Lesson 04 Demo 01

Demonstrating Variables and Data Types

Objective: To demonstrate variable usage, primitive data types, and effective data type conversion to ensure the correctness of declarations and conversions in JavaScript

Tools required: Visual Studio Code and Node.js

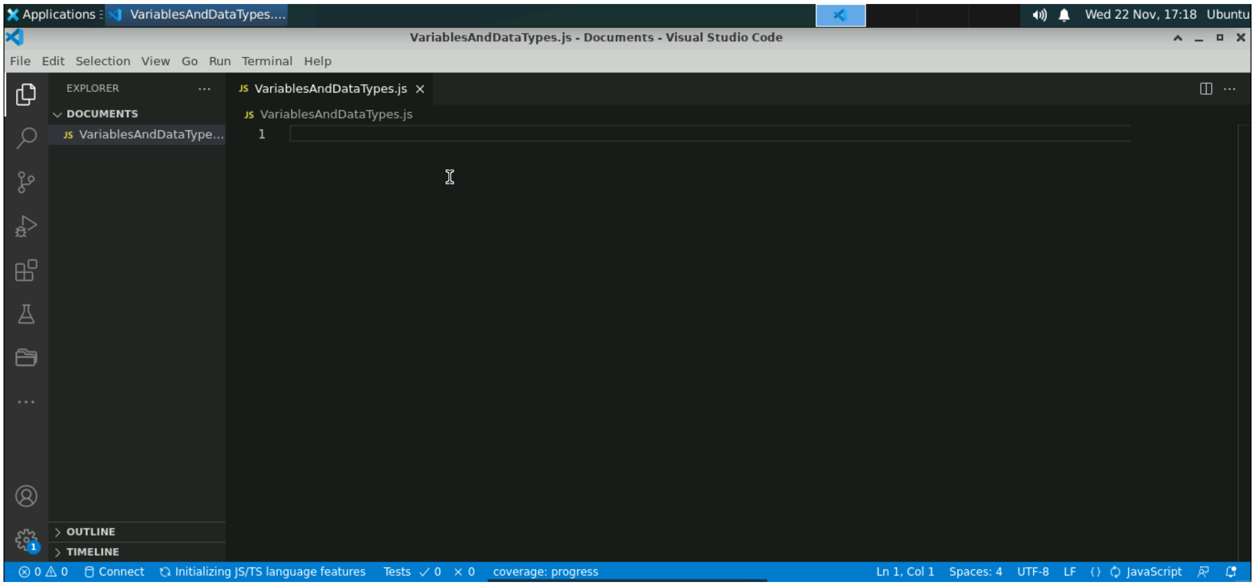
Prerequisites: A basic understanding of variables and data types

Steps to be followed:

1. Create and execute the JS file

Step 1: Create and execute the JS file

1.1 Open the Visual Studio Code editor and create a JavaScript file named **VariablesAndDataTypes.js**


Applications
VariablesAndDataTypes....
Wed 22 Nov, 17:18 Ubuntu
VariablesAndDataTypes.js - Documents - Visual Studio Code
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1.2 Add the following code to the **VariablesAndDataTypes.js** file:

```
// Variables and Constants
// Declare variables using let, const, and var:

let variableExample = "I am a variable.";
const constantExample = "I am a constant.";
var legacyVariable = "I am a legacy variable.";

// Output variables to the console:
console.log("Variable:", variableExample);
console.log("Constant:", constantExample);
console.log("Legacy Variable:", legacyVariable);

// Update the value of a variable:
variableExample = "I have a new value.";
console.log("Updated Variable:", variableExample);

// Note: Constants cannot be reassigned.
// constantExample = "This will cause an error.";

// Primitive Data Types
// Strings:
let stringExample = "Hello, JavaScript!";
console.log("String:", stringExample);

// Numbers:
let numberExample = 42;
console.log("Number:", numberExample);

// Booleans:
let booleanExample = true;
console.log("Boolean:", booleanExample);

// Data Type Conversion
// Convert a number to a string:
let convertedString = String(numberExample);
console.log("Converted String:", convertedString);

// Convert a string to a number:
let convertedNumber = Number("123");
console.log("Converted Number:", convertedNumber);

// Convert a boolean to a string:
```

