Home Assignment

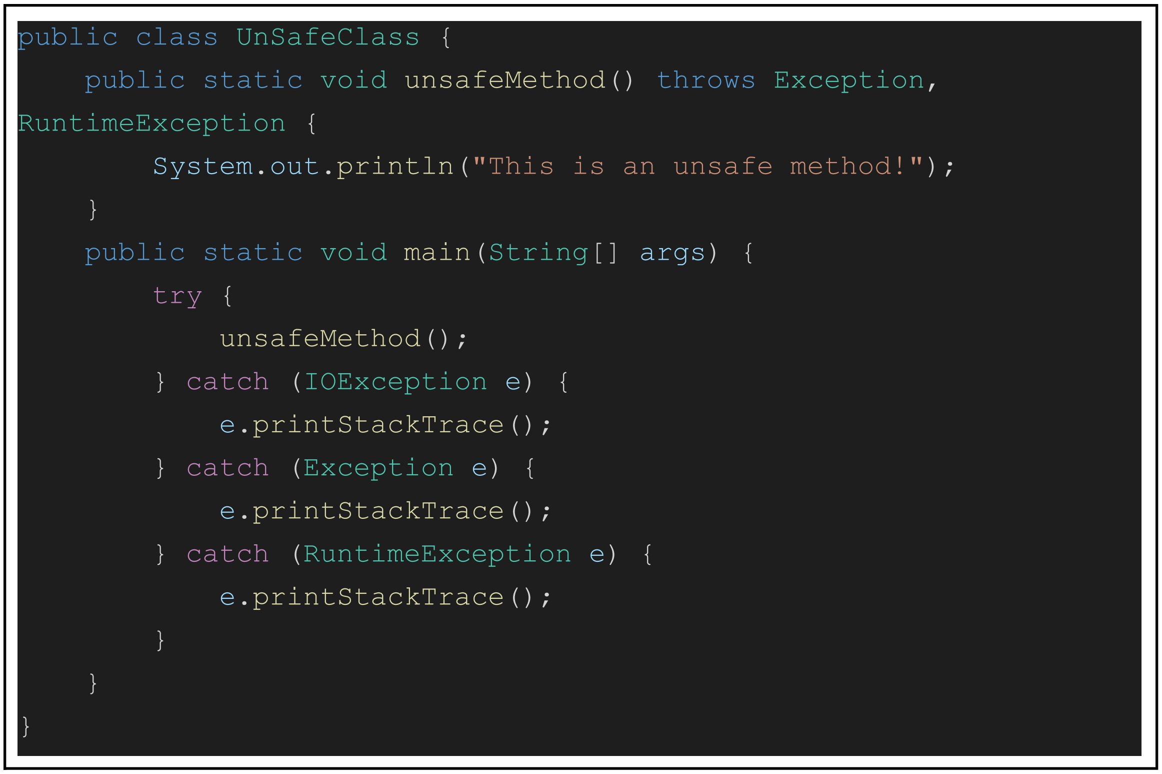
You can submit either handwritten scanned or typed pdf

