**IMPLEMENTATION OF ADVANCED DATA STRUCTURES AND ALGORITHMS**

**Assignment: SP0-PQ**

**Group: G19**

**Group Members:**

Jayakarthigayan Sridharan

Sagarikha Srinivasan

SathyaNarayanan Srinivasan

Sahithireddy Andem

1. Implement Binary Heap

Compile Time Instructions: javac BinaryHeap.java

Run Time Instructions: java BinaryHeap

1. Prim’s Algorithm using MST and Prim’s Algorithm using Indexed Heap

Compile Time Instructions: javac MST.java

Run Time Instructions: java <#option> <input\_filename>

<#option> => 1 for Prim 1 algorithm – Priority Queue

<#option> => 2 for Prim 2 algorithm - Indexed Priority Queue

Ex: java 1 Prim1.txt

1. Comparison of the algorithms in Question 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | File Name | Prim’s MST  Memory used | Prim’s MST  Running Time | Prim’s Indexed Heap  Memory used | Prim’s Indexed Heap  Running Time |
| 1. | Prim 1 | 1MB | 3ms | 1MB | 3ms |
| 2 | Prim 2 | 1MB | 3ms | 1MB | 4ms |
| 3. | Prim 3 | 1MB | 4ms | 1MB | 5ms |
| 4. | Big Input | 461MB | 4072ms | 338MB | 480ms |

For larger inputs, Indexed Heap works better.