**DIGITAMIZE**

**In this assignment we expect the working code with documentation. We’ll evaluate your Programming skills, problem solving skills**

Q. Write a program to generate COMPLEX PASSWORD for a user having following functionality

1. Able to generate simple password as well as complex password

2. Min Length and Max Length

3. Number of lower case characters (min, max)

4. Number of upper case characters (min, max)

5. Number of numerics (min, max)

6. Number of special characters (min, max)

Q. Mr. Walker is a person who is known for his ability to walk fast. He accepts an attractive offer to get as much free land as he can cover by a walk on an open uneven huge piece of land within a specified time and following certain conditions. A walk is a sequence of paths, starting at a marked spot on the land and ending at the same spot where the walk starts. The first path in a walk begins at the marked spot and extends in one of the four directions: North (N), South (S), East (E) or West (W). It ends at the point where the direction changes. Each of the other paths in a walk begins at the point where the previous path ends and ends either at a point where the direction changes or when the walk ends. Mr. Walker may change directions, as and when he feels like, depending on the constraint of time and/or quality/quantity of the land he decides to get. When he changes a direction he must keep the direction always to one of the four directions N, S, E or W. Paths are distinct and non-intersecting; for example, a path in E or W direction cannot cross another in N.

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Given a walk, you are required to write a program that finds the area of land covered by the walk or S direction.

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Input

The input consists of multiple test cases.

First line will be number of test cases, followed by the test cases, one per line. The line gives a walk defined by a sequence of paths. A direction followed, without any space, by a distance represents a path. A direction is denoted by oneof the four letters N, S, E or W while a distance is measured in meters and is denoted by an integer. A space character appears between two paths in the given sequence.

Output

For each test case print the area of land covered by the given walk.

**Sample Input**

3

N3 W4 S8 E4 N5

W6 N2 E9 S6 W3 N4

W6 N2 W3 S4 W5 S4 E14 N6

**Sample Output**

3

Case #1 = 32

Case #1 = 30

Case #1 = 80

Please code it how you generally code.