Variable and Variable Types :-

→ **Variable :-** Any variable Name can be declared only once in a file.

Q1:- Is it possible to declare same variable name more than once in a single file?

Ans:- No, to avoid abiguity or confusion to the compiler.

Q2:- Is it possible to reassign variable's value more than 1?

Ans:- Yes, // Reassignment is possible n no of time to any variable Except const variable.

⇒ Variable declaration keyword [var, let, const]

⇒ Variable phase [declaration → initialization → assignment or reassignment].

Examples:-

 # Declaration:-

```
Var x; // any variable declared with or without value at first time is called variable declaration.
```

Or

```
let y; // variable declaration.
```

 # Initialization:-

```
x = 100; any value assigned to value at very first time is called "Variable initialization".
```

Or

```
State = "India"; // variable initailzation.
```

 # Assignment:-

```
x = 11;
```

Or

```
state = "Pakistan";
```

Reassignment / assignment.

⇒ Var declaration + initialization shortcut is also present.

Eg:- `let name = "John"; // Declaration + initialization.`

const Variable :-

↳ const variable forced us to initialize variable's value while declaration itself.

Syntax:-

const <var-name> = <any value>

Eg:- const country ; // ✗ Error → It will throw error, due to above const rules.

↳ missing initialiser in const declaration.

Eg:- const state = "Bihar" ; // valid, as per const variable rules.

Declaration + initialization.

Q1:- Is it possible to declare const variable without initialization.

Ans:- No.

Examples on variables:-

1.) var x ; // var declaration.
X = 100 ; // var initialization.
X = 200 ; // var re-assignment.

2.) var y = 'A' ; // var declaration + initialization.
Y = 'B' ; // re-assignment.

3.) let names ; // variable declaration.
names = "Newtam" ; // variable initialisation.
let names = "Newtam" ; // variable declaration + initialization.
names = "Joh" ; // variable re-assignment.

4.) const PI = 3.14 ; // variable declaration + initialization.
// const keyword can not be re-assignment & also can not be only declare, it must be declare and initialized at the same line.

Special keywords are [null, undefined, true, false] used as a value.

- var myknowledge = null;
- var earthDistance = undefined;
- let isIndian = true; // boolean data type value.
- let isAmerican = false; // boolean data type value.

Function & functionTypes :-

NOTE :-

1.) What is Function ?

Ans→ Function is a block of code designed to perform a particular task.

2.) Why function is required ?

Ans→ Function is required to make program efficient and optimise
⇒ It is technique to write re-executable code and re-usable code, like variable.

~~## Function Types :-~~

⇒ Function declaration
↳ function keyword + function name + parantheses + body + return keyword.

↳ function can be two types : [void, non-void].

1) Void :- nothing.
↳ If a function doesn't has [return] keyword.
↳ or [return] keyword with no value.
↳ it means it is a void type function.

Eg :- function click () {

}

Eg:- function clickButton() {
    return;
}

2> non-void:- means something / anything.

↳ if a function has [return] keyword + any values / references, it means it is a non-void type function.

Eg:- function getSalary() {
    // it can have more than 1 line of code.
    return "John";
}

↳ function uses or calling or execution, // function Name + parenthesis

↳ getSalary() // calling a function with their name.

Examples of function:-

1> calculate simple Intrest.

function findIntrest() { // fn without arguments.
    // formula:- principalAmount * rate * time.
    let principalAmount = 5000000;
    let rate = 10;
    let time = 1;
    let simpleIntrest = principalAmount * rate * time.
    return simpleIntrest;
}

findIntrest(); // calling a function.
console.log(findIntrest()); // calling & printing.

Eg:- Function with argument:-

```
function getSimpleInterest(principalAmt, rate, time){
    let SimpleInterest = principalAmt, rate, time.
      return SimpleInterest;
}
get console.log(getSimpleInterest(500000, 10, 2));
```

Eg:- Find Area of triangle.

```
function getAreaOfTriangle( ) {
  // formula :- 1/2 x b x h.

    let base = 120;
    let height = 100;
    let AreaOfTriangle = 1/2 * base x height.
      return areaOfTriangle;
}
Console.log(getAreaOfTriangle( ));
```

Eg:-

~~Function getSimpleInterest(~~

```
function getAreaOfTriangle(base, height) {
    // formula :- 1/2 x b x h.

      let areaOfTriangle = 1/2 * base * height.
        return areaOfTriangle;
}

Console.log(getAreaOfTriangle(100, 100));
```