

# Configuration Manual

Research Project MSc Cloud Computing

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## Configuration Manual

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### 1 Introduction

The steps to implement load balancing with dynamic workload in a simulated environment are listed in this configuration manual.

## 2 Prerequisites

Below are the prerequisites to install and immplement the cloudsim set up.

- Eclipse IDE
- Java JDK 17
- CloudSim 3.0.3 Framework

Note: Kindly follow the specific instructions listed for your operating system. This set up was installed and implemented on a Windows 11 machine with 8 GB RAM and 500GB storage.

## 3 Installation of Prerequisites

#### 3.1 Java JDK 17

Step 1: For the relevant operating system, download Java JDK 17.0.5.
https://www.oracle.com/java/technologies/javase/jdk17-archive-downloads.html

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macOS x64 Compressed Archive	170.32 MB	https://download.oracle.com/java/17/archive/jdk-17.0.5_macos-x64_bin.tar.gz (sha256 )
		- <sup>1</sup>

Step 2: Run the setup file and install JDK



#### Step 3: Click Install



#### 3.2 Eclipse IDE

Step 1: Use the below link to download Eclipse IDE.
https://www.eclipse.org/downloads/



#### Step 2: Choose the "Eclipse IDE for Java Developers" option.



**Step 3:** Choose the installation folder and the JDK directory where you installed the Java JDK.

Click "Install"



### 3.3 CloudSim version 3.0.3

Step 1: Use the below link to download CloudSim
https://github.com/Cloudslab/cloudsim/releases/tag/cloudsim-3.0.3



Cloudsim is a simulation tool Goyal et al. (2012).

## 4 Steps to execute the proposed code

**Step 1:** Open Eclipse IDE and create a new Java Project. Click on "File" > "New" > "Java Project"

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Browse through the path where the clousim is downloaded and click "Finish".

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Module name:					
Generate comments					
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Step 3: Browse through "Project name" > "cloudsim-3.0.3/examples", right click on "org.cloudbus.cloudsim.examples" and select "import".

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Package Explorer X				
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Step 4: Open "General" folder and select "File System" and click "next".

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Step 5: Browse through the path where the code files in .java extension are present.

Select the files "DynamicLBUsingEGA.java" and "DynamicLBUsingPSO.java" and click "Finish"  $\ensuremath{\mathsf{SO}}$ 

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Step 6: Click "Run" > "Run" to execute the program.

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The simulation will start and the below outputs are generated.

- Execution Time
- Resource Utilization
- Energy consumption

## References

Goyal, T., Singh, A. and Agrawal, A. (2012). Cloudsim: simulator for cloud computing infrastructure and modeling, *Procedia Engineering* **38**: 3566–3572.