



Experiment 2.1

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Semester: 6TH
Subject Name: CCDS

UID: 21BCS9043
Section: 21BCS_CC-646-A
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1. Aim:

Simulate a cloud scenario using Matlab and run a scheduling algorithm.

2. Objective:

The objective is to simulate a cloud computing environment in MATLAB and evaluate the effectiveness of scheduling algorithms in optimizing resource utilization and minimizing task completion time. This aims to inform decision-making in cloud infrastructure management and algorithm selection.

3. Theory:

MATLAB: MATLAB is a high-level programming language and interactive environment primarily used for numerical computation, data analysis, and visualization. It offers powerful tools for matrix computation, numerical analysis, data visualization, algorithm development, and integration with other languages.

Scheduling Algorithms: Scheduling algorithms are essential in computer science and operating systems for managing tasks and resources efficiently. Common algorithms include FCFS, SJF, priority scheduling, round-robin, multi-level queues, and deadline-based scheduling. Each algorithm aims to optimize metrics like throughput, latency, fairness, and resource utilization based on specific system requirements and objectives.

4. Script and Output:

Step 1: Install jdk-17 and Set up its path in Environment Variables in Advance System Settings.



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Java(TM) SE Development Kit 17.0.10 (64-bit) - Destination Folder

This will install the Java(TM) SE Development Kit 17.0.10 (64-bit), which requires 420MB on your hard drive. Click the "Change" button to change the installation folder.

Install Java(TM) SE Development Kit 17.0.10 (64-bit) to:

C:\Program Files\Java\jdk-17\

Change...

Back

Next

Cancel

bin

File

Home

Share

View

C:\Program Files\Java\jdk-17\bin

Quick access

Desktop

Downloads

Documents

Pictures

Music

Videos

OneDrive - Personal

This PC

Network

Name	Date modified	Type
server	04/02/2024 18:00	File
api-ms-win-core-console-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-console-l1-2-0.dll	04/02/2024 18:00	File
api-ms-win-core-datetime-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-debug-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-errorhandling-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-file-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-file-l1-2-0.dll	04/02/2024 18:00	File
api-ms-win-core-file-l2-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-handle-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-heap-l1-1-0.dll	04/02/2024 18:00	File
api-ms-win-core-interlocked-l1-1-0.dll	04/02/2024 18:00	File

System Properties

Computer Name

Hardware

Advanced

System Protection

Remote

You must be logged on as an Administrator to make most of these changes.

Performance

Visual effects, processor scheduling, memory usage and virtual memory

Settings...

User Profiles

Desktop settings related to your sign-in

Settings...

Start-up and Recovery

System start-up, system failure and debugging information

Settings...

Environment Variables...

OK

Cancel

Apply

Edit environment variable

%USERPROFILE%\AppData\Local\Microsoft\WindowsApps

C:\Users\jyoti\AppData\Local\Programs\Microsoft VS Code\bin

C:\MinGW\bin

C:\Program Files\Java\jdk-17\bin

New

Edit

Browse...

