Exp.No: 5 **Date:** 12.08.2024

Installation and Configuration of CloudSim in Eclipse IDE

AIM:

To install and configure the CloudSim in Eclipse IDE and run a java program in it.

PROCEDURE:

1. Java Installation:
    a. Check Java in your system.
    b. If Java not installed then download Java.
    c. Install Java setup.
    d. Set the path for Java in Environment Variables.
2. Download Cloud Sim and Additional JAR file:
    a. Download CloudSim 3.0.3
    b. Download common math 3 JAR file
3. Eclipse IDE Installation:
    a. Download the correct version of Eclipse IDE for your system.
    b. Install Eclipse IDE.
4. Run Cloud Sim in Eclipse:
    a. Put the common math 3 JAR file in the JAR folder of CloudSim.
    b. Build a new java project with CloudSim folder.

PROGRAM:

```
package org.cloudbus.cloudsim.examples;
import java.text.DecimalFormat;
import java.util.ArrayList;
import java.util.Calendar;
import java.util.LinkedList;
import java.util.List;
```

```
import org.cloudbus.cloudsim.Cloudlet;
import org.cloudbus.cloudsim.CloudletSchedulerTimeShared;
import org.cloudbus.cloudsim.Datacenter;
import org.cloudbus.cloudsim.DatacenterBroker;
import org.cloudbus.cloudsim.DatacenterCharacteristics;
import org.cloudbus.cloudsim.Host;
import org.cloudbus.cloudsim.Log;
import org.cloudbus.cloudsim.Pe;
import org.cloudbus.cloudsim.Storage;
import org.cloudbus.cloudsim.UtilizationModel;
import org.cloudbus.cloudsim.UtilizationModelFull;
import org.cloudbus.cloudsim.Vm;
import org.cloudbus.cloudsim.VmAllocationPolicySimple;
import org.cloudbus.cloudsim.VmSchedulerTimeShared;
import org.cloudbus.cloudsim.core.CloudSim;
import org.cloudbus.cloudsim.provisioners.BwProvisionerSimple;
import org.cloudbus.cloudsim.provisioners.PeProvisionerSimple;
import org.cloudbus.cloudsim.provisioners.RamProvisionerSimple;
public class CloudSimExample1 {
/** The cloudlet list. */
private static List<Cloudlet> cloudletList;
/** The vmlist. */
private static List<Vm> vmlist;
/**
* Creates main() to run this example.
*
* @param args the args
*/
@SuppressWarnings("unused")
public static void main(String[] args) {
Log.printLine("Starting CloudSimExample1...");
try {
// First step: Initialize the CloudSim package. It should be called
// before creating any entities.
int num_user = 1; // number of cloud users
Calendar calendar = Calendar.getInstance();
boolean trace_flag = false; // mean trace events
// Initialize the CloudSim library
CloudSim.init(num_user, calendar, trace_flag);
// Second step: Create Datacenters
// Datacenters are the resource providers in CloudSim. We need at
// list one of them to run a CloudSim simulation
```

```
Datacenter datacenter0 = createDatacenter("Datacenter_0");
// Third step: Create Broker
DatacenterBroker broker = createBroker();
int brokerId = broker.getId();
// Fourth step: Create one virtual machine
vmlist = new ArrayList<Vm>();
// VM description
int vmid = 0;
int mips = 1000;
long size = 10000; // image size (MB)
int ram = 512; // vm memory (MB)
long bw = 1000;
int pesNumber = 1; // number of cpus
String vmm = "Xen"; // VMM name
// create VM
Vm vm = new Vm(vmid, brokerId, mips, pesNumber, ram, bw, size, vmm, new
CloudletSchedulerTimeShared());
// add the VM to the vmList
vmlist.add(vm);
// submit vm list to the broker
broker.submitVmList(vmlist);
// Fifth step: Create one Cloudlet
cloudletList = new ArrayList<Cloudlet>();
// Cloudlet properties
int id = 0;
long length = 400000;
long fileSize = 300;
long outputSize = 300;
UtilizationModel utilizationModel = new UtilizationModelFull();
Cloudlet cloudlet = new Cloudlet(id, length, pesNumber, fileSize, outputSize,
utilizationModel, utilizationModel, utilizationModel);
cloudlet.setUserId(brokerId);
cloudlet.setVmId(vmid);
// add the cloudlet to the list
cloudletList.add(cloudlet);
// submit cloudlet list to the broker
broker.submitCloudletList(cloudletList);
// Sixth step: Starts the simulation
