COMPILE DESIGN LAB

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CSE E

Week 1: Language recognizer

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.
b. Lab Assignment: Set of all strings ending with two symbols of the same type.

A. Code:

```c
#include<stdio.h>
void main()
{
   int state=0,i=0;
   char token,input[20];
   printf("Enter input string \t :");
   scanf("%s",input);
   //printf("Given string is : %s");

   while((token=input[i++])!='\0')
   {
     // printf("current token : %c \n",token);
      switch(state)
      {
         case 0: if(token=='a')
                 state=1;
               else if(token=='b')
                  state=2;
               else
               {
                  printf("Invalid token");
                  exit(0);
               }
```

```c
                break;
        case 1: if(token=='a')
                    state=0;
                else if(token=='b')
                    state=3;
                else
                {
                    printf("Invalid token");
                    exit(0);
                }

                break;
        case 2: if(token=='a')
                    state=3;
                else if(token=='b')
                    state=0;
                else
                {
                    printf("Invalid token");
                    exit(0);
                }
                break;
        case 3: if(token=='a')
                    state=2;
                else if(token=='b')
                    state=1;
                else
                {
                    printf("Invalid token");
                    exit(0);
                }
                break;
        }
    // printf("state = %d  ",state);
    }
    if(state==0)
        printf("\n\nString accepted\n\n");
    else
        printf("\n\nString not accepted\n\n");
}
```

```
Enter input string        :abaa


String not accepted


--------------------------------
Process exited after 29.4 seconds with return value 0
Press any key to continue . . . _
```

```
Enter input string      :abba

String accepted


-------------------------------
Process exited after 19.43 seconds with return value 0
Press any key to continue . . . _
```

B.Code:

```c
#include<stdio.h>
void main()
{
    int state=0,i=0;
    char token,input[20];
    printf("Enter input string: ");
    scanf("%s",input);
    while((token=input[i++])!='\0')
    {
        switch(state)
        {
            case 0: if(token=='a')
                    state=1;
                else if(token=='b')
                    state=3;
                else
                {
                    printf("token is invalid");
                    exit(0);

                }
                break;
```

```c
case 1: if(token=='a')
            state=2;
        else if(token=='b')
            state=3;
        else
        {
            printf("token is invalid");
            exit(0);

        }
        break;

case 2: if(token=='a')
            state=2;
        else if(token=='b')
            state=3;
        else
        {
            printf("token is invalid");
            exit(0);

        }
        break;

case 3: if(token=='a')
            state=1;
        else if(token=='b')
            state=4;
        else
        {
            printf("token is valid");
            exit(0);

        }
        break;

case 4: if(token=='a')
            state=1;
        else if(token=='b')
            state=4;
        else
        {
            printf("token is invalid");
```

```c
            exit(0);

        }
        break;

    }
}
if(state==2 || state==4)
    printf("\nString is accepted");
else
    printf("String is not accepted");
}
```

```
Enter input string: abaa

String is accepted
-------------------------------
Process exited after 9.297 seconds with return value 19
Press any key to continue . . .
```

```
Enter input string: aba
String is not accepted
---------------------------------
Process exited after 10.37 seconds with return value 22
Press any key to continue . . . _
```