Delete

Move Up

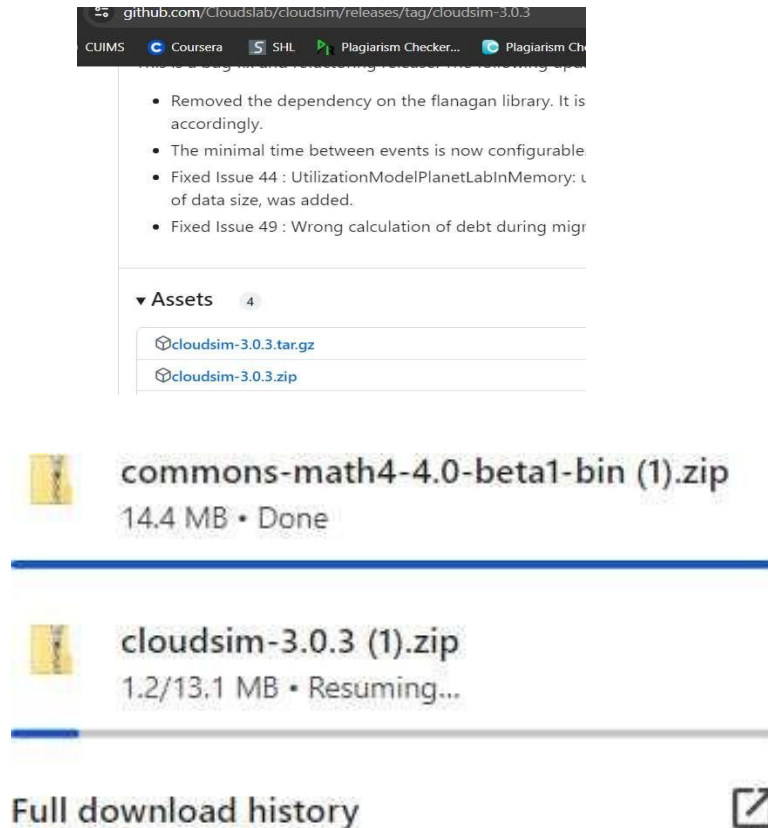
Move Down

Edit text...

