Compiler Design Lab (CSE306)

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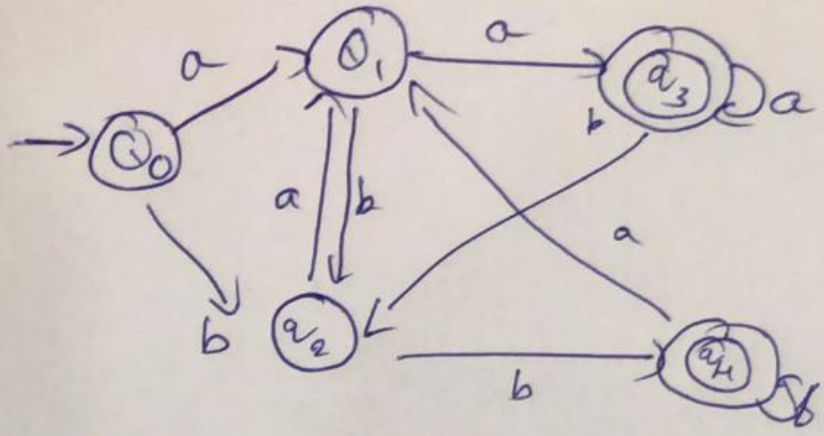
CSE-C

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

Description: Any string where the last two symbols were the same is acceptable. The strings are like aa, aaa, baa, bababb, etc. Deterministic Finite Automata for the given language is given below:



Here

DFAM = (Q, Σ, q_0, F)

where

Q = set of all states

= $\{q_0, q_1, q_2, q_3, q_4\}$

Σ = Input Alphabet = $\{a, b\}$

State is q_0

F = set of all final states

= $\{q_3, q_4\}$

Algorithm: Language recognizer

Input: input //input string

Output: Algorithm prints a message:
“String accepted”: If the input is acceptable by the language,
“String not accepted” otherwise,
“Invalid token”: If the input string contains symbols other than the input alphabet.

Code:

```
#include <stdio.h>
int main(void)
{
char s[1000];
scanf("%s",s);
int state = 1;
for(int i=0; s[i]!='\0'; i++)
{
switch(s[i])
{
case 'a':
if(state==1)
state = 2;
else if(state==2)
state=3;
else if(state==4)
state =2 ;
else if(state ==5)
state = 2;
break;
case 'b' :
if(state==1)
state = 4;
else if(state == 4)
state = 5;
else if(state == 2)
state = 4;
else if(state ==3)
state = 4;
```

```
break;
default:
printf("Invalid Token");
exit(0);

}
}
if(state==3 || state ==5)
printf("accepted ");
else
printf("not accepted");
printf("\n");
return 0;
}
```

Test Cases	Output
abaa	Accepted
abaaba	Not Accepted
aabb	Accepted
abbab	Not Accepted