Project 1 - Escape the Maze

Assume that you are in a maze, and you are given a set of commands describing how to exit from the maze using east, west, north, and south commands each denoted with first letters (e, w, n, s).

Assuming you start at the origin of the x-y coordinate system (0, 0), calculate the length of the straight line connecting your starting point and where you arrived in the coordinate plane.[1]

- Do not use any extra libraries.
- Use any square root method you choose and implement (heron, bisection, newton-raphson), but make sure you give accurate results (diff < epsilon) with your method.
- inputs: input = { x: x ∈ {w,e,n,s} and len(x) ∈ [1, 200]}.
- output: float (with epsilon = 1E-9)

```
>>>
Enter the exit route: s
1.0
```

Explanation: s makes it (0, -1). So we ended at (0, -1) coordinates. If we calculate the distance (hypotenuse) from origin (0, 0): sqrt((abs(0 - 0)**2 + abs(-1 - 0)**2) which is sqrt(0 + 1) = sqrt(1) = 1.0

```
>>>
Enter the exit route: wwenn
2.23606797749979
```

Explanation: first w makes it (-1, 0), second w makes it (-2, 0), e makes it (-1, 0), n makes it (-1, 1), n makes it (-1, 2). So we ended at (-1, 2) coordinates. If we calculate the distance (hypotenuse) from origin (0, 0): sqrt((abs(-1 - 0)**2 + abs(2 - 0)**2) which is sqrt(1 + 4) = sqrt(5) = 2.23606797749979

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>>>
Enter the exit route: sewnsnwwwnsseeewnsswnwnwwnessnswwnewsn
6.0
```

[1] https://en.wikipedia.org/wiki/Hypotenuse

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Show the procedure regarding the "Single Course Exam" given in Article-35 of the Regulation (Regulations for Undergraduate Education and Teaching) with a flow chart diagram. You can access the regulation from the link[2] below.

- You must submit your flow chart diagram to the homework box in front of Room-251 on Tuesday, November 7, between 9:00-14:00.
- You must upload the .py extension files of your Project-1 codes to Ms Teams, just like laboratory assignments.

[2] https://www.gtu.edu.tr/kategori/1846/0/display.aspx?languageId=2