OK

Cancel

Step 2: Download Cloud Sim 3.0.3 zip file and common-math zip file



Step 3: Now download Eclipse IDE



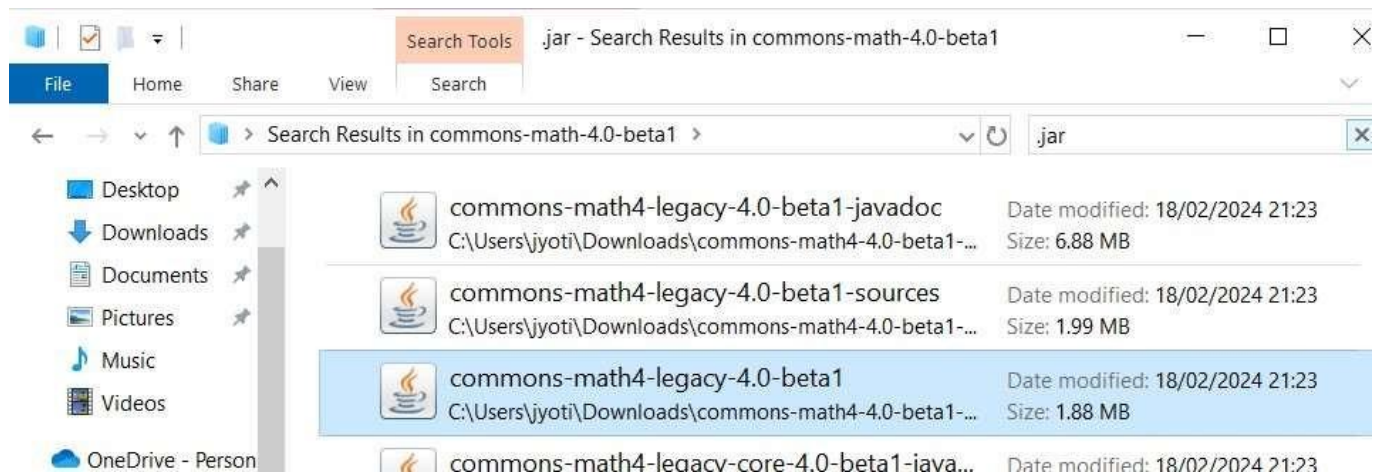


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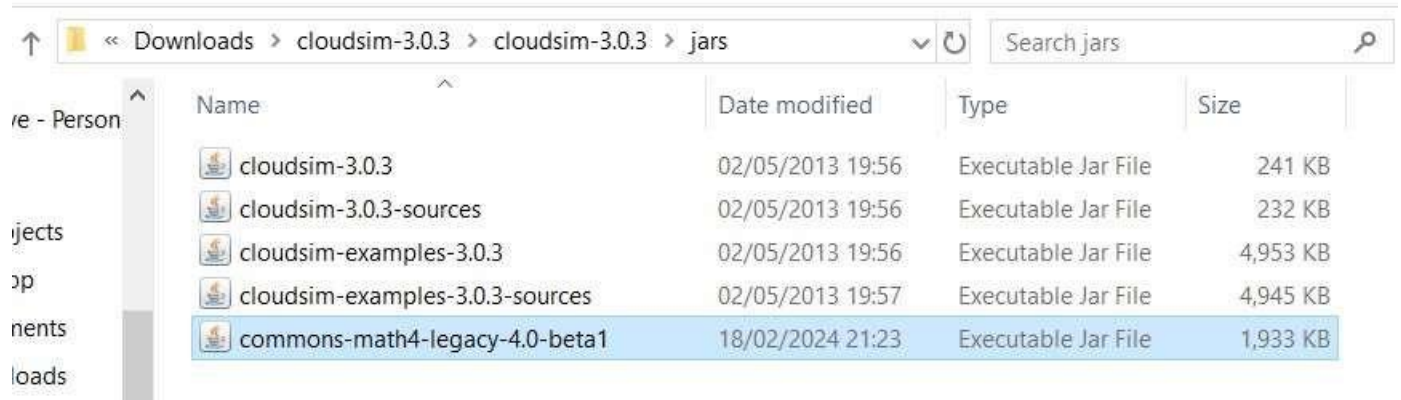
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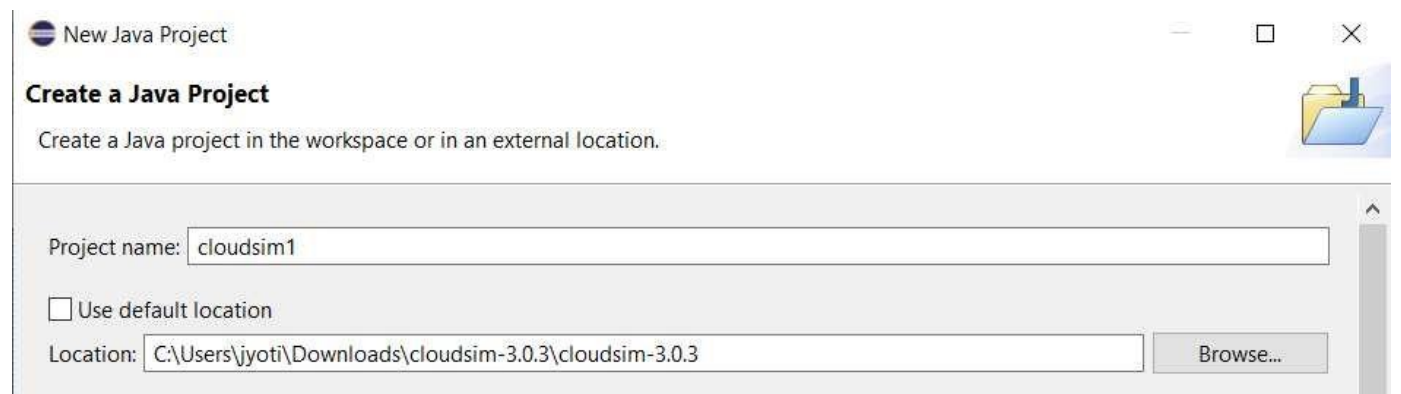
Step 4: Put the common math jar file into the jar folder in cloud sim.



Step 5: Paste the common jar file in Cloud Sim 3.0.3 jar files.



Step 6: Build a new Java Project say cloudsims1 and browse any location.

