Course: CSE 232:: Algorithm Design and Analysis Lab *Stark*

Lab Final - 1

Time: 1 Hour 20 Minutes

1. You are given a list of ***n*** tasks, each with a priority value and a time duration. Implement a priority queue using a pair data structure to efficiently process the tasks based on their priorities and time durations.
   In the Input: There are ***n*** tasks represented as pairs. The first element of the pair is priority and the second one is duration.

Input	***Output***
Input the number of tasks: 5 **Task 1:** 3 10 **Task 2:** 1 5 **Task 3:** 2 8 **Task 4:** 4 7 **Task 5:** 2 12	**Tasks processed according to their time durations:** **Task 2:** (1, 5) **Task 4:** (4, 7) **Task 3:** (2, 8) **Task 1:** (3, 10) **Task 5:** (2, 12)

2. You are tasked with designing a cost-effective power distribution network for a city. Implement an appropriate algorithm to determine the minimum cost of connecting all the substations while minimizing the total construction cost.

Input	***Output***
City map represented as a weighted graph with **nodes** as substations and **edges** as potential power lines. 5 8 1 3 2 1 4 1 1 2 3 1 5 7 2 4 1 2 3 4 3 5 5 5 4 3	**Minimum cost** of connecting all substations: **7** **The connections:** Stations: 1 and 4 Stations: 2 and 4 Stations: 1 and 3 Stations: 5 and 4