

BENHA UNIVERSITY

FACULTY OF COMPUTERS AND INFORMATICS

Assignment (1)

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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. 3.53.5
- B. 3.5 3.5
- C. area3.5
- 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

- D. -4
- E. 0

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?

```
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.

39 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`.

40 Are the following four statements equivalent?

```
number += 1;  
number = number + 1;  
number++;  
++number;
```

- A. Yes
- B. No

41 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

42 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;
```

```
System.out.println("What is i? " + i);  
}  
}
```

- A. 0
- B. 1
- C. 5
- D. 6

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

52 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

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

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

54 A Java character is stored in _____.

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

55 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

56 Which of the following statement prints `smith\exam1\test.txt`?

- A. `System.out.println("smith\exam1\test.txt");`
- B. `System.out.println("smith\\exam1\\test.txt");`
- C. `System.out.println("smith\"exam1\"test.txt");`
- D. `System.out.println("smith"\exam1"\test.txt");`

57 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 + " ");`

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

- A. 96
- B. 97

- C. 98
- D. 99

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.parseInteger(s);`
- D. `Integer.parseInteger(s);`

73 The _____ method parses a string `s` to a double value.

- A. `double.parseDouble(s);`
- B. `Double.parsedouble(s);`
- C. `double.parse(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.

Key Answer Chapter 2 Elementary Programming

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19	20	21	22	23	24
Key								
Q#	25	26	27	28	29	30	31	32
Key								
Q#	33	34	35	36	37	38	39	40
Key								
Q#	41	42	43	44	45	46	47	48
Key								
Q#	49	50	51	52	53	54	55	56
Key								
Q#	57	58	59	60	61	62	63	64
Key								
Q#	65	66	67	68	69	70	71	72
Key								
Q#	73	74						
Key								

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 $1 - 1.0 - 1.0 - 1.0 - 1.0 - 1.0 == 5.0$?

- A. true
- B. false
- C. There is no guarantee that $1 - 1.0 - 1.0 - 1.0 - 1.0 - 1.0 == 5.0$ 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.)

```
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:

```
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.

```
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 _____.

```
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.

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

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");`

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

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");
```

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

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

- B. 10
- C. 11

21 Suppose x=10 and y=10 what is x after evaluating the expression (y >= 10) || (x-- > 10).

- A. 9
- B. 10
- C. 11

22 Suppose x=10 and y=10 what is x after evaluating the expression (y >= 10) || (x++ > 10).

- A. 9
- B. 10
- C. 11

23 To check whether a char variable ch is an uppercase letter, you write _____.

- A. (ch >= 'A' && ch >= 'Z')
- B. (ch >= 'A' && ch <= 'Z')
- C. (ch >= 'A' || ch <= 'Z')
- D. ('A' <= ch <= 'Z')

24 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.

25 What is the output of the following code?

```
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?

```
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

27 What is the printout of the following switch statement?

```
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?

```
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);
}
```


- A. abcd
- B. bcd
- C. b
- D. bb
- E. bbb

29 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.

30 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

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.

- 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.

32 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

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

D. 12345.6

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:

```
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)`

Key Answer Chapter 3 Selections

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19	20	21	22	23	24
Key								
Q#	25	26	27	28	29	30	31	32
Key								
Q#	33	34	35	36	37	38	39	40
Key								
Q#	41	42						
Key								

BENHA UNIVERSITY

FACULTY OF COMPUTERS AND INFORMATICS

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"?

```
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.

```
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"?

```
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"?

```
int count = 0;
do {
System.out.println("Welcome to Java");
count++;
} while (count < 10);
```

- A. 8

- B. 9
- C. 10
- D. 11
- E. 0

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:

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

B:

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

C:

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

D:

```
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 $1/2 + 2/3 + 3/4 + \dots + 99/100$?

A:

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

B:

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

C:

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

D:

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

E:

```
double sum = 0;  
for (int i = 1; i < 99; i++) {  
    sum += i / (i + 1.0);  
}
```



```
}  
System.out.println("Sum is " + sum);
```

- 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;  
}
```