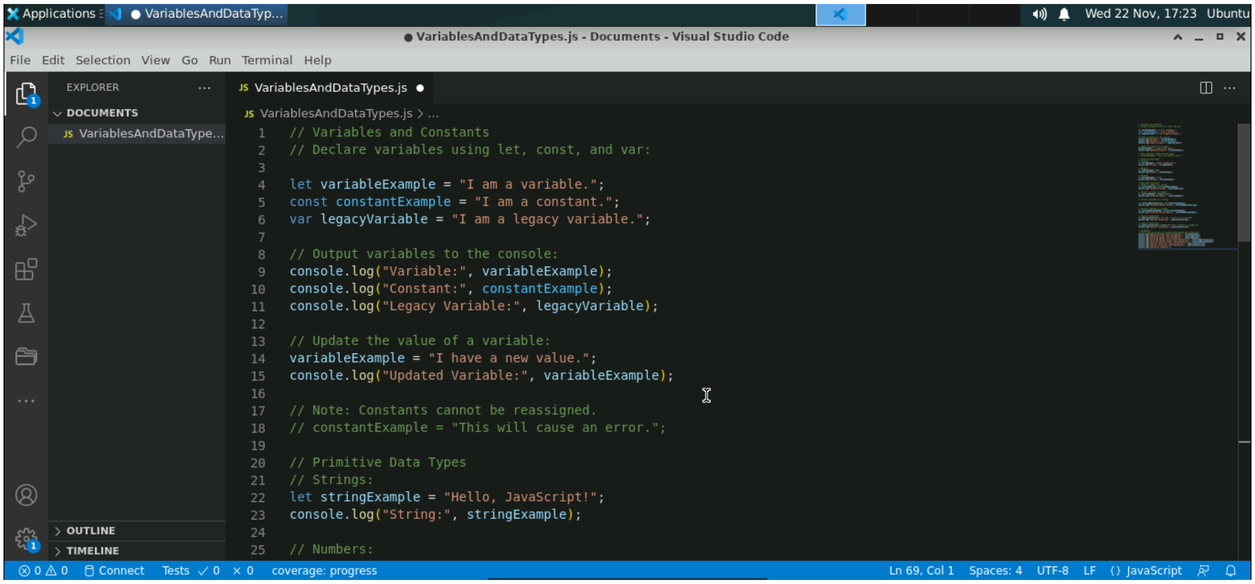
```
let convertedBooleanString = String(booleanExample);
console.log("Converted Boolean String:", convertedBooleanString);

// Convert a boolean to a number:
let convertedBooleanNumber = Number(booleanExample);
console.log("Converted Boolean Number:", convertedBooleanNumber);

// Implicit Conversion:
let implicitConversion = "5" + 5; // Results in string "55"
console.log("Implicit Conversion:", implicitConversion);

// Explicit Conversion:
let explicitConversion = Number("5") + 5; // Results in number 10
console.log("Explicit Conversion:", explicitConversion);

// Validation
// Verify the correctness of variable declarations and conversions:
console.log("Updated Variable (Post-Validation):", variableExample);
console.log("Converted String (Post-Validation):", convertedString);
console.log("Converted Number (Post-Validation):", convertedNumber);
console.log("Converted Boolean String (Post-Validation):", convertedBooleanString);
console.log("Converted Boolean Number (Post-Validation):",
convertedBooleanNumber);
console.log("Implicit Conversion (Post-Validation):", implicitConversion);
console.log("Explicit Conversion (Post-Validation):", explicitConversion);
console.log("Validation Complete!");
```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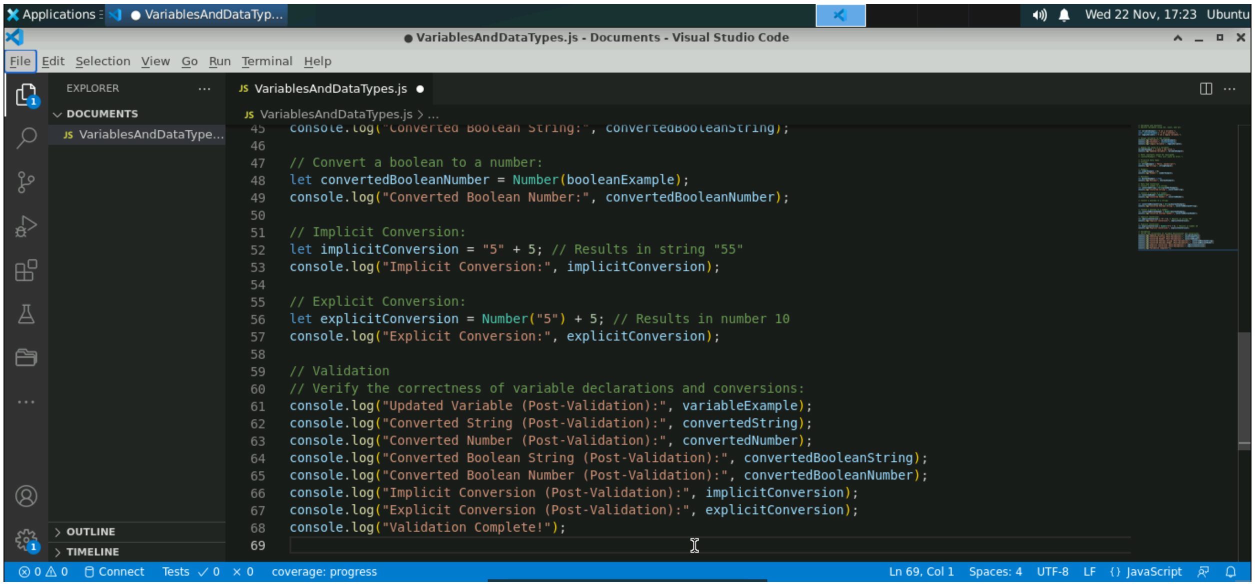
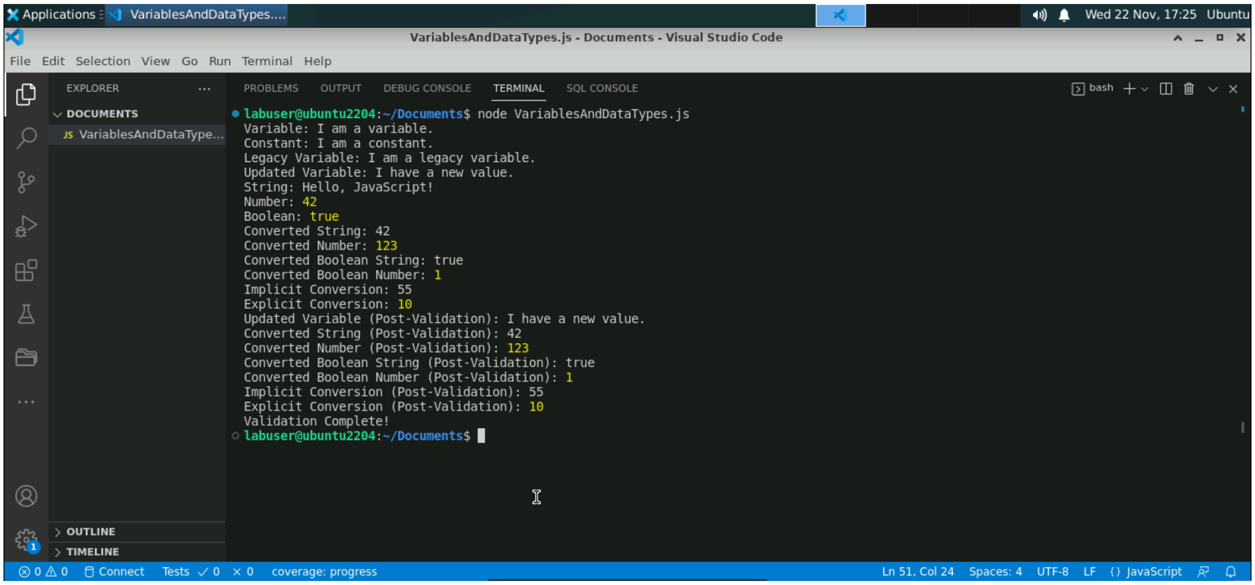
```
// Variables and Constants
// Declare variables using let, const, and var:

let variableExample = "I am a variable.";
const constantExample = "I am a constant.";
var legacyVariable = "I am a legacy variable.";

// Output variables to the console:
console.log("Variable:", variableExample);
console.log("Constant:", constantExample);
console.log("Legacy Variable:", legacyVariable);

// Update the value of a variable:
variableExample = "I have a new value.";
console.log("Updated Variable:", variableExample);

// Note: Constants cannot be reassigned.
// constantExample = "This will cause an error.";

// Primitive Data Types
// Strings:
let stringExample = "Hello, JavaScript!";
console.log("String:", stringExample);

// Numbers:
```



Applications
VariablesAndDataTypes.js - Documents - Visual Studio Code
Wed 22 Nov, 17:23 Ubuntu
File Edit Selection View Go Run Terminal Help
EXPLORER
DOCUMENTS
VariablesAndDataTypes.js
OUTLINE
TIMELINE
Ln 69, Col 1 Spaces: 4 UTF-8 LF {} JavaScript

```javascript
console.log("Converted Boolean String:", convertedBooleanString);

// Convert a boolean to a number:
let convertedBooleanNumber = Number(booleanExample);
console.log("Converted Boolean Number:", convertedBooleanNumber);

// Implicit Conversion:
let implicitConversion = "5" + 5; // Results in string "55"
console.log("Implicit Conversion:", implicitConversion);

// Explicit Conversion:
let explicitConversion = Number("5") + 5; // Results in number 10
console.log("Explicit Conversion:", explicitConversion);

// Validation
// Verify the correctness of variable declarations and conversions:
console.log("Updated Variable (Post-Validation):", variableExample);
console.log("Converted String (Post-Validation):", convertedString);
console.log("Converted Number (Post-Validation):", convertedNumber);
console.log("Converted Boolean String (Post-Validation):", convertedBooleanString);
console.log("Converted Boolean Number (Post-Validation):", convertedBooleanNumber);
console.log("Implicit Conversion (Post-Validation):", implicitConversion);
console.log("Explicit Conversion (Post-Validation):", explicitConversion);
console.log("Validation Complete!");
```