Copying will result in negative marking

Total Marks: 100

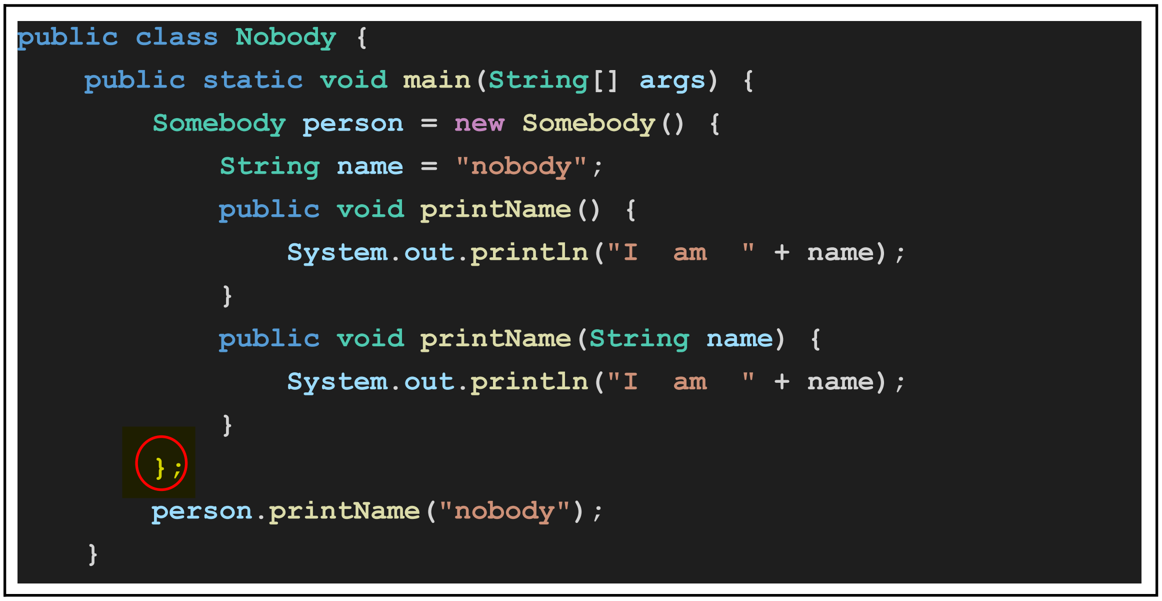
1. **Is there anything wrong with the following codes? If any fix them all. [4+3+3=10]**

   a.

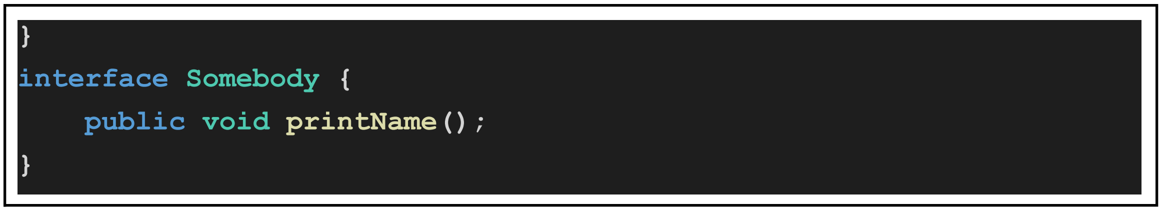


```
public class UnSafeClass {
    public static void unsafeMethod() throws Exception,
RuntimeException {
        System.out.println("This is an unsafe method!");
    }
    public static void main(String[] args) {
        try {
            unsafeMethod();
        } catch (IOException e) {
            e.printStackTrace();
        } catch (Exception e) {
            e.printStackTrace();
        } catch (RuntimeException e) {
            e.printStackTrace();
        }
    }
}
```

   b.

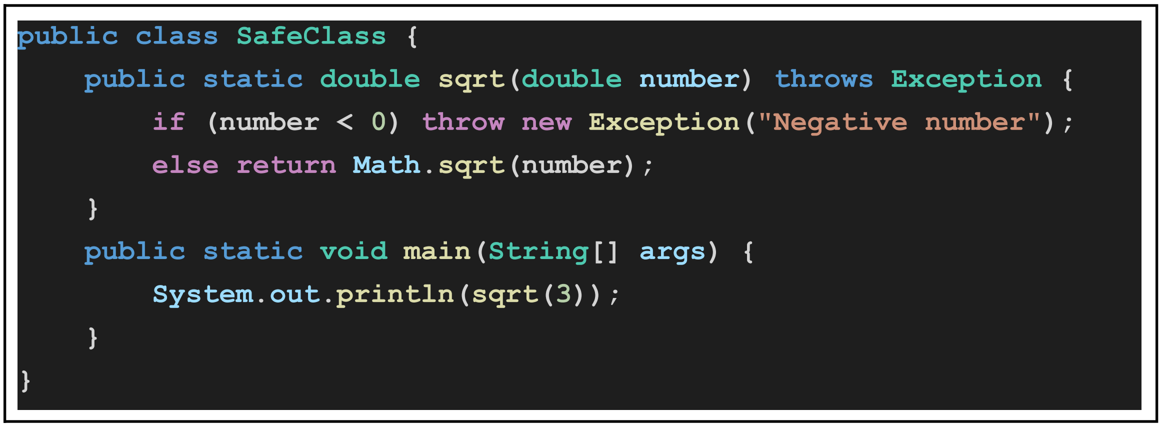


```
public class Nobody {
    public static void main(String[] args) {
        Somebody person = new Somebody() {
            String name = "nobody";
            public void printName() {
                System.out.println("I  am  " + name);
            }
            public void printName(String name) {
                System.out.println("I  am  " + name);
            }
        };
        person.printName("nobody");
    }
```



```
}
interface Somebody {
    public void printName();
}
```

c.

