Assignment (1)

Date: 11-2-2013

Dr. Essam Halim
Part 1: Chapter 2 Elementary Programming

1 Suppose a Scanner object is created as follows:
   Scanner input = new Scanner(System.in);
   What method do you use to read an int value?
   A. input.nextInt();  
   B. input.nextInteger();  
   C. input.int();  
   D. input.integer();

2 The following code fragment reads in two numbers:
   Scanner input = new Scanner(System.in);
   int i = input.nextInt();
   double d = input.nextDouble();
   What are the correct ways to enter these two numbers?
   A. Enter an integer, a space, a double value, and then the Enter key.
   B. Enter an integer, two spaces, a double value, and then the Enter key.
   C. Enter an integer, an Enter key, a double value, and then the Enter key.
   D. Enter a numeric value with a decimal point, a space, an integer, and then the Enter key.

3 _______ is the code with natural language mixed with Java code.
   A. Java program  
   B. A Java statement  
   C. Pseudocode  
   D. A flowchart diagram

4 If you enter 1 2 3, when you run this program, what will be the output?
   import java.util.Scanner;
   public class Test1 { 
      public static void main(String[] args) { 
         Scanner input = new Scanner(System.in);
         System.out.print("Enter three numbers: ");
         double number1 = input.nextDouble();
         double number2 = input.nextDouble();
         double number3 = input.nextDouble();
         // Compute average
         double average = (number1 + number2 + number3) / 3;
         // Display result
         System.out.println(average);
      }
   }
   A. 1.0  
   B. 2.0  
   C. 3.0  
   D. 4.0
5 What is the exact output of the following code?
   double area = 3.5;
   System.out.print("area");
   System.out.print(area);

   A. 3.5 3.5
   B. 3.5 3.5
   C. area 3.5
   D. area 3.5

6 Every letter in a Java keyword is in lowercase?
   A. true
   B. false

7 Which of the following is a valid identifier?
   A. $343
   B. class
   C. 9X
   D. 8+9
   E. radius

8 Which of the following are correct names for variables according to Java naming conventions?
   A. radius
   B. Radius
   C. RADIUS
   D. findArea
   E. FindArea

9 Which of the following are correct ways to declare variables?
   A. int length; int width;
   B. int length, width;
   C. int length; width;
   D. int length, int width;

10 __________ is the Java assignment operator.
   A. ==
   B. :=
   C. =
   D. =:
11 To assign a value 1 to variable x, you write
A. 1 = x;
B. x = 1;
C. x := 1;
D. 1 := x;
E. x == 1;

12 Which of the following assignment statements is incorrect?
A. i = j = k = 1;
B. i = 1; j = 1; k = 1;
C. i = 1 = j = 1 = k = 1;
D. i == j == k == 1;

13 To declare a constant MAX_LENGTH inside a method with value 99.98, you write
A. final MAX_LENGTH = 99.98;
B. final float MAX_LENGTH = 99.98;
C. double MAX_LENGTH = 99.98;
D. final double MAX_LENGTH = 99.98;

14 Which of the following is a constant, according to Java naming conventions?
A. MAX_VALUE
B. Test
C. read
D. ReadInt
E. COUNT

15 To improve readability and maintainability, you should declare ________ instead of using literal values such as 3.14159.
A. variables
B. methods
C. constants
D. classes

16 Which of these data types requires the most amount of memory?
A. long
B. int
C. short
D. byte
17 To declare an int variable number with initial value 2, you write
A. int number = 2L;
B. int number = 2l;
C. int number = 2;
D. int number = 2.0;

18 If a number is too large to be stored in a variable of the float type, it ____________.
A. causes overflow
B. causes underflow
C. causes no error
D. cannot happen in Java

19 Analyze the following code:
public class Test {
    public static void main(String[] args) {
        int n = 10000 * 10000 * 10000;
        System.out.println("n is " + n);
    }
}
A. The program displays n is 1000000000000
B. The result of 10000 * 10000 * 10000 is too large to be stored in an int variable n. This causes an overflow and the program is aborted.
C. The result of 10000 * 10000 * 10000 is too large to be stored in an int variable n. This causes an overflow and the program continues to execute because Java does not report errors on overflow.
D. The result of 10000 * 10000 * 10000 is too large to be stored in an int variable n. This causes an underflow and the program is aborted.
E. The result of 10000 * 10000 * 10000 is too large to be stored in an int variable n. This causes an underflow and the program continues to execute because Java does not report errors on underflow.

20 What is the result of 45 / 4?
A. 10
B. 11
C. 11.25
D. 12

21 Which of the following expressions will yield 0.5?
A. 1 / 2
B. 1.0 / 2
C. (double) (1 / 2)
D. (double) 1 / 2
E. 1 / 2.0
22 Which of the following expression results in a value 1?

A. 2 % 1
B. 15 % 4
C. 25 % 5
D. 37 % 6

23 25 % 1 is _____
A. 1
B. 2
C. 3
D. 4
E. 0

24 -25 % 5 is _____
A. 1
B. 2
C. 3
D. 4
E. 0

25 24 % 5 is _____
A. 1
B. 2
C. 3
D. 4
E. 0

26 -24 % 5 is _____
A. -1
B. -2
C. -3
D. -4
E. 0

27 -24 % -5 is _____
A. 3
B. -3
C. 4
28 To add a value 1 to variable x, you write
A. \(1 + x = x\);
B. \(x += 1\);
C. \(x := 1\);
D. \(x = x + 1\);
E. \(x = 1 + x\);

29 To add number to sum, you write (Note: Java is case-sensitive)
A. \(number += sum\);
B. \(number = sum + number\);
C. \(sum = Number + sum\);
D. \(sum += number\);
E. \(sum = sum + number\);

30 Suppose x is 1. What is x after \(x += 2\)?
A. 0
B. 1
C. 2
D. 3
E. 4

31 Suppose x is 1. What is x after \(x -= 1\)?
A. 0
B. 1
C. 2
D. -1
E. -2

32 What is x after the following statements?
```java
int x = 1;
int y = 2;
x *= y + 1;
```
A. x is 1.
B. x is 2.
C. x is 3.
D. x is 4.
33 What is x after the following statements?
int x = 1;
x *= x + 1;

- A. x is 1.
- B. x is 2.
- C. x is 3.
- D. x is 4.

34 Math.pow(2, 3) returns __________.
- A. 9
- B. 8
- C. 9.0
- D. 8.0

35 Math.pow(4, 1 / 2) returns __________.
- A. 2
- B. 2.0
- C. 0
- D. 1.0
- E. 1

36 Math.pow(4, 1.0 / 2) returns __________.
- A. 2
- B. 2.0
- C. 0
- D. 1.0
- E. 1

37 The __________ method returns a raised to the power of b.
- A. Math.power(a, b)
- B. Math.exponent(a, b)
- C. Math.pow(a, b)
- D. Math.pow(b, a)

38 Analyze the following code.
public class Test {
    public static void main(String[] args) {
        int month = 09;
        System.out.println("month is " + month);
A. The program displays month is 09
B. The program displays month is 9
C. The program displays month is 9.0
D. The program has a syntax error, because 09 is an incorrect literal value.

What is y displayed in the following code?
```
public class Test1 {
    public static void main(String[] args) {
        int x = 1;
        int y = x = x + 1;
        System.out.println("y is "+ y);
    }
}
```
A. y is 0.
B. y is 1 because x is assigned to y first.
C. y is 2 because x + 1 is assigned to x and then x is assigned to y.
D. The program has a compile error since x is redeclared in the statement int y = x = x + 1.

Are the following four statements equivalent?
```
number += 1;
number = number + 1;
number++;
++number;
```
A. Yes
B. No

What is i printed?
```
public class Test {
    public static void main(String[] args) {
        int j = 0;
        int i = ++j + j * 5;
        System.out.println("What is i? " + i);
    }
}
```
A. 0
B. 1
C. 5
D. 6

What is i printed in the following code?
```
public class Test {
    public static void main(String[] args) {
        int j = 0;
        int i = j++ + j * 5;
```
43 What is y displayed in the following code?
public class Test {
    public static void main(String[] args) {
        int x = 1;
        int y = x++ + x;
        System.out.println("y is " + y);
    }
}
A. y is 1.
B. y is 2.
C. y is 3.
D. y is 4.

44 What is y displayed?
public class Test {
    public static void main(String[] args) {
        int x = 1;
        int y = x + x++;
        System.out.println("y is " + y);
    }
}
A. y is 1.
B. y is 2.
C. y is 3.
D. y is 4.

45 To assign a double variable d to a float variable x, you write
A. x = (long)d
B. x = (int)d;
C. x = d;
D. x = (float)d;

46 What is the printout of the following code:
double x = 5.5;
int y = (int)x;
System.out.println("x is " + x + " and y is " + y);
A. x is 5 and y is 6
B. x is 6.0 and y is 6.0
C. x is 6 and y is 6
D. x is 5.5 and y is 5
E. x is 5.5 and y is 5.0

47 Which of the following assignment statements is illegal?
- A. float f = -34;
- B. int t = 23;
- C. short s = 10;
- D. int t = (int)false;
- E. int t = 4.5;

48 What is the value of (double)5/2?
- A. 2
- B. 2.5
- C. 3
- D. 2.0
- E. 3.0

49 What is the value of (double)(5/2)?
- A. 2
- B. 2.5
- C. 3
- D. 2.0
- E. 3.0

50 Which of the following expression results in 45.37?
- A. (int)(45.378 * 100) / 100
- B. (int)(45.378 * 100) / 100.0
- C. (int)(45.378 * 100 / 100)
- D. (int)(45.378) * 100 / 100.0

51 The expression (int)(76.0252175 * 100) / 100 evaluates to _________.
- A. 76.02
- B. 76
- C. 76.0252175
- D. 76.03
If you attempt to add an int, a byte, a long, and a double, the result will be a _________ value.

A. byte  
B. int  
C. long  
D. double

Which of the following is the correct expression of character 4?

A. 4  
B. "4"  
C. '0004'  
D. '4'

A Java character is stored in _________.

A. one byte  
B. two bytes  
C. three bytes  
D. four bytes

Suppose x is a char variable with a value 'b'. What is the printout of the statement System.out.println(++x)?

A. a  
B. b  
C. c  
D. d

Which of the following statement prints smith\exam\test.txt?

A. System.out.println("smith\exam\test.txt");  
B. System.out.println(“smith\exam\test.txt”);  
C. System.out.println("smith\exam\"test.txt");  
D. System.out.println("smith"\exam"\test.txt");

Suppose i is an int type variable. Which of the following statements display the character whose Unicode is stored in variable i?

A. System.out.println(i);  
B. System.out.println((char)i);  
C. System.out.println((int)i));  
D. System.out.println(i + "");

The Unicode of 'a' is 97. What is the Unicode for 'c'?

A. 96  
B. 97
59 Will System.out.println((char)4) display 4?
- A. Yes
- B. No

60 What is the printout of System.out.println('z' - 'a')?
- A. 25
- B. 26
- C. a
- D. z

61 An int variable can hold ________.
- A. 'x'
- B. 120
- C. 120.0
- D. "x"
- E. "120"

62 Which of the following assignment statements is correct?
- A. char c = 'd';
- B. char c = 100;
- C. char c = "d";
- D. char c = "100";

63 '3' - '2' + 'm' / 'n' is ______.
- A. 0
- B. 1
- C. 2
- D. 3

64 The expression "Java " + 1 + 2 + 3 evaluates to ________.
- A. Java123
- B. Java6
- C. Java 123
- D. java 123
- E. Illegal expression
65. Note that the Unicode for character A is 65. The expression "A" + 1 evaluates to ________.

- A. 66
- B. B
- C. A1
- D. Illegal expression

66. Note that the Unicode for character A is 65. The expression 'A' + 1 evaluates to ________.

- A. 66
- B. B
- C. A1
- D. Illegal expression

67. The System.currentTimeMillis() returns ________________.

- A. the current time.
- B. the current time in milliseconds.
- C. the current time in milliseconds since midnight.
- D. the current time in milliseconds since midnight, January 1, 1970.
- E. the current time in milliseconds since midnight, January 1, 1970 GMT (the Unix time).

