

PROGRAMMING

Lecture 25

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TODAY'S TOPIC

- Client Side and Server Side
- Server Client Architecture
- JSON
- Servlet
- Maven
- Dependency

CLIENT SIDE

- Client-side development is a type of development that involves programs that run on a client or user's device.
- Client-side developers focus on creating the part of a website that the user can interact with.
- Sometimes, client-side development is also referred to as front-end development, as it focuses on the "front" part of an application that users can see.

CLIENT SIDE

- Client-side developers complete a variety of tasks, including:
 - Creating website layouts
 - Designing user interfaces
 - Adding form validation
 - Adding visual elements like colors and fonts

CLIENT SIDE

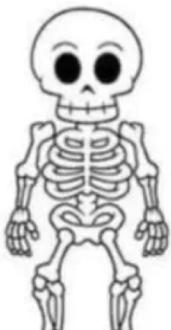
Some common client-side languages include:

- **HTML**: HTML, which stands for Hypertext Markup Language, is a markup language that is the standard language for web development. HTML builds a website's structure and renders a website in a browser.
- **CSS**: CSS, which stands for Cascading Style Sheets, is a design language that developers can use to add visual design elements to a website coded in HTML.
- **JavaScript**: JavaScript is a scripting language that developers can use for web development, web applications and other purposes. Developers can use JavaScript to make websites dynamic and interactive.

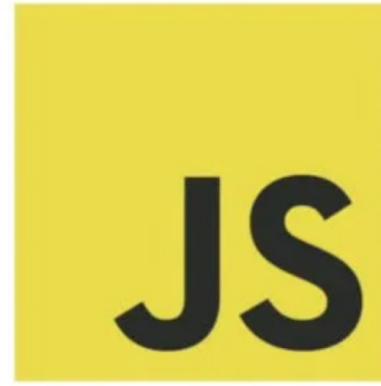
HTML CSS JAVASCRIPT



Skeleton



Style



Functionality



SERVER SIDE

- Server-side development is a type of development that involves programs that run on a server.
- Server-side developers focus on behind-the-scenes development, and server-side development is also referred to as "back-end" development.
- This type of programming is important because web browsers, or clients, interact with web servers to retrieve information.

SERVER SIDE

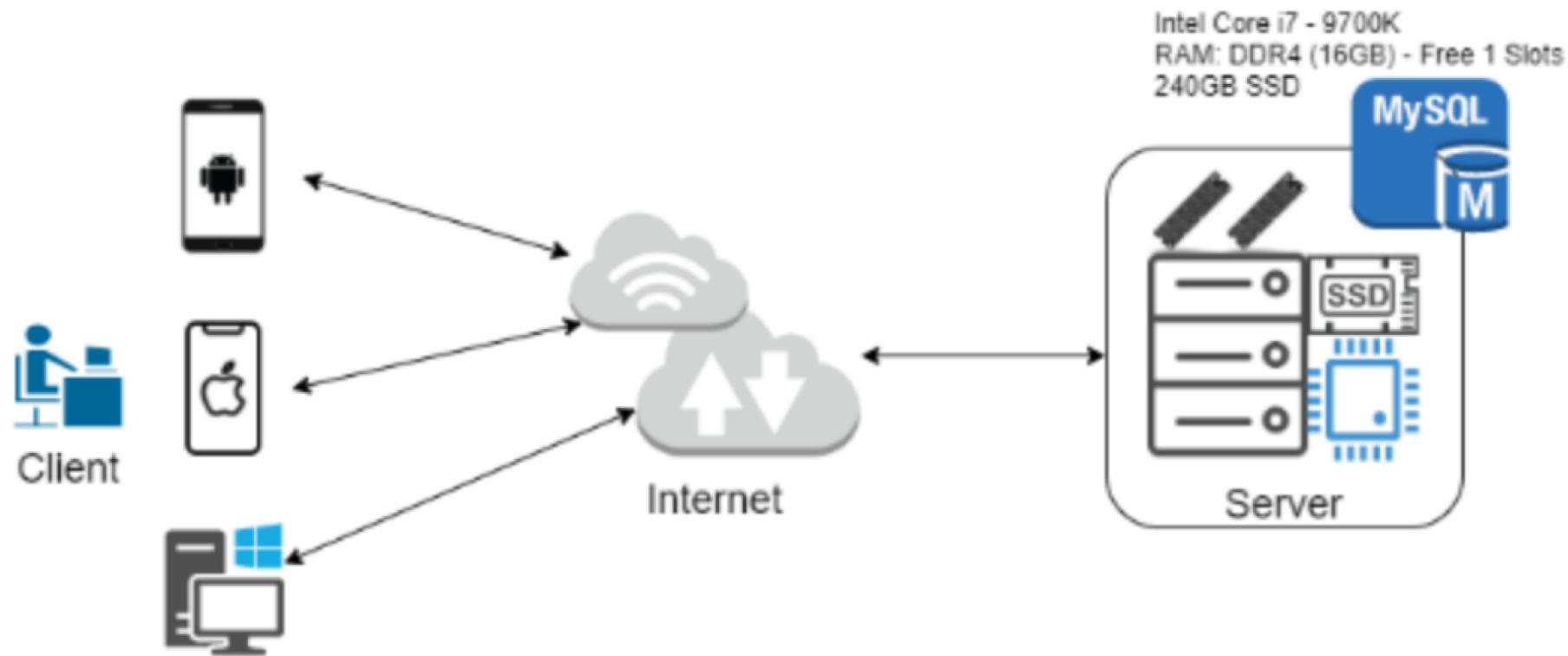
Common server-side tasks include:

- Coding dynamic websites
- Developing web applications
- Connecting websites to databases

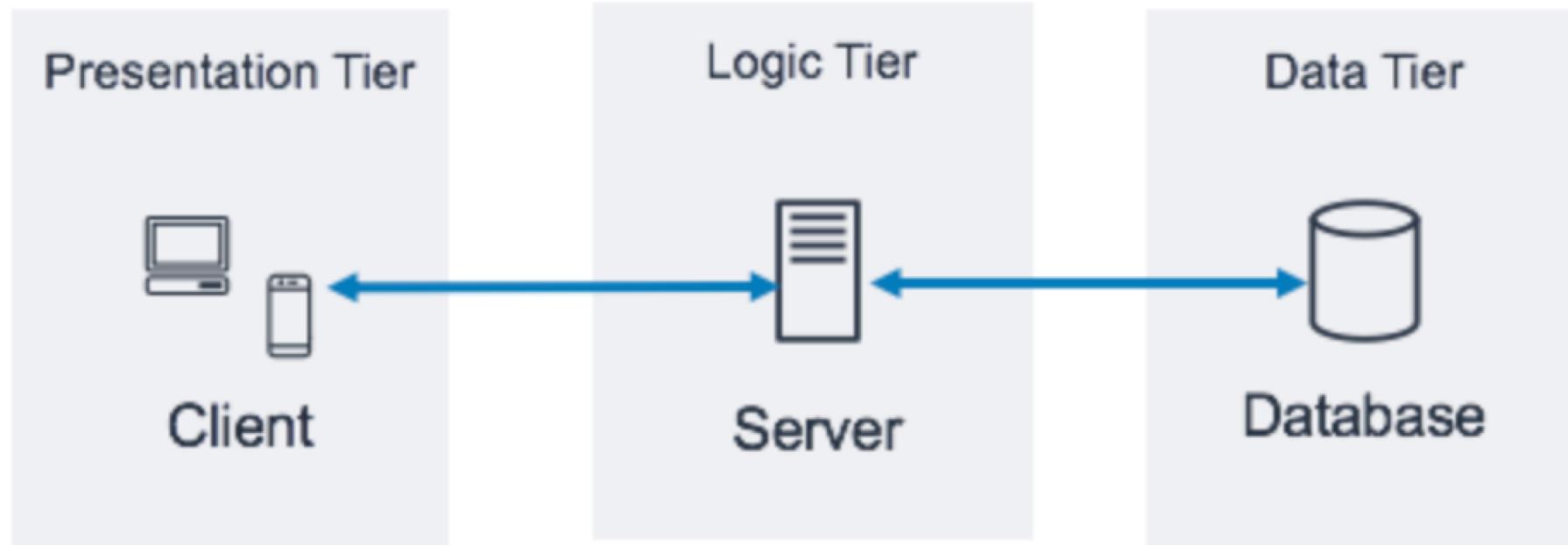
SERVER SIDE

- Server-side developers can use many different programming languages, including:
 - **Java:** Java is an object-oriented programming language that developers can use for a variety of purposes, including software and application development. Java is one of the most popular server-side programming languages.
 - **Python:** Python is an object-oriented, general-purpose programming language that developers can use for web development, application development, operating systems and other purposes. Python has applications in data science, finance, computing and other fields.
 - **PHP:** PHP, which stands for Hypertext Preprocessor, is a scripting language developers use to create websites and web applications. PHP can connect to databases to display their content on websites.

