Preparation QUIZ & TEST (Chapter 3)

[Chap 3.2]

3.1 The "less than or equal to" comparison operator in Java is _____.

A. < B. <=
C. =< D. << E. !=

3.2 The equal comparison operator in Java is _____.

A. <> B. !=
C. == D. ^=

3.3 What is 1 + 1 + 1 + 1 + 1 == 5?

A. true B. false
C. There is no guarantee that 1 + 1 + 1 + 1 + 1 == 5 is true.

3.4 What is 1 - 0.1 - 0.1 - 0.1 - 0.1 - 0.1 == 0.5?

A. true B. false
C. There is no guarantee that 1 - 0.1 - 0.1 - 0.1 - 0.1 - 0.1 == 0.5 is true.

3.5 In Java, the word true is _____.

A. a Java keyword B. a Boolean literal
C. same as value 1 D. same as value 0

[Chap 3.3]

3.6 Which of the following code displays the area of a circle if the radius is positive?

A. if (radius != 0) System.out.println(radius * radius * 3.14159);
B. if (radius >= 0) System.out.println(radius * radius * 3.14159);
C. if (radius > 0) System.out.println(radius * radius * 3.14159);
D. if (radius <= 0) System.out.println(radius * radius * 3.14159);

3.7 What is the output of the following code?

```
int x = 0;
if (x < 4) {
  x = x + 1;
}
System.out.println("x is " + x);
```

A. x is 0 B. x is 1
C. x is 2 D. x is 3 E. x is 4

[Chap 3.4]

3.8 Suppose income is 4001, what is the output of the following code?

```
if (income > 3000) {
  System.out.println("Income is greater than 3000");
}
else if (income > 4000) {
  System.out.println("Income is greater than 4000");
}
```

A. no output
B. Income is greater than 3000
C. Income is greater than 3000 followed by Income is greater than 4000
D. Income is greater than 4000
E. Income is greater than 4000 followed by Income is greater than 3000

[Chap 3.5]

3.9 The following code displays _____.

```
double temperature = 50;

if (temperature >= 100)
  System.out.println("too hot");
else if (temperature <= 40)
  System.out.println("too cold");
else
  System.out.println("just right");
```

A. too hot B. too cold
C. just right D. too hot too cold just right

[Chap 3.6]

3.10 Suppose x = 1, y = -1, and z = 1. What is the output of the following statement? (Please indent the statement correctly first.)

```
if (x > 0)
  if (y > 0)
    System.out.println("x > 0 and y > 0");
else if (z > 0)
    System.out.println("x < 0 and z > 0");
```

A. x > 0 and y > 0; B. x < 0 and z > 0;
C. x < 0 and z < 0; D. no output.

3.11 Analyze the following code:

```
boolean even = false;
if (even = true) {
  System.out.println("It is even");
}
```

A. The program has a compile error.
B. The program has a runtime error.
C. The program runs fine, but displays nothing.
D. The program runs fine and displays It is even.

3.12 Suppose isPrime is a boolean variable, which of the following is the correct and best statement for testing if isPrime is true?

A. if (isPrime = true) B. if (isPrime == true)
C. if (isPrime) D. if (!isPrime = false)
E. if (!isPrime == false)

3.13 Analyze the following code.

```
boolean even = false;
if (even) {
  System.out.println("It is even!");
}
```

A. The code displays It is even!
B. The code displays nothing.
C. The code is wrong. You should replace if (even) with if (even == true).
D. The code is wrong. You should replace if (even) with if (even = true).

3.14 Analyze the following code:

Code 1:

```
int number = 45;
boolean even;

if (number % 2 == 0)
  even = true;
else
  even = false;
```

Code 2:

```
int number = 45;
boolean even = (number % 2 == 0);
```

A. Code 1 has compile errors.
B. Code 2 has compile errors.
C. Both Code 1 and Code 2 have compile errors.
D. Both Code 1 and Code 2 are correct, but Code 2 is better.

[Chap 3.7]

3.15 Which of the following is a possible output from invoking Math.random()? Please select all that apply.

A. 3.43 B. 0.5
C. 0.0 D. 1.0

3.16 What is the output from System.out.println((int)Math.random() * 4)?

A. 0 B. 1 C. 2 D. 3 E. 4

3.17 What is the possible output from System.out.println((int)(Math.random() * 4))? Please select all that apply.

A. 0 B. 1 C. 2 D. 3 E. 4

[Chap 3.8]

3.18 Suppose you write the code to display "Cannot get a driver's license" if age is less than 16 and "Can get a driver's license" if age is greater than or equal to 16. Which of the following code is correct? Please select all that apply.

I:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
if (age >= 16)
  System.out.println("Can get a driver's license");
```

II:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else
  System.out.println("Can get a driver's license");
```

III:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else if (age >= 16)
  System.out.println("Can get a driver's license");
```

IV:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else if (age > 16)
  System.out.println("Can get a driver's license");
else if (age == 16)
  System.out.println("Can get a driver's license");
```

A. I and II B. II and III
C. I, II, and III D. III and IV
E. I, II, III, and IV

3.19 Suppose you write the code to display "Cannot get a driver's license" if age is less than 16 and "Can get a driver's license" if age is greater than or equal to 16. Which of the following code is the best?

I:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
if (age >= 16)
  System.out.println("Can get a driver's license");
```

II:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else
  System.out.println("Can get a driver's license");
```

III:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else if (age >= 16)
  System.out.println("Can get a driver's license");
```

IV:
```
if (age < 16)
  System.out.println("Cannot get a driver's
license");
else if (age > 16)
  System.out.println("Can get a driver's license");
else if (age == 16)
  System.out.println("Can get a driver's license");
```

A. I B. II C. III D. IV

[Chap 3.9]

3.20 The _____ method immediately terminates the program.

A. System.terminate(0); B. System.halt(0);
C. System.exit(0); D. System.quit(0);
E. System.stop(0);

[Chap 3.10]

3.21 Which of the Boolean expressions below is incorrect? Please select all that apply.

A. (true) && (3 => 4) B. !(x > 0) && (x > 0)
C. (x > 0) || (x < 0) D. (x != 0) || (x = 0)
E. (-10 < x < 0)

3.22 Which of the following is the correct expression that evaluates to true if the number x is between 1 and 100 or the number is negative?

A. 1 < x < 100 && x < 0
B. ((x < 100) && (x > 1)) || (x < 0)
C. ((x < 100) && (x > 1)) && (x < 0)
D. (1 > x > 100) || (x < 0)

3.23 Assume x = 4 and y = 5, which of the following is true?
A. x < 5 && y < 5 B. x < 5 || y < 5
C. x > 5 && y > 5 D. x > 5 || y > 5

3.24 Assume x = 4, which of the following is true?
A. !(x == 4) B. x != 4
C. x == 5 D. x != 5

3.25 Assume x = 4 and y = 5, which of the following is true?
A. !(x == 4) ^ y != 5 B. x != 4 ^ y == 5
C. x == 5 ^ y == 4 D. x != 5 ^ y != 4

[Chap 3.11]

3.26 Given |x| <= 4, which of the following is true?
A. x <= 4 && x >= 4 B. x <= 4 && x > -4
C. x <= 4 && x >= -4 D. x <= 4 || x >= -4

3.27 Given |x| >= 4, which of the following is true?
A. x >= 4 && x <= -4 B. x >= 4 || x <= -4
C. x >= 4 && x < -4 D. x >= 4 || x < -4

3.28 Which of the following is equivalent to x != y? Please select all that apply.
A. ! (x == y) B. x > y && x < y
C. x > y || x < y D. x >= y || x <= y

[Chap 3.12]

3.29 Suppose x=10 and y=10. What is x after evaluating the expression (y > 10) && (x-- > 10)?
A. 9 B. 10 C. 11

3.30 Suppose x=10 and y=10. What is x after evaluating the expression (y > 10) && (x++ > 10).
A. 9 B. 10 C. 11

3.31 Suppose x=10 and y=10. What is x after evaluating the expression (y >= 10) || (x-- > 10).
A. 9 B. 10 C. 11

3.32 Suppose x=10 and y=10. What is x after evaluating the expression (y >= 10) || (x++ > 10).
A. 9 B. 10 C. 11

3.33 Analyze the following code:

```
if (x < 100) && (x > 10)
  System.out.println("x is between 10 and 100");
```

A. The statement has compile errors because (x<100) & (x > 10) must be enclosed inside parentheses.
B. The statement has compile errors because (x<100) & (x > 10) must be enclosed inside parentheses and the println(?) statement must be put inside a block.
C. The statement compiles fine.
D. The statement compiles fine, but has a runtime error.

3.34 Which of the following are so called short-circuit operators? Please select all that apply.
A. && B. & C. || D. |

[Chap 3.13]

3.35 What is y after the following switch statement is executed?

```
int x = 3; int y = 4;
switch (x + 3) {
  case 6: y = 0;
  case 7: y = 1;
  default: y += 1;
}
```

A. 1 B. 2 C. 3 D. 4 E. 0

3.36 Analyze the following program fragment:

```
int x;
double d = 1.5;

switch (d) {
  case 1.0: x = 1;
  case 1.5: x = 2;
  case 2.0: x = 3;
}
```

A. The program has a compile error because the required break statement is missing in the switch statement.
B. The program has a compile error because the required default case is missing in the switch statement.
C. The switch control variable cannot be double.
D. No errors.

[Chap 3.14]

3.37 What is y after the following statement is executed?

```
x = 0;
y = (x > 0) ? 10 : -10;
```

A. -10 B. 0 C. 10
D. 20 E. Illegal expression

3.38 Analyze the following code fragments that assign a boolean value to the variable even.

Code 1:

```
if (number % 2 == 0)
  even = true;
else
  even = false;
```

Code 2:

```
even = (number % 2 == 0) ? true: false;
```

Code 3:

```
even = number % 2 == 0;
```

A. Code 2 has a compile error, because you cannot have true and false literals in the conditional expression.
B. Code 3 has a compile error, because you attempt to assign number to even.
C. All three are correct, but Code 1 is preferred.
D. All three are correct, but Code 2 is preferred.
E. All three are correct, but Code 3 is preferred.

3.39 What is the output of the following code?

```
boolean even = false;
System.out.println(even ? "true" : "false");
```

A. true B. false
C. nothing D. true false