LowestPath iOS Application using Swift

LowestPath Application Consideration

The LowestPath application will process the input matrix array and provide the shortest path to traverse from left to right side of the matrix with having the condition of total path cost not exceeding 50. The LowestPath app performance is mainly depends on its

- Matrix input processing
- Algorithm design (Vertex, Edge and Path) based on our requirement
- Processing Matrix Edges
- Finding Best Path, Low Cost Total & Path Traversing

Algorithm design (Vertex, Edge and Path)

Designed this algorithm based on the Dijkstra's algorithmic approach. Choose this algorithmic approach based on its running time.

> *Dijkstra's algorithm to find the shortest path between a and b. It picks the unvisited vertex with the lowest distance, calculates the distance through it to each unvisited neighbor, and updates the neighbor's distance if smaller.*

Matrix input processing

Handled the matrix input data using 2Dimensional array in swift and processed the input columns & rows. Designed the matrix processing logic as per the requirements.

Processing Matrix edges

Our logic will process all the edges against the providing input. Here, the input is referred to as left column vertex. It is testing against the destination(right column vertex). Each vertex has connected with the neighbor vertex in the form of edges. Path is the flow of operation, where algorithm will store the previous, destination and total path cost.

Finding Best Path, Low Cost Total & Path Traversing

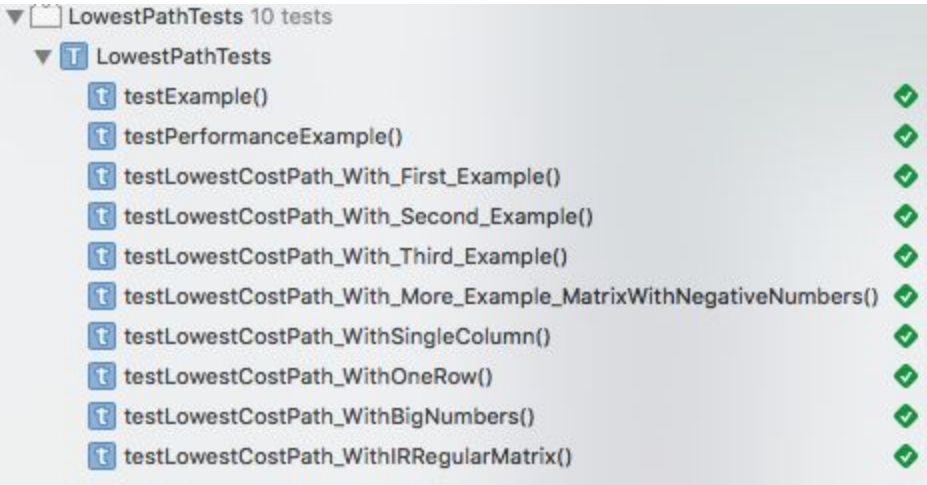
Our algorithm will then process the best path, low cost total and path traversing.

Testing the LowestPath App

Updated the test cases with different scenarios:

- Three examples provided in the requirement
- Matrix with negative numbers

- Matrix with single column
- Matrix with one row
- Matrix with Big Numbers in the first column
- Matrix with irregular matrix



How to Run?

Run this project using XCode 8.2 IDE.

Reference

- https://en.wikipedia.org/wiki/Dijkstra's_algorithm