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Roll No.: A-25

Section: A

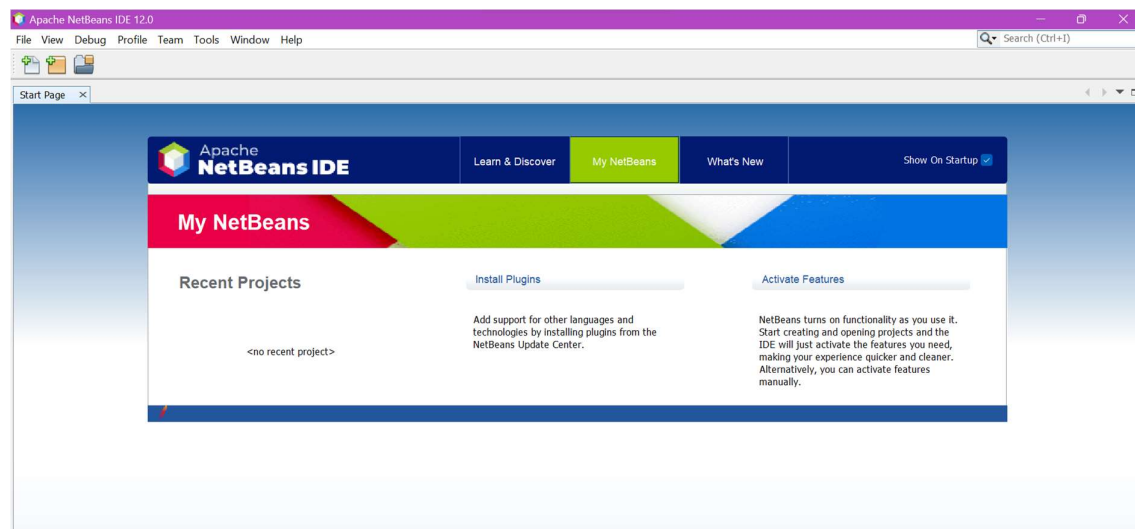
Semester: VII

Shift: I

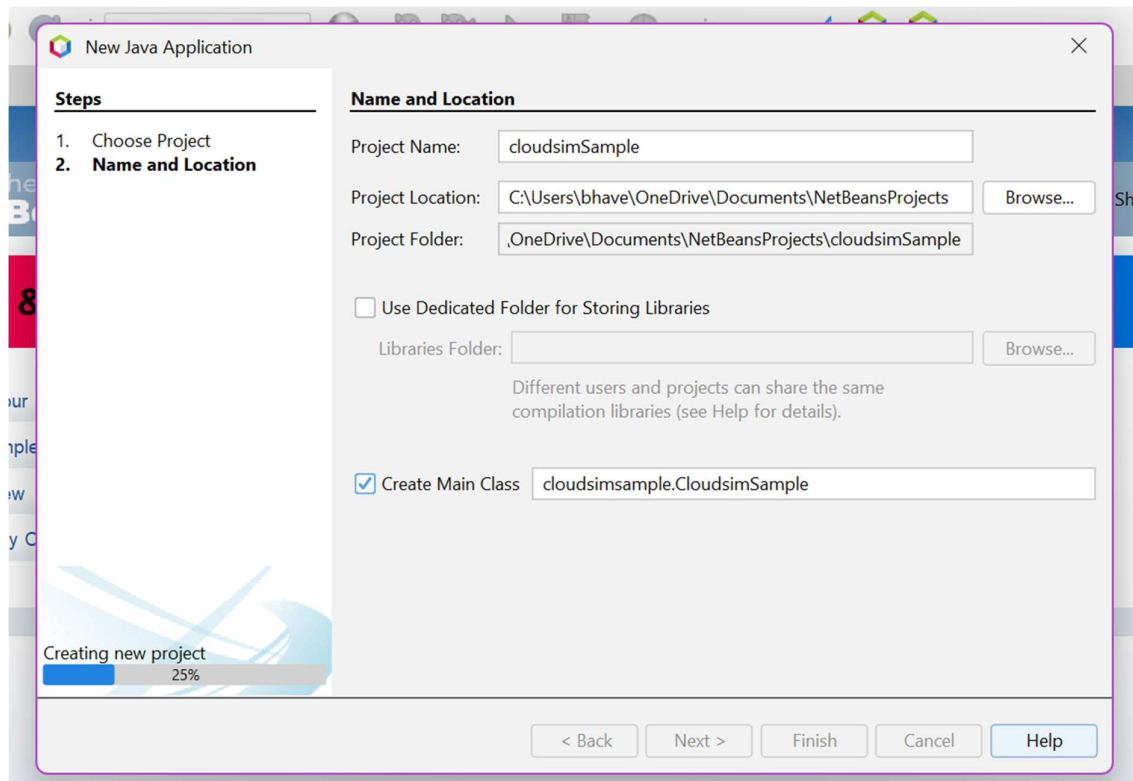