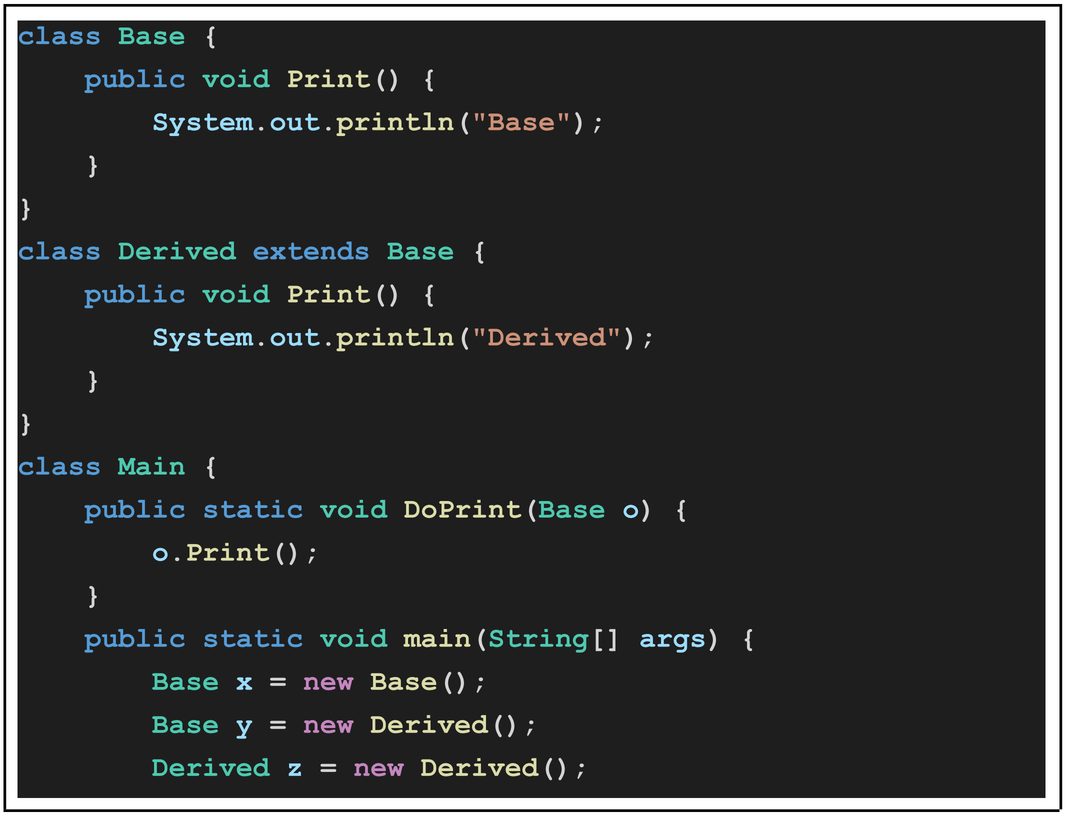


```
public class SafeClass {
    public static double sqrt(double number) throws Exception {
        if (number < 0) throw new Exception("Negative number");
        else return Math.sqrt(number);
    }
    public static void main(String[] args) {
        System.out.println(sqrt(3));
    }
}
```

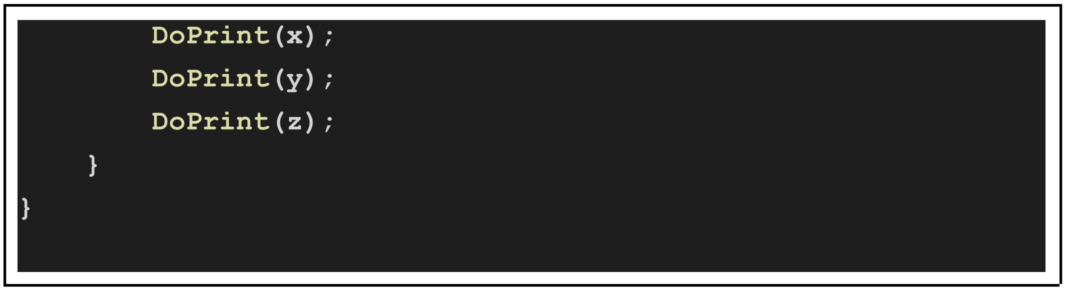
2. Why abstract classes cannot have any objects? Briefly explain. [10]

3. What will be the output of the following code segments? If there is compiler error then state why [3+3+4=10]

a.

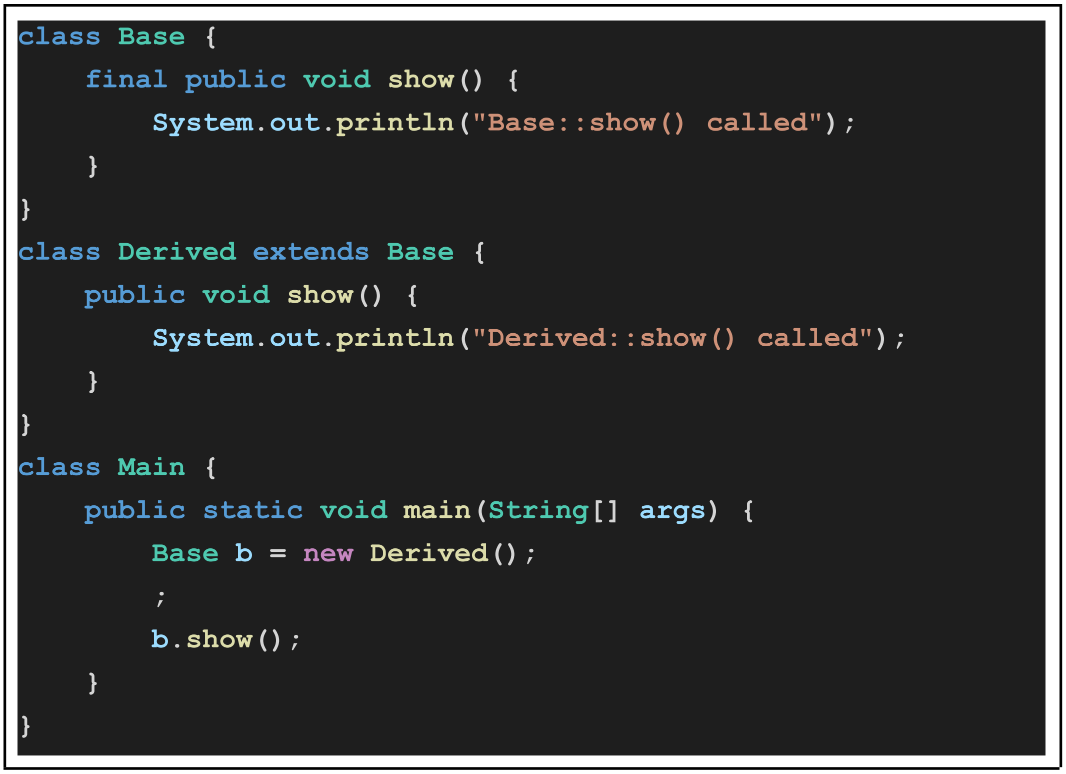


```
class Base {
    public void Print() {
        System.out.println("Base");
    }
}
class Derived extends Base {
    public void Print() {
        System.out.println("Derived");
    }
}
class Main {
    public static void DoPrint(Base o) {
        o.Print();
    }
    public static void main(String[] args) {
        Base x = new Base();
        Base y = new Derived();
        Derived z = new Derived();
```