SERVER CLIENT ARCHITECTURE



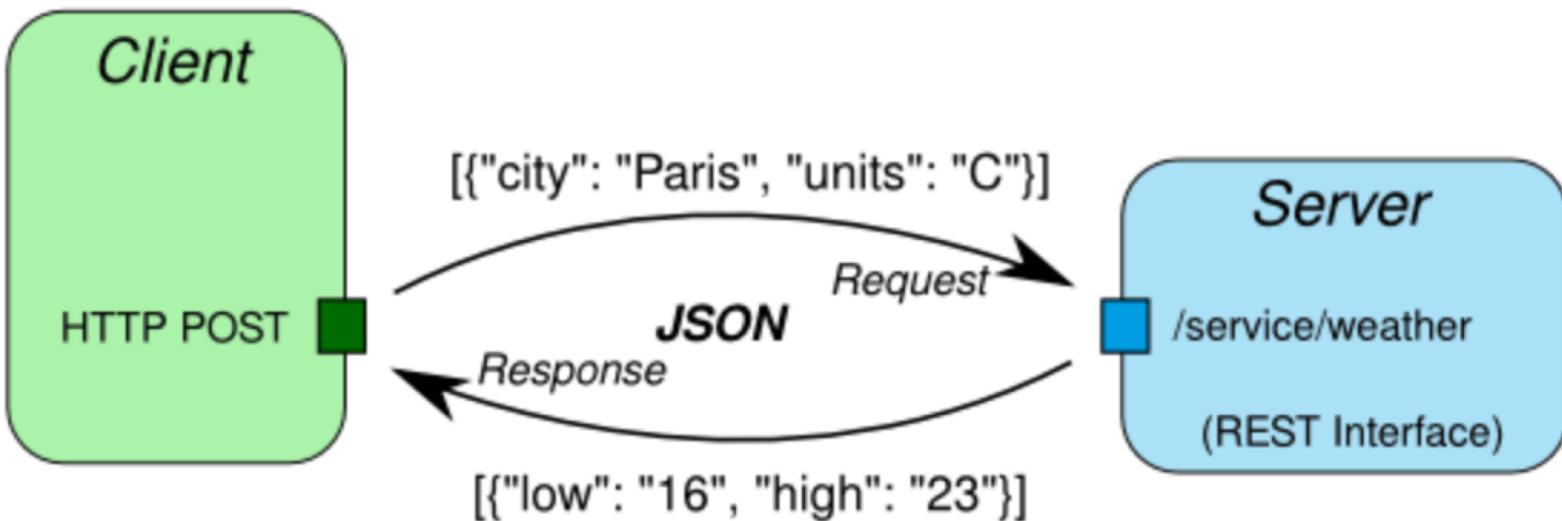
3-TIER ARCHITECTURE



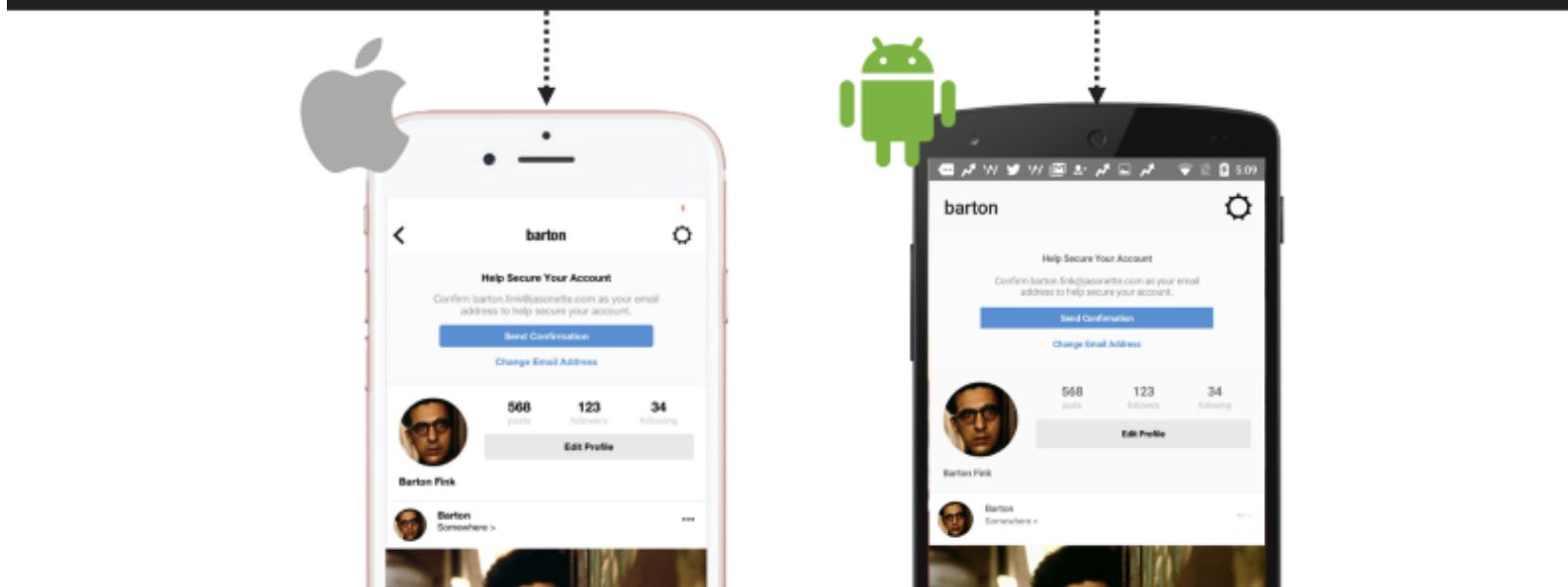
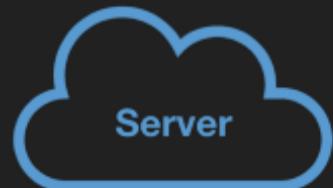
HTTP

- The Hypertext Transfer Protocol (HTTP) is designed to enable communications between clients and servers.
- HTTP works as a request-response protocol between a client and server.
- A web browser may be the client, and an application on a computer that hosts a web site may be the server.
- Example: A client (browser) submits an HTTP request to the server; then the server returns a response to the client. The response contains status information about the request and may also contain the requested content.