Batch: A1

Aim: Simulate a cloud scenario using CloudSim and implement programs for its modelling and simulation.

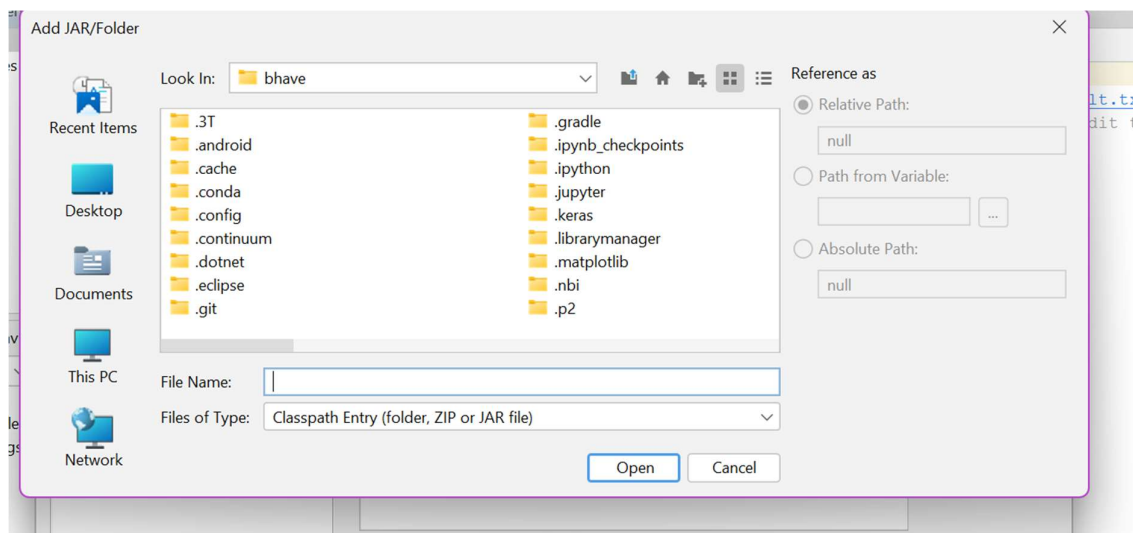
Outputs:



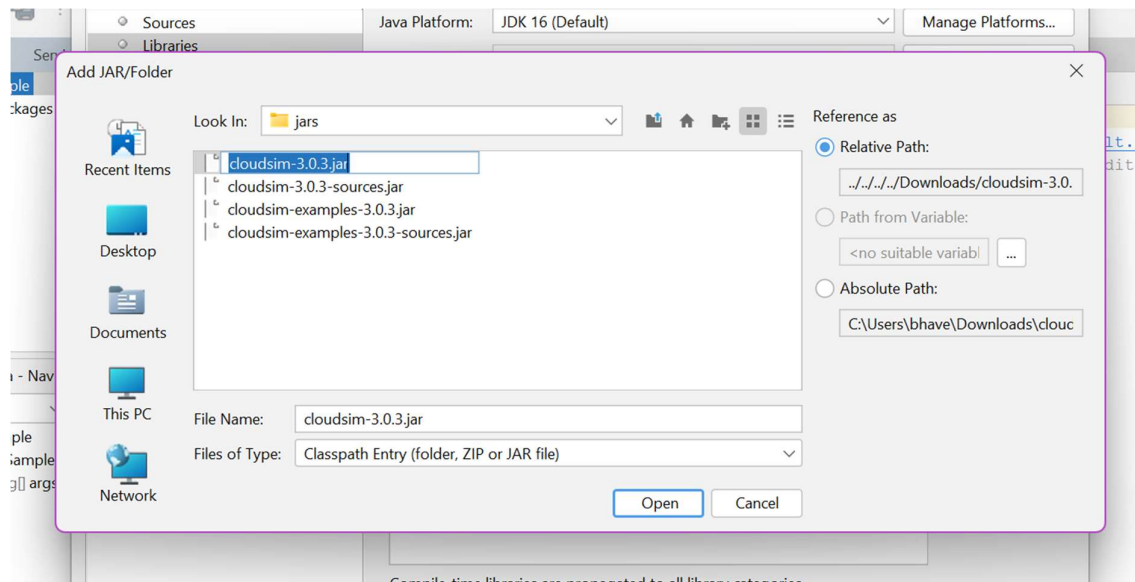
Install the NetBeans IDE from its official website. After installation, open it and it will look like the above image



