CSE110: Principles of Programming

Assignment 3

Name:

ID:

Program:

3.1 Multiple Choice Questions

1) The _____ statement is used to make simple decisions in Java.
A) `do/while`
B) `for`
C) `branch`
D) `if`

2) A Boolean expression is one that is either:
A) `true` or `false`
B) `x` or `y`
C) Positive or negative
D) None of the above

3) This type of operator determines whether a specific relationship exists between two values:
A) Logical
B) Mathematical
C) Unary
D) Relational

4) Which of the following expressions will determine whether `x` is less than or equal to `y`?
A) `x > y`
B) `x =< y`
C) `x <= y`
D) `x >= y`

5) Which one of the following is the not equal operator?
A) `<>`
B) `NOT`
C) `*&`
D) `!=`

6) What will be the value of x after the following code is executed?

```
int x = 75;
int y = 60;
if (x > y)
    x = x - y;
```
A) 75
B) 15
C) 60
D) 135

7) What will be the value of ans after the following code has been executed?

```
int ans = 10;
int x = 65;
int y = 55;
if (x >= y)
    ans = x + y;
```
A) 10
B) 120
C) 100
D) No value, there is a syntax error.

8) What will be the value of ans after the following code has been executed?

```
int x = 90, y = 55, ans = 10;
if ( x == y);
    ans *= 2;
```
A) 10
B) 145
C) 20
D) No value, there is a syntax error.

9) A block of code is enclosed in a set of:
A) braces { }
B) parentheses ( )
C) double quotes " "
D) brackets [ ]

10) A flag may have the values:
A) 0 or 1
B) +1 or -1
C) true or false
D) of any character

11) If `chr` is a character variable, which of the following `if` statements is written correctly?
A) `if (chr = "a")`
B) `if (chr == "a")`
C) `if (chr = 'a')`
D) `if (chr == 'a')`

12) In Java, when a character is stored in memory, it is actually stored as a(n):
A) Unicode number
B) ASCII character code
C) EBCDIC character code
D) Morse code

13) This is an international coding system that is extensive enough to represent all the characters of all the world's alphabets:
A) ASCII
B) Unicode
C) Java
D) None of the above

14) What will be the values of `ans`, `x`, and `y` after the following statements are executed?

```
int ans = 35, x = 50, y =50;
if ( x >= y)
{
    ans = x + 10;
    x -=y;
}
else
{
    ans = y + 10;
    y += x;
}
```
A) `ans` = 60, x = 50, y =100
B) `ans` = 60, x =0, y =50
C) `ans` = 45, x = 50, y = 0
D) `ans` = 45, x = 50, y = 50

15) What will be the value of `bonus` after the following code is executed?

```
int bonus, sales = 10000;
if (sales < 5000)
   bonus = 200;
else if (sales < 7500)
   bonus = 500;
else if (sales < 10000)
   bonus = 750;
else if (sales < 20000)
   bonus = 1000;
else
   bonus = 1250;
```
A) 200
B) 500
C) 750
D) 1000
E) 1250

16) In most editors, you are indenting by one level each time that you press this key:
A) Tab
B) Shift
C) Alt
D) Space

17) If you prematurely terminate an `if` statement with a semicolon, the compiler will:
A) Not display an error message
B) Assume you are placing a null statement there
C) All of the above
D) None of the above

18) What would be the value of `bonus` after the following statements are executed?

```
int bonus, sales = 1250;
if (sales > 1000)
   bonus = 100;
if (sales > 750)
   bonus = 50;
if (sales > 500)
   bonus = 25;
else
   bonus = 0;
```
A) 100
B) 500
C) 25
D) 0

19) What would be the value of `bonus` after the following statements are executed?

```
int bonus, sales = 85000;
char dept = 'S';
if (sales > 100000)
   if (dept == 'R')
      bonus = 2000;
   else
      bonus = 1500;
else if (sales > 75000)
   if (dept == 'R')
      bonus = 1250;
   else
      bonus = 1000;
else
   bonus = 0;
```
A) 2000
B) 1500
C) 1250
D) 1000

20) Which of the following is the correct `boolean` expression to test for: `int x` being a value between, but not including, 500 and 650, or `int y` not equal to 1000?
A) `((x >= 500 && x <= 650) && (y != 1000))`
B) `((x > 500 AND x < 650) OR !(y.equal(1000)))`
C) `((x > 500 && x < 650) || (y != 1000))`
D) `((x < 500 && x > 650) || !(y == 1000))`

21) _____ works like this: If the expression on the left side of the `&&` operator is `false`, the expression the right side will not be checked.
A) Short-circuit evaluation
B) Reverse logic
C) Boolean logic
D) Relational evaluation

22) If `str1` and `str2` are both `Strings`, which of the following will correctly test to determine whether `str1` is less than `str2`?

