● Compiler Design Lab (CS 306L)

Week - 1

Implementation of Language recognizer

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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.

C 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);
```

```c
switch(state)
{
    case 0: if(token=='a')
                state=1;
            else if(token=='b')
                state=2;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            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");
}
```

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

Python:

```
state = 0


string = input("Enter the String: ")

print("\n")
```

```python
for token in string:

    if state == 0:

        if token == "a":

            state = 1

        elif token == "b":

            state = 3


        else:

            print("Invalid Token")

            break


    elif state == 1:

        if  token == "a":

            state = 2

        elif token == "b":

            state = 3

        else:

            print("Invalid Token")

            break


    elif state == 2:
```

```python
        if token == "a":

            state = 2

        elif token == "b":

            state = 3

        else:

            print("Invalid Token")

            break

elif state == 3:

    if  token == "a":

        state = 1



    elif token == "b":

        state = 4

    else:

        print("Invalid Token")

        break



elif state == 4:

    if  token == "a":
```

```python
            state = 1

        elif token == "b":

            state = 4


        else:

            print("Invalid Token")

            break



if state == 2 or state == 4:

    print("Given String: ",string," is Accepted" )

else:

    print("Given String: ",string," is NOT Accepted" )
```

Test Cases:

Input	Output
aaaa	Accepted
aabb	Accepted
abss	Invalid Token
bbba	Not Accepted