- A. 9
- B. 10
- C. 11
- D. undefined

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 $0 + 0.1 + 0.2 + 0.3 + \dots + 1.9$

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 $0.01 + 0.02 + \dots + 1.00$, 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;
    }
}
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

D. i is 6 isPrime is false

24 What is sum after the following loop terminates?

```
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?

```
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:

```
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:

```
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?

```
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

Key Answer Chapter 4 Loops

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19	20	21	22	23	24
Key								
Q#	25	26	27	28				
Key								

Assignment (3)

Date: 25-2-2013

Dr. Essam Halim

Part 4: Chapter 5 Methods

1 Suppose your method does not return any value, which of the following keywords can be used as a return type?

- A. void
- B. int
- C. double
- D. public
- E. None of the above

2 The signature of a method consists of _____.

- A. method name
- B. method name and parameter list
- C. return type, method name, and parameter list
- D. parameter list

3 All Java applications must have a method _____.

- A. public static Main(String[] args)
- B. public static Main(String args[])
- C. public static void main(String[] args)
- D. public void main(String[] args)
- E. public static main(String[] args)

4 Arguments to methods always appear within _____.

- A. brackets
- B. parentheses
- C. curly braces
- D. quotation marks

5 Does the return statement in the following method cause compile errors?

```
public static void main(String[] args) {  
    int max = 0;  
    if (max != 0)  
        System.out.println(max);  
    else  
        return;  
}
```

- A. Yes
- B. No

6 Does the method call in the following method cause compile errors?

```
public static void main(String[] args) {  
    Math.pow(2, 4);  
}
```

- A. Yes
- B. No

7 Each time a method is invoked, the system stores parameters and local variables in an area of memory, known as _____, which stores elements in last-in first-out fashion.

- A. a heap
- B. storage area
- C. a stack
- D. an array

8 Which of the following should be defined as a void method?

- A. Write a method that prints integers from 1 to 100.
- B. Write a method that returns a random integer from 1 to 100.
- C. Write a method that checks whether current second is an integer from 1 to 100.
- D. Write a method that converts an uppercase letter to lowercase.

9 You should fill in the blank in the following code with _____.

```
public class Test {
    public static void main(String[] args) {
        System.out.print("The grade is ");
        printGrade(78.5);
        System.out.print("The grade is ");
        printGrade(59.5);
    }
    public static _____ printGrade(double score) {
        if (score >= 90.0) {
            System.out.println('A');
        }
        else if (score >= 80.0) {
            System.out.println('B');
        }
        else if (score >= 70.0) {
            System.out.println('C');
        }
        else if (score >= 60.0) {
            System.out.println('D');
        }
        else {
            System.out.println('F');
        }
    }
}
```

- A. int
- B. double
- C. boolean
- D. char
- E. void

10 You should fill in the blank in the following code with _____.

```
public class Test {
public static void main(String[] args) {
System.out.print("The grade is " + getGrade(78.5));
System.out.print("\n\nThe grade is " + getGrade(59.5));
}
public static _____ getGrade(double score) {
if (score >= 90.0)
return 'A';
else if (score >= 80.0)
return 'B';
else if (score >= 70.0)
return 'C';
else if (score >= 60.0)
return 'D';
else
return 'F';
}
}
```

- A. int
- B. double
- C. boolean
- D. char
- E. void

11 When you invoke a method with a parameter, the value of the argument is passed to the parameter. This is referred to as _____.

- A. method invocation
- B. pass by value
- C. pass by reference
- D. pass by name

12 Given the following method

```
static void nPrint(String message, int n) {
while (n > 0) {
System.out.print(message);
n--;
}
}
```

What is the printout of the call `nPrint('a', 4)`?

- A. aaaaa
- B. aaaa
- C. aaa
- D. invalid call

13 Given the following method

```
static void nPrint(String message, int n) {
while (n > 0) {
System.out.print(message);
n--;
```

```
}  
}  
What is k after invoking nPrint("A message", k)?  
int k = 2;  
nPrint("A message", k);
```

- A. 0
- B. 1
- C. 2
- D. 3

14 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println(xMethod(5, 500L));  
    }  
    public static int xMethod(int n, long l) {  
        System.out.println("int, long");  
        return n;  
    }  
    public static long xMethod(long n, long l) {  
        System.out.println("long, long");  
        return n;  
    }  
}
```

- A. The program displays int, long followed by 5.
- B. The program displays long, long followed by 5.
- C. The program runs fine but displays things other than 5.
- D. The program does not compile because the compiler cannot distinguish which xmethod to invoke.

15 Analyze the following code:

```
class Test {  
    public static void main(String[] args) {  
        System.out.println(xmethod(5));  
    }  
    public static int xmethod(int n, long t) {  
        System.out.println("int");  
        return n;  
    }  
    public static long xmethod(long n) {  
        System.out.println("long");  
        return n;  
    }  
}
```

- A. The program displays int followed by 5.
- B. The program displays long followed by 5.
- C. The program runs fine but displays things other than 5.
- D. The program does not compile because the compiler cannot distinguish which xmethod to invoke.

16 Analyze the following code.

```
public class Test {
    public static void main(String[] args) {
        System.out.println(max(1, 2));
    }
    public static double max(int num1, double num2) {
        System.out.println("max(int, double) is invoked");
        if (num1 > num2)
            return num1;
        else
            return num2;
    }
    public static double max(double num1, int num2) {
        System.out.println("max(double, int) is invoked");
        if (num1 > num2)
            return num1;
        else
            return num2;
    }
}
```

- A. The program cannot compile because you cannot have the print statement in a non-void method.
- B. The program cannot compile because the compiler cannot determine which max method should be invoked.
- C. The program runs and prints 2 followed by "max(int, double)" is invoked.
- D. The program runs and prints 2 followed by "max(double, int)" is invoked.
- E. The program runs and prints "max(int, double) is invoked" followed by 2.

17 Analyze the following code.

```
public class Test {
    public static void main(String[] args) {
        System.out.println(m(2));
    }
    public static int m(int num) {
        return num;
    }
    public static void m(int num) {
        System.out.println(num);
    }
}
```

- A. The program has a compile error because the two methods m have the same signature.
- B. The program has a compile error because the second m method is defined, but not invoked in the main method.
- C. The program runs and prints 2 once.
- D. The program runs and prints 2 twice.

18 A variable defined inside a method is referred to as _____.

- A. a global variable
- B. a method variable
- C. a block variable
- D. a local variable

19 What is k after the following block executes?

```
{  
int k = 2;  
nPrint("A message", k);  
}  
System.out.println(k);
```

- A. 0
- B. 1
- C. 2
- D. k is not defined outside the block. So, the program has a compile error

20 The client can use a method without knowing how it is implemented. The details of the implementation are encapsulated in the method and hidden from the client who invokes the method. This is known as _____.

- A. information hiding
- B. encapsulation
- C. method hiding
- D. simplifying method

21 Which of the following is a possible output from invoking Math.random()?

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

22 What is Math.round(3.6)?

- A. 3.0
- B. 3
- C. 4
- D. 4.0

23 What is Math rint(3.6)?

- A. 3.0
- B. 3
- C. 4.0
- D. 5.0

24 What is Math.rint(3.5)?

- A. 3.0
- B. 3
- C. 4
- D. 4.0

E. 5.0

25 What is `Math.ceil(3.6)`?

- A. 3.0
- B. 3
- C. 4.0
- D. 5.0

26 What is `Math.floor(3.6)`?

- A. 3.0
- B. 3
- C. 4
- D. 5.0

27 `(int)(Math.random() * (65535 + 1))` returns a random number _____.

- A. between 1 and 65536
- B. between 1 and 65535
- C. between 0 and 65535
- D. between 0 and 65536

28 `(int>('a' + Math.random() * ('z' - 'a' + 1)))` returns a random number _____.

- A. between 0 and `(int)'z'`
- B. between `(int)'a'` and `(int)'z'`
- C. between 'a' and 'z'
- D. between 'a' and 'y'

29 `(char>('a' + Math.random() * ('z' - 'a' + 1)))` returns a random character _____.

- A. between 'a' and 'