

# Assignment3

## What are first class citizens

If any programming language has the ability to treat functions as values, to pass them as arguments and to return a function from another function then it is said that programming language has First Class Functions and the functions are called as First Class Citizens in that programming language.

Functions are very important and powerful in JavaScript. JavaScript has all those abilities or features that are required to be a language having First Class Functions, hence functions are treated as First Class Citizens. Let's look at all the abilities of functions being a *First Class Citizen*.

1. **Ability to treat functions as values:** Functions in JavaScript can be treated as values, i.e. a function can be stored as a value in a variable.

```
var greet = function() { console.log("welcomes Team");  
}  
greet();
```

In the above example, a function is stored in a variable *greet*, and the variable with parenthesis, i.e. *greet()* calls the body of the function and shows the output in the console.

2. **Ability to pass a function as arguments:** Functions in JavaScript also has the ability to be passed as arguments to another function. Let's see an example-

```
function teacher(){  
    return "Teacher";  
}  
  
function student(){  
    return "Student";  
}  
  
function greet(user){ console.log("Welcome", user());  
}  
  
// Prints "Welcome Teacher"  
var message = greet(teacher);  
  
// Prints "Welcome Student"  
var message = greet(student);
```

In the above example, when we pass the argument in

function *greet()* as *teacher*, it passes the body of function *teacher()* and returns the string "Teacher" but when we pass the argument in function *greet()* as *student*, it passes the body of function *student()* and returns the string "Student".

- **Difference between**
  1. **parameters and arguments**

The Javascript Function Parameters are the names that are defined in the function definition and real values passed to the function in the function definition are known as arguments.

```
function Name(paramet1, paramet2, paramet3,...) {  
  // Statements  
}
```

(Example 2)

```
function foo(param1, param2)  
{ // do something } foo(10, 20);
```

In this function, param1 and param2 are function parameters, and the values passed to the function (10 and 20) are arguments.

### **function statement and function expression**

function expressions and function statements are very similar in JavaScript, the difference is how the browser loads them into the execution context.

```
// function statement  
function foo() {  
}
```

```
// function expression  
var foo = function() {  
};
```

### **WAP to determine someone's age using their dob and the current year.**

```
// Javascript program for age calculator
```

```
// function to calculate current age  
function findAge(current_date, current_month, current_year, birth_date,  
                birth_month, birth_year)  
{  
  // days of every month
```

```

month = [31, 28, 31, 30, 31, 30, 31,
         31, 30, 31, 30, 31 ]

// if birth date is greater than current date
// then do not count this month and add 30
// to the date so as to subtract the date and
// get the remaining days
if (birth_date > current_date) {
    current_date = current_date + month[birth_month - 1];
    current_month = current_month - 1;
}

// if birth month exceeds current month, then do
// not count this year and add 12 to the month so
// that we can subtract and find out the difference
if (birth_month > current_month) {
    current_year = current_year - 1;
    current_month = current_month + 12;
}

// calculate date, month, year
var calculated_date = current_date - birth_date;
var calculated_month = current_month - birth_month;
var calculated_year = current_year - birth_year;

// print the present age
document.write("Present Age<br>Years: "+(calculated_year)+" ");
document.write("Months: "+calculated_month+" ");
document.write("Days: "+calculated_date+" ");
}

// driver code to check the above function
// current dd// mm/yyyy
var current_date = 7;
var current_month = 12;
var current_year = 2017;
// birth dd// mm// yyyy
var birth_date = 16;
var birth_month = 12;
var birth_year = 2009;
// function call to print age
findAge(current_date, current_month, current_year,
        birth_date, birth_month, birth_year);

```

**Write a JavaScript function that capitalizes the first letter of each word in a sentence.**

```
function capitalizeFLetter() {  
  let string = 'mnjikhkhkhkjkkjjjjjjjjjj';  
  console.log(string[0].toUpperCase() +  
    string.slice(1));  
}  
capitalizeFLetter()
```

**Write a JavaScript function that counts the occurrences of a specified element in an array.**

```
let arr = [  
  'ashish', 2, 'mohan', 2, 'Javascript', 4,  
  'Javascript', 5, 'form', 6, 'Javascript', 1,  
  'form', 5, 7, 8, 'form'  
];  
  
const counter = {};  
  
arr.forEach(ele => {  
  if (counter[ele]) {  
    counter[ele] += 1;  
  } else {  
    counter[ele] = 1;  
  }  
});  
  
console.log(counter)
```