Inside this code:

In this TypeScript code, I've explained the declaration of variables using `var`, `let`, and `const`, and their scope. I've also covered data types like `number`, `string`, `boolean`, `undefined`, `null`, `never`, and `any`, along with examples and usage of the `typeof` operator. This serves as a comprehensive guide for beginners learning TypeScript.

```
// TypeScript Variables and Data Types

// Variables

// How to declare a Variable

// There are 4 ways to declare variables

// 1. both type and initial value
var empName : string = 'John';
console.log(empName);

// 2. only type
var empName : string ;

// 3. only the initial value
var empName = 'John';

// 4. without the type and the initial value
var name1;
name1 = 'Robert';
console.log(name1);

// How to assign value to a variable with assignment operator '='
var empName1 :string = 'John'; // Declaration
var message = 'Hello World';

// differences between var vs let

// var

// #1 difference
var aa : number;

// #2 difference
var a: string = 'Hello'; // initialised
console.log('value of a :',a);
a = 'Hello World'; // updated
console.log('updated value of a :', a);
var a = 'Welcome to Typescript'; // re-declared
console.log('redeclared value of a :', a);

// #3 difference
```

```
function example1(){
    if(true){
        var x = 100;
        console.log(x); // block scoped
    }
    console.log(x); // function scoped
}

// let

// #1 difference
var bb : number;

// #2 difference
let b : string = 'Hello'; // initialised
console.log('value of b :', b);
b = 'Hello World'; // error : cannot be updated
console.log('updated value of b :', b);
//let b = 'Welcome to typescript'; // error : cannot be redeclared
console.log('redeclared value of b :',b);

// #3 difference
function example2(){
    if(true){
        let x = 100;
        console.log(x); // only block scoped
    }
    // uncomment below to demonstrate error
    // console.log(x); // error : not function scoped
}

// const

// #1 difference
//const cc : number; // Error

// #2 difference
//const c : number = 2.742; //console.log('constant value :', c);
//c = 1000; // error : cannot update the value as it is a constant
const c = 200; // error :cannot re-declare the constant

// #3 difference
function example3(){
    if(true){
        const x = 100;
        console.log(x); // only block scoped
    }
    // console.log(x); // error : not function scoped
}
```

```
// Data Types
console.log("Data Types")

// 'number' Data Type
let firstNumber : number = 12.0;
let secondNumber : number = 0X37CF;
let thirdNumber : number = 0o377;
let fourthNumber : number = 0b111000;
console.log(firstNumber);
console.log(secondNumber);
console.log(thirdNumber);
console.log(fourthNumber);

// 'string' Data Type
var empName11 : string = "John";
var empName12 : string = 'XXXX';
console.log(empName11);
console.log(empName12);

// 'boolean' Data Type
var isPresent : boolean = true;
console.log(isPresent);

// 'undefined'
var x = undefined; // 'undefined' as value
console.log(x);
console.log(typeof(x));
x = "hello";
console.log(x);
console.log(x);
var x1 : undefined; // 'undefined' as datatype
//x1 = "hello" ; // Error :

// 'null'
var x2 = null; // 'null' as value
console.log(x2);
console.log(typeof(x2));
x2 = "hello";
console.log(x2);
console.log(x2);
var x22 : undefined; // 'null' as datatype
//x22 = "hello" ; // Error :

// never
//var str1 : never = 'null'; // Error

// 'any'
var value : any;
console.log(typeof(value));
value = "Hello";
```

```
console.log(value);
console.log(typeof(value));
value = 100;
console.log(value);
console.log(typeof(value));
```