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Name

1. Consider the following class definition.

```
public class ExamScore
{
private String studentId;
private double score;
public ExamScore(String sid, double s)
{
studentId = sid;
score = s;
}
public double getScore()
{
return score;
}
public void bonus(int b)
{
score += score * b/100.0;
}
}
```

Assume that the following code segment appears in a class other than ExamScore.

```
ExamScore es = new ExamScore("12345", 80.0);
es.bonus(5);
System.out.println(es.getScore());
```

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

(A) 4.0

(B) 5.0

(C) 80.0

(D) 84.0

(E) 85.0

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2. Consider the following statement, which assigns a value to b1.

```
boolean b1 = true && (17 % 3 == 1);
```

Which of the following assigns the same value to b2 as the value stored in b1 ?

(A)
```
boolean b2 = false || (17 % 3 == 2);
```

(B)
```
boolean b2 = false && (17 % 3 == 2);
```

(C)
```
boolean b2 = true || (17 % 3 == 1);
```

(D)
```
boolean b2 = (true || false) && true;
```

(E)
```
boolean b2 = (true && false) || true;
```

---

3. Consider the following code segment.

```
int count = 0;
for (int k = 0; k < 10; k++)
{
count++;
}
System.out.println(count);
```

Which of the following code segments will produce the same output as the code segment above?

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(A)
```
int count = 0;
for (int k = 1; k < 10; k++)
{
count++;
}
System.out.println(count);
```

(B)
```
int count = 1;
for (int k = 1; k <= 10; k++)
{
count++;
}
System.out.println(count);
```

(C)
```
int count = 1;
for (int k = 0; k <= 9; k++)
{
count++;
}
System.out.println(count);
```

(D)
```
int count = 0;
for (int k = 9; k >= 0; k--)
{
count++;
}
System.out.println(count);
```

(E)
```
int count = 0;
for (int k = 10; k >= 0; k--)
{
count++;
}
System.out.println(count);
```

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4. Consider the following methods, which appear in the same class.

```
public int function1(int i, int j)
{
return i + j;
}

public int function2(int i, int j)
{
return j - i;
}
```

Which of the following statements, if located in a method in the same class, will initialize the variable x to 11?

(A) `int x = function2(4, 5) + function1(1, 3);`

(B) `int x = function1(4, 5) + function2(1, 3);`

(C) `int x = function1(4, 5) + function2(3, 1);`

(D) `int x = function1(3, 1) + function2(4, 5);`

(E) `int x = function2(3, 1) + function1(4, 5);`

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5. Consider the following class declaration.

```
public class GameClass
{
private int numPlayers;
private boolean gameOver;

public Game()
{
numPlayers = 1;
gameOver = false;
}

public void addPlayer()
{
numPlayers++;
}

public void endGame()
{
gameOver = true;
}
}
```

Assume that the GameClass object game has been properly declared and initialized in a method in a class other than GameClass. Which of the following statements are valid?

1. game.numPlayers++;
2. game.addPlayer();
3. game.gameOver();
4. game.endGame();

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(A) IV only

(B) I and III only

(C) I and IV only

(D) II and IV only

(E) II, III, and IV only

---

6. Consider the following code segment.

```
/* missing loop header */
{
for (int k = 0; k < 4; k++)
{
System.out.print(k);
}
System.out.println();
}
```

The code segment is intended to produce the following output.

```
0123
0123
0123
```

Which of the following can be used to replace /* *missing loop header* */ so that the code segment works as intended?

1. `for (int j = 0; j < 3; j++)`
2. `for (int j = 1; j < 3; j++)`
3. `for (int j = 1; j <= 3; j++)`

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(A) I only

(B) II only

(C) III only

(D) I and II

(E) I and III

---

7. Consider the following code segment.

```
System.out.print("Hello System.out.println");
System.out.print("!!!");
```

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

(A) Hello!!!

(B) Hello System.out.println!!!

(C) Hello
!!!

(D) Hello System.out.println
!!!

(E) Nothing is printed because the text "System.out.println" cannot appear inside a print statement.

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8. Consider the following code segment.

```
int counter = 0;
for (int x = 10; x > 0; x--)
{
for (int y = x; y <= x; y++)
{
counter++;  // line 6
}
}
```

How many times will the statement in line 6 be executed as a result of running the code segment?

(A) 0

(B) 1

(C) 10

(D) 11

(E) 20

---

9. Consider the following code segment.

```
int outerMax = 10;
int innerMax = 5;
for (int outer = 0; outer < outerMax; outer++)
{
for (int inner = 0; inner <= innerMax; inner++)
{
System.out.println(outer + inner);
}
}
```

How many values will be printed when the code segment is executed?