(1) `(str1 < str2)`
(2) `(str1.equals(str2) < 0)`
(3) `(str1.compareTo(str2) < 0)`
A) 1, 2, and 3 will all work
B) 2
C) 3
D) 2 and 3

23) To do a case insensitive compare which of the following could be used to test the equality of two strings, `str1` and `str2`?
A) `(str1.equalsIgnoreCase(str2))`
B) `(str1.compareToIgnoreCase(str2) == 0)`
C) Only A
D) A and B

24) What will be the value of `pay` after the following statements are executed?

```
int hours = 45;
double pay, payRate = 10.00;
pay = hours <= 40 ? hours * payRate :
      40 * payRate + (hours - 40) * payRate * 1.5;
```
A) 400.00
B) 450.00
C) 465.00
D) 475.00

25) What would be the value of `x` after the following statements were executed?

```
int x = 10;
switch (x)
{
   case 10:
      x += 15;
   case 12:
      x -= 5;
      break;
   default:
      x *= 3;
}
```
A) 5
B) 20
C) 25
D) 30

26) What will be printed when the following code is executed?

```
double x = 45678.259;
System.out.printf("%,.2f", x);
```
A) 45678.259
B) 0,045,678.26
C) 45,678.26
D) 45,678.3

27) Which of the following will format 12.78 to display as 12.8%?
A) `System.out.printf("%2.1d%", 12.78);`
B) `System.out.printf("%.2f%%", 12.78);`
C) `System.out.printf("%1.2d%", 12.78);`
D) `System.out.printf("%.1f%%", 12.78);`

28) The expression tested by an `if` statement must evaluate to:
A) 0 or 1
B) +1 or -1
C) `true` or `false`
D) `t` or `f`

29) These operators use two operands:
A) Unary
B) Binary
C) Tertiary
D) None of the above

30) What is the value of `x` after the following code has been executed?

```
int x = 75;
int y = 90;
if ( x != y)
    x += y;
```
A) 75
B) 90
C) 15
D) 165

31) What is the value of `ans` after the following code has been executed?

```
int x = 40;
int y = 40;
int ans = 0;
if (x = y)
    ans = x + 10;
```
A) 50
B) 80
C) 30
D) No value, this is a syntax error.

32) What is the value of `ans` after the following code has been executed?

```
int x = 35;
int y = 20, ans = 80;
if (x < y);
   ans += y;
```
A) 80
B) 100
C) 35
D) 55

33) Enclosing a group of statements inside a set of braces creates a:
A) block of statements
B) `boolean` expression
C) loop
D) nothing, it is just for readability

34) This is a `boolean` variable that signals when some condition exists in the program:
A) Sentinel
B) Block
C) Flag
D) Case

35) Which of the following correctly tests the `char` variable `chr` to determine whether it is NOT equal to the character B?
A) `if (chr > 'B')`
B) `if (chr < 'B')`
C) `if (chr != 'B')`
D) `if (chr != "B")`

36) In an `if/else` statement, if the `boolean` expression is `false`:
A) the first statement or block is executed
B) the statement or block following the `else` is executed
C) all statements or blocks are executed
D) no statements or blocks are executed

37) What will be the values of ans, x, and y after the following statements are executed?

```
int ans = 0, x = 15, y =25;
if ( x >= y)
{
    ans = x + 10;
    x -=y;
}
else
{
    ans = y + 10;
    y += x;
}
```

A) ans = 0, x = 15, y = 25
B) ans = 25, x = -10, y = 25
C) ans = 35, x = 15, y = 40
D) ans = 25, x = 15, y = 40

38) What would be the value of discountRate after the following statements are executed?

```
double discountRate = 0.0;
int purchase = 100;
if (purchase > 1000)
        discountRate = .05;
else if (purchase > 750)
        discountRate = .03;
else if (purchase > 500)
    discountRate = .01;
```

A) .05
B) .03
C) .01
D) 0.0

39) What would be the value of discountRate after the following statements are executed?

```
double discountRate = 0.0;
int purchase = 1250;
if (purchase > 1000)
        discountRate = .05;
if (purchase > 750)
        discountRate = .03;
if (purchase > 500)
        discountRate = .01;
else
    discountRate = 0;
```