68. Programming style is important, because ____________.

- A. a program may not compile if it has a bad style
- B. good programming style can make a program run faster
- C. good programming style makes a program more readable
- D. good programming style helps reduce programming errors

69. According to Java naming convention, which of the following names can be variables?

- A. FindArea
- B. findArea
- C. totalLength
- D. TOTAL_LENGTH
- E. class

70. If a program compiles fine, but it produces incorrect result, then the program suffers __________.

- A. a compilation error
- B. a runtime error
- C. a logic error

71. The __________ method displays an input dialog for reading a string.

- A. String string = JOptionPane.showMessageDialog(null, "Enter a string", "Input Demo", JOptionPane.QUESTION_MESSAGE);
B. String string = JOptionPane.showInputDialog(null, "Enter a string", "Input Demo", JOptionPane.QUESTION_MESSAGE);
C. String string = JOptionPane.showInputDialog("Enter a string", "Input Demo", JOptionPane.QUESTION_MESSAGE);
D. String string = JOptionPane.showInputDialog(null, "Enter a string");
E. String string = JOptionPane.showInputDialog("Enter a string");

72 The ________ method parses a string s to an int value.
   A. integer.parseInt(s);
   B. Integer.parseInt(s);
   C. integer.parseInt(s);
   D. Integer.parseInt(s);

73 The ________ method parses a string s to a double value.
   A. double.parseDouble(s);
   B. Double.parseDouble(s);
   C. double.parseDouble(s);
   D. Double.parseDouble(s);

74 Analyze the following code.
   import javax.swing.*;
   public class ShowErrors {
   public static void main(String[] args) {
      int i;
      int j;
      String s = JOptionPane.showInputDialog(null, "Enter an integer", "Input", JOptionPane.QUESTION_MESSAGE);
      j = Integer.parseInt(s);
      i = (i + 4);
   }
   }
   A. The program cannot compile because j is not initialized.
   B. The program cannot compile because i does not have an initial value when it is used in i = i + 4;
   C. The program compiles but has a runtime error because i does not have an initial value when it is used in i = i + 4;
   D. The program compiles and runs fine.
<table>
<thead>
<tr>
<th>Q#</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>49</td>
<td>50</td>
<td>51</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>57</td>
<td>58</td>
<td>59</td>
<td>60</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>65</td>
<td>66</td>
<td>67</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td>71</td>
<td>72</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>73</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assignment (2-1)

Date: 18-2-2013

Dr. Essam Halim
Part 2: Chapter 3 Selections

1 The "less than or equal to" comparison operator in Java is __________.
   - A. <
   - B. <=
   - C. =<
   - D. <<
   - E. !=

2 The equal comparison operator in Java is __________.
   - A. <>
   - B. !=
   - C. ==
   - D. ^=

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.

4 What is 1 - 1.0 - 1.0 - 1.0 - 1.0 == 5.0?
   - A. true
   - B. false
   - C. There is no guarantee that 1 - 1.0 - 1.0 - 1.0 - 1.0 == 5.0 is true.

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

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);
7 Suppose \( x = 1 \), \( y = -1 \), and \( z = 1 \). What is the printout of the following statement? (Please indent the statement correctly first.)

```java
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 printout.

8 Analyze the following code:

```java
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!.

9 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)

10 Analyze the following code.

```java
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)

11 The following code displays __________.

```java
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

12 Analyze the following code:

Code 1:

int number = 45;
boolean even;

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

Code 2:

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.

13 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

14 The __________ method immediately terminates the program.
15 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?

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");

16 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");

17 Which of the Boolean expressions below is incorrect?
A. (true) && (3 => 4)
B. !(x > 0) && (x > 0)
C. (x > 0) || (x < 0)
D. (x != 0) || (x = 0)
E. (-10 < x < 0)

18 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)

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

20 Suppose x=10 and y=10 what is x after evaluating the expression (y > 10) && (x++ > 10).
A. 9
21 Suppose x=10 and y=10 what is x after evaluating the expression \( y \geq 10 \) || \( x-- \geq 10 \).
- A. 9
- B. 10
- C. 11

22 Suppose x=10 and y=10 what is x after evaluating the expression \( y \geq 10 \) || \( x++ \geq 10 \).
- A. 9
- B. 10
- C. 11

23 To check whether a char variable ch is an uppercase letter, you write ___________.
- A. \( \text{ch} \geq 'A' && \text{ch} \leq 'Z' \)
- B. \( \text{ch} \geq 'A' \&\& \text{ch} \leq 'Z' \)
- C. \( \text{ch} \geq 'A' || \text{ch} \leq 'Z' \)
- D. \('A' \leq \text{ch} \leq 'Z'\)

