]>='0'&&str[i]<='9')||(str[i]=='$')||(str
[i]=='_')||(str[i]=='-'))
                count=count+1;



        }
        if(length-1==count)
        {
            if((strcmp(str, "if")==0)||(strcmp(str, "else")==0)||(strcmp(str, "int")==0)||(strcmp(str,
"float")==0)||(strcmp(str, "break")==0)||(strcmp(str, "double")==0)||(strcmp(str,
"else")==0)||(strcmp(str, "brake")==0)||(strcmp(str, "double")==0))
            {
                printf("\nValid identifier \n Keyword\n\n");
            }
            else
            {
                printf("\nValid identifier \n Variable \n\n");
            }



        }else
        {
          printf("\nInvalid Idenfifier\n\n");

        }
```

```
    }
    else
    {
       printf("\nInvalid idenfifier\n\n");
    }



    }


    return 0;
}
```

Output: