

## Ch 3 Review

Monday, December 17, 2012  
7:56 AM

### Chapter 3 Review Problems

Name: \_\_\_\_\_

1. Consider the following code segment.

```
for (int k = 0; k < 20; k = k + 2) {  
    if (k % 3 == 1)  
        System.out.print(k + " " );  
}
```

What is printed as a result of executing the code segment?

- a) 4 16
- ☒ b) 4 10 16
- c) 0 6 12 18
- d) 1 4 7 10 13 16 19
- e) 0 2 4 6 8 10 12 14 16 18

*Handwritten:* k  
0  
2  
4  
6  
8  
10  
12  
14  
16  
18

*Handwritten:* 4 10 16

2. Consider the following code segment.

```
int num1 = 0;  
int num2 = 3;  
  
while ((num2 != 0) && (num1 / num2 >= 0)) {  
    num1 = num1 + 2;  
    num2 = num2 - 1;  
}
```

What are the values of num1 and num2 after the while loop completes its execution?

- a) num1 = 0, num2 = 3
- b) num1 = 8, num2 = -1
- c) num1 = 4, num2 = 1
- ☒ d) num1 = 6, num2 = 0
- e) The loop will never complete its execution because a division by zero will generate an ArithmeticException.

*Handwritten:*

<u>num1</u>	<u>num2</u>
0	3
2	2
4	1
6	0

3. Assume that a, b, and c are variables of type int. Consider the following three conditions.

- ☒ I. (a == b) && (a == c) && (b == c) → we're only guaranteed one of these to be true
- ☒ II. (a == b) || (a == c) || (b == c)
- ☒ III. ((a - b) \* (a - c) \* (b - c)) == 0 → one of these will be 0.

Assume that subtraction and multiplication never overflow. Which of the conditions above is (are) always true if at least two of a, b, and c are equal?

- a) I only
- b) II only
- c) III only
- d) I and II
- ☒ e) II and III

4. Consider the following code segment.

```
int sum = 200;
int n = 0;
if ((n != 0) && (sum / n > 90))
    return sum += sum;
else
    return sum;
```

It short-circuits if the left operand is false

What is the result when this code is executed?

- a) A run-time error occurs when evaluating `sum / n`.
- b) A compile-time error occurs when evaluating `sum / n`.
- c) 0 is returned.
- d) 200 is returned.
- e) 400 is returned.

5. Consider the following method.

```
public void conditionalTest(int a, int b) {
    if ((a > 0) && (b > 0)) {
        if (a > b)
            System.out.println("A");
        else
            System.out.println("B");
    }
    else if ((b < 0) || (a < 0))
        System.out.println("C");
    else
        System.out.println("D");
}
```

What is printed as a result of the call `conditionalTest(3, -2)` ?

- a) A
- b) B
- c) C
- d) D
- e) Nothing is printed.

## Chapter 3 Review Problems

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6. Consider the following output.

```
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
```

Which of the following code segments will produce this output?

a)

```
for (int j = 1; j <= 5; j++) {
    for (int k = 1; k <= 5; k++) {
        System.out.print(j + " ");
    }
    System.out.println();
}
```

b)

```
for (int j = 1; j <= 5; j++) {
    for (int k = 1; k <= j; k++) {
        System.out.print(j + " ");
    }
    System.out.println();
}
```

c)

```
for (int j = 1; j <= 5; j++) {
    for (int k = 5; k >= j; k--) {
        System.out.print(j + " ");
    }
    System.out.println();
}
```

d)

```
for (int j = 1; j <= 5; j++) {
    for (int k = 5; k >= j; k--) {
        System.out.print(j + " ");
    }
    System.out.println();
}
```

e)

```
for (int j = 1; j <= 5; j++) {
    for (int k = j; k <= 5; k++) {
        System.out.print(k + " ");
    }
    System.out.println();
}
```

```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5
```

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5
```

```
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
```

```
1 2 3 4 5
2 3 4 5
3 4 5
4 5
5
```

## Chapter 3 Review Problems

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7. At a certain high school students receive letter grades based on the following scale.

<u>Numeric Score</u>	<u>Letter Grade</u>
93 or above	A
From 84 to 92 inclusive	B
From 75 to 83 inclusive	C
Below 75	F

Which of the following code segments will assign the correct string to grade for a given integer score?

I.

Which of the following code segments will assign the correct string to grade for a given integer score?

I.

```
if (score >= 93)
    grade = "A";
if (score >= 84 && score <= 92)
    grade = "B";
if (score >= 75 && score <= 83)
    grade = "C";
if (score < 75)
    grade = "F";
```

4 independent ifs. Not desirable  
but it works

II.

```
if (score >= 93)
    grade = "A";
if (84 <= score <= 92)
    grade = "B";
if (75 <= score <= 83)
    grade = "C";
if (score < 75)
    grade = "F";
```

→ 3-ways are not allowed

III.

```
if (score >= 93)
    grade = "A";
else if (score >= 84)
    grade = "B";
else if (score >= 75)
    grade = "C";
else
    grade = "F";
```

- a) II only
- b) III only
- c) I and II only
- d) I and III only
- e) I, II, and III

8. Consider the following code segment. The code is intended to read nonnegative numbers and compute their product until a negative number is read; however, it does not work as intended.

```
int k = 0;
int prod = 1;
while (k >= 0) {
    System.out.print("enter a number: ");
    k = Keyboard.readInt();
    prod = prod * k;
}
System.out.println("product: " + prod);
```

*-1 gets into the loop/answer*

Which of the following best describes the error in the program?

- a) The variable `prod` is incorrectly initialized.
- b) The while condition always evaluates to `false`.
- c) The while condition always evaluates to `true`.
- d) The negative number entered to signal no more input is included in the product.**
- e) If the user enters a zero, the computation of the product will be terminated prematurely.

9. Consider the following code segment.

```
x = 6;
y = 19;
z = 2;
if (x > y)
    (z > x)
    z++;
    z -= 5;
y += x;
```

After this code is executed, the values of `x`, `y`, and `z` are:

- a) `x = 6`, `y = 25`, `z = -3`
- b) `x = 6`, `y = 19`, `z = 2`
- c) `x = 6`, `y = 25`, `z = 3`
- d) `x = 6`, `y = 25`, `z = 2`**
- e) `x = 6`, `y = 19`, `z = 3`

10. Given the following declarations:

```
String vowel = "aeiou";
String word = some String value;
int count = 0;
```

*"foodNetwork"*

Which of the following segments of code accurately counts the number of letters in `word` that are vowels (a, e, i, o, or u)?

**I**

```
for (int j = 0; j < vowel.length(); j++) {
    String temp = vowel.substring(j, j + 1);
    if (word.indexOf(temp) != -1) {
        count++;
    }
}
```

go through the vowels  
for each vowel, count 1 if it  
occurs in the word.

**II**

```
for (int j = 0; j < word.length(); j++) {
    String temp = word.substring(j, j + 1);
    if (vowel.indexOf(temp) != -1) {
        count++;
    }
}
```

go through letters in the word.  
for each letter, count 1 if it  
occurs in vowel.

**III**

```
for (int i = 0; i < word.length(); i++) {
    for (int k = 0; k < vowel.length(); k++) {
        if (word.substring(i, i+1).equals(vowel.substring(k, k+1))) {
            count++;
        }
    }
}
```

go through the letters in the word,  
for each letter, go through the vowels  
see if they match.

- a) I only
- b) II only
- c) III only
- d) I and III only
- ☒ e) II and III only