24 Analyze the following code:
```java
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.

25 What is the output of the following code?
```java
char ch = 'F';
if (ch >= 'A' \&\& ch <= 'Z')
    System.out.println(ch);
```
- A. F
- B. f
- C. nothing
- D. F f

26 What is y after the following switch statement is executed?
```java
int x = 3; int y = 4;
switch (x + 3) {
```
24

```java
case 6: y = 0;
case 7: y = 1;
default: y += 1;
}
```

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

27 What is the printout of the following switch statement?

```java
char ch = 'a';
switch (ch) {
case 'a':
case 'A':
    System.out.print(ch); break;
case 'b':
case 'B':
    System.out.print(ch); break;
case 'c':
case 'C':
    System.out.print(ch); break;
case 'd':
case 'D':
    System.out.print(ch);
}
```

A. abcd
B. a
C. aa
D. ab
E. abc

28 What is the printout of the following switch statement?

```java
char ch = 'b';
switch (ch) {
case 'a':
    System.out.print(ch);
case 'b':
    System.out.print(ch);
case 'c':
    System.out.print(ch);
case 'd':
    System.out.print(ch);
}
```
29 Analyze the following program fragment:

```java
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.

30 What is y after the following statement is executed?

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

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

31 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.
Yes. 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.

32 What is the output of the following code?

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

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

33 Which of the following are valid specifiers for the printf statement?

- A. %4c
- B. %10b
- C. %6d
- D. %8.2d
- E. %10.2e

34 The statement System.out.printf("%3.1f", 1234.56) outputs ___________.

- A. 123.4
- B. 123.5
- C. 1234.5
- D. 1234.56
- E. 1234.6

35 The statement System.out.printf("%3.1e", 1234.56) outputs ___________.

- A. 0.1e+04
- B. 0.123456e+04
- C. 0.123e+04
- D. 1.2e+03
- E. 1.23+03

36 The statement System.out.printf("%5d", 123456) outputs ___________.

- A. 12345
- B. 23456
- C. 123456

26
37 The statement `System.out.printf("%10s", 123456)` outputs ___________. (Note: * represents a space)
A. 123456****  
B. 23456*****  
C. 12345*****  
D. ****123456

38 Analyze the following code:
```java
int i = 3434; double d = 3434;
System.out.printf("%5.1f %5.1f", i, d);
```
A. The code compiles and runs fine to display 3434.0 3434.0.  
B. The code compiles and runs fine to display 3434 3434.0.  
C. i is an integer, but the format specifier %5.1f specifies a format for double value. The code has an error.

39 The order of the precedence (from high to low) of the operators binary +, *, &&, ||, & is:
A. &&, ||, &, *, +  
B. *, +, &&, ||, &  
C. *, +, &, &&, ||  
D. *, +, &, ||, &&  
E. &., ||, &&, *, +

40 Which of the following operators are right-associative.
A. *  
B. + (binary +)  
C. %  
D. &&  
E. =

41 What is the value of the following expression?
true || true && false  
A. true  
B. false

42 Which of the following statements are true?
A. `(x > 0 && x < 10)` is same as `(x > 0) && (x < 10)`  
B. `(x > 0 || x < 10)` is same as `(x > 0) || (x < 10)`  
C. `(x > 0 || x < 10 && y < 0)` is same as `(x > 0 || (x < 10 && y < 0))`  
D. `(x > 0 || x < 10 && y < 0)` is same as `(x > 0 || x < 10) && y < 0`
<table>
<thead>
<tr>
<th>Q#</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q#</td>
<td>41</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assignment (2-2)

Date: 18-2-2013

Dr. Essam Halim
Part 3: Chapter 4 Loops

1. How many times will the following code print "Welcome to Java"?
   ```java
   int count = 0;
   while (count < 10) {
      System.out.println("Welcome to Java");
      count++;
   }
   ```
   - A. 8
   - B. 9
   - C. 10
   - D. 11
   - E. 0

