EC-362 Lab Problems 1

NOTE: Write programs in C or C++.

1) Write a program to simulate the given DFA. Your program should take an input string from the keyboard and display the state sequence through which the machine makes transitions alongside the symbols input. Also indicate with each input symbol whether the string input so far is accepted or not. Consider the following DFSA for implementation. * denotes the accepting state.

	0	1	2
→A	B	A	B
B	E	A	C
C	A	E	D
D	C	D	E
*E	E	D	A

HINT: Each state may be implemented as a case of a *switch* statement. For example, let states A and B be represented by cases 1 and 2 respectively. Let variable *state* denote the current state of the DFA. Then, implementation of the first row (state A or 1) will be as follows.

```
switch(state) {
    case 1: c = nextchar();
            if (c = '0') state = 2;
            else if (c = '1') state = 1;
            else if (c = '2') state = 2;
    case 2: ...
            ...
            }
```

2) Write a general-purpose program that can simulate any given DFA. The input alphabet and state table are taken as input. Alternatively, the table can be defined in the program and program recompiled when a new table is encoded. The state table is stored in the matrix form. For a given input sequence your program should interpret the state table and make appropriate moves. The input sequence is given through the keyboard. The state sequence should be displayed along with the input sequence and acceptance/rejection of the input should be indicated. Show working with different state tables.

3) Some state tables have many blank entries indicating error conditions. Devise a suitable representation for such sperse state tables. Write a general-purpose program that interprets the state table in the above form. For an input string the program should display the state sequence through which the machine makes transitions along with the input symbols and indicate whether the input is accepted or not.