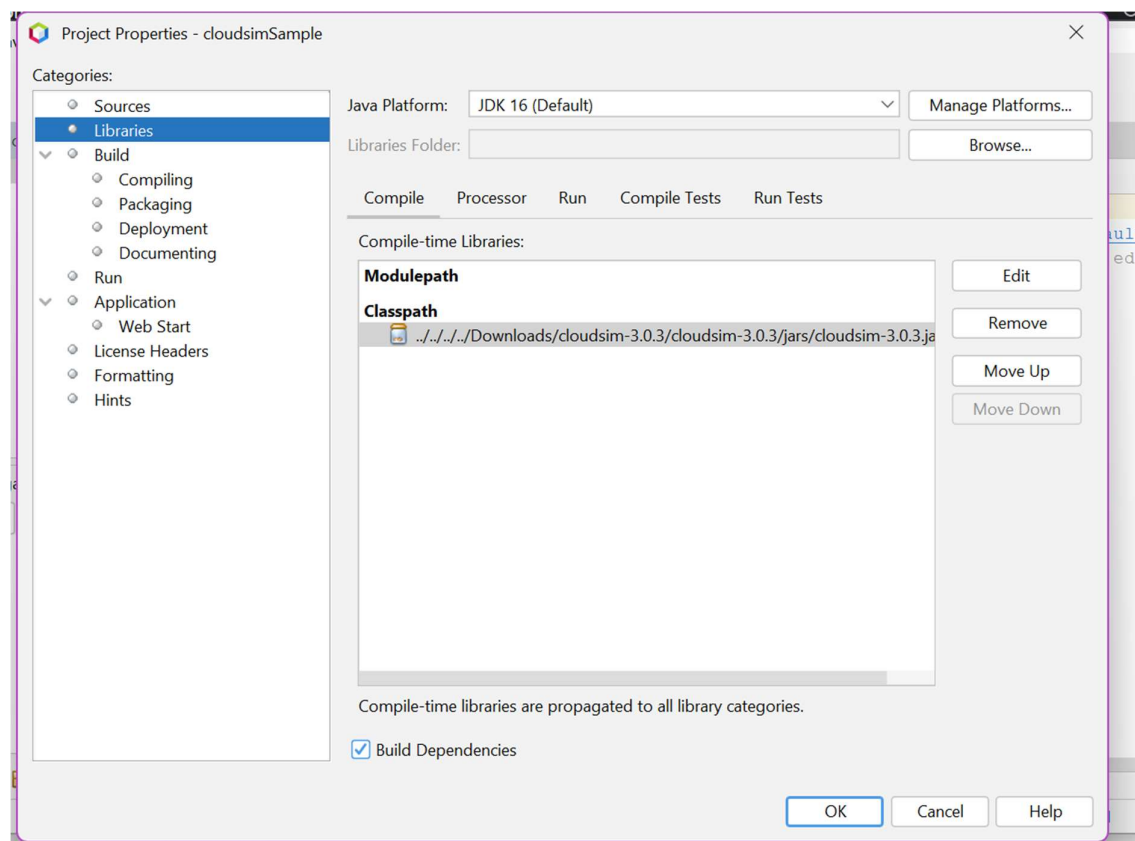
Create a new project in the IDE



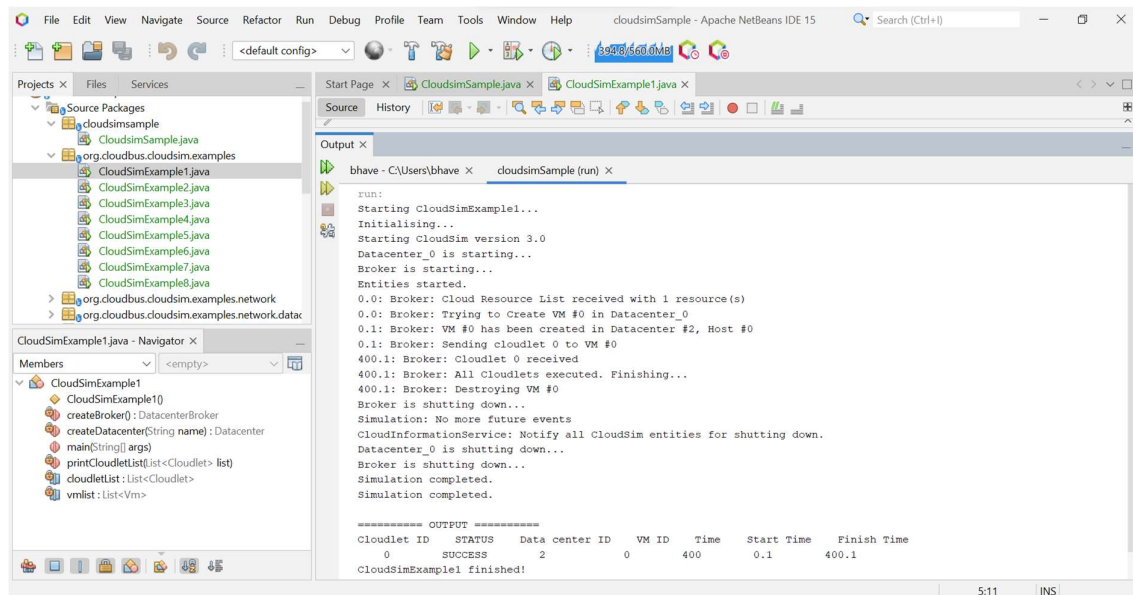
We now have to add the JAR folder of Cloudsim



