**Assignment 6**

1. **Introduction**

The purpose of the simulation is to implement a hash table as an event set. The event set class that’s associated with SimObj class has been removed. Hash table class and Linked list class that’s associated with the hash table has been added. Two implementations were presented. The first is based on the simulation engine itself to show that the hash table is capable of putting events in order. The second is implementing the simulation engine into the SSSQ system. Results are shown for both implementation

1. **Methodology**

In this task the SimObj class has been modified and Hash Table classes (HashTable class and LinkedList class) has been added. Event set class has been removed from SimObj class to be replaced with a HashTable class object. the required variables have been added to track the order of the events by implementing next node (item) key that’s associated with each node (item). Next events on the list are retrieved using next node key that’s associated with the current node.

1. **Results**

Results taken Hash Table test program are as follows:

**I am scheduled at time 1**

**I am scheduled at time 1.5**

**I am scheduled at time 2**

**I am scheduled at time 3.2**

**I am scheduled at time 5**

**Program ended with exit code: 0**

Results taken from SSSQ program are as follows:

**0, Source, CreateEntity, Entity 1**

**current time 0**

**end time 100**

**0, SSSQ SSSQ, Arrive, Entity 1**

**current time 2.02582**

**end time 100**

**2.02582 , SSSQ SSSQ, Depart, Entity 1**

**2.02582, Sink Sink, Depart, Entity 1**

**Entity 1 Arrival Time: 0, Service Start Time: 0, Departure Time: 2.02582**

**Total Entities Arrived in Queue: 1**

**Total Entities Processed in Simulation: 1**

**Average Delay in Queue (total delay / total entities that arrived in SSSQ): 0**

**Maximum Delay in Queue: 0**

**Average Flow Time: 2.02582**

**Max Flow Time: 2.02582**

**Total Service Time: 2.02582**

**Server Utilization: 100%**

**Program ended with exit code: 1**

1. **Analysis**

As it’s shown from the previous results, it can be shown that in case of events scheduling using the simulation engine, the hash table is capable of saving the events and putting them in the proper time order. Whereas for the SSSQ program case, only one entity was executed. It’s not clear why this is happening although all the events for the entity has been successfully executed in the proper order.