CS3423: Compilers 2
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VIVA REPORT

AUTOMATON

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1. **How Global state declaration works in Automaton?**

   Declaration is only possible in two ways i.e inside a state, and outside the node (i.e in the DFA). Variables can't be defined outside the dfa.

   Examples :

```
    void DFA main()
    {
        Start
        {

            int x = 5; // declared in the Start state can only be
                                                used between these braces.
            Bool_one <- (a > 0);
            Bool_two <- $;
        }

        Bool_one
        {
            x = x + 5; // x variable is not defined here
            Bool_two <- $;
        }

        Bool_two
        {
            print("Second");
            return;
        }
    }
Output:
Uncaught exception: Semantic.Error("Uninitialized variable")
Fatal error: exception Semantic.Error("Uninitialized variable")
```


```
void DFA main()
{
    int a = 1; // variable declared inside dfa and outside the
                node is global to all the states
    Start
    {
     a = a + 1;
     stack<float> s;
     s.push(10.0);
     s.push(3.5);
     float a = s.peek();
     State_2 <- (a > 0);
     End <- $;
    }
    State_2
    {
     a = a + 1;
     print("peek value is positive");
     return;
    }
    End
    {
     a = a + 1;
     print("peek value is negative");
     return;
    }
}
```

```
Output: (No error in this case)
```

2. **How does lexer work internally?**

   We have already answered the question, but we have not included this part of the answer :

   A lexer generator works by converting this regular expression into a deterministic finite automaton (DFA).