

ANSWER KEY

Multiple Choice Review Exam

"Hello /n. (KEY) Kelly"

B

1. Suppose x is an int variable that holds a positive integer. Consider the following five expressions

- (x = 115)*
- a. $(x - x / 100 * 100) / 10 \rightarrow (115 - 115/100 * 100) / 10 \rightarrow 1$
 - b. $x / 10 - x / 10 * 10 \rightarrow 115/10 - 115/10 * 10 \rightarrow -99$
 - c. $(x - x \% 100) / 10 \rightarrow (115 - 115 \% 100) / 10 \rightarrow 10$
 - d. $x / 10 \% 10 \rightarrow 115 / 10 \% 10 \rightarrow 1$
 - e. $x \% 100 / 10 \rightarrow 115 \% 100 / 10 \rightarrow 1$
- b or c!* } B or C!

Which one of them produces a value different from the other four for some values of x?

Both Accepted }

- (F) a.
 - (G) b.
 - (H) c.
 - (I) d.
 - (J) e.
- (x = 90)*
- a. $(90 - 90/100 * 100) / 10 \rightarrow 9$
 - b. $90/10 - 90/10 * 10 \rightarrow -891$
 - c. $(90 - 90 \% 100) / 10 \rightarrow 0$
 - d. $90/10 \% 10 \rightarrow 9$
 - e. $90 \% 100 / 10 \rightarrow 9$
- } B or C!

2. What is the output to the following code segment?

```
String name = "Mickey Mouse";
int pos = name.indexOf("x"); pos = -1
int pos2 = name.indexOf("M"); pos2 = 0
int pos3 = name.indexOf("Mo"); pos3 = 7
System.out.println(pos + pos2 + pos3); -1 + 0 + 7
```

- (F) 5
- (G) 7
- (H) 6
- (I) 8
- (J) 0

3. What is the output to the following code segment?

```
int x = 2;
while ( x < 10)
{
    System.out.print(x);
    x += 2;
}
```

2468

- (F) 23456789
- (G) 2345678910
- (H) 246810
- (I) 246
- (J) 2468

4. What is the output of the following code segment?

```
String url = "http://www.usa.gov";
int pos = url.indexOf("http://"); pos = 0
if ( pos >= 0)
    System.out.println("<" + url.substring(0, pos) + ">");
else
    System.out.println("not found");
```

Handwritten notes: pos = 0, (0,0) ← nothing

- (F) <>
- (G) <www.usa.gov>
- (H) <http://www.usa.gov>
- (I) not found
- (J) StringIndexOutOfBoundsException

5. Consider the following code segment.

```
int x = < some integer value >;
int y = < another integer value >;
while (x > y && x % y != 0)
{
    x -= y;
}
```

Which of the following conditions will always be true after the while loop, regardless of the initial values of x and y?

- (F) $x < y$
- (G) $x < y \parallel x \% y \neq 0$
- (H) $x \leq y \&\& x \% y \neq 0$
- (I) $x \leq y \parallel x \% y == 0$
- (J) $x \geq y \&\& x \% y == 0$

Handwritten notes: Demorgan's Laws:
 $\!(x > y \&\& x \% y \neq 0)$
 $\!(x > y) \parallel \!(x \% y \neq 0)$
 $x \leq y \parallel x \% y == 0$

6. Consider the following method.

```
public int randomPoints(int n)
{
    return (int) (n * Math.random()) + 1;
}
```

Which of the following outputs is NOT possible when the statement below is executed?

```
System.out.println(randomPoints(3) + randomPoints(3));
```

- (F) 2 ✓ *(int)(3 * math.random()) + 1*
- (G) 3 ✓ *(1 to 3) + (1 to 3)*
- (H) 4 ✓
- (I) 6 ✓
- (J) All of the above are possible

7. Given the x is true, y is true, and z is false, which of the following expressions will evaluate to false?

- . F) (x && y) || z
- G) (x || y) && z
- . H) y || (x && z)
- . I) x || (y && z)
- . J) x && (y || z)

8. What are the ranges of values for x produced from the following code segment?

```
int x = (int)(Math.random() * 12) + 3;
```

- (F) 0 to 12
- (G) 0 to 11
- (H) 3 to 11
- I) 3 to 14
- (J) 3 to 15

9. What is the output of the following code segment?

```
String message = "Thank you all!";  
int pos = message.indexOf("a");  
int pos2 = message.indexOf("a", 6);  
System.out.println(pos + pos2);
```

