Experiment Details

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| Department Name | Computer Science and Engineering |
| Class | T.Y.BTech |
| Semester | 1 |
| Subject Name | Advance Programming Laboratory |
| Experiment No. | 1 |
| Experiment Name | Cloning in Java |

Version History

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| --- | --- | --- | --- | --- |
| Sr. No. | Version Number | Created By | Approved By | Date |
| 1 | v1.0 | Jay Deelip Kamble | Prof. Shivani Kale ma’am | 13/10/2020 |
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AIM:

To understand the concept of Cloning, deep copy, shallow copy and to create a deep copy of objects for a given class.

THEORY:

Cloning:-

Cloning refers to creating an exact copy of the desired object. To clone an object of the desired class, the **java.lang.clonable interface** must be implemented by the class or else it will throw an exception **CloneNotSupportedException.**

Advantages:-

1. Easiest and the most efficient way of copying objects.
2. No need to write lengthy and repetitive code.
3. Fastest way of copying.

Shallow Copy;-

A shallow copy is a result of default implementation of clone method. A new instance is created and all the fields of the object are copied to the new instance. If original object has any references to other objects as fields, then only references of those objects are copied into clone object, copy of those objects are not created. A shallow copy is not 100% independent of original object.

Deep Copy:-

Alike shallow copy, Deep copy of an object of an object will have exact copy of all the fields of original object just like shallow copy. In addition, if original object has any references to other objects as fields, then copy of those objects are also created by calling clone() method on them. A deep copy is 100% independent of the original object.

PRE TEST:

**What kind of programming language is java?**

1. **Object-Oriented**
2. Functional
3. Theoretical
4. Procedural

**What does a class in java resembles?**

1. Blueprint
2. Instruction Sheet
3. Prototype
4. **All of the above**

**What can a java class contain?**

1. Methods, Constructors
2. Variables
3. Inner Class
4. **All of the Above**

**Which keyword is used to create an interface?**

1. new
2. **implements**
3. extends
4. shows

**Which of the following is a super class of every class?**

1. **Object class**
2. String class
3. ArrayList class
4. Abstract class

PROCEDURE:

Execute and understand the code line by line in the simulator.

POST TEST:

**When a exact copy of the existing object is created, then it is called\_\_\_\_**

1. Overriding
2. Overloading
3. **Cloning**
4. None of these

**Which method of object class is responsible for cloning an object?**

1. Object.copy()
2. **Object.clone()**
3. copy()
4. clone()

**Which is not a type of copy in java?**

1. Shallow copy
2. Lazy copy
3. Deep Copy
4. **Clean copy**

**A Shallow Copy of an object is 100% independent of the original object?**

1. True
2. **False**

**Cloning is the most easy and efficient way of copying an Object.**

1. **True**
2. False

REFERENCES:

www.geeksforgeeks.org