Industrial Assessment-4

What is JavaScript?

JavaScript is a cross-platform programming language for front-end and back and development. Javascript is used in building web pages, backend servers, and interactive applications with interactive user experience.

It is created to make the static pages more dynamic with sophisticated features and functionality like search boxes on websites like Amazon, interactive maps, refreshing content updates on social media platforms, etc

JavaScript was developed in the year 1994 for only the Netscape browser to bring interaction on the webpages. It was in 1997 when the first standardized version of JavaScript was introduced by ECMAScript.

From then till today, newer versions of JavaScript have been developed like ECMAScript 12 to primarily standardize the language, and provide better execution, interaction, and performance of the language.

JavaScript became the fundamental scripting language for front-end development with HTML and CSS. Let us read about an example to get a clear idea of what functionality JavaScript bring to web pages or applications

JavaScript is an object-oriented scripting language that allows you to add interactive elements to web pages. For example, allowing users to log in after clicking the login button is possible through JavaScript only

Earlier JavaScript was limited to only front-end development but with the introduction of virtual engines like Google VS and Node js, it can also function well for server-side development as well.

For example, the set of JavaScript objects and elements like Array, Date, operators. control structures, etc, provide the functionality to run JavaScript on the server as well as on the browser.

It helps in performing functions like accessing low-level I/O API, communicating with a database and so much more.

JavaScript Features

User Input Validation: JavaScript validates user's inputs for errors. This means that while sending the data to the server, JavaScript takes into account user's errors like leaving a blank space or incorrect information.. It saves a lot of time while executing the code.

Platform Independent: JavaScript is a front-end language that runs on browsers and, therefore, becomes crucial for it to be platform-independent. It is a feature that allows JavaScript code to run on different platforms like Netscape, Windows, Macintosh, etc.

User's Browsers and OS: JavaScript has the feature of detecting user's browsers and operating systems. It is essential in some cases when different outputs are expected for different browsers.

Client-side Caleufations: JavaScript is a front-end language and can

perform basic, simple front-end calculations without asking the server every time. It is a time saver and ensures efficiency.

What is TypeScript?

TypeScript is a programming language that is syntactical to JavaScript. It means it includes all the features of JavaScript and additional features as well.

JavaScript is one of the fundamental scripting front-end languages for web development. However, there were some quirks or problems, for which Microsoft created TypeScript in 2012

It is in the features and characteristics of the language, that lies the difference between TypeScript and JavaScript. So, let us read about the key features of JavaScript and TypeScript.

TypeScript Features

Static Typing: Static Typing means wherein the programmer has to declare the type for a variable.

For example, suppose you take the variable name str. Unless you assign a type to it like whether it is an Integer, Float, List, or anything, the code will not be executed. And TypeScript is statically typed.

TypeScript's feature of Static Typing adds a lot of advantages to the language like early errors detection, faster code completion, etc.

Compatibility: TypeScript is the perfect combination of old and new features. It is fully compatible with JavaScript older versions to the newer versions like ES7, and ES12, It can compile the finished code in ES7 back to ES5 and vice versa.

This ensures smooth transition and the portability of the language

JavaScript Features: TypeScript is a superset of JavaScript. With its advanced features. it includes additional features of JavaScript as well.

JavaScript is TypeScript: It means the code written in JavaScript with valid.js extension can be converted to TypeScript by changing the extension from .js to its and compiled with other TypeScript files.

TypeScript is portable: TypeScript is portable because it can be executed on any browsers, devices, or any operating systems. It can be run in any environment where JavaScript runs on. It is not specific to any virtual-machine for execution.

DOM Manipulation: TypeScript can be used to manipulate the DOM for adding or removing elements similar to JavaScript.

Diffrence between TypeScript and JavaScript

Feature	TypeScript	JavaScript
Typing	Provides static typing	Dynamically typed
Tooling	Comes with IDEs and code editors	Limited built-in tooling
Syntax	Similar to JavaScript, with additional features	Standard JavaScript syntax
Compatibility	Backward compatible with JavaScript	Cannot run TypeScript in JavaScript files
Debugging	Stronger typing can help identify errors	May require more debugging and testing
Learning curve	Can take time to learn additional features	Standard JavaScript syntax is familiar