TSP using MapReduce

The project was aimed at solving the **Traveling Salesman Problem** using **MapReduce** using the **Monte-Carlo** approximation method.
The **Hadoop** framework from Apache Software Foundation was used.

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A panel will be provided to the user to plot the nodes. An adjacency matrix will be generated of the graph input by the user. This adjacency matrix is used as input for the TSP 'main' program.
The user also selects how close approximate his solution need to be. Since we are randomly sampling paths arbitrarily, the more close he needs the answer to be the more number of times we do the sampling.

The problem of generating an arbitrary path is given to a node to execute as map function. These nodes returns a pair of (path-length, path)

A number of such pairs are found out and is given to the reduce function after being internally sorted by the combiner. The only function of the reduce function is to choose the first occurring pair as its path-length will be the smallest of the found out paths.

This is returned to the user. If the user entered the graph through the panel the output is pasted onto the panel.

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The program was successfully run on **fully distributed configuration** of **Hadoop** comprising of **three computers** -two laptops (one of which acts as the master) and a desktop.