

## Week-1

### 1. Write a program in C that recognizes the following languages.

a. Set of all strings over binary alphabet containing even number of 0's and even number of 1's.

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

```
void main(){
```

```
    int state=0,i=0;
```

```
    char current,input[20];
```

```
    printf("Enter input string :");
```

```
    scanf("%s",input);
```

```
    while((current=input[i++])!='\0'){
```

```
        switch(state)
```

```
        {
```

```
            case 0: if(current=='a')
```

```
                    state=1;
```

```
                    else if(current=='b')
```

```
                        state=2;
```

```
                    else
```

```
                    {
```

```
                        printf("Invalid token");
```

```
                        printf("PAUSE");
```

```
                    }
```

```
                    break;
```

```
            case 1: if(current=='a')
```

```
                    state=0;
```

```
                    else if(current=='b')
```

```
                        state=3;
```

```
                    else
```

```
                    {
```

```
                        printf("Invalid token");
```

```
                        printf("PAUSE");
```

```

        }
        break;

    case 2: if(current=='a')
        state=3;
        else if(current=='b')
        state=0;
        else
        {
            printf("Invalid token");
            printf("PAUSE");
        }
        break;

    case 3: if(current=='a')
        state=2;
        else if(current=='b')
        state=1;
        else
        {
            printf("Invalid token");
            printf("PAUSE");
        }
        break;
    }
}

if(state==0)
printf("String accepted\n");
else
printf("String not accepted\n");
}

```

```

Enter input string :aaaabbbbabababa
String accepted

-----
Process exited after 20.27 seconds with return value 0
Press any key to continue . . .

```

## b. Set of all strings ending with two symbols of same type

```
#include <stdio.h>

int main() {

    char s[100];

    printf("Enter input string :");
    scanf("%s",s);

    int count=0, count1=0, i;

    for (i = 0; s[i] != '\0'; i++);
    if(s[i-1] == s[i-2])
        printf("String is accepted");
    else
        printf("String is not accepted");

    return 0;
}
```

### Output:

```
Enter input string :ababababababaaa
String is accepted
-----
```

```
Enter input string :ababab
String is not accepted
-----
```