Questions 1 – 12 are worth 5 points each.

1. **What is wrong with the following program?**

```java
public class q1 {
    public static void main(String[] args) {
        int i = 0;
        do {
            i = i + 10;
            System.out.println(i);
        } while (i >= 0);
    }
}
```

**Infinite loop**

2. **What is wrong with the following program?**

```java
public class q2 {
    public static void main(String[] args) {
        int i = 10;
        double j = 20;
        method1(i, j);
    }

    public static void method1(double a, int b) {
        System.out.println(a);
    }
}
```

**method1(double,int) in q2 cannot be applied to (int,double) method1(i, j);**
3. What is wrong with the following program?

```java
public class q3 {
    public static void main(String[] args) {
        int j;
        j = method1(10, 20);
        System.out.println(j);
    }

    public static int method1(int a) {
        return a * 2;
    }
}
```

`method1(int)` in q3 cannot be applied to (int,int)  
`j = method1(10, 20);`

4. When run, what will the following program output?

```java
public class q4 {
    public static void main(String[] args) {
        int i = 1;
        while (i <= 5) {
            System.out.println(i);
            i++;
        }
    }
}
```

1
2
3
4
5
5. When run, what will the following program output?

```java
public class q5
{
    public static void main(String[] args)
    {
        int i = 0;
        do
        {
            System.out.println(i);
            i = i + 10;
        } while (i <= 40);
    }
}
```

0
10
20
30
40

6. When run, what will the following program output?

```java
public class q6
{
    public static void main(String[] args)
    {
        int i;
        for (i = 6; i <= 10; i++)
        {
            System.out.println(i);
        }
    }
}
```

6
7
8
9
10
7. When run, what will the following program output?

```java
public class q7 {
    public static void main(String[] args) {
        int i, j;
        for (i = 1; i <= 2; i++) {
            for (j = 1; j <= 8; j++) {
                System.out.print("?");
            }
            System.out.println();
        }
    }
}
```

```
????????
```

8. When run, what will the following program output?

```java
public class q8 {
    public static void main(String[] args) {
        int i;
        int x = 0;
        for (i = 0; i <= 5; i++) {
            if (i < 3) {
                x++;
            }
        }
        System.out.println(x);
    }
}
```

```
3
```
9. When run, what will the following program output?

```java
class q9 {
    public static void main(String[] args) {
        int a = 0;
        System.out.println("main:");
        method1(a);
        System.out.println("main:");
    }

    public static void method1(int b) {
        System.out.println("method1:");
        b = b + 10;
        System.out.println("method1:");
    }
}
```

```
main:0
method1:0
method1:10
main:0
```
10. When run, what will the following program output?

```java
public class q10 {
    public static void main(String[] args) {
        String name = "Joe";
        int j;
        j = method1(name);
        System.out.println(j);
    }

    public static int method1(String a) {
        return a.length();
    }
}
```

3
11. When run, what will the following program output?

```java
public class q11
{
    public static void main(String[] args)
    {
        String name = "Joe";
        String name2;
        name2 = method1(name);
        System.out.println(name2);
    }

    public static String method1(String a)
    {
        return a + a;
    }
}
```

JoeJoe

12. In the following code, what values could be read into number to terminate the while loop?

```java
Scanner keyboard = new Scanner(System.in);
System.out.print("Enter a number: ");
int number = keyboard.nextInt();
while (number < 200 || number > 800)
{
    System.out.print("Enter another number: ");
    number = keyboard.nextInt();
}
```

Any number between 200 and 800.
13. Assuming that the file named data.txt exists and contains a series of numbers (1 per line), write a program that will print how many numbers are at least 500 and how many numbers are less than 500. (20 points).

```java
import java.io.*;
import java.util.Scanner;

public class q13
{
    public static void main(String[] args) throws IOException
    {
        File myFile = new File("data.txt");
        Scanner inputFile = new Scanner(myFile);
        int small = 0;
        int large = 0;
        while (inputFile.hasNext())
        {
            int number = inputFile.nextInt();
            if (number < 500)
                small++;
            else
                large++;
        }
        System.out.println("Small numbers " + small);
        System.out.println("Large numbers " + large);
    }
}
```
14. Write a program that will print twenty randomly chosen numbers between 1 and 20.

Your program must contain a method named myThrow that has no arguments and returns a randomly chosen int between 1 and 20. (20 points).

```java
import java.util.Random;

public class q14 {
    public static void main(String[] args) {
        for (int i = 1; i <= 20; i++) {
            System.out.println(myThrow());
        }
    }

    public static int myThrow() {
        Random generator = new Random();
        return generator.nextInt(20) + 1;
    }
}
```