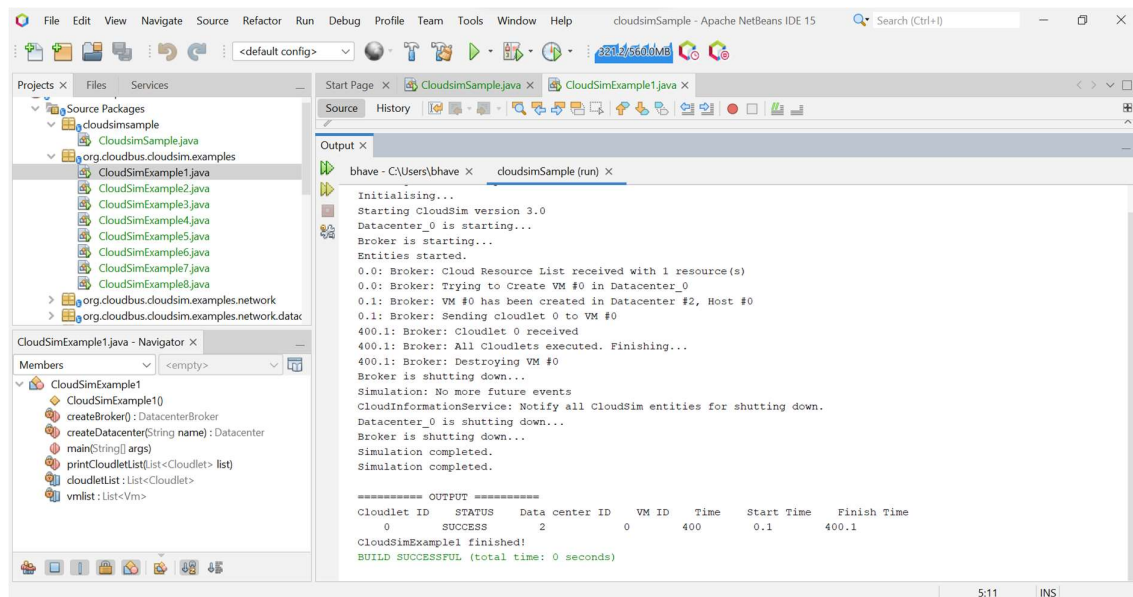
Navigate to the location and find the cloudsim-3.0.3.jar file



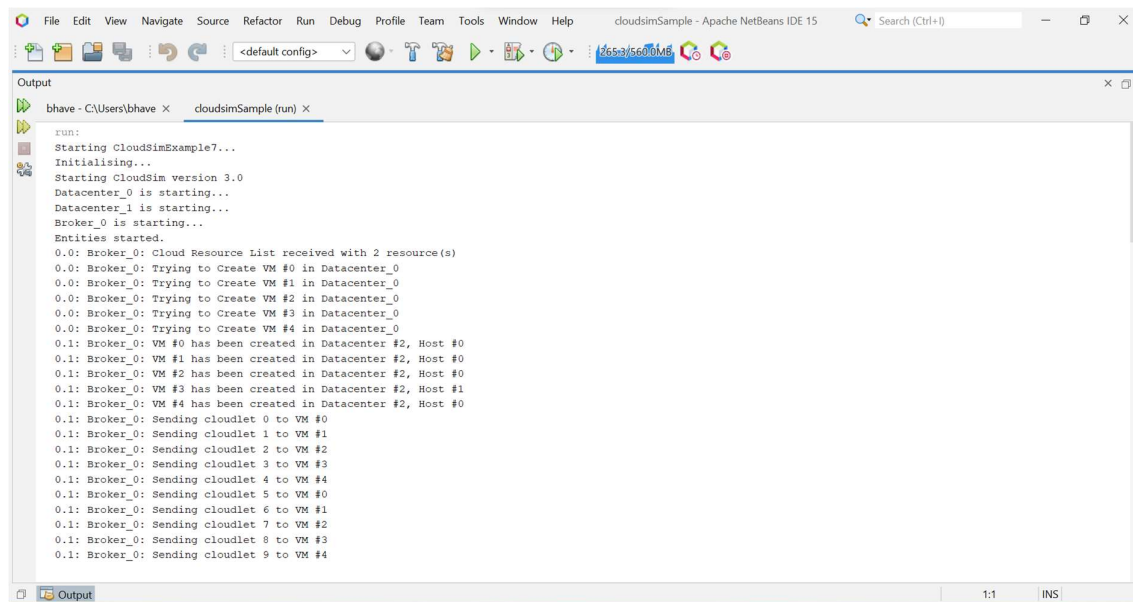
Add the file in classpath and then click ok



Open any example from the org.cloudbus.cloudsim.examples package and run it. You can see the output above

