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COURSE CODE :- CSE427

COURSE NAME :- CLOUD COMPUTING LABORATORY

CA 4 >> PRACTICALS (DATE : – April 26, 2023)

Q1:- RUN DIFFERENT TYPES OF CLOUD SIM EXAMPLES

TERMINOLOGIES INVOLVED IN CLOUD SIM:-

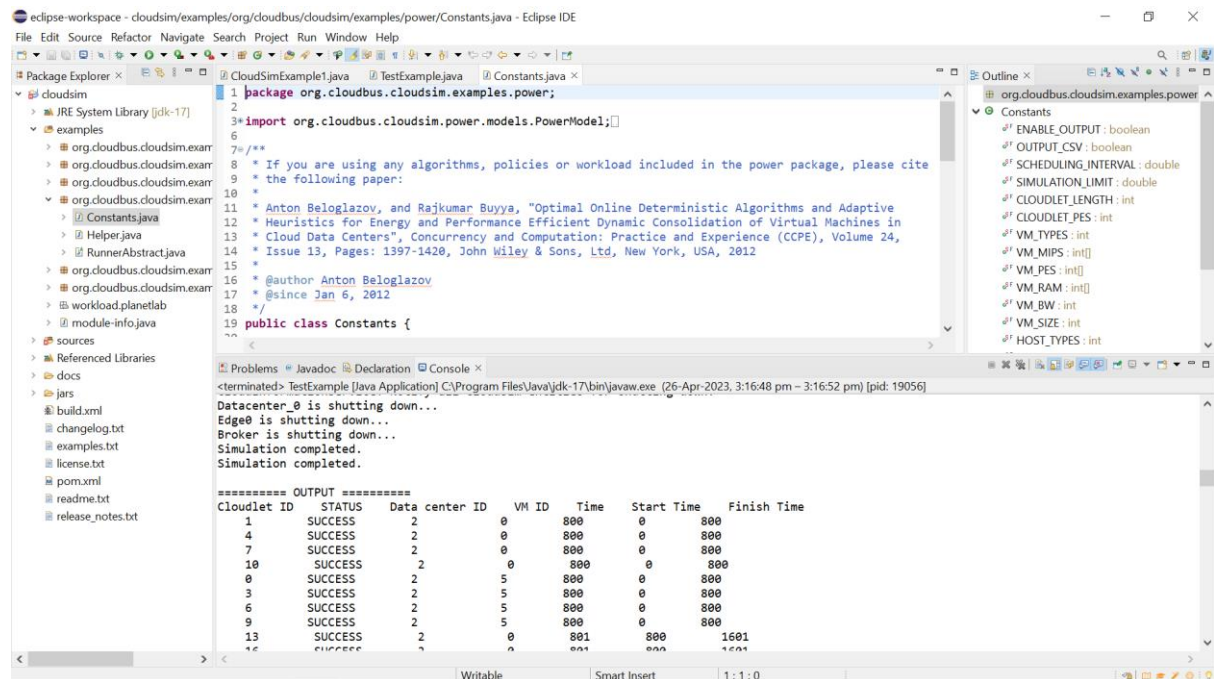
Cloudlet: A cloudlet is a small unit of work that can be executed on a cloud resource, such as a virtual machine (VM). Cloudlets can represent tasks that are submitted by cloud users to be executed on the cloud infrastructure.

Datacentre: A datacentre is a collection of physical and virtual resources that are managed as a single entity. Datacentres provide computing, storage, and networking resources that can be used to host cloud services.

