

## Term 1 – Unit 4 – Week 16

## Exam 4 – Offline Version – Solution

1. What is output by the following code?

```
System.out.print(21 / 5);
```

- a. 3.5   b. 4   c. 4.2   d. 5   e. 5.5

2. Assume the following method has been defined:

```
public static int mystery(String a [], int x) {
    int c = 0;
    for(int i = 0; i < a.length; i++) {
        if (a[i].length() != x )
            c++;
    }
    return c;
}
```

What is output by the following code?

```
String b [] = {"aardvark", "banana", "cougar", "daikon",
              "elephant", "fog", "get"};
System.out.println( mystery(b, 6));
```

- a. 0   b. 2   c. 3   d. 4   e. 5

3. What does the following method do?

```
public static int mystery(int a [], int x) {
    int c = 0;
    for(int i = 0; i < a.length; i++)
        if (a[i] % 2 == 0)
            c++;
    return c;
}
```

- a. Returns a count of the number of elements in the array.  
 b. Returns the sum of the values in the array.  
 c. Returns a count of the number of times x appears in the array.  
 d. Returns the average of the values in the array.  
 e. Returns a count of the number of even elements in the array.

4. What is output by the following code?

```
public static void stuff(int w) {
    w += 2;
}
public static void main(String a []) {
    int n = 2;
    stuff(n);
    System.out.println(n);
}
```

- a. 0   b. 1   c. 2   d. 3   e. 4

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5. Consider the following methods:

```
public static void printSport(double n) {
    System.out.print("football ");
    printSport((int)(n));
}
public static void printSport(int n) {
    System.out.print("basketball ");
}
```

What is output by the method call `printSport(3.5)`?

- football basketball
- football football basketball basketball
- football
- basketball
- basketball football

6. Consider the following method definition:

```
public static int mystery(int a) {
    int sum = 0;
    for(int i = 1; i <= a; i++) {
        sum += i;
    }
    return sum;
}
```

What is returned by the call, `mystery(9)`?

- 9
- 10
- 36
- 45
- 55

7. What does the following method do?

```
public static void mystery (int a, int b) {
    if (a < b)
        mystery(a, b-1);
    if(b < a)
        mystery(a-1, b);
    System.out.println(a + " " + b);
}
```

- Repeats until a and b are equal.
- Repeats until b is less than a.
- Repeats until a is less than b.
- The recursion does not stop.
- There is an error, you cannot have more than one recursive call.

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8. Consider the following code:

```
public static void mystery(int x) {
    if (x > 0)
        mystery( x/10 );
    System.out.print(x % 10 + " ");
}
```

What is output by the call, `mystery(3748)`?

- a. 8 4 7 3 0
- b. 374 37 3 0 0
- c. 0 0 3 37 374
- d. 0 3 7 4 8
- e. 0

9. What is output by the following code?

```
int a [] = {64, 66, 67, 37, 73, 70, 95, 52, 81, 82};

for(int i = 0; i < a.length; i++) {
    a[i] = a[i]/10 + 1;
}
for(int i = 0; i < a.length; i++) {
    System.out.print(a[i] + " ");
}
```

- a. 2 4 5 2 2 8 7 8 1 2
- b. 4 6 7 7 3 0 5 2 1 2
- c. 6 6 6 3 7 7 9 5 8 8
- d. 7 7 7 4 8 8 1 0 6 9 9
- e. 5 7 8 8 4 1 6 2 3

10. What return statement may be used in `p()`?

```
public static int p() {
    //...
}
```

- a. `return 1;`
- b. `return {1, 2, 3};`
- c. `return int [] {1, 2, 3};`
- d. `return new int [] {1, 2, 3};`
- e. `return true;`

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11. Consider the following methods:

```
public static double average(int nums[]) {
    int sum = 0;
    for(int i = 0; i < nums.length; i++) {
        sum += nums[i];
    }
    return (1.0*sum) / nums.length;
} //average

public static int [] mystery(String a [] ) {
    int temp [] = new int[a.length];
    for(int i = 0; i < a.length; i++) {
        if (a[i].indexOf('a') >= 0)
            temp[i] = a[i].indexOf('a');
        else
            temp[i] = 0;
    }
    return temp;
}
```

What is output by running the following code?

```
String spelling [] = {"against", "forms", "belief", "government",
                    "democratic", "movement", "understanding",
                    "single", "followed", "scenario"};
System.out.println( average( mystery( spelling)));
```

- a. 0.5   b. 1.1   c. 1.25   d. 1.7   e. Error, you cannot average Strings.