CloudSim.startSimulation();
CloudSim.stopSimulation();
//Final step: Print results when simulation is over
List<Cloudlet> newList = broker.getCloudletReceivedList();
```

```
printCloudletList(newList);
Log.printLine("CloudSimExample1 finished!");
} catch (Exception e) {
e.printStackTrace();
Log.printLine("Unwanted errors happen");
}
}
/**
* Creates the datacenter.
*
* @param name the name
*
* @return the datacenter
*/
private static Datacenter createDatacenter(String name) {
// Here are the steps needed to create a PowerDatacenter:
// 1. We need to create a list to store
// our machine
List<Host> hostList = new ArrayList<Host>();
// 2. A Machine contains one or more PEs or CPUs/Cores.
// In this example, it will have only one core.
List<Pe> peList = new ArrayList<Pe>();
int mips = 1000;
// 3. Create PEs and add these into a list.
peList.add(new Pe(0, new PeProvisionerSimple(mips))); // need to store Pe id and
MIPS Rating
// 4. Create Host with its id and list of PEs and add them to the list
// of machines
int hostId = 0;
int ram = 2048; // host memory (MB)
long storage = 1000000; // host storage
int bw = 10000;
hostList.add(
new Host(
hostId,
new RamProvisionerSimple(ram),
new BwProvisionerSimple(bw),
storage,
peList,
new VmSchedulerTimeShared(peList)
)
); // This is our machine
```

```
// 5. Create a DatacenterCharacteristics object that stores the
// properties of a data center: architecture, OS, list of
// Machines, allocation policy: time- or space-shared, time zone
// and its price (G$/Pe time unit).
String arch = "x86"; // system architecture
String os = "Linux"; // operating system
String vmm = "Xen";
double time_zone = 10.0; // time zone this resource located
double cost = 3.0; // the cost of using processing in this resource
double costPerMem = 0.05; // the cost of using memory in this resource
double costPerStorage = 0.001; // the cost of using storage in this
// resource
double costPerBw = 0.0; // the cost of using bw in this resource
LinkedList<Storage> storageList = new LinkedList<Storage>(); // we are not adding
SAN
// devices by now
DatacenterCharacteristics characteristics = new DatacenterCharacteristics(
arch, os, vmm, hostList, time_zone, cost, costPerMem,
costPerStorage, costPerBw);
// 6. Finally, we need to create a PowerDatacenter object.
Datacenter datacenter = null;
try {
datacenter = new Datacenter(name, characteristics, new
VmAllocationPolicySimple(hostList), storageList, 0);
} catch (Exception e) {
e.printStackTrace();
}
return datacenter;
}
// We strongly encourage users to develop their own broker policies, to
// submit vms and cloudlets according
// to the specific rules of the simulated scenario
/**
* Creates the broker.
*
* @return the datacenter broker
*/
private static DatacenterBroker createBroker() {
DatacenterBroker broker = null;
try {
broker = new DatacenterBroker("Broker");
```

```
} catch (Exception e) {
e.printStackTrace();
return null;
}
return broker;
}
/**
* Prints the Cloudlet objects.
*
* @param list list of Cloudlets
*/
private static void printCloudletList(List<Cloudlet> list) {
int size = list.size();
Cloudlet cloudlet;
String indent = " ";
Log.printLine();
Log.printLine("========== OUTPUT ==========");
Log.printLine("Cloudlet ID" + indent + "STATUS" + indent
+ "Data center ID" + indent + "VM ID" + indent + "Time" + indent
+ "Start Time" + indent + "Finish Time");
DecimalFormat dft = new DecimalFormat("###.##");
for (int i = 0; i < size; i++) {
cloudlet = list.get(i);
Log.print(indent + cloudlet.getCloudletId() + indent + indent);
if (cloudlet.getCloudletStatus() == Cloudlet.SUCCESS) {
Log.print("SUCCESS");
Log.printLine(indent + indent + cloudlet.getResourceId()
+ indent + indent + indent + cloudlet.getVmId()
+ indent + indent
+ dft.format(cloudlet.getActualCPUTime()) + indent
+ indent + dft.format(cloudlet.getExecStartTime())
+ indent + indent
+ dft.format(cloudlet.getFinishTime()));
}
}
}
}
```

OUTPUT:

Changes from CloudSim 3.0.2 to CloudSim 3.0.3

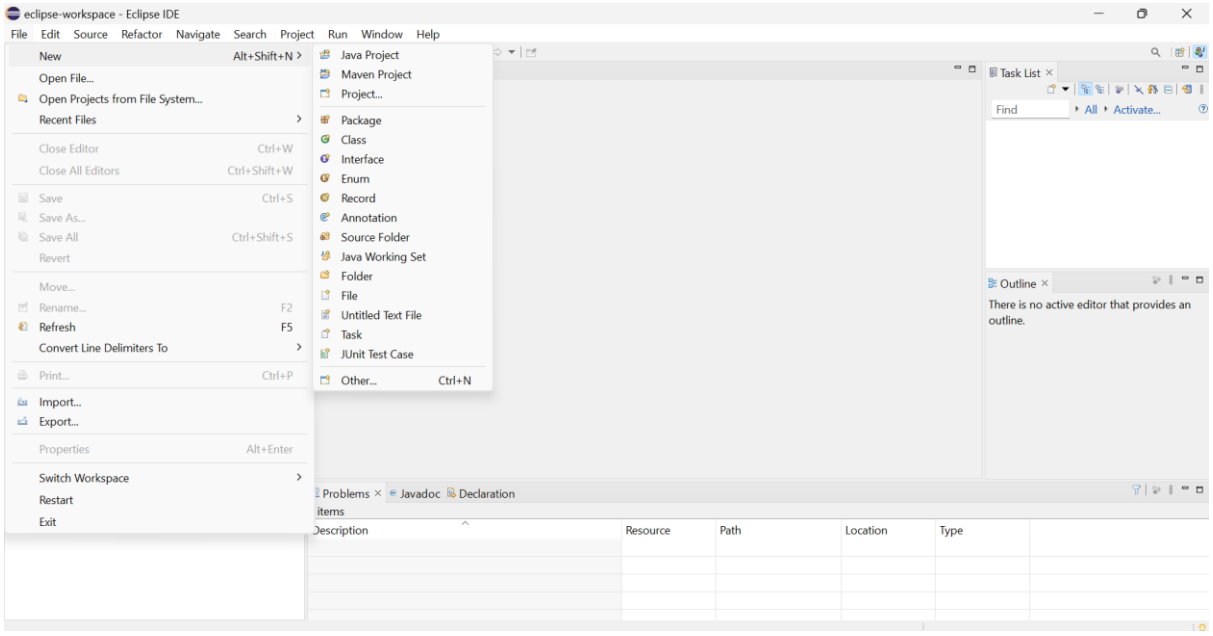
WHAT'S NEW

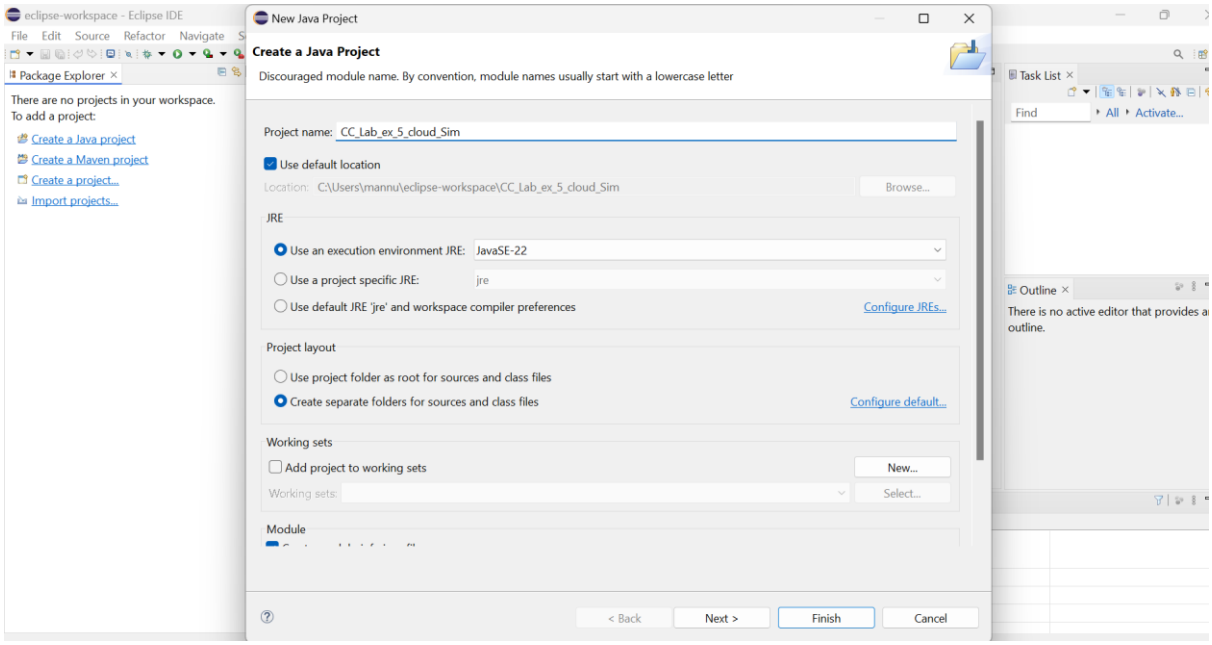
This is a bug fix and refactoring release. The following updates have been made:

