Episode 13 : First Class Functions ft. Anonymous Functions

> Functions are heart ♥ of Javascript.

Q: What is Function statement?

Below way of creating function are function statement.

```
function a() {
    console.log('Hello');
}
a(); // Hello
```

Q: What is Function Expression?

Assigning a function to a variable. Function acts like a value.

```
var b = function () {
    console.log('Hello');
};
b();
```

Q: Difference between function statement and expression

The major difference between these two lies in **Hoisting**.

```
a(); // "Hello A"
b(); // TypeError
function a() {
    console.log('Hello A');
}
var b = function () {
    console.log('Hello B');
};
// Why? During mem creation phase a is created in memory and function assigned to
// a. But b is created like a variable (b:undefined) and until code reaches the
// function()  part, it is still undefined. So it cannot be called.
```

Q: What is Function Declaration?

Other name for **function statement**.

Q: What is Anonymous Function?

A function without a name.

```
function () {

}// this is going to throw Syntax Error - Function Statement requires function
name.
```

- They don't have their own identity. So an anonymous function without code inside it results in an error.
- Anonymous functions are used when functions are used as values eg. the code sample for **function expression** above.

Q: What is Named Function Expression?

Same as Function Expression but function has a name instead of being anonymous.

```
var b = function xyz() {
  console.log('b called');
};
b(); // "b called"
xyz(); // Throws ReferenceError:xyz is not defined.
// xyz function is not created in global scope. So it can't be called.
```

Q: Parameters vs Arguments?

```
var b = function (param1, param2) {
  // labels/identifiers are parameters
  console.log('b called');
};
b(arg1, arg2); // arguments - values passed inside function call
```

Q: What is First Class Function aka First Class Citizens?

We can pass functions inside a function as arguments and /or return a function(HOF). These ability are altogether known as First class function. It is programming concept available in some other languages too.

```
var b = function (param1) {
  console.log(param1); // prints " f() {} "
};
b(function () {});

// Other way of doing the same thing:
var b = function (param1) {
  console.log(param1);
};
function xyz() {}
b(xyz); // same thing as prev code

// we can return a function from a function:
var b = function (param1) {
  return function () {};
};
console.log(b()); //we log the entire fun within b.
```

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