CSC311-01 Theory of Computation

Programming Homework B

Write a program to read in an alphabet set, A, and a maximum length, L, such that |A| + L ≤ 10. The program will print out the set of all possible strings from alphabet A, length from 0 up to the length specified by L, in the order of the length of the strings.

Also note your order of strings output should be the same the order of the strings listed in the following Example output.

Example input:

```
Enter an alphabet set -> ab
Enter maximum length  -> 4
```

Example output:

```
Total number of strings = 31

Length = 0 | Number of strings = 1
e -> 0

Length = 1 | Number of strings = 2
a ->  1
b ->  2

Length = 2 | Number of strings = 4
aa ->  3
ab ->  4
ba ->  5
bb ->  6

Length = 3 | Number of strings = 8
aaa ->  7
aab ->  8
aba ->  9
abb ->  10
baa ->  11
bab ->  12
bba ->  13
bbb ->  14

Length = 4 | Number of strings = 16
```

```
aaaa ->  15
aaab ->  16
aaba ->  17
aabb ->  18
abaa ->  19
abab ->  20
abba ->  21
abbb ->  22
baaa ->  23
baab ->  24
baba ->  25
babb ->  26
bbaa ->  27
bbab ->  28
bbba ->  29
bbbb ->  30
```

For simplicity, you don't have to check input errors. However, your program output should be EXACTLY the same (format and order) as the example output if the example input are entered.

Your program should execute on your own computer. Please test your program thoroughly and make sure it is free of errors. Points will be deducted for each error that I discover for you.

Please also pay attention to program design and follow all the good programming practice. I reserve the right to deduct points based on these criteria.

Submit:

- **Program listing**
- **Testing files/cases with Justification**
- **Results of test files/cases**