CloudSim Installation and Setup Guide for Windows

This guide provides a step-by-step walkthrough for installing, building, and running CloudSim on a Windows machine from scratch. It is designed for users with no prior setup or experience.

# 1. Install Java JDK (Recommended: JDK 21)

CloudSim requires Java to run. We recommend installing Java Development Kit (JDK) version 21.  
- Download JDK 21:  
 • Oracle JDK: https://www.oracle.com/java/technologies/javase/jdk21-archive-downloads.html  
 • Adoptium OpenJDK: https://adoptium.net/releases.html?variant=openjdk21  
- Installation steps:  
 1. Download the Windows x64 Installer `.msi` file from either Oracle or Adoptium.  
 2. Run the installer and follow the prompts.  
 3. By default, the JDK installs to a folder like C:\Program Files\Java\jdk-21.

# 2. Set JAVA\_HOME and Update PATH Environment Variables

To use Java from the command line, you need to set the JAVA\_HOME environment variable and update your system PATH.  
- Setting JAVA\_HOME:  
 1. Open the Start Menu and search for 'Environment Variables'.  
 2. Select 'Edit the system environment variables'.  
 3. In the System Properties window, click 'Environment Variables...'.  
 4. Under System variables, click New...  
 5. Enter:  
 • Variable name: JAVA\_HOME  
 • Variable value: The path to your JDK installation (e.g., C:\Program Files\Java\jdk-21)  
 6. Click OK.  
- Updating PATH:  
 1. In the Environment Variables window, under System variables, find and select the Path variable.  
 2. Click Edit...  
 3. Click New and add: %JAVA\_HOME%\bin  
 4. Click OK on all windows to apply changes.  
- Verify Java installation:  
 Open a new Command Prompt and run: java -version

# 3. Install Apache Maven

Maven is used to build and manage CloudSim.  
- Download Maven:  
 Official site: https://maven.apache.org/download.cgi  
- Installation steps:  
 1. Download the Binary zip archive (e.g., apache-maven-3.9.4-bin.zip).  
 2. Extract the zip file to a directory, e.g., C:\Program Files\Apache\Maven.  
- Set MAVEN\_HOME and update PATH:  
 1. Open Environment Variables as before.  
 2. Under System variables, click New...  
 • Variable name: MAVEN\_HOME  
 • Variable value: path to your Maven folder (e.g., C:\Program Files\Apache\Maven\apache-maven-3.9.4)  
 3. Edit the Path variable and add %MAVEN\_HOME%\bin.  
 4. Click OK to save.  
- Verify Maven installation:  
 mvn -version

# 4. Download CloudSim Source Code

You can obtain CloudSim from GitHub in two ways:  
- Using Git (recommended if Git is installed):  
 1. Open Command Prompt.  
 2. Navigate to the directory where you want CloudSim.  
 3. Run: git clone https://github.com/Cloudslab/CloudSim.git  
- Using ZIP Download:  
 1. Visit https://github.com/Cloudslab/CloudSim  
 2. Click 'Code' → 'Download ZIP'.  
 3. Extract the ZIP file to a folder.

# 5. Open Command Prompt in CloudSim Directory

- Navigate to the root folder of the CloudSim project.  
- Open Command Prompt here or use 'Open in Terminal' in Windows 11.

# 6. Build CloudSim Project with Maven

Run: mvn clean install  
- This downloads dependencies and compiles CloudSim.  
- If successful, Maven will display a BUILD SUCCESS message.

# 7. Run CloudSim Example (CloudSimExample9)

**To run CloudSimExample9:**mvn exec:java -pl modules/cloudsim-examples -Dexec.mainClass=org.cloudbus.cloudsim.examples.CloudSimExample9  
- This runs the simulation and prints results.

# 8. Tips for Running CloudSim in an IDE

- Import the project as a Maven project.  
- Configure the IDE to use JDK 21.  
- Run examples directly from the IDE.

# 9. Troubleshooting Common Issues

- JAVA\_HOME not set: Ensure it points to JDK.  
- Maven not found: Ensure MAVEN\_HOME and PATH are correct.  
- Build failures: Try mvn clean install -DskipTests  
- Example errors: Confirm correct command and working directory.