

EXPERIMENT NO. 3

1. What is Object Cloning? How to clone the object in JAVA?

Ans: The **object cloning** is a way to create exact copy of an object. The `clone()` method of `Object` class is used to clone an object.

The **`java.lang.Cloneable` interface** must be implemented by the class whose object clone we want to create. If we don't implement `Cloneable` interface, `clone ()` method generates **`CloneNotSupportedException`**. The `clone()` method is defined in the `Object` class. **Syntax** of the `clone()` method is as follows:

`protected Object clone() throws CloneNotSupportedException`

2. What is shallow copy and deep copy? Give an example for each.

Ans: Shallow copy is a bit-wise copy of an object. In shallow copy new object is created that has an exact copy of the values in the original object. For e.g.

```
public class Person {
    private Name name;
    private Address address;
    public Person(Person originalPerson) {
        this.name = originalPerson.name;
        this.address = originalPerson.address;
    }
    [...]
}
```

Whereas, deep copy is a fully independent copy of an object. If we copied our `Person` object, we would copy the entire object structure. For e.g.

```
| public class Person {
    private Name name;
    private Address address;
    public Person(Person otherPerson) {
        this.name = new Name(otherPerson.name);
        this.address = new Address(otherPerson.address);
    }
    [...]
}
```



3. What are the ways to pass the parameters to methods in java.

Ans: There is only pass by value in java, not pass by reference. If we call a method passing a value, it is known as call by value. The changes being done in the called method, is not affected in the calling method.

4. Why in java function is known as method?

Ans: 1) A method is on an object.
2) A function is independent of an object.
3) For Java, there are only methods.
4) For C, there are only functions.

For C++ it would depend on whether or not you're in a class. In languages such as C++, functions are bits of code that will perform a particular action - but are not associated with an object. functions that are to do with an object are called methods. in java all functions are methods as they are all to do with object.

5. When we pass an array as parameter to method so is it call by value or reference? Explain with an example.

Ans: Everything in Java are passed-by value. In case of Array (Which is nothing but an Object), array reference is passed by value. (Just like an object reference is passed by value).

When you pass an array to other method, actually the reference to that array is copied.

Any changes in the content of array through that reference will affect the original array. But changing the reference to point to a new array will not change the existing reference in original method. For e.g.



```

public static void changeContent(int[] arr) {
    // If we change the content of arr
    arr[0] = 10; // Will change the content of array in main()
}
public static void changeRef(int[] arr) {
    // If we change the reference
    arr = new int[2]; // Will not change the array in main()
    arr[0] = 15;
}
public static void main(String[] args) {
    int [] arr = new int[2];
    arr[0] = 4;
    arr[1] = 5;
    changeContent(arr);

    System.out.println(arr[0]); // Will print 10..

    changeRef(arr);

    System.out.println(arr[0]); // Will still print 10..
    // Change the reference doesn't reflect change here..
}

```

6. What are the different uses of 'this' keyword.

Ans: Here are some uses of java 'this' keyword,

- this can be used to refer current class instance variable.
- this can be used to invoke current class method (implicitly)
- this() can be used to invoke current class constructor.
- this can be passed as an argument in the method call.
- this can be passed as argument in the constructor call.
- this can be used to return the current class instance from the method.