2. Analyze the following code.
   ```java
   int count = 0;
   while (count < 100) {
      // Point A
      System.out.println("Welcome to Java!");
      count++;
      // Point B
   }
   // Point C
   ```
   - A. count < 100 is always true at Point A
   - B. count < 100 is always true at Point B
   - C. count < 100 is always false at Point B
   - D. count < 100 is always true at Point C
   - E. count < 100 is always false at Point C

3. How many times will the following code print "Welcome to Java"?
   ```java
   int count = 0;
   while (count++ < 10) {
      System.out.println("Welcome to Java");
   }
   ```
   - A. 8
   - B. 9
   - C. 10
   - D. 11
   - E. 0

4. How many times will the following code print "Welcome to Java"?
   ```java
   int count = 0;
   do {
      System.out.println("Welcome to Java");
      count++;
   } while (count < 10);
   ```
   - A. 8
5 How many times will the following code print "Welcome to Java"?
int count = 0;
do {
    System.out.println("Welcome to Java");
} while (count++ < 10);

A. 8  
B. 9  
C. 10  
D. 11  
E. 0

6 How many times will the following code print "Welcome to Java"?
int count = 0;
do {
    System.out.println("Welcome to Java");
} while (++count < 10);

A. 8  
B. 9  
C. 10  
D. 11  
E. 0

7 What is the value in count after the following loop is executed?
int count = 0;
do {
    System.out.println("Welcome to Java");
} while (count++ < 9);
System.out.println(count);

A. 8  
B. 9  
C. 10  
D. 11  
E. 0

8 Analyze the following statement:
double sum = 0;
for (double d = 0; d < 10;) {
    d += 0.1;
    sum += sum + d;
}

A. The program has a compile error because the adjustment is missing in the for loop.  
B. The program has a compile error because the control variable in the for loop cannot be of the double type.
C. The program runs in an infinite loop because \( d < 10 \) would always be true.

D. The program compiles and runs fine.

9 Which of the following loops prints "Welcome to Java" 10 times?

A:
```java
for (int count = 1; count <= 10; count++) {
    System.out.println("Welcome to Java");
}
```

B:
```java
for (int count = 0; count < 10; count++) {
    System.out.println("Welcome to Java");
}
```

C:
```java
for (int count = 1; count < 10; count++ ) {
    System.out.println("Welcome to Java");
}
```

D:
```java
for (int count = 0; count <= 10; count++) {
    System.out.println("Welcome to Java");
}
```

A. BD
B. ABC
C. AC
D. BC
E. AB

10 Which of the following loops correctly computes \( \frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \ldots + \frac{99}{100} \)?

A:
```java
double sum = 0;
for (int i = 1; i <= 99; i++) {
    sum = i / (i + 1);
}
System.out.println("Sum is "+ sum);
```

B:
```java
double sum = 0;
for (int i = 1; i < 99; i++) {
    sum += i / (i + 1);
}
System.out.println("Sum is "+ sum);
```

C:
```java
double sum = 0;
for (int i = 1; i <= 99; i++) {
    sum += 1.0 * i / (i + 1);
}
System.out.println("Sum is "+ sum);
```

D:
```java
double sum = 0;
for (int i = 1; i <= 99; i++) {
    sum += i / (i + 1.0);
}
System.out.println("Sum is "+ sum);
```

E:
```java
double sum = 0;
for (int i = 1; i < 99; i++) {
    sum += i / (i + 1.0);
```
A. BCD
B. ABCD
C. B
D. CDE
E. CD

11 The following loop displays _______________.
for (int i = 1; i <= 10; i++) {
    System.out.print(i + " ");
i++;
}

  A. 1 2 3 4 5 6 7 8 9
  B. 1 2 3 4 5 6 7 8 9 10
  C. 1 2 3 4 5
  D. 1 3 5 7 9
  E. 2 4 6 8 10

12 Do the following two statements in (I) and (II) result in the same value in sum?
(I):
for (int i = 0; i<10; ++i) {
    sum += i;
}

(II):
for (int i = 0; i<10; i++) {
    sum += i;
}

  A. Yes
  B. No

13 What is the output for y?
int y = 0;
for (int i = 0; i<10; ++i) {
y += i;
}
System.out.println(y);

  A. 10
  B. 11
  C. 12
  D. 13
  E. 45

14 What is i after the following for loop?
int y = 0;
for (int i = 0; i<10; ++i) {
y += i;
}
15 Is the following loop correct?
for ( ; ; );
A. Yes
B. No