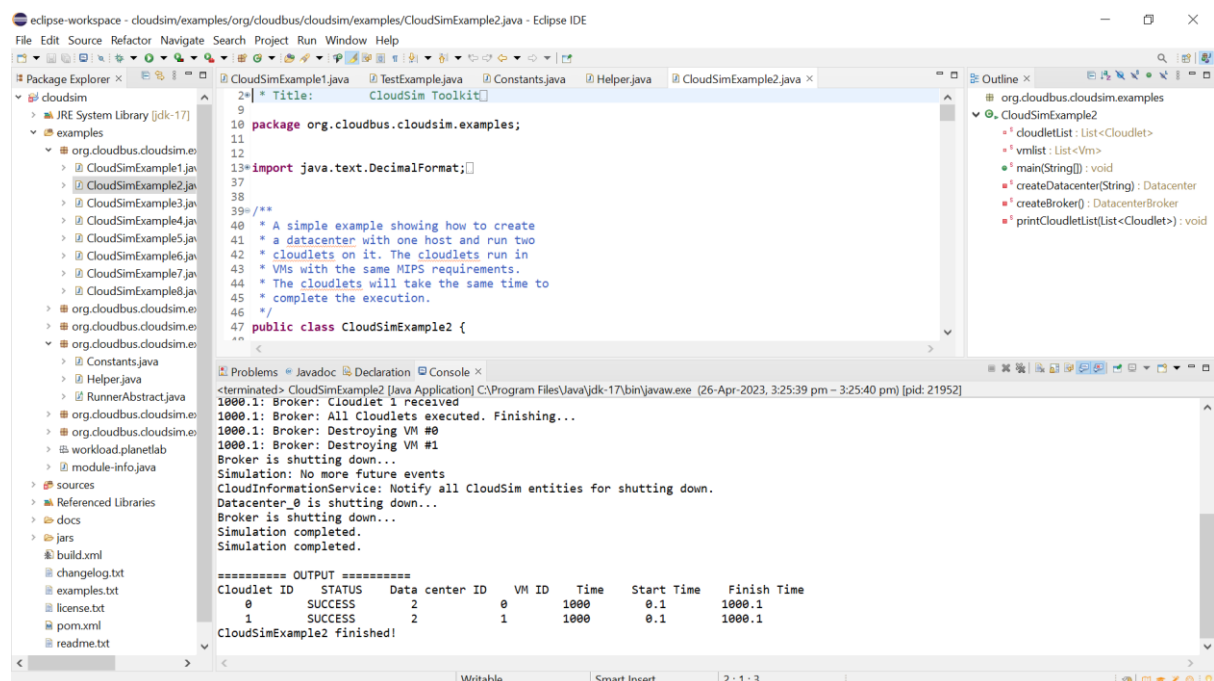
Virtual Machine (VM): A virtual machine is a software implementation of a physical machine. VMs are used to provide users with a virtualized environment in which they can run their applications.

SCREENSHOTS:-

EXAMPLE1:-



EXAMPLE2:-



EXAMPLE3:-

The screenshot shows the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with packages `org.cloudbus.cloudsim` and `org.cloudbus.cloudsim.examples`. The file `CloudSimExample5.java` is selected.
- Editor:** Displays the source code of `CloudSimExample5.java`. The code defines a `CloudSimExample5` class that simulates two datacenters, each with one host, and runs cloudlets of two users on them.
- Outline:** Shows the class structure of `CloudSimExample5`, including fields `cloudletList1`, `cloudletList2`, `vmList1`, `vmList2`, and methods `main`, `createDatacenter`, `createBroker`, and `printCloudletList`.
- Console:** Displays the output of the simulation. It shows the termination of `CloudSimExample5`, the completion of the simulation, and the output for User 4 and User 5. The output for User 4 shows a successful execution of a cloudlet on Datacenter 2 with a VM ID of 0, starting at time 0.1 and finishing at 160.1. The output for User 5 shows a successful execution of a cloudlet on Datacenter 3 with a VM ID of 0, starting at time 0.2 and finishing at 160.2.

```
24 * Title: CloudSim Toolkit
9
10 package org.cloudbus.cloudsim.examples;
11
12 import java.text.DecimalFormat;
13
14 /**
15  * A simple example showing how to create
16  * two datacenters with one host each and
17  * run cloudlets of two users on them.
18  */
19 public class CloudSimExample5 {
20
21     /** The cloudlet lists. */
22     private static List<Cloudlet> cloudletList1;
23     private static List<Cloudlet> cloudletList2;
24 }
```

