

## Q1.

```
package Lab_5.Generic_Types;

public class MyPair<T, U> {
    public final T Fst;
    public final U Snd;

    public MyPair(T fst, U snd) {
        this.Fst = fst;
        this.Snd = snd;
    }

    public MyPair Swap(MyPair<T, U> pairSwap) {
        T a = pairSwap.Fst;
        U b = pairSwap.Snd;
        MyPair<T, U> newPair = new MyPair<T, U>((T) b, (U) a);
        return newPair;
    }

    public String toString() {
        return "(" + Fst + ", " + Snd + ")";
    }
}
```

```
package Lab_5.Generic_Types;

public class Main {

    public static void main(String[] args) {
        MyPair<String, Integer> myPairInteger = new MyPair<String,
Integer>("Anders", 13);
        MyPair<String, Double> myPairDouble = new MyPair<String,
Double>("Phoenix", 39.7);

        // myPairInteger = myPairDouble;
        // Can't assign value of type MyPair<String, Double> to a
variable of type MyPair<String, Integer> because of different in types of
the 3rd types in declaration

        MyPair<String, Integer>[] grades = new MyPair[5];
        MyPair<String, Integer> myPair1 = new MyPair<String,
Integer>("Robert", 17);
        MyPair<String, Integer> myPair2 = new MyPair<String,
Integer>("Reyna", 22);
        MyPair<String, Integer> myPair3 = new MyPair<String,
Integer>("Bob", 15);

        grades[0] = myPair1;
        grades[1] = myPair2;
        grades[2] = myPair3;

        for(MyPair i:grades) {
            System.out.print(i);
        }
        // The values of those array elements that weren't assigned
anything is null

        MyPair<Integer, Integer> pairNums = new MyPair<Integer,
Integer>(6, 9);
        MyPair<MyPair<Integer, Integer>, String> appointment = new
MyPair<MyPair<Integer, Integer>, String>(pairNums, "Goodbye");
    }
}
```

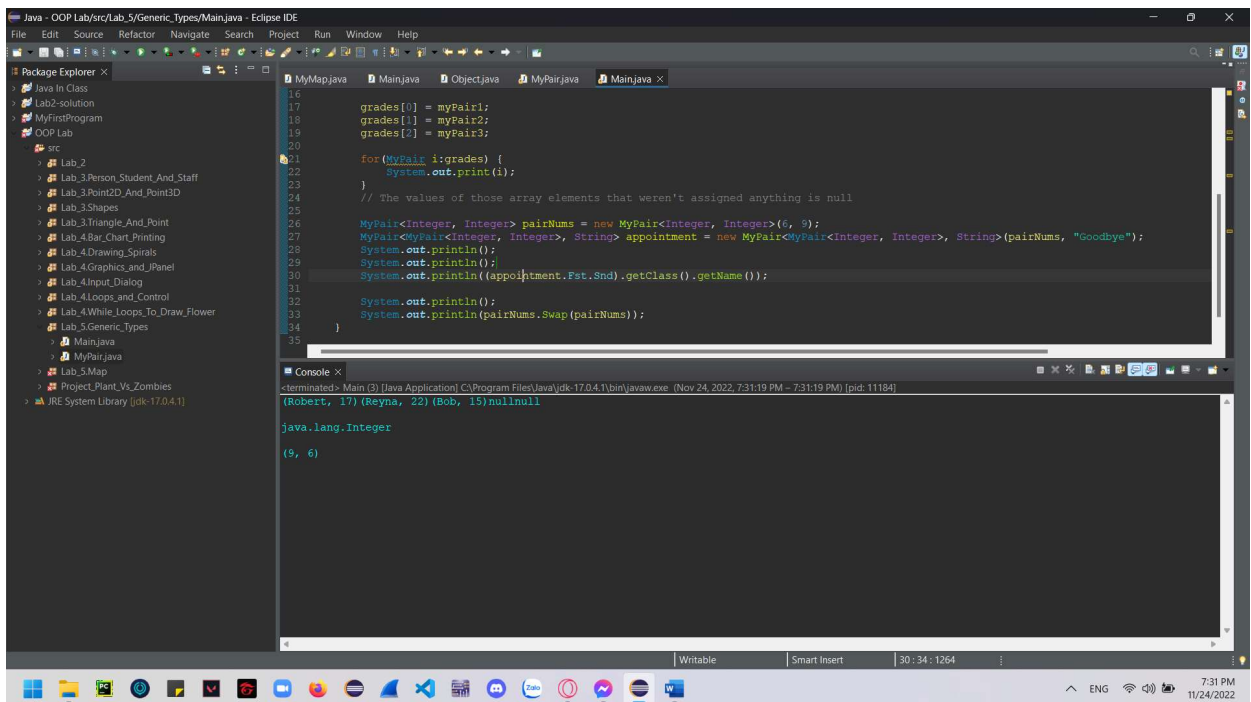
```

        System.out.println();
        System.out.println((appointment.Fst.Snd).getClass().getName());

        System.out.println();
        System.out.println(pairNums.Swap(pairNums));
    }
}

```

- d) Can't assign value of type MyPair<String, Double> to a variable of type MyPair<String, Integer> because of different in types of the 3rd types in declaration
- f) The values of those array elements that weren't assigned anything is null
- g) The type of appointment.Fst.Snd is Integer



## Q2.

```

package Lab_5.Map;

public class Object {
    private int ID;
    public Object(int ID) {
        this.ID = ID;
    }

    public int getID() {
        return ID;
    }
}

```

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```

package Lab_5.Map;

import java.util.Collection;
import java.util.HashMap;

```

```
import java.util.Map;
import java.util.Objects;
import java.util.Set;

public class MyMap<Integer, Object> implements Map<Integer, Object>{

    private HashMap<Integer, Object> aMap = new HashMap<>();
    private int size = 0;
    private Integer Key;
    private Object Value;

    public Object put(Integer Key, Object Value) {
        this.Key = Key;
        this.Value = Value;
        aMap.put(Key, Value);
        return Value;
    }

    public Object get(int key) {
        return aMap.get(key);
    }
}
```

```
package Lab_5.Map;

import java.util.HashMap;

public class Main {

    public static void main(String[] args) {
        //b
        Object obj = new Object(12345);
        int id = obj.getID();
        MyMap m = new MyMap();
        m.put(obj.getID(), obj);
        System.out.println(m.get(id));

        //c
        MyMap<Integer, Object> map1 = new MyMap<Integer, Object>();
        map1.put(obj.getID(), obj);
        System.out.println(map1.get(id));
    }
}
```