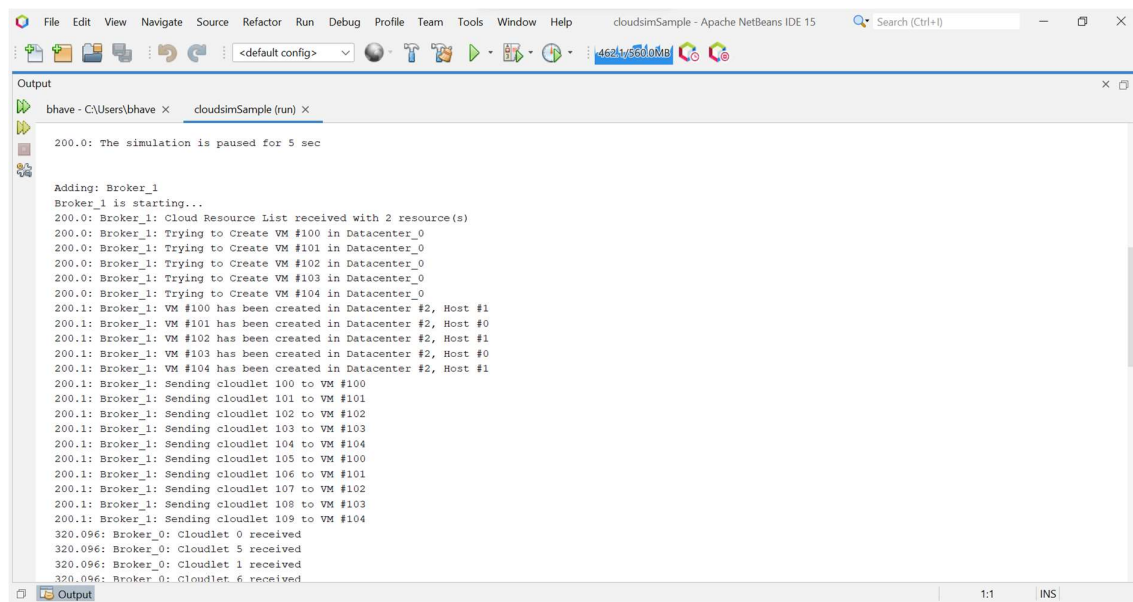


Here we have created a datacenter with all the required things and we now create a VM in it. We are simulating a cloud computing infrastructure and services. Here for example one 1 cloudlet has been created with VM Id 0. It also shows the how much time it took for creation



```
run:
Starting CloudSimExample7...
Initialising...
Starting cloudsim version 3.0
Datacenter_0 is starting...
Datacenter_1 is starting...
Broker_0 is starting...
Entities started.
0.0: Broker_0: Cloud Resource List received with 2 resource(s)
0.0: Broker_0: Trying to Create VM #0 in Datacenter_0
0.0: Broker_0: Trying to Create VM #1 in Datacenter_0
0.0: Broker_0: Trying to Create VM #2 in Datacenter_0
0.0: Broker_0: Trying to Create VM #3 in Datacenter_0
0.0: Broker_0: Trying to Create VM #4 in Datacenter_0
0.1: Broker_0: VM #0 has been created in Datacenter #2, Host #0
0.1: Broker_0: VM #1 has been created in Datacenter #2, Host #0
0.1: Broker_0: VM #2 has been created in Datacenter #2, Host #0
0.1: Broker_0: VM #3 has been created in Datacenter #2, Host #1
0.1: Broker_0: VM #4 has been created in Datacenter #2, Host #0
0.1: Broker_0: Sending cloudlet 0 to VM #0
0.1: Broker_0: Sending cloudlet 1 to VM #1
0.1: Broker_0: Sending cloudlet 2 to VM #2
0.1: Broker_0: Sending cloudlet 3 to VM #3
0.1: Broker_0: Sending cloudlet 4 to VM #4
0.1: Broker_0: Sending cloudlet 5 to VM #0
0.1: Broker_0: Sending cloudlet 6 to VM #1
0.1: Broker_0: Sending cloudlet 7 to VM #2
0.1: Broker_0: Sending cloudlet 8 to VM #3
0.1: Broker_0: Sending cloudlet 9 to VM #4
```