<terminated> CloudSimExample5 [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (26-Apr-2023, 3:25:54 pm - 3:25:55 pm) [pid: 6536]
Simulation: No more future events
CloudInformationService: Notify all CloudSim entities for shutting down.
Datacenter_0 is shutting down...
Datacenter_1 is shutting down...
Broker1 is shutting down...
Broker2 is shutting down...
Simulation completed.
Simulation completed.
===== User 4
===== OUTPUT =====
Cloudlet ID STATUS Data center ID VM ID Time Start Time Finish Time
0 SUCCESS 2 0 160 0.1 160.1
===== User 5
===== OUTPUT =====
Cloudlet ID STATUS Data center ID VM ID Time Start Time Finish Time
0 SUCCESS 3 0 160 0.2 160.2
CloudSimExample5 finished!

EXAMPLE4:-

The screenshot shows the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with packages `org.cloudbus.cloudsim` and `org.cloudbus.cloudsim.examples`. The file `CloudSimExample6.java` is selected.
- Editor:** Displays the source code of `CloudSimExample6.java`. The code defines a `CloudSimExample6` class that simulates two datacenters, each with one host, and runs cloudlets of two users on them.
- Outline:** Shows the class structure of `CloudSimExample6`, including fields `cloudletList`, `vmList`, and methods `main`, `createVM`, `createCloudlet`, `createDatacenter`, `createBroker`, and `printCloudletList`.
- Console:** Displays the output of the simulation. It shows the termination of `CloudSimExample6`, the completion of the simulation, and the output for User 4 and User 5. The output for User 4 shows a successful execution of a cloudlet on Datacenter 2 with a VM ID of 4, starting at time 0.2 and finishing at 3.2. The output for User 5 shows a successful execution of a cloudlet on Datacenter 3 with a VM ID of 6, starting at time 0.2 and finishing at 3.2.

```
24 * Title: CloudSim Toolkit
9
10 package org.cloudbus.cloudsim.examples;
11
12 import java.text.DecimalFormat;
13
14 /**
15  * An example showing how to create
16  * scalable simulations.
17  */
18 public class CloudSimExample6 {
19
20     /** The cloudlet list. */
21     private static List<Cloudlet> cloudletList;
22
23     /** The vmList. */
24     private static List<Vm> vmList;
25 }
```

<terminated> CloudSimExample6 [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (26-Apr-2023, 3:26:15 pm - 3:26:16 pm) [pid: 4676]
Datacenter_1 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
4 SUCCESS 2 4 3 0.2 3.2
16 SUCCESS 2 4 3 0.2 3.2
28 SUCCESS 2 4 3 0.2 3.2
5 SUCCESS 2 5 3 0.2 3.2
17 SUCCESS 2 5 3 0.2 3.2
29 SUCCESS 2 5 3 0.2 3.2
6 SUCCESS 3 6 3 0.2 3.2
18 SUCCESS 3 6 3 0.2 3.2
30 SUCCESS 3 6 3 0.2 3.2
7 SUCCESS 3 7 3 0.2 3.2
10 SUCCESS 3 7 3 0.2 3.2

EXAMPLE5:-

The screenshot displays the Eclipse IDE interface with the following components:

- Package Explorer:** Shows the project structure with 'org.cloudbus.cloudsim.examples' containing 'CloudSimExample7.java'.
- Code Editor:** Contains the source code for 'CloudSimExample7.java'. The code includes package declarations, imports, and a main method that creates a simulation environment with data centers, VMs, and cloudlets.
- Outline:** Lists the classes and methods in the project, including 'CloudSimExample7' and its methods like 'main', 'createDatacenter', and 'createBroker'.
- Console:** Displays the execution output of the program. It shows the simulation running successfully, with a table of results for each cloudlet.

Console Output:

```
<terminated> CloudSimExample7 [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (26-Apr-2023, 3:44:51 pm - 3:44:59 pm) [pid: 11056]
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!
```