1. Write a regular expression to describe inputs over the alphabet {a, b, c} that are in sorted order
2. Write a regular expression for each of the following sets of binary strings. Use only the basic operations.
   1. has at least 3 characters, and the third character is 0
   2. number of 0s is a multiple of 3
   3. starts and ends with the same character
   4. odd length
   5. starts with 0 and has odd length, or starts with 1 and has even length
   6. length is at least 1 and at most 3
3. Construct NFA for the following language : (0|1)\*(000|111)(0|1)\*
4. Using the conversion algorithm of regular expression to NFA to get the following regular expressions :

4.1 aa|baab 4.2 ab\*a

4.3 (0|1)\*001\* 4.4 01(0|1)\*1

4.5 (01\*0)|(10\*1)

5. Convert NFA to DFA in question 4.

6. Using the following grammar draw the parse tree for the given statement:

**Grammar**:

S 🡪 NP VP

VP 🡪 Verb NP

NP 🡪Det NOM

Det 🡪 that | this | a | the

NOM 🡪 Noun

Noun 🡪 book | flight | meal | man

Verb 🡪book | include | read

**Statement**: the man read this book