KAZAKH KBTU BRITISH
TECHNICAL
UNIVERSITY

Object-Oriented programming

Laboratory work #4
Interfaces

#1

Create an interface for 3D shapes, e.g., volume(), surfaceArea(). Then create data types Cylinder, Sphere, Cube, Point implementing this interface.

Using abstract class, do the same.

#2

When to use an Interface vs when to use an abstract class. For each "when" provide extended example(s) (with class/interface codes).

#3

Extend Employee and Manager classes created in lab#3.

- Replace field year by the field hireDate of type java.util.Date
- Your classes should implement Comparable interface. (Employee1 > Employee2 if its salary is more than the salary of Employee2, the same for managers, but if their salaries are equal, compare by bonus).
- Implement Cloneable interface so to be able to clone your objects. Use shallow or deep cloning, as you want.

#4

Suppose you have an interface Moveable. Think of some interface that can extend it. Implement this two interfaces.

#5

You need to write a class MinMax with a method minmax that takes an array of integers as a parameter and returns min and max simultaneously (using one method and one call).

Hint: use inner class

```
public class MinMax {
       static class ??? {

      }
       static ??? minmax(int values[]){

             return ???;
             }
```

Test class:

```
            int a[] = {0, 8 , -3, 20};
            MinMax m = new MinMax();
            // Do something to find min and max using instance m of
class MinMax.
```