- . F) 4
- . G) 3
- . H) 11
- I) 12
- . J) 10

*2 + 10
12*

*pos = 2
pos 2 = 10*

10. Consider the following method.

```
private int swap(int a, int b)  
{  
    if (a < b)  
    {  
        b = a;  
        a = b;  
    }  
    return b - a;  
}
```

What are the values of the variables a, b, and c after the following statements are executed?

```
int a = 2, b = 5;  
int c = swap(a, b);
```

- F) 2, 5, 0
- (G) 2, 5, 3
- (H) 2, 5, -3
- (I) 2, 2, 0
- (J) 5, 2, 3

For questions 11 and 12, use the following class definition:

```
public class Person
{
    double height;
    // Constructors not shown

    public void setHeight(double inches)
    {    height= inches; }

    public double getHeightInInches()
    {    return height; }
}
```

You create a new Person object in the main method with the following code:

```
Person rando = new Person();
```

11. Which of the following segments of code will compile with no error?

- (F) rando.getHeightInInches(2);
- (G) rando.setHeight("3");
- (H) System.out.println(rando.setHeight(50));
- (I) System.out.println(rando.getHeightInInches());
- (J) rando.setHeight(true);

12. Which of the following will compile with no error?

- (F) int y = rando.getHeightInInches();
- (G) double y = rando.setHeight(30);
- (H) double y = rando.getHeightInInches();
- (I) int y = rando.setHeight(50);
- (J) System.out.println(rando.setHeight());

13. Consider the following method.

```
public void processSomething(String s)
{return s.substring(2, 3) + s.substring(1, 2) + s.substring(0, 1);}
```

What is printed as a result of executed the following code?

```
String s = "ABCD";
processSomething(s);
System.out.println(s);
```

- (F) CDBCA
- (G) ABCD
- (H) CBA
- (I) CDBCAB
- (J) IndexOutOfBoundsException

Questions 14-15 refer to the following information.

```
public class SomeClass
{
    private int myA;
    private int myB;
    private int myC;

    // Constructor(s) not shown here.

    public int getA()
    {   return gradeA; myA;   }

    public void setB(int value)
    {   gradeB = value; myB;   }
}
```

The following declaration appears in another class.

```
SomeClass obj = new SomeClass();
```

14. Which of the following code segments will compile with no error?

- (F) `int x = obj.myA;`
- (G) `int x;`
`obj.getA(x);`
- (H) `int x = obj.getA();`
- (I) `int x = SomeClass.getA();`
- (J) `int x = getA(obj);`

15. Which of the following changes to `SomeClass` will allow other classes to access but not modify the value of `myC`?

- (F) Make `myC` public.
- (G) Include the method:
`private int getC()`
`{ return myC; }`
- (H) Include the method:
`public void getC(int x)`
`{ x = myC; }`
- (I) Include the method:
`public int getC()`
`{ return myC; }`
- (J) Include the method:
`private void getC(int x)`

16. What is printed as a result of executing the following code?

```
double x = 2.5;
y = 1.99;
System.out.println((int)(x/y) + (int) (x*y));
```

- (F) 0
- (G) 4
- (H) 4.0
- (I) 3
- (J) 5

17. Which of the following expressions is true if and only if NOT all three variables a, b, and c, have the same value?

- (F) a !=b || b != c
- (G) a >= b && b >= c && c >= a
- (H) a != b && b != c
- (I) !(a==b || b==c || a == c)
- (J) a > b || b > c || a > c

18. Which of the following pairs of values a and b does the expression

```
(a > 10 && a > b) || (a > 20 && a < b)
```

evaluate to true?

- (F) 15 and 20
- (G) 5 and 0
- (H) 5 and 10
- (I) 15 and 10
- (J) None of the above

19. What is the output from the following statement?

```
System.out.println("123".substring(1) + "123".substring(2) +  
"123".substring(3));
```

Handwritten annotations:
- Above "123".substring(1): "0 1 2" with an arrow pointing to "23"
- Above "123".substring(2): "0 1 2" with an arrow pointing to "3"
- Below "123".substring(3): an arrow pointing to ""

- (F) 123
- (G) 233
- (H) 23
- (I) 112123
- (J) 123233