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Batch   :B1
Subject :CCL
Title   :Implementation of Deterministic Finite Automata.

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#include<stdio.h>
#include<stdlib.h>
#include<string.h>

int main (int argc, char **argv)
{

    int a, b, s, x, i, len, Q[100][100], initial, final;
    char str[100], c[2];

    printf("\nEnter total number of inputs: ");
    scanf("%d", &i);

    printf("\nEnter total number of states: ");
    scanf("%d", &s);

    printf("\nEnter initial state for DFA: ");
    scanf("%d", &initial);

    printf("\nEnter final state for DFA: ");
    scanf("%d", &final);

    printf("\n\n Initial State: {Q%d}", initial);
    printf("\n Final State: {Q%d}", final);
    printf("\n Set of Finite States: {");
    for (a = 0; a < s; a++)
    {
        printf("Q%d", a);
        if(a <  s-1)
            printf(", ");
    }
    printf("}");
    printf("\n Set of Inputs : {");
    for(a = 0; a < i; a++)
    {
        printf("%d ",a);
        if(a < i-1)
            printf(", ");
    }
    printf("}\n\n");
    printf(" Enter the transition table INPUT:\n");
    printf("Transition-> state");
    for(a = 0; a < s; a++)
```

```
    {
        for(b = 0; b < i; b++)
        {
            printf("\n Q%d, %d    ->  ", a, b);
            scanf("%d", &Q[a][b]);
        }
    }
    do
    {

        printf("\nEnter the string to check: ");
        scanf("%s", str);
        len = strlen(str);

        c[1] = '\0';
        x = initial;
        printf("\n -> Q0");
        for(a = 0; a < len; a++)
        {
            c[0] = str[a];
            x = Q[x][atoi(c)];
            printf(" --%d--> Q%d", atoi(c), x);
        }
            if(x == final)
                printf("\n\n***[String Accepted for this
grammar]***\n\n");
            else
                printf("\n\n###[String Not Accepted]###\n\n");
            printf("Do you want to check another string [Yes = 1 / No =
0]: ");
            scanf("%d", &a);
    }
    while(a);
    return 0;

}

/********************** OUTPUT **********************

Enter total number of inputs: 2

Enter total number of states: 3

Enter initial state for DFA: 0

Enter final state for DFA: 2


 Initial State: {Q0}
 Final State: {Q2}
 Set of Finite States: {Q0, Q1, Q2}
 Set of Inputs : {0 , 1 }

 Enter the transition table INPUT:
```

```
Transition-> state
 Q0, 0    ->  1

 Q0, 1    ->  2

 Q1, 0    ->  1

 Q1, 1    ->  2

 Q2, 0    ->  1

 Q2, 1    ->  2

Enter the string to check: 110101

 -> Q0 --1--> Q2 --1--> Q2 --0--> Q1 --1--> Q2 --0--> Q1 --1--> Q2

***[String Accepted for this grammar]***

Do you want to check another string [Yes = 1 / No = 0]: 0

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```