16 Analyze the following fragment:
double sum = 0;
double d = 0;
while (d != 10.0) {
d += 0.1;
sum += sum + d;
}
A. The program does not compile because sum and d are declared double, but assigned with integer value 0.
B. The program never stops because d is always 0.1 inside the loop.
C. The program may not stop because of the phenomenon referred to as numerical inaccuracy for operating with floating-point numbers.
D. After the loop, sum is 0 + 0.1 + 0.2 + 0.3 + ... + 1.9

17 Analyze the following code:
public class Test {
    public static void main (String args[]) {
        int i = 0;
        for (i = 0; i < 10; i++);
        System.out.println(i + 4);
    }
}
A. The program has a compile error because of the semicolon (;) on the for loop line.
B. The program compiles despite the semicolon (;) on the for loop line, and displays 4.
C. The program compiles despite the semicolon (;) on the for loop line, and displays 14.
D. The for loop in this program is same as for (i = 0; i < 10; i++) { }; System.out.println(i + 4);

18 How many times is the println statement executed?
for (int i = 0; i < 10; i++)
    for (int j = 0; j < i; j++)
        System.out.println(i * j)
A. 100
B. 20
C. 10
D. 45

19 To add 0.01 + 0.02 + ... + 1.00, what order should you use to add the numbers to get better accuracy?
A. add 0.01, 0.02, ..., 1.00 in this order to a sum variable whose initial value is 0.
B. add 1.00, 0.99, 0.98, ..., 0.02, 0.01 in this order to a sum variable whose initial value is 0.
20 Will the following program terminate?
int balance = 10;
while (true) {
    if (balance < 9) break;
    balance = balance - 9;
}
A. Yes
B. No

21 What is sum after the following loop terminates?
int sum = 0;
int item = 0;
do {
    item++;
    sum += item;
    if (sum > 4) break;
} while (item < 5);
A. 5
B. 6
C. 7
D. 8

22 What is the printout after the following loop terminates?
int number = 25;
int i;
boolean isPrime = true;
for (i = 2; i < number && isPrime; i++) {
    if (number % i == 0) {
        isPrime = false; break;
    }
}
System.out.println("i is " + i + " isPrime is " + isPrime);
A. i is 5 isPrime is true
B. i is 5 isPrime is false
C. i is 6 isPrime is true
D. i is 6 isPrime is false

23 What is the printout after the following loop terminates?
int number = 25;
int i;
boolean isPrime = true;
for (i = 2; i < number; i++) {
    if (number % i == 0) {
        isPrime = false; break;
    }
}
System.out.println("i is " + i + " isPrime is " + isPrime);
A. i is 5 isPrime is true
B. i is 5 isPrime is false
C. i is 6 isPrime is true
24 What is sum after the following loop terminates?
```java
int sum = 0;
int item = 0;
do {
    item++;
    sum += item;
    if (sum >= 4) continue;
} while (item < 5);
```
A. 15  
B. 16  
C. 17  
D. 18

25 Will the following program terminate?
```java
int balance = 10;
while (true) {
    if (balance < 9) continue;
    balance = balance - 9;
}
```
A. Yes  
B. No

26 What is the number of iterations in the following loop:
```java
for (int i = 1; i < n; i++) {
   // iteration
}
```
A. 2*n  
B. n  
C. n - 1  
D. n + 1

27 What is the number of iterations in the following loop:
```java
for (int i = 1; i <= n; i++) {
   // iteration
}
```
A. 2*n  
B. n  
C. n - 1  
D. n + 1

28 Suppose the input for number is 9. What is the output from running the following program?
```java
import java.util.Scanner;
public class Test {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter an integer: ");
        int number = input.nextInt();
        int i;
        boolean isPrime = true;
    }
}
```
for (i = 2; i < number && isPrime; i++) {
    if (number % i == 0) {
        isPrime = false;
    }
}
System.out.println("i is "+i);
if (isPrime)
    System.out.println(number + " is prime");
else
    System.out.println(number + " is not prime");
}

A. i is 3 followed by 9 is prime
B. i is 3 followed by 9 is not prime
C. i is 4 followed by 9 is prime
D. i is 4 followed by 9 is not prime