LEBANESE AMERICAN UNIVERSITY

Department of Computer Engineering

COE211

Computer Programming

Exam Preparation Exercises
Set1

For the following exercises, consider the declarations below, and then indicate the value that is assigned in each assignment statement. That is, show what is stored in the iResult, fResult, or sResult variables after each assignment. Show each floating point value to three places past the decimal point. Refer to Appendix M in your textbook as needed regarding specific methods.

```
int iResult, num1 = 25, num2 = 40, num3 = 17, num4 = 5;
int num5 = -14, num6 = -27;
double fResult, val1 = 17.0, val2 = 12.78;
String sResult, title = "Java Software Solutions";
```

1. iResult = num1 / num4;
2. fResult = num1 / num4;
3. iResult = num3 / num4;
4. fResult = num3 / num4;
5. fResult = val1 / num4;
6. fResult = val1 / val2;
7. iResult = num1 / num2;
8. fResult = num1 / num2;
9. fResult = (double) num1 / num2;
10. fResult = num1 / (double) num2;
11. fResult = (double) (num1 / num2);
12. iResult = (int) (val1 / num4);
13. fResult = (int) (val1 / num4);
14. fResult = (int) ((double) num1 / num2);
15. iResult = num3 % num4;
16. iResult = num2 % num3;
17. iResult = num3 % num2;
18. iResult = num2 % num4;
19. iResult = num5 % num4;
20. iResult = num6 % num5;
21. iResult = title.length();
22. fResult = title.length();
23. iResult = title.indexOf('t');
24. iResult = title.indexOf('q');
25. iResult = title.lastIndexOf('a');
26. sResult = title.toUpperCase();
27. sResult = title.replace('o', 'X');
28. sResult = title.substring(8);
29. sResult = title.substring(8, 16);
30. iResult = (title.substring(8, 16)).length();
31. sResult = title + num1;

32. sResult = title + num1 + num2;
33. sResult = title + (num1 + num2);
34. iResult = Math.abs(num6);
35. iResult = Math.abs(num1 – num2);
36. fResult = Math.sqrt(num2);
37. fResult = Math.pow(num4, 3);
38. iResult = Math.max(num2, num3);
39. iResult = Math.floor(val2);
40. iResult = Math.ceil(val2);
41. fResult = Math.sin(num2 + num1 * 2);
42. fResult = Math.PI * num4;
43. fResult = Math.pow(title.length(), 2) + num3 * Math.sqrt(num3 / num4);

For exercises 1 to 12, indicate the range of the possible result of each expression. Assume the following declaration:

```
Random rand = new Random();
```

1. rand.nextInt()
2. Math.abs (rand.nextInt()) % 20
3. Math.abs (rand.nextInt() % 20)
4. Math.abs (rand.nextInt()) % 8 + 1
5. Math.abs (rand.nextInt()) % 45 + 10
6. Math.abs (rand.nextInt()) % 100 – 50
7. rand.nextInt() % 50
8. rand.nextFloat()
9. Math.random()
10. Math.random() * 8
11. (int) (Math.random() * 20)
12. (int) (Math.random() * 20) + 1

For exercises 13 to 18, write an expression using the Random object declared below that generates a random number in the specified range (inclusive).

```
Random gen = new Random();
```

13. 0 to 10
14. 0 to 500
15. 1 to 10
16. 1 to 500
17. 25 to 50
18. -10 to 15

For exercises 19 to 20, write an expression using the random method of the Math class that generates a random number in the specified range (inclusive).

19. -5 to 10
20. 0 to 500
21. 25 to 50
22. 1 to 500

For exercises 1 to 7, indicate the output that will be produced. Assume the following declarations:

```
final int MAX = 25, LIMIT = 100;
int num1 = 12, num2 = 25, num3 = 87;
```

1.
```
if (num1 > 7 && LIMIT <= 100)
  System.out.println ("apple");
System.out.println ("orange");
```

2.
```
if (num3 < 40 || num3 > 50)
  System.out.println ("apple");
System.out.println ("orange");
```

3.
```
if (MAX == LIMIT || num1*2 == num2)
  System.out.println ("apple");
System.out.println ("orange");
```

4.
```
if (num2%2 != 0 || num3 > LIMIT)
  System.out.println ("apple");
System.out.println ("orange");
```

5.
```
if (MAX == 25 && num2 != MAX || num1 < num3)
  System.out.println ("apple");
System.out.println ("orange");
```

6.
```
if (num3 == 87 || num2 > num1 && MAX > LIMIT)
  System.out.println ("apple");
System.out.println ("orange");
```

7.
```
if ((num3 == 87 || num2 > num1) && MAX > LIMIT)
  System.out.println ("apple");
System.out.println ("orange");
```

For exercises 8 to 21, write code segments that will perform the specified action. Assume that all variables have already been declared and given values.

8. Print "Hurrah!" if sum is evenly divisible by count.

9. Increment the integer variable total if total is zero and decrement total otherwise.

10. Print "num is zero", "num is negative", or "num is positive" as appropriate, based on the current value of num.

11. Print "num is zero", "num is even", or "num is odd" as appropriate based on the current value of num.

22. Print "Victory" only if result is greater than or equal to 500 and penalty is equal to zero (use nested ifs).

13. Print "Victory" only if result is greater than or equal to 500 and penalty is equal to zero (use logical operators).