**Question 5**

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**Solution：**

Since it is closely related to the all pairs shortest path problem, except that we are multiplying edge weights rather than adding them. Therefore, we can use the Floyd-Warshall algorithm and simply change plus sign for key comparison steps to multiplication sign to solve this problem.

**Subproblems:**

Let be the problem of determining , count if the safety of a path from vertex to is greater than from to times from to

**Recurrence:**

For , and :

**Base cases:**

For every edge in graph G, if there exists an edge from vertex to , set the weights into the corresponding if not let .

**Because the algorithm uses three nested loops to traverse our directed graph G, the time complexity of the algorithm is .**