12. The following is intended to return the location of the first instance of the String the user enters from the keyboard, -1 if not found.

```
String names [] = new String [20];
//assume array is initialized

System.out.println("Enter a name to search for: ");
String lookingFor = scan.nextLine();

int found = -1;
for(int i = 0; i < names.length; i++) {
    if ( /* Missing Code */ ) {
        found = i;
        break;
    }
}
```

Which of the following could replace /\* Missing Code \*/ so that it works as intended?

- a. !lookingFor.equals(names[i])  
 b. lookingFor[i].equals(names[i])  
 c. lookingFor != names[i]  
 d. lookingFor.equals(names)  
 e. lookingFor.equals(names[i])

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13. Consider the following method definition:

```
public static void test(int maxNum) {
    int first = 0;
    int second = 0;
    int third = 0;
    for(int k = 1; k <= maxNum; k++) {
        if (k % 2 == 0 && k % 3 == 0)
            first++;
        if (k % 2 == 0)
            second++;
        if(k % 3 == 0)
            third++;
    }
    System.out.println(first + " " + second + " " + third);
}
```

What is printed as a result of the call, test(30)?

- a. 5 15 5
- b. 5 15 10
- c. 5 10 5
- d. 5 10 10
- e. 30 15 10

14. Given the following method declaration:

```
public static int mystery (int a []) {
    int m = a[0];
    for(int i = 0; i < a.length; i++) {
        if (m < a[i])
            m = a[i];
    }
    return m;
}
```

What would be returned by mystery if it was passed the following array?

```
int a[] = {34, 18, 34, 38, 27, 37, 39, 21, 19};
```

- a. 18   b. 19   c. 27   d. 34   e. 39

15. What mistake is in the following code:

```
public static double mystery(double a) {
    System.out.println(a * 3.14);
}
```

- a. It should say return true;
- b. There should not be a return statement.
- c. The parameter should be a boolean type.
- d. The return statement is missing.
- e. The method cannot return a double.

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16. When a parameter is a(n) \_\_\_\_\_, any changes made in a method are NOT preserved.

- class data type
- primitive data type
- actual
- reference
- String of characters

17. Which method(s) would produce the following output if they were passed the argument, "hamster"?

```
h
ha
ham
hams
hamst
hamste
hamster
```

I. 

```
public static void mystery(String wo) {
    System.out.println(wo);
    if (wo.length() > 0)
        mystery( wo.substring(0, wo.length() - 1));
}
```

II. 

```
public static void mystery(String wo) {
    if (wo.length() > 0)
        mystery( wo.substring(0, wo.length() - 1));
    System.out.println(wo);
}
```

III. 

```
public static void mystery(String wo) {
    if (wo.length() > 0)
        mystery( wo.substring( wo.length() - 1));
    System.out.println(wo);
}
```

- I only
- II only
- III only
- I and III only
- I, II and III

18. Consider a method defined with the header:

```
public static void doStuff(double x)
```

Which of the following method calls is legal?

- doStuff(9);
- doStuff(0.555);
- doStuff(0.1 + 0.2);
- doStuff(0.1, 0.2);
- all of the above are legal except for d.

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19. Consider the following variables and method representing a student.

```
private int testAverage;
private int assignmentAverage;

public boolean isPassing()
{
    /* Missing Code */
}
```

A student can pass a class if at least one of the following is true:

- His/her test average is over 95
- His/her test average and assignment average are over 80

Which of the following correctly replaces `/* Missing Code */` so that the method works as intended?

- I. 

```
if ((testAverage > 95) || ((testAverage > 80) && (assignmentAverage >80)))
    return true;
```
  - II. 

```
boolean pass = false;
if (testAverage > 95)
    pass = true;
if ((testAverage > 80) && (assignmentAverage > 80))
    pass = true;
return pass;
```
  - III. 

```
return (testAverage > 95 || (testAverage > 80 && assignmentAverage > 80));
```
- a. I only
  - b. II only
  - c. III only
  - d. I & III only
  - e. II, & III only

20. What is output by the following code?

```
String q = "adjective";
String r = "stinky";

System.out.println( q.charAt( r.indexOf('s')));
```

- a. 1
- b. 2
- c. a
- d. d
- e. Error - index out of bounds