Distributed Systems

COMP90015 2023 Semester 1
Tutorial 01

Our Expectations

- Come prepared to get the most benefit out of this tutorial!
- Think of this tutorial as more of a conversation, it’s to get discussion going about Distributed Systems

Contact

- We encourage you to post your questions on LMS
- For any other queries contact your Tutor

Tutorial Structure

- Review of previous week’s content via questions (Your questions are welcome!)
- Demonstration time (Let’s get our hands dirty and make it work!)

1. Provide a definition of a Distributed System

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- A **system** in which **hardware or software components** located at **networked computers** communicate and **coordinate their actions only by passing message** [Coulouris]

- A collection of **independent computers** that appears to its users as a **single coherent system** [Tanenbaum]

2. Briefly explain the difference between a computer network and a distributed system.

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A Computer Network: Is a collection of spatially separated, interconnected computers that exchange messages based on specific protocols. Computers are addressed by IP addresses.

A Distributed System: Multiple computers **on the network working together as a system.** The **spatial separation of computers and communication aspects are hidden from users.**

3. List three reasons for using a distributed system.

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- Economy (cost effective)
- Reliability (fault tolerance)
- Availability (high uptime)
- Scalability (extendible)
- Functional Separation (Modularity)

The **main motivation** to build and use distributed systems is **Resource Sharing**

- Hardware Resources (Disks, printers, scanners etc.)
- Software Resources (Files, databases etc)
- Other (Processing power, memory, bandwidth)

4. Briefly explain four consequences when using distributed systems, i.e. issues that arise that are not present otherwise.

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- Concurrency
- Heterogeneity
- No Global Clock
- Independent Failures

Java IDE

IDE - Integrated Development Environment

Used to facilitate development, options available:

- Eclipse (supported by this subject)
- IntelliJ
- Netbeans

You can use any IDE of your choice

Quick Eclipse Demo

- Create a new Eclipse project
- Add a JAR file (internal / external)
- Build an executable jar file

Create a new Eclipse Project

http://www.tutorialspoint.com/eclipse/eclipse_create_java_project.htm

Intellij Idea Project

1) Create a new project
https://www.jetbrains.com/help/idea/new-project-wizard.html

2) Import and export projects
https://www.jetbrains.com/help/idea/import-project-or-module-wizard.html

3) Project structure settings
https://www.jetbrains.com/help/idea/project-settings-and-structure.html

Build an executable jarfile

1) Export a Jar

https://www.tutorialspoint.com/how-to-run-a-jar-file-through-command-prompt-in-java

https://www.youtube.com/watch?v=mE3rbtKm-pk

2) Execute Program using Jar

https://www.java67.com/2016/01/how-to-run-jar-file-from-command-prompt.html

Add a JAR file (internal / external)

https://www.cs.utexas.edu/~scottm/cs324e/Assignments/AddJarToEclipse.htm

Command Line Arguments