# CD LAB WEEK-1 PROBLEMS

1. Implementation of Language recognizer for set of all strings over input alphabet ∑={a,b} containing an even number of a's and even number of b's.

```java
import java.util.Scanner;
public class week1_lab_program1 {
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        int state=0,i=0;
        char current;
        String input=sc.nextLine();

        for(i=0;i<input.length();i++){

            current=input.charAt(i);

            switch (state)
            {

                case 0:
                    if(current=='a'){
                        state=1;
                    }
                    else if(current=='b'){
                        state=2;

                    }
                    else{
                        System.out.println("Invalid token");
                    }
                    break;
                case 1:
                    if(current=='a'){
                        state=0;

                    }
```

```java
            else if(current=='b'){
                state=3;

            }
            else {
                System.out.println("Invalid token");
            }
            break;
        case 2:
            if(current=='a'){
                state=3;
            }
            else if(current=='b'){
                state=0;
            }
            else{
                System.out.println("Invalid token");
            }
            break;
        case 3:
            if(current=='a'){
                state=2;

            }
            else if(current=='b'){
                state=1;

            }
            else{
                System.out.println("Invalid token");
            }
            break;
        }

    }
    if(state==0){
        System.out.println("String is accepted");
    }
    else {
        System.out.println("String not accepted");
    }

    }
}
```

## 2. Implementation of Language recognizer for a set of all strings ending with two symbols of the same type.

```java
import java.util.Scanner;
public class cp1 {
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        int state=0,i=0;
        char current;
        String input=sc.nextLine();

        for(i=0;i<input.length();i++){

            current=input.charAt(i);

            switch (state)
            {

                case 0:
                    if(current=='a'){
                        state=1;
                    }
                    else if(current=='b'){
                        state=3;

                    }
                    else{
                        System.out.println("Invalid token");
                    }
                break;
                case 1:
                    if(current=='a'){
                        state=2;

                    }
                    else if(current=='b'){
                        state=3;

                    }
                    else {
                        System.out.println("Invalid token");
                    }
                break;
```

```java
            case 2:
               if(current=='a'){
                   state=2;
               }
               else if(current=='b'){
                   state=3;
               }
               else{
                   System.out.println("Invalid token");
               }
             break;
            case 3:
               if(current=='a'){
                   state=1;

               }
               else if(current=='b'){
                   state=4;

               }
               else{
                   System.out.println("Invalid token");
               }
             break;
            case 4:
               if(current=='a'){
                   state=1;

               }
               else if(current=='b'){
                   state=4;

               }
               else{
                   System.out.println("Invalid token");
               }
              break;
         }

    }
    if(state==2||state==4){
        System.out.println("String is accepted");
    }
    else {
```

```java
            System.out.println("String not accepted");
        }

    }
}
```