Program: 01

Problem Statement:

Write a Program to Implement minimal DFA which accept the string having three consecutive 1's as a substring.

Solution:

```
#include<stdio.h>
#include<string.h>
#include<conio.h>
int main()
{
char input[100];
int i=0, state=0;
clrscr();
printf("Enter any string:");
gets(input);
while(input[i]!='\0')
{
switch(state)
{
case 0:{
if(input[i]=='0'){
state=0;}
else if(input[i]=='1')
```

```
{state=1;
}else
{printf("Error");
}break;
}case 1:{
if(input[i]=='0')
{state=0;
}else if(input[i]=='1')
{state=2;
}else
{printf("Error");break;
}case 2:{
if(input[i]=='0')
{
state=0;
}else if(input[i]=='1'){
state=3;
}else
{printf("Error");
}break;
}case 3:{
if(input[i]=='0'||input[i]=='1'){
state=3;
}
```

```
else
{
printf("Error");
}
break;
}
}i++;
}if(state==3)
{
printf("\nString accepted");
}else
{
printf("\nInvalid String");
}getch();
return 0;
}
```

Program: 02

Problem Statement:

Write a Program to Implement minimal DFA that accepts all strings over input symbols {0, 1} which are divisible by 3.

Solution:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
int main()
{
char input[100];
int  count=0,i=0;
clrscr();
printf("Enter string divisible by 3: ");
gets(input);
while(input[i]!='\0')
{
if(input[i]=='0'||input[i]=='1'){
 count++;
 i++;
}
else
{
```

```
printf("Error");
}
}
 if(count%3==0)
{
printf("String accepted");
}
else
{
printf("String not valid");
}
getch();
return 0;
}
```

Program: 03

Problem Statement:

Write a Program to Implement minimal DFA that accepts all decimal string which are divisible by 3.

Solution:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
int main()
{
char input[100];
int i=0,state=0;
clrscr();
printf("Enter decimal string divisible by 3:\n");
gets(input);
while(input[i]!='\0')
{
switch(state)
{
case 0:
{
if(input[i]=='0')
{
state=0;
}
```

```
else if(input[i]=='1')
state=1;
else{
printf("Error"); }
break;
}case 1:
{if(input[i]=='0'){
state=2;
}else if(input[i]=='1')
{
state=0;
}else
{printf("Error");
} break;
}case 2:
{
if(input[i]=='0'){
state=1;
}
else if(input[i]=='1')
{
state=2;
}else{
printf("Error");
```

```
} break;

}

}

i++;

}

if(state==0)

{

printf("Decimal string divisible by 3");

}

else

{

printf("Decimal string NOT divisible by 3");

}

getch();

return 0;

}
```

Program: 04

Problem Statement:

Write a Program to Implement minimal DFA which accept all string of a and b where string starts and ends with same symbol.

Solution:

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main(){
 char s[100];
 int i=0, state=0;
 printf("Enter the string:");
 gets(s);
 while(s[i]!='\0') {
 switch(state) {
 case 0: {
 if(s[i]=='a') {
 state=1;
 }
 else if(s[i]=='b')
 {
 state=3;
 }
```

```
else {


printf("String is not valid");

} break;

}

case 1: {

if(s[i]=='a'){

state=2;

}

else if(s[i]=='b'){

state=1;

}else {

printf("String is not valid");

} break;

}case 2:

{

if(s[i]=='a')

{

state=2;

}

else if(s[i]=='b') {

state=1;

}else {

printf("String is not valid");
```

```
}break;
} case 3:
{
if(s[i]=='a') {
state=3;
}
else if(s[i]=='b'){
state=4; }
else {
printf("String is not valid");
}break;
} case 4:
{
if(s[i]=='a') {
state=3;
} else if(s[i]=='b')
{
state=4;
} else
{ printf("String is not valid");
} break;
}
}
i++;
```

```
}
if(state==2||state==4){
printf("Valid String");
}
else{
printf("Not Valid");
}
}
```
