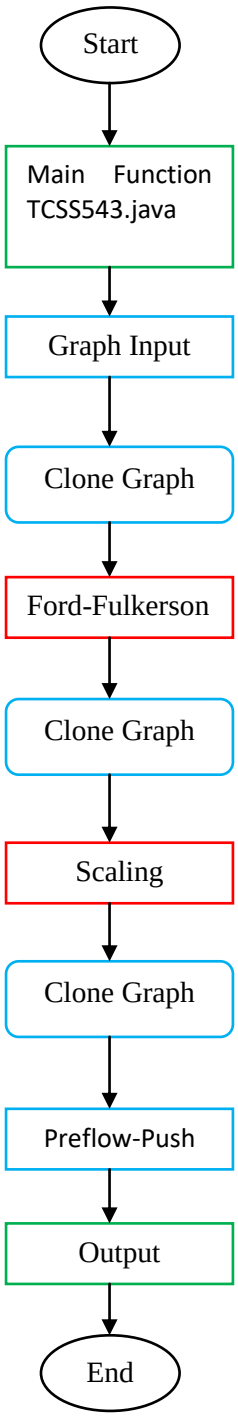
Documentations

1. Work structure



FordFulkerson.java

1. MaxFlow()

Entrance of this class, called by the Main method. It gets the Hashtable from the input argument SimpleGragh, and call computeMaxFlow function to get the max flow and then return the value.

2. computeMaxFlow()

For every augment path, available in the graph, this function computes the “bottleneck” for the given path from source to the sink, updates the residual graph and computes the maxflow of the graph.

3. augmentPath()

This function finds the possible paths from source to the sink using Breath First Search algorithm and returns the possible paths.

4. setResidualValues()
This function updates the forward and backward edge values in the residual graph for the given edge.

5. getResidualValues()

This function returns the forward edge value in the residual graph for the given edge.

6. getVertices()

This function returns all the available vertices of from the graph generated using the values of the input files.

ScalingMaxFlow.java

1. MaxFlow()

Entrance of this class, called by the Main method. It initiate the value of delta, and repeatedly call AugmentPath method to find an augment path, and add the new flow into max flow until delta equals 0;

2. AugmentPath()
This function finds the possible paths from source to the sink using Breath First Search algorithm and returns the flow value of this path.

3. updateResGraph()
Called in the AugmentPath method after finding a augment path to update the residual graph.

PreFlowPush.java

1. MaxFlow()

Entrance of this class, called by the Main method. It firstly initiates the ef[] and h[] by calling init(), and then uses BFS to implement Preflow-Push algorithm. It calculates the max flow using push and relabel methods and then returns the result.
2. init()
Initialization function. It initiates ef[] and h[] for all vertex.

3. push()
This method pushes the preflow of a vertex to another vertex which has a lower height and then update the residual graph.

4 relabel()
This method is used to increase height of vertex.