

1- Difference between copy by value and copy by reference?

Ans – Copy by Value - In copy by value if we initialize two variable i.e. a and b, and if we copy the value of a in b and then if we update the value of a then the variable a will show the updated value and the variable b will show the value which was copied earlier. This is because both the variable points to different memory location. For ex:-

```
Var a = 10;
```

```
Var b;
```

```
b=a;
```

```
a = 20;
```

```
console.log(a,b)
```

Output will be:-

```
a=20 , b = 10
```

Copy by Reference – In copy by reference the memory reference is been copied due to which if we update the value of the initial variable then the values of both the variable changes. This is because both points to the same memory location. For ex:-

```
Var a = [1,2,3]
```

```
Var b = a;
```

```
b[2] = 100;
```

```
console.log(a,b);
```

Output :-

```
[1,2,100] [1,2,100] // the values of both the array changed because both points to the same memory location.
```

2- How to copy by value a composite data type (array + objects)?

Ans – There are three ways to use copy by value in a composite data type.

- a- Using spread Operator
- b- Using object.assign() method.
- c- Using json.stringify() and JSON.parse().