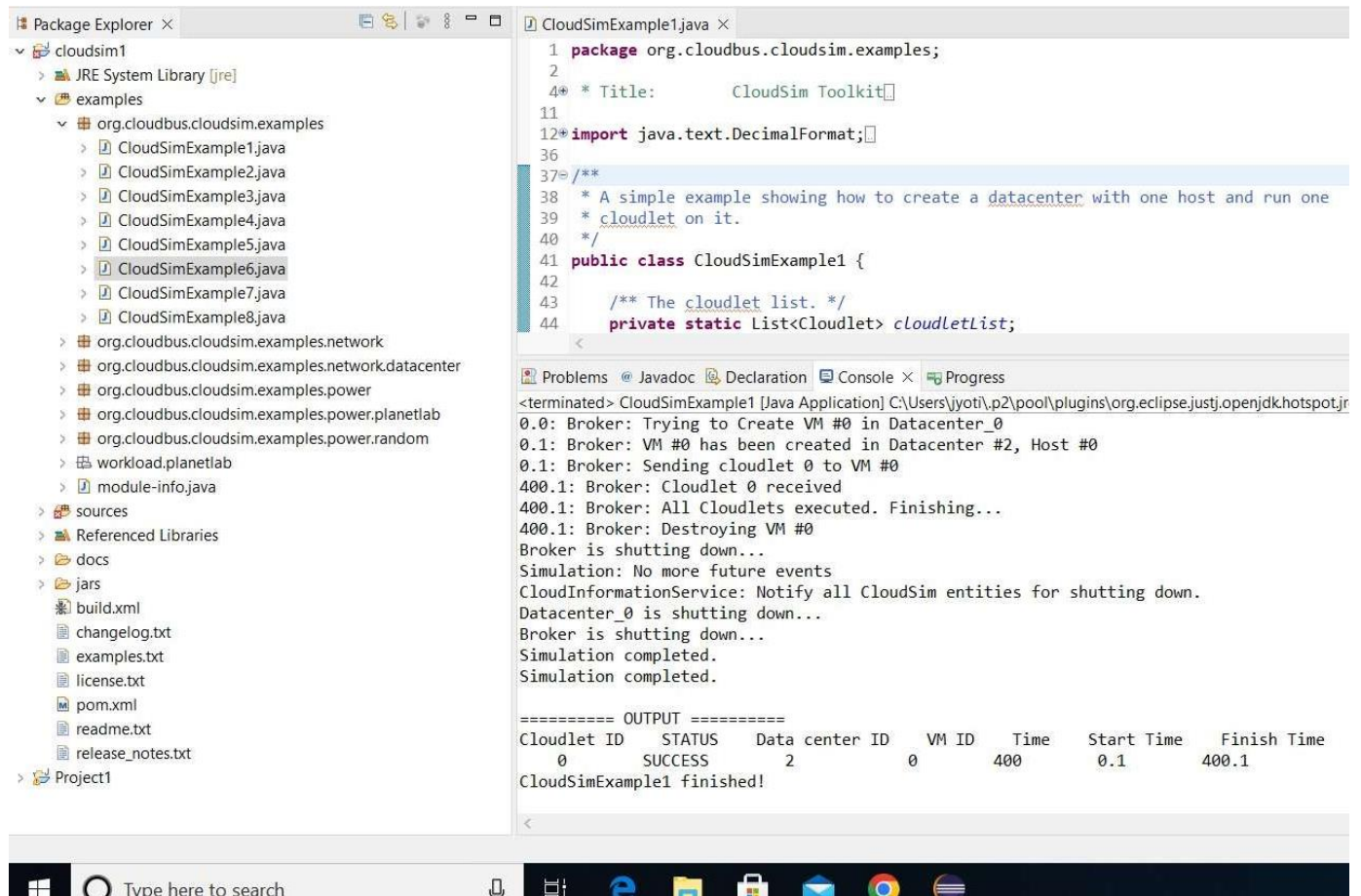


Java Settings

Define the Java build settings.



Step 7: Run the Cloud Sim Example.



```

1 package org.cloudbus.cloudsim.examples;
2
34 * Title:      CloudSim Toolkit
11
12*import java.text.DecimalFormat;
36
37= /**
38 * A simple example showing how to create a datacenter with one host and run one
39 * cloudlet on it.
40 */
41 public class CloudSimExample1 {
42
43     /** The cloudlet list. */
44     private static List<Cloudlet> cloudletList;

```

Problems @ Javadoc Declaration Console × Progress

<terminated> CloudSimExample1 [Java Application] C:\Users\jyoti\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jr

0.0: Broker: Trying to Create VM #0 in Datacenter_0
0.1: Broker: VM #0 has been created in Datacenter #2, Host #0
0.1: Broker: Sending cloudlet 0 to VM #0
400.1: Broker: Cloudlet 0 received
400.1: Broker: All Cloudlets executed. Finishing...
400.1: Broker: Destroying VM #0
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
0	SUCCESS	2	0	400	0.1	400.1

CloudSimExample1 finished!

5. Learning Outcomes:

- I have learned decision-making in cloud infrastructure management.
- I have learned data analysis and visualization.
- I have learned critical thinking and problem-solving.