- Removed the dependency on the flanagan library. It is now replaced with Apache Math. The implementation and interface of the MathUtil has been changed accordingly.
- The minimal time between events is now configurable.
- Fixed Issue 44 : UtilizationModelPlanetLabInMemory: use a global constant to define the size of the data field: a new constructor for the classes, allowing definition of data size, was added.
- Fixed Issue 49 : Wrong calculation of debt during migrationL: all references to debt from Datacenter and its subclasses were removed.

▾ Assets 4

cloudsim-3.0.3.tar.gz	9.9 MB	Mar 19, 2015
cloudsim-3.0.3.zip	13.1 MB	Mar 19, 2015
Source code (zip)		May 2, 2013
Source code (tar.gz)		May 2, 2013




eclipse-workspace - Eclipse IDE
File Edit Source Refactor Navigate
Package Explorer
There are no projects in your workspace.
To add a project:
Create a Java project
Create a Maven project
Create a project...
Import projects...
New Java Project
Create a Java Project
Discouraged module name. By convention, module names usually start with a lowercase letter
Project name: CC_Lab_ex_5_cloud_Sim
Use default location
Location: C:\Users\mannu\eclipse-workspace\CC_Lab_ex_5_cloud_Sim
Browse...
JRE
Use an execution environment JRE: JavaSE-22
Use a project specific JRE: jre
Use default JRE 'jre' and workspace compiler preferences
Configure JREs...
Project layout
Use project folder as root for sources and class files
Create separate folders for sources and class files
Configure default...
Working sets
Add project to working sets
New...
Working sets:
Select...
Module
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Finish
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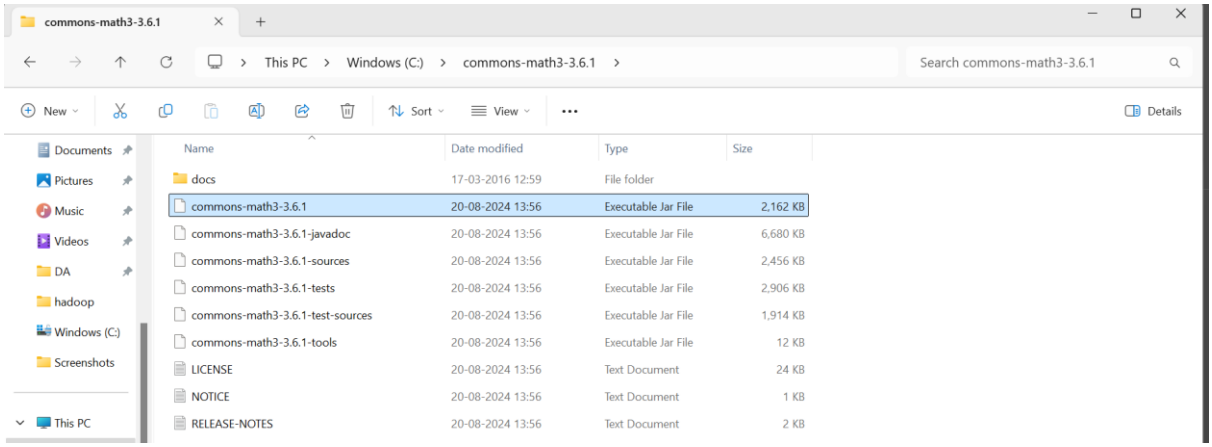
Task List
Find
All
Activate...
Outline
There is no active editor that provides a outline.