JSON



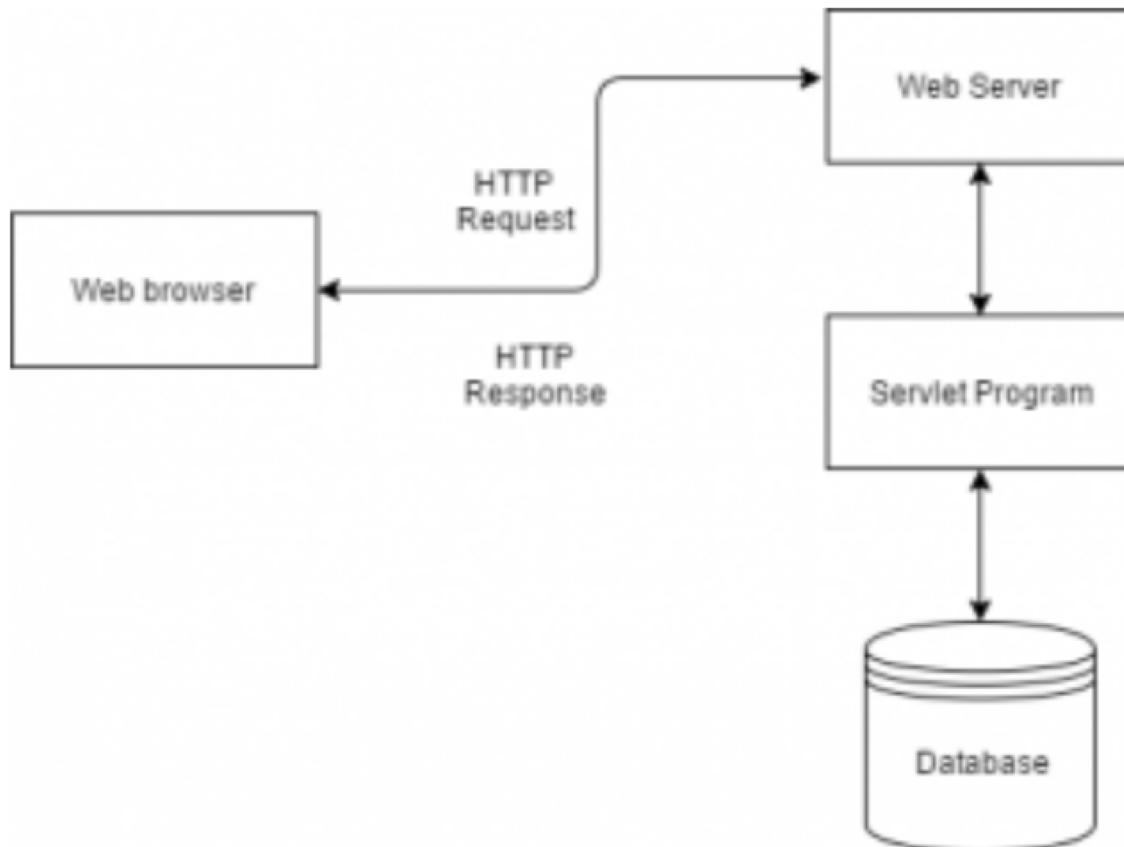
JSON



SERVLET

- Servlet is a technology which is used to create a web application.
- Servlet is a class that extends the capabilities of the servers and responds to the incoming requests. It can respond to any requests.
- Servlet is a web component that is deployed on the server to create a dynamic web page.

SERVLET



SERVLET TASKS

- Read the explicit data sent by the clients.
- Read the implicit HTTP request data sent by the clients like cookies, media types, etc.
- Process the data and generate the results. This process may require communicating to a database, invoking a Web service, or computing the response directly.
- Send the explicit data (i.e., the document) to the clients.
- Send the implicit HTTP response to the clients. This includes telling the browsers or other clients what type of document is being returned (e.g., HTML), setting cookies and caching parameters, and other such tasks.

TOMCAT SERVER

- Apache Tomcat is a popular open source web server and Servlet container for Java code.
- It allows the users to run Servlet and Java Server Pages that are based on the web-applications.
- It can be used as the HTTP server.

MAVEN

- Maven is a powerful project management tool that is based on POM (project object model).
- It is used for projects build, dependency and documentation.
- In short terms we can tell maven is a tool that can be used for building and managing any Java-based project.
- Maven make the day-to-day work of Java developers easier and generally help with the comprehension of any Java-based project.

pom.xml

- POM means Project Object Model is key to operate Maven.
- Maven reads pom.xml file to accomplish its configuration and operations.
- It is an XML file that contains information related to the project and configuration information such as dependencies, source directory, plugin, goals etc. used by Maven to build the project.

DEPENDENCIES

- Whenever a class A uses another class or interface B, then A depends on B.
- A cannot carry out it's work without B, and A cannot be reused without also reusing B.
- In such a situation the class A is called the "dependent" and the class or interface B is called the "dependency".
- Eg. Coursework 2 depends upon Coursework 1.

REFERENCES

- <https://www.indeed.com/career-advice/career-development/client-side-vs-server-side>

THANK YOU!

Any questions?