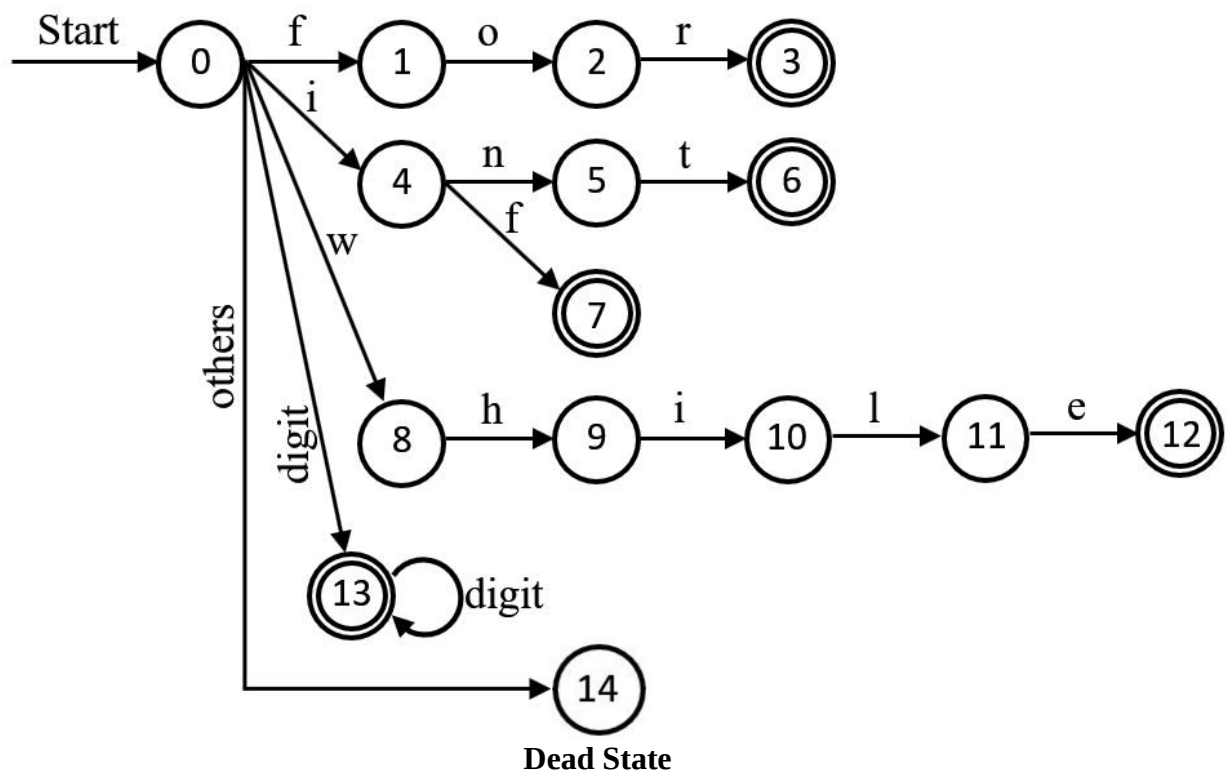


Exp.2: A lexical scanner to recognize the set of keywords (for, int, if, while) and natural numbers.

Step 1: Design a finite state automata



Step 2: Construct the transition table

State	Input Symbols											
	f	o	r	i	w	h	l	e	n	t	digit	others
0	1	14	14	4	8	14	14	14	14	14	13	14
1	14	2	14	14	14	14	14	14	14	14	14	14
2	14	14	3	14	14	14	14	14	14	14	14	14
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14	14	14	14	14	14	14	14	14	14	14	14	14


```
57
58     while (true) // Infinite loop
59     {
60         string input = Console.ReadLine();
61         int state = 0;
62         for (int next = 0; next < input.Length; next++)
63         {
64             int symbol = getColNum(input[next]);
65             state = TT[state, symbol];
66             if (state == 14) break;
67         }
68         switch (state)
69         {
70             case 3:
71                 Console.WriteLine("(for) keyword recognized");
72                 break;
73             case 6:
74                 Console.WriteLine("(int) keyword recognized");
75                 break;
76             case 7:
77                 Console.WriteLine("(if) keyword recognized");
78                 break;
79             case 12:
80                 Console.WriteLine("(while) keyword recognized");
81                 break;
82             case 13:
83                 Console.WriteLine("Natural number recognized");
84                 break;
85             default: // dead state and any non final state
86                 Console.WriteLine("Unrecognized token");
87                 break;
88         }
89     }
90 }
91 }
92 }
```