commons-math3-3.6.1
This PC
Windows (C:)
commons-math3-3.6.1
Search commons-math3-3.6.1
New
Sort
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Details
Documents
Pictures
Music
Videos
DA
hadoop
Windows (C:)
Screenshots
This PC
Name
Date modified
Type
Size
docs 17-03-2016 12:59 File folder
commons-math3-3.6.1 20-08-2024 13:56 Executable Jar File 2,162 KB
commons-math3-3.6.1-javadoc 20-08-2024 13:56 Executable Jar File 6,680 KB
commons-math3-3.6.1-sources 20-08-2024 13:56 Executable Jar File 2,456 KB
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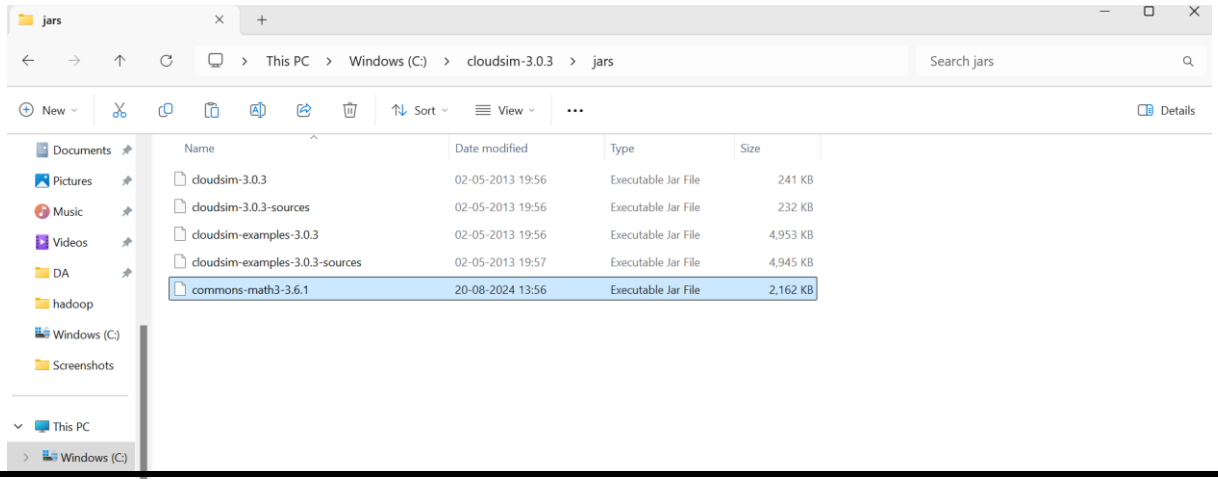
commons-math3-3.6.1-tools 20-08-2024 13:56 Executable Jar File 12 KB
LICENSE 20-08-2024 13:56 Text Document 24 KB
NOTICE 20-08-2024 13:56 Text Document 1 KB
RELEASE-NOTES 20-08-2024 13:56 Text Document 2 KB