A) .05
B) .03
C) .01
D) 0

40) What would be the value of `discountRate` after the following statements are executed?

```
double discountRate = 0.0;
int purchase = 1250;
char cust = 'N';
if (purchase > 1000)
   if (cust == 'Y')
      discountRate = .05;
   else
      discountRate = .04;
else if (purchase > 750)
   if (cust == 'Y')
      discountRate = .04;
   else
      discountRate = .03;
else
   discountRate = 0;
```
A) .05
B) .04
C) .03
D) 0

41) Which of the following is the correct `boolean` expression to test for: `int x` being a value less than or equal to 500 or greater than 650, and `int y` not equal to 1000?
A) `((x >= 500 && x <650) && (y != 1000))`
B) `((x <= 500 OR x > 650) AND !(y.equal(1000)))`
C) `((x >= 500 || x < 650) || (y != 1000))`
D) `((x <= 500 || x > 650) && !(y == 1000))`

42) If `str1` and `str2` are both `Strings`, which of the following expressions will correctly determine whether they are equal?

(1) `(str1 == str2)`
(2) `str1.equals(str2)`
(3) `(str1.compareTo(str2) == 0)`
A) 1, 2, and 3 will all work
B) 1 and 2
C) 1 and 3
D) 2 and 3

43) What will be printed when the following code is executed?

```
int y = 10;
if ( y == 10)
{
    int x = 30;
    x += y;
}
System.out.print("x = ");
System.out.print(x);
```

A) x = 30
B) x = 40
C) x = 20
D) x is unknown when the last statement is executed.

44) The switch statement is a:
A) Multiple alternative decision structure
B) Nested decision structure
C) Sequence structure
D) Test expression

45) What will be the value of charges after the following code is executed?

```
double charges, rate = 7.00;
int time = 180;
charges = time <= 119 ? rate * 2 :
              time / 60.0 * rate;
```

A) 7.00
B) 14.00
C) 21.00
D) 28.00

46) What would be the value of `discountRate` after the following statements are executed?

```
double discountRate;
char custType = 'B';
switch (custType)
{
   case 'A':
      discountRate = .08;
      break;
   case 'B':
      discountRate = .06;
   case 'C':
      discountRate = .04;
   default:
      discountRate = 0.0;
}
```
A) .08
B) .06
C) .04
D) 0.0

47) What will be printed when the following code is executed?

```
double x = 45678.259;
String output = String.format("%,.1f", x);
System.out.println(output);
```
A) 45678.259
B) 45,678.259
C) 45,678.26
D) 45,678.3

48) Which of the following will format 12.7801 to display as $12.78?
A) `System.out.printf("$%,.2f", 12.7801);`
B) `System.out.printf("%f", 12.7801);`
C) `System.out.printf("%.2f$$", 12.7801);`
D) `System.out.printf("$d", 12.7801);`

49) What does the following code display?
```
int d = 9, e = 12;
System.out.printf("%d %d\n", d, e);
```
A) `%d %d`
B) `9 12`
C) `%d 9`
D) `%9 %12`

50) What does the following code display?
```
double x = 12.3798146;
System.out.printf("%.2f\n", x);
```
A) `123798146`
B) `1238`
C) `%12.38`
D) `12.38`

3.2 True/False Questions

1) Programs never need more than one path of execution.

2) An important style rule you should adopt for writing `if` statements is to write the conditionally executed statement on the line after the `if` statement.

3) The `if/else` statement will execute one group of statements if its `boolean` expression is `true` or another group if its `boolean` expression is `false`.

4) Because the `&&` operator performs short-circuit evaluation, your `boolean` expression will usually execute faster if the subexpression that is most likely `false` is on the left of the `&&` operator.

5) A local variable's scope always ends at the closing brace of the block of code in which it is declared.

6) When testing for character values, the `switch` statement does not test for the case of the character.

7) An important style rule you should follow when writing `if` statements is to line up the conditionally executed statement with the `if` statement.

8) Unicode is an international encoding system that is extensive enough to represent ALL the characters of ALL the world's alphabets.

9) Because the `||` operator performs short-circuit evaluation, your `boolean` expression will generally be evaluated faster if the subexpression that is most likely to be `true` is on the left.

10) When two `Strings` are compared using the `compareTo` method, the cases of the two strings are not considered.

11) In a `switch` statement, each of the `case` values must be unique.

12) In a `switch` statement, if two different values for the *CaseExpression* would result in the same code being executed, you must have two copies of the code, one after each *CaseExpression*.

13) The `String.format` method works exactly like the `System.out.printf` method, except that it does not display the formatted string on the screen.

14) The `System.out.printf` method formats a string and displays it in the console window.