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(A) 45

(B) 50

(C) 55

(D) 60

(E) 66

10. Consider the following code segment.

```
int x = 3;
int y = -1;
if (x - 2 > y)
{
x -= y;
}
if (y + 3 >= x)
{
y += x;
}
System.out.print("x = " + x + " y = " + y);
```

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

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(A) x = -1 y = -1

(B) x = 2 y = 1

(C) x = 3 y = 2

(D) x = 4 y = -1

(E) x = 4 y = 3

---

11. The following code segment is intended to interchange the values of the int variables x and y. Assume that x and y have been properly declared and initialized.

```
int temp = x;
/* missing code */
```

Which of the following can be used to replace /* *missing code* */ so that the code segment works as intended?

(A)
```
x = y;
x = temp;
```

(B)
```
x = y;
y = temp;
```

(C)
```
y = x;
x = temp;
```

(D)
```
y = x;
temp = y;
```

(E)
```
y = x;
temp = x;
```

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12. The following method is intended to print the number of digits in the parameter num.

```
public int numDigits(int num)
{
int count = 0;
while (/* missing condition */)
{
count++;
num = count / 10;
}
return count;
}
```

Which of the following can be used to replace /* *missing condition* */ so that the method will work as intended?

(A) count != 0

(B) count > 0

(C) num >= 0

(D) num != 0

(E) num == 0

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13. The following method is intended to return true if and only if the parameter val is a multiple of 4 but is not a multiple of 100 unless it is also a multiple of 400. The method does not always work correctly.

```
public boolean isLeapYear(int val)
{
if ((val % 4) == 0)
{
return true;
}
else
{
return (val % 400) == 0;
}
}
```

Which of the following method calls will return an incorrect response?

(A) isLeapYear(1900)

(B) isLeapYear(1984)

(C) isLeapYear(2000)

(D) isLeapYear(2001)

(E) isLeapYear(2010)

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14. Consider the following code segment, which is intended to print the sum of all the odd integers from 0 up to and including 101.

```
int r = 0;
int sum = 0;
/* missing loop header */
{
if (r % 2 == 1)
{
sum += r;
}
r++;
}
System.out.println(sum);
```

Which of the following could replace /* *missing loop header* */ to ensure that the code segment will work as intended?

(A) while (r <= 100)

(B) while (sum <= 100)

(C) while (r < 101)

(D) while (r <= 101)

(E) while (sum <= 101)

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15. Consider the following code segment.

```
for (int outer = 0; outer < 3; outer++)
{
for (/* missing loop header */)
{
System.out.print(outer + "" + inner + "_");
}
}
```

Which of the following can be used as a replacement for /* *missing loop header* */ so that the code segment produces the output 00_01_02_11_12_22_ ?

(A) `int inner = 0; inner < 3; inner++`

(B) `int inner = 1; inner < 3; inner++`

(C) `int inner = outer - 1; inner < 3; inner++`

(D) `int inner = outer; inner < 3; inner++`

(E) `int inner = outer + 1; inner < 3; inner++`

---

16. Consider the following code segment.

```
int count = 0;
for (int x = 1; x <= 3; x++)
{
/* missing loop header */
{
count++;
}
}
System.out.println(count);
```

Which of the following should be used to replace /* *missing loop header* */ so that the code segment will print 6 as the value of count ?

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(A) for (int y = 0; y <= 2; y++)

(B) for (int y = 0; y < 3; y++)

(C) for (int y = 2; y >= 0; y--)

(D) for (int y = 3; y > 0; y--)

(E) for (int y = 0; y < x; y++)

---

17. Consider the following code segment.

```
int k = 0;
/* missing loop header */
{
k++;
System.out.print(k + " ");
}
```

Which of the following can be used as a replacement for /* *missing loop header* */ so that the code segment prints out the string "1 2 3 4 "?

(A) while (k < 3)

(B) while (k < 4)

(C) while (k < 5)

(D) while (k <= 4)

(E) while (k <= 5)

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18. Consider the following code segment.

```
if (false && true || false)
{
if (false || true && false)
{
System.out.print("First");
}
else
{
System.out.print("Second");
}
}
if (true || true && false)
{
System.out.print("Third");
}
```

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

(A) First

(B) Second

(C) Third

(D) FirstThird

(E) SecondThird

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19. Consider the following code segment.

```
int start = 4;
int end = 5;
boolean keepGoing = true;
if (start < end && keepGoing)
{
if (end > 0)
{
start += 2;
end++;
}
else
{
end += 3;
}
}
if (start < end)
{
if (end == 0)
{
end += 2;
start++;
}
else
{
end += 4;
}
}
```

What is the value of `end` after the code segment is executed?

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(A) 5

(B) 6

(C) 9

(D) 10

(E) 16

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20. Consider the following code segment.

```
int x = 7;
int y = 4;
boolean a = false;
boolean b = false;
if (x > y)
{
if (x % y >= 3)
{
a = true;
x -= y;
}
else
{
x += y;
}
}
if (x < y)
{
if (y % x >= 3)
{
b = true;
x -= y;
}
else
{
x += y;
}
}
```

What are the values of a, b, and x after the code segment has been executed?

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(A) a = true, b = true, x = -1

(B) a = true, b = false, x = 3

(C) a = true, b = false, x = 7

(D) a = false, b = true, x = 3

(E) a = false, b = false, x = 11