



5. What would be the output if the code `doSomething("true", 2, false)` was executed? You can write “none” if nothing applies.

```
public void doSomething(String x, int y, boolean z) {
    System.out.println("A");
}

public void doSomething(int x, String y, double z) {
    System.out.println("B");
}

public void doSomething(boolean x, String y, double z) {
    System.out.println("C");
}

public void doSomething(int x, boolean y, double z) {
    System.out.println("D");
}

public void doSomething(double x, String y, boolean z) {
    System.out.println("E");
}

public void doSomething(String x, String y, String z) {
    System.out.println("F");
}
```

6. What would be the output of the following code?

```
class Person extends Object {
    Person() {
        System.out.print("m");
        System.out.print("z");
    }

    String speak(String w) {
        System.out.print("a" + w);
        return "c";
    }
}

class AMackey extends Person {
    AMackey(String k) {
        if ( k.equals("b"))
            System.out.print("z");
    }

    void lecture(String e) {
        System.out.print("y");
        speak(e);
    }
}

class MainClass {

    public static void main(String[] args) {
        AMackey x = new AMackey("a");
        x.lecture("d");
        System.out.print("o");
    }
}
```

7. Consider the following code and determine which methods that `MackeyRuntime` will be required to be implemented.

```
public abstract class UAMackey {
    public String A;
    public int[] B;

    public void C() { }
    public abstract void D( E F );
    public G Abstract( H I, J K ) { return null; }
}

public interface UAExam {
    L M(N O, P Q);
    R S(T U);
}

public class MackeyRuntime extends UAMackey implements UAExam {
    // methods to implement here
}
```

8. How many bytes are in a double variable?

9. Write an algorithm that runs in  $\mathcal{O}(n^2 \log_5 n)$  time. You may only use each type of loop once (e.g. one for loop, one while loop, one do/while loop, etc.).

10. What would be the output if we called `new Mackey()`?

```
public class Mackey {  
  
    public Mackey(String x) {  
        System.out.println("A");  
    }  
  
    public Mackey(int x) {  
        System.out.println("B");  
    }  
  
    public Mackey() {  
        run("C");  
    }  
  
    public static void main(String[] args) {  
  
        new Mackey( 123 );  
  
    }  
  
    public void run(String x) {  
        System.out.println("D");  
    }  
  
}
```

11. What would be the output of the following code?

```
public class UACat {
    public String name;
}

UACat c1 = new UACat();
UACat c2 = new UACat();
UACat c3 = new UACat();
UACat c4 = new UACat();
UACat c5 = new UACat();

c5 = c2;
c3 = c1;
c4 = c5;
c2 = c3;
c1 = c2;

c1.name = "A";
c2.name = "B";
c3.name = "C";
c4.name = "D";
c5.name = "E";

String output = c1.name + c2.name + c3.name + c4.name + c5.name;

System.out.println(output);
```

12. What is a `NullPointerException`? Provide an example that would throw this type of exception and explain how would you prevent it.