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Cloud Computing

Project 1

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**Source Code:** <https://github.com/clincol2/CCProject1>

**Running Results:**

Starting ExtendedExample...

Initialising...

Starting CloudSim version 3.0

Datacenter\_0 is starting...

Broker is starting...

Entities started.

0.0: Broker: Cloud Resource List received with 1 resource(s)

0.0: Broker: Trying to Create VM #0 in Datacenter\_0

0.0: Broker: Trying to Create VM #1 in Datacenter\_0

0.0: Broker: Trying to Create VM #2 in Datacenter\_0

0.1: Broker: VM #0 has been created in Datacenter #2, Host #0

0.1: Broker: VM #1 has been created in Datacenter #2, Host #1

0.1: Broker: VM #2 has been created in Datacenter #2, Host #2

0.1: Broker: Sending cloudlet 0 to VM #0

0.1: Broker: Sending cloudlet 1 to VM #1

0.1: Broker: Sending cloudlet 2 to VM #2

0.1: Broker: Sending cloudlet 3 to VM #2

0.1: Broker: Sending cloudlet 4 to VM #0

0.1: Broker: Sending cloudlet 5 to VM #1

0.1: Broker: Sending cloudlet 6 to VM #1

0.1: Broker: Sending cloudlet 7 to VM #1

0.1: Broker: Sending cloudlet 8 to VM #0

0.1: Broker: Sending cloudlet 9 to VM #2

52.6: Broker: Cloudlet 2 received

60.1: Broker: Cloudlet 0 received

70.1: Broker: Cloudlet 1 received

95.1: Broker: Cloudlet 5 received

111.76666666666667: Broker: Cloudlet 6 received

126.76666666666667: Broker: Cloudlet 4 received

132.59916666666666: Broker: Cloudlet 3 received

161.76583333333332: Broker: Cloudlet 7 received

257.5983333333333: Broker: Cloudlet 9 received

260.0983333333333: Broker: Cloudlet 8 received

260.0983333333333: Broker: All Cloudlets executed. Finishing...

260.0983333333333: Broker: Destroying VM #0

260.0983333333333: Broker: Destroying VM #1

260.0983333333333: Broker: Destroying VM #2

Broker is shutting down...

Simulation: No more future events

CloudInformationService: Notify all CloudSim entities for shutting down.

Datacenter\_0 is shutting down...

Broker is shutting down...

Simulation completed.

Simulation completed.

========== OUTPUT ==========

Cloudlet ID STATUS Data center ID VM ID Time Start Time Finish Time

2 SUCCESS 2 2 52.5 0.1 52.6

0 SUCCESS 2 0 60 0.1 60.1

1 SUCCESS 2 1 70 0.1 70.1

5 SUCCESS 2 1 25 70.1 95.1

6 SUCCESS 2 1 16.67 95.1 111.77

4 SUCCESS 2 0 66.67 60.1 126.77

3 SUCCESS 2 2 80 52.6 132.6

7 SUCCESS 2 1 50 111.77 161.77

9 SUCCESS 2 2 125 132.6 257.6

8 SUCCESS 2 0 133.33 126.77 260.1

ExtendedExample finished!

**Table:**

**Min-Min and Max-Min (Yellow and Orange)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Finish Time** | **Start Time** | **Turnaround Time** |
| **0** | **60.1** | **0.1** | **60** |
| **1** | **70.1** | **0.1** | **70** |
| **2** | **52.6** | **0.1** | **52.5** |
| **3** | **132.6** | **52.6** | **80** |
| **4** | **126.77** | **60.1** | **66.67** |
| **5** | **95.1** | **70.1** | **25** |
| **6** | **111.7** | **95.1** | **16.67** |
| **7** | **161.77** | **111.77** | **50** |
| **8** | **260.1** | **126.77** | **133.33** |
| **9** | **257.6** | **132.6** | **125** |

**Discussion:**

**FCFS:**

**Advantages:** Simple logic. Completed one by one.

**Disadvantages:** No pre-emption process. The back of the queue might have to wait a long time before being executed (call centers use this method, and depending on the volume, the wait time can be large).

**Shortest First:**

**Advantages:** Short process are executed first. Throughput increases because more processes can be executed in a shorter amount of time.

**Disadvantages:** Not possible to know the amount of time needed to provide to the CPU beforehand. The longer processes may eventually suffer starvation.

**Min-Min:**

**Advantages:** Schedules the tasks that change the expected machine ready time status by the least amount

**Disadvantages:** More than one task can be contending for a machine.

**Max-Min:**

Advantages: Similar to Min-min, once the machine that provides the earliest completing time is found for every task, the task that the maximum earliest completion time is determines then assigned to the corresponding machine.

Disadvantages: Can be complex and have more than one task contending for the same machine.

**Sufferage:**

**Advantages**: Better mapping and can be generate by assigning a machine to a task that would “suffer” most.

**Disadvantages:** Can have a larger computational complexity.

**Note:** I originally misunderstood this assignment. I got stuck on the table portion and reached out to my dad for assistance. He couldn’t assist me, but he did notice that I did not implement Min-min, Max-min and Sufferage in the code. This is 100% my fault, but since I am out of time, I am submitting what I have.

I will say, having content on these concepts would have been very helpful. Just a suggestion for future classes. Your videos are very helpful. Thank you!