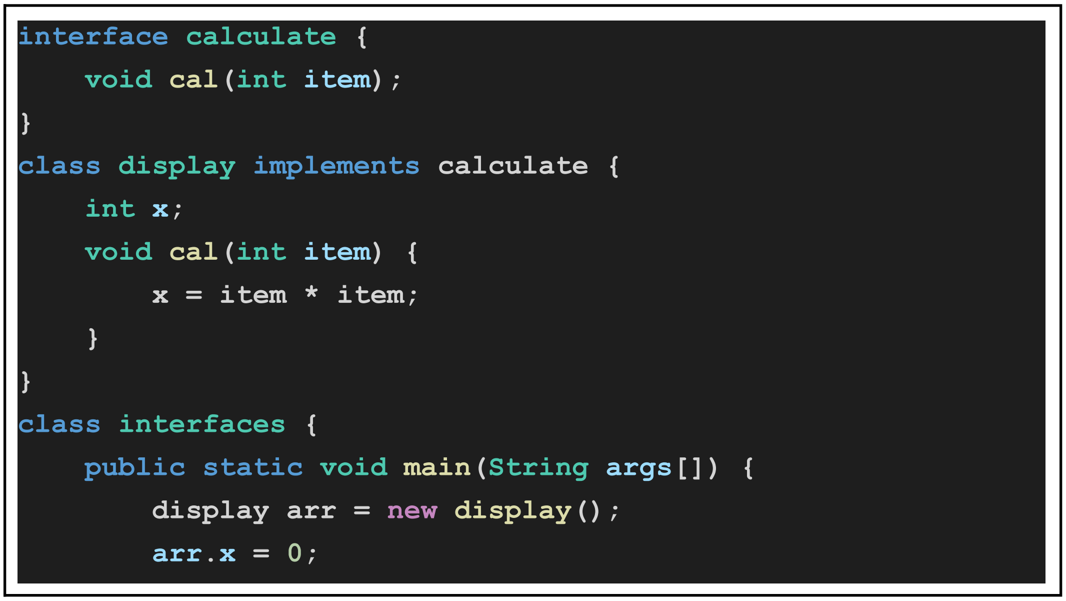
```
        DoPrint(x);
        DoPrint(y);
        DoPrint(z);
    }
}
```

b.



```
class Base {
    final public void show() {
        System.out.println("Base::show() called");
    }
}
class Derived extends Base {
    public void show() {
        System.out.println("Derived::show() called");
    }
}
class Main {
    public static void main(String[] args) {
        Base b = new Derived();
        ;
        b.show();
    }
}
```

c.



```
interface calculate {
    void cal(int item);
}
class display implements calculate {
    int x;
    void cal(int item) {
        x = item * item;
    }
}
class interfaces {
    public static void main(String args[]) {
        display arr = new display();
        arr.x = 0;
        arr.cal(2);
        System.out.print(arr.x);
    }
}
```

4. Complete the code for the class StudentAccount in the following. Add constructors and methods [10]

```
public abstract class BankAccount {
    public String id;
    public double balance;
    public BankAccount(String id) {
        this.id = id;
    }
    public abstract double calculateInterest();
}
public interface Taxable {
    void taxCharged(double amount);
}
class StudentAccount extends BankAccount implements Taxable {
    // .......
}
```

5. When Exception is preferred over if-else for dealing with error/invalid situations? [10]

6. What will be the output of the following code? [10]

```
public class IdentifyMyParts {
    public static int x = 7;
    public int y = 3;
    public static void main(String[] args) {
        IdentifyMyParts a = new IdentifyMyParts();
        IdentifyMyParts b = new IdentifyMyParts();
        a.y = 5;
        b.y = 6;
        a.x = 1;
        b.x = 2;
        System.out.println(a.y);
        System.out.println(b.y);
        System.out.println(a.x);
        System.out.println(b.x);
        System.out.println(IdentifyMyParts.x);
    }
}
```

7. Will the following code compile? If not what’s wrong with it? [10]

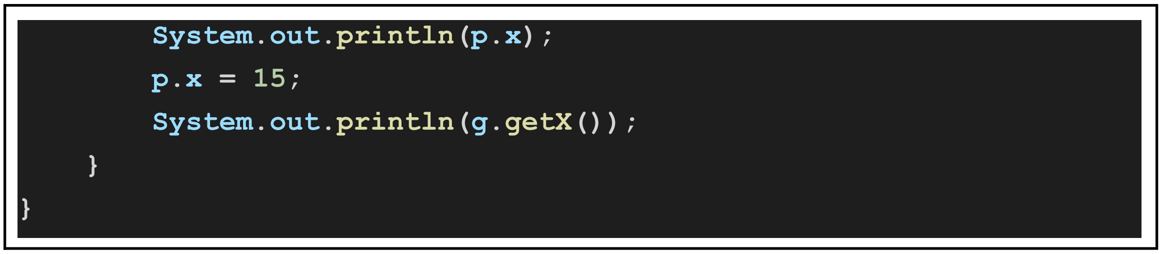
```
package pack1;
public class A {
    A() {}
}

package pack2;
import pack1.A;
class B {
    A a = new A();
}
```