jars
This PC
Windows (C:)
cloudsim-3.0.3
jars
Search jars
New
Sort
View
Details
Documents
Pictures
Music
Videos
DA
hadoop
Windows (C:)
Screenshots
This PC
Windows (C:)
Name
Date modified
Type
Size
cloudsim-3.0.3 02-05-2013 19:56 Executable Jar File 241 KB
cloudsim-3.0.3-sources 02-05-2013 19:56 Executable Jar File 232 KB
cloudsim-examples-3.0.3 02-05-2013 19:56 Executable Jar File 4,953 KB
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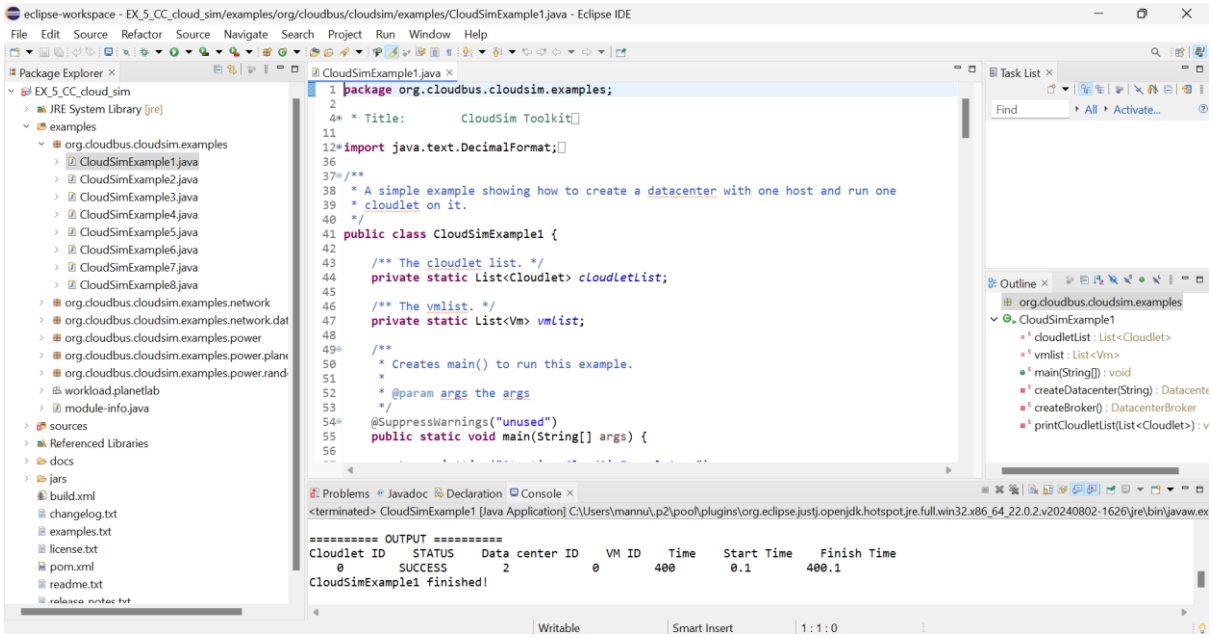
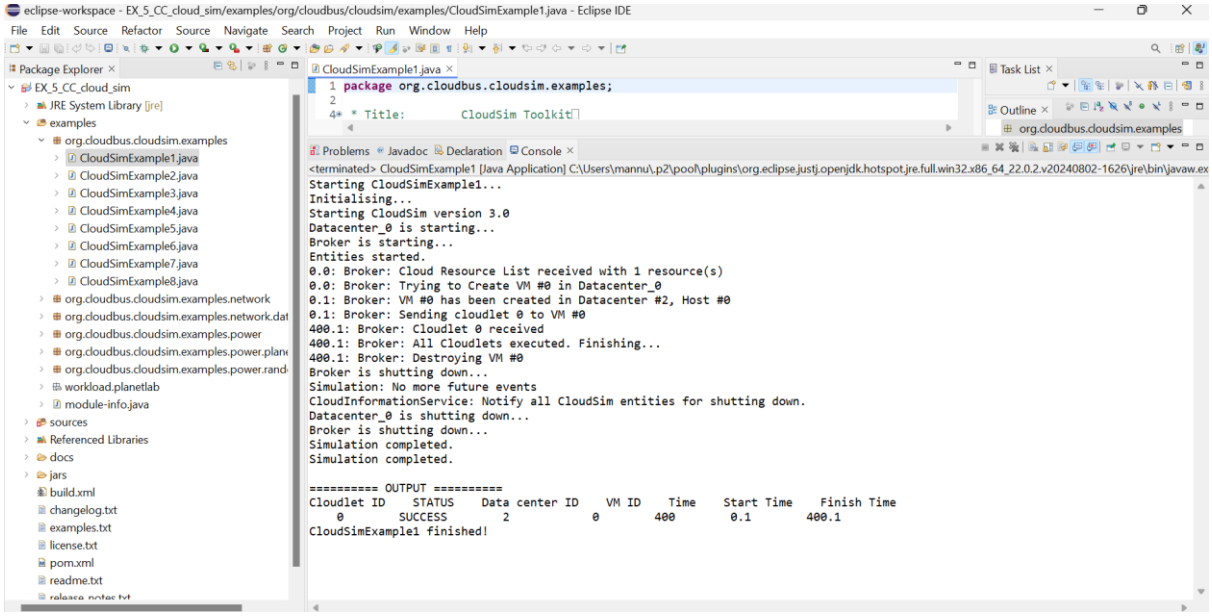
commons-math3-3.6.1 20-08-2024 13:56 Executable Jar File 2,162 KB





RESULT:

Thus, the installation and configuration of CloudSim in Eclipse IDE has been successfully completed.