1.3 Save the file and run it using Node.js in the terminal:
node VariablesAndDataTypes.js



Applications
VariablesAndDataTypes.js - Documents - Visual Studio Code
Wed 22 Nov, 17:25 Ubuntu
File Edit Selection View Go Run Terminal Help
EXPLORER
DOCUMENTS
VariablesAndDataTypes.js
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
SQL CONSOLE
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TIMELINE
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```
labuser@ubuntu2204:~/Documents$ node VariablesAndDataTypes.js
Variable: I am a variable.
Constant: I am a constant.
Legacy Variable: I am a legacy variable.
Updated Variable: I have a new value.
String: Hello, JavaScript!
Number: 42
Boolean: true
Converted String: 42
Converted Number: 123
Converted Boolean String: true
Converted Boolean Number: 1
Implicit Conversion: 55
Explicit Conversion: 10
Updated Variable (Post-Validation): I have a new value.
Converted String (Post-Validation): 42
Converted Number (Post-Validation): 123
Converted Boolean String (Post-Validation): true
Converted Boolean Number (Post-Validation): 1
Implicit Conversion (Post-Validation): 55
Explicit Conversion (Post-Validation): 10
Validation Complete!
labuser@ubuntu2204:~/Documents$
```

The above code declares variables using let, const, and var, showcasing their usage and updating variable values. It demonstrates primitive data types (strings, numbers, and Booleans) and illustrates data type conversion. Finally, it validates variable declarations and conversions through console output, ensuring correctness.

By following these steps, you have successfully demonstrated variable usage, primitive data types, and effective data type conversion in JavaScript, ensuring the correctness of declarations and conversions through systematic validation.