Exercises 2

Give regular expressions for following languages 1-6.

1. *L* = { 0n1m : n < 4, m ≤ 3}.

2. The set of all strings of 0's and 1's not containing 101 as a substring.

3. *L* = { w∈{0,1}\*| w contains both 01 and 10 as substrings }.

4. The set of all strings with an equal number of 0's and 1's, such that no prefix has two more 0's than 1's, nor two more 1's than 0's.

5. Let *L*={ w | w∈{0,1}\* and if there are two 0s of w, they must be separated by 1 or 11 }

6. *L* = { w∈{ 0,1}∗ | w has only one 1 and the length of w is a multiple of 3 }

Design context-free grammars for the following languages:

7. The set {aibjck | i ≠ j or j ≠ k}, that is, the set of strings of a's followed by b's followed by c's, such that there are either a different number of a's and b's or a different number of b's and c's, or both.

8. The set of all strings a’s and b’s that are not of the form ww, that is , not equal to any string repeated..

9. *L* = { aibj | i ≠ j and i ≠ 2j }

10. *L* = { aibjck | i + j ≠ k } .

11. L = {0i10j10k | i + j = k}.