8. When might down casting create problems? [10]

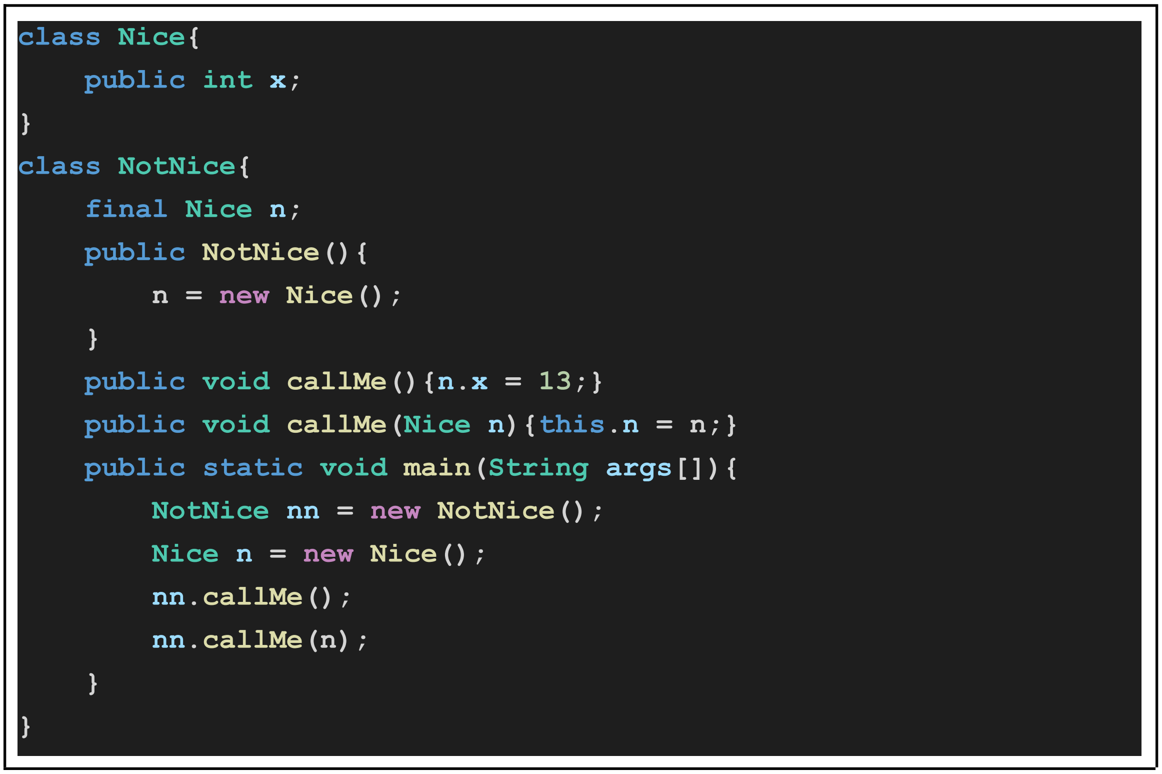
9. There are three System.out.println() calls in the following code. Find the output of each of them and explain why output would be that. [10]

```
class P{
    public int x;
}
class G{
    private P p;
    public G(P q){p = q;}
    P getP(){return p;}
    int getX(){return p.x;}
    public static void main(String[] args){
        P p = new P();
        G g = new G(p);
        P q = g.getP();
        q.x = 10;
        p.x = 15;
        System.out.println(q.x);
        q.x = 10;
```



```
        System.out.println(p.x);
        p.x = 15;
        System.out.println(g.getX());
    }
}
```

10. **What is probably wrong with the following code? [10]**



```
class Nice{
    public int x;
}
class NotNice{
    final Nice n;
    public NotNice(){
        n = new Nice();
    }
    public void callMe(){n.x = 13;}
    public void callMe(Nice n){this.n = n;}
    public static void main(String args[]){
        NotNice nn = new NotNice();
        Nice n = new Nice();
        nn.callMe();
        nn.callMe(n);
    }
}
```