This is Example 7 and in this 2 datacenters have been created with 5 VMs and 9 cloudlets



```
200.0: The simulation is paused for 5 sec

Adding: Broker_1
Broker_1 is starting...
200.0: Broker_1: Cloud Resource List received with 2 resource(s)
200.0: Broker_1: Trying to Create VM #100 in Datacenter_0
200.0: Broker_1: Trying to Create VM #101 in Datacenter_0
200.0: Broker_1: Trying to Create VM #102 in Datacenter_0
200.0: Broker_1: Trying to Create VM #103 in Datacenter_0
200.0: Broker_1: Trying to Create VM #104 in Datacenter_0
200.1: Broker_1: VM #100 has been created in Datacenter #2, Host #1
200.1: Broker_1: VM #101 has been created in Datacenter #2, Host #0
200.1: Broker_1: VM #102 has been created in Datacenter #2, Host #1
200.1: Broker_1: VM #103 has been created in Datacenter #2, Host #0
200.1: Broker_1: VM #104 has been created in Datacenter #2, Host #1
200.1: Broker_1: Sending cloudlet 100 to VM #100
200.1: Broker_1: Sending cloudlet 101 to VM #101
200.1: Broker_1: Sending cloudlet 102 to VM #102
200.1: Broker_1: Sending cloudlet 103 to VM #103
200.1: Broker_1: Sending cloudlet 104 to VM #104
200.1: Broker_1: Sending cloudlet 105 to VM #100
200.1: Broker_1: Sending cloudlet 106 to VM #101
200.1: Broker_1: Sending cloudlet 107 to VM #102
200.1: Broker_1: Sending cloudlet 108 to VM #103
200.1: Broker_1: Sending cloudlet 109 to VM #104
320.096: Broker_0: Cloudlet 0 received
320.096: Broker_0: Cloudlet 5 received
320.096: Broker_0: Cloudlet 1 received
320.096: Broker_0: Cloudlet 6 received
```

The example shows the cloudlet sent to broker through different hosts

```
519.996: Broker_1: Destroying VM #100
519.996: Broker_1: Destroying VM #101
519.996: Broker_1: Destroying VM #102
519.996: Broker_1: Destroying VM #103
519.996: Broker_1: Destroying VM #104
Broker_1 is shutting down...
Simulation: No more future events
CloudInformationService: Notify all CloudSim entities for shutting down.
Datacenter_0 is shutting down...
Datacenter_1 is shutting down...
Broker_0 is shutting down...
Broker_1 is shutting down...
Simulation completed.
Simulation completed.

===== OUTPUT =====
Cloudlet ID   STATUS   Data center ID   VM ID   Time   Start Time   Finish Time
0            SUCCESS   2                0       320    0.1          320.1
5            SUCCESS   2                0       320    0.1          320.1
1            SUCCESS   2                1       320    0.1          320.1
6            SUCCESS   2                1       320    0.1          320.1
2            SUCCESS   2                2       320    0.1          320.1
7            SUCCESS   2                2       320    0.1          320.1
4            SUCCESS   2                4       320    0.1          320.1
9            SUCCESS   2                4       320    0.1          320.1
3            SUCCESS   2                3       320    0.1          320.1
8            SUCCESS   2                3       320    0.1          320.1

CloudSimExample7 finished!
BUILD SUCCESSFUL (total time: 9 seconds)
```

It shows all the details with required datacenter ID and VM Id

Conclusion:

CloudSim is a completely customizable tool that can simulate all parts of the cloud infrastructure making it suitable for testing different setups, algorithms, models and topologies in order to see the results, compare them and make improvements. After reading this work we hope that the reader has a firmer understanding of processes that happen on the cloud and ways to create and test their own.