**ASSIGNMENT-2**

(Important things to learn)

**TASK-4: Full-Stack Development**

Define "full-stack development" and elaborate on the responsibilities and skillsets expected from a full-stack developer in a web development context.

### Full-Stack Development

### Full-stack development refers to the practice of working on both the front-end and back-end portions of a web application. A full-stack developer is proficient in both client-side (front-end) and server-side (back-end) technologies, enabling them to create a fully functional web application from start to finish.

**What is a Full Stack Developer?**

* Every job role requires specific skill sets. As the name suggests, a Full Stack Developer has got a full stack of skills for working with both the backend and the frontend of websites and mobile applications. They are well acquainted with CSS, HTML, JavaScript, and many more. A Full Stack Developer who works on apps can be called a software engineer. But not all software engineers are Full Stack Developers.
* **Front End Developer (Client Side)**
* Front-end developers take care of designing and implementing the user interface. They are responsible for creating and managing website design. These professionals see to it that the design is able to perform when online. Front-end developers are proficient in coding languages such as HTML, JavaScript, and CSS.
* They also take care of the infrastructure and databases in the system and monitor the entire process—from start to end. It is named ‘Client side’ because the client here refers to the user and the user side is the view that is visible to the users (Clients). Some of the tools used by Front-end Developers are shown in the following image.
* **Back End Developer (Server Side)**
* The backend is the server-side development- the part not visible to the clients (users). Back-end developers deal with servers and databases that ensure that the process is running smoothly. Back-end development has a clear focus on databases, website architecture, and scripting.
* The back-end developers write codes that help the system fetch the required data from the database and display it on the front-end website. A Back-end developer is skilled in writing scripts, and [web development](https://intellipaat.com/blog/what-is-web-development/) languages and working on databases and cache, etc.
* **Need for a Full Stack Developer**
* Full Stack Developers constitute around 48 % of the overall Developer profiles. Below we will discuss what are the various reasons behind the need for a Full Stack Developer:
* Having a Full Stack Developer in your team will lead to lower wastage of resources for hiring multiple developers for the process. Full Stack Developers are skilled in single-handedly taking care of the entire process. They can very well handle an entire small-scale project on their own.
* Full-stack developers are known as the best fit for communicating with UI or UX designers and others.
* They are well equipped to provide guidance and help to other members of the development team and hence reduce the technical cost.
* They also play the most important role in ensuring the smooth running of the development system.
* They are well equipped in using various technologies and hence can resolve any issue promptly.

**Full Stack Developer Skills**

* **Front-End Skills**:
* **HTML:** HTML is the markup language that is used to create the structure of a web page. Full stack developers should be able to use HTML to create well-organized and visually appealing web pages.
* **CSS:**CSS is the style sheet language that is used to control the appearance of a web page. Full stack developers should be able to use CSS to style web pages to match the company’s branding guidelines and to create a user-friendly experience.
* **JavaScript:** JavaScript is a programming language that is used to add interactivity to web pages. Full stack developers should be able to use JavaScript to create dynamic web pages that can respond to user input.
* **Web frameworks:** Web frameworks are pre-made libraries of code that can be used to speed up the development process. Full stack developers should be familiar with at least one web framework, such as Django, Rails, or Spring Boot.
* **Git:** Git is a version control system that is used to track changes to code. Full stack developers should be able to use Git to collaborate with others on projects and to revert to previous versions of code if necessary.
* **Back-End Skills**:
* **Programming languages:** Full stack developers should have experience with at least one programming language, such as Python, Java, or C++. These languages are used to create the logic and functionality of web applications.
* **Databases:** Full stack developers should be able to create and manage databases. This includes creating tables, schemas, and relationships.
* **API Development**: Experience in designing and consuming RESTful and/or GraphQL APIs.
* **Authentication and Security**: Understanding of web security principles and best practices for authentication and authorization.
* **Soft Skills**:
  + **Adaptability**: Willingness to learn new technologies and adapt to changing project requirements.
  + **Problem-solving skills:**Full stack developers should be able to identify and solve problems that arise during the development process. They should also be able to think critically and creatively to come up with new solutions.
  + **Communication skills:** Full stack developers should be able to communicate effectively with both technical and non-technical audiences. They should be able to explain complex concepts in a clear and concise way.
  + **Collaboration skills:**Full stack developers should be able to work effectively with other developers, designers, and project managers. They should be able to take feedback and work towards a common goal.
* **Time Management**: Ability to manage time and handle multiple tasks simultaneously.
* **DevOps and Tools**:
  + **Cloud Services**: Experience with cloud platforms (AWS, Azure, Google Cloud).
  + **CI/CD**: Familiarity with continuous integration and continuous deployment pipelines.
  + **Containerization**: Knowledge of containerization technologies like Docker and orchestration tools like Kubernetes.
  + **Testing Tools**: Proficiency in using testing frameworks and tools (Jest, Mocha, Selenium).

**Responsibilities of a Full-Stack Developer**

* **Front-End Development**:
* **UI/UX Design**: Creating user interfaces that are intuitive and aesthetically pleasing.
* **Responsive Design**: Ensuring the application works well on various devices and screen sizes.
* **Implementation**: Using HTML, CSS, and JavaScript to develop the visual and interactive aspects of the application.
* **Frameworks and Libraries**: Utilizing tools like React, Angular, or Vue.js to streamline development.
* **Back-End Development**:
  + **Server Management**: Setting up, configuring, and maintaining servers.
  + **Database Management**: Designing and managing databases, ensuring data integrity, and handling database queries.
  + **Server-Side Logic**: Writing server-side code using languages like Node.js, Python, Ruby, Java, or PHP to implement the core logic of the application.
  + **APIs**: Developing and integrating RESTful APIs and web services to connect the front-end with the back-end.
* **Full Application Lifecycle**:
  + **Requirement Analysis**: Understanding project requirements and translating them into technical specifications.
  + **System Design and Architecture**: Designing the overall system architecture, including the choice of technologies and frameworks.
  + **Development**: Writing clean, maintainable, and efficient code for both front-end and back-end.
  + **Testing**: Conducting unit tests, integration tests, and end-to-end tests to ensure the application works as expected.
  + **Deployment**: Deploying applications to production environments using platforms like AWS, Azure, or Heroku.
  + **Maintenance and Scaling**: Monitoring application performance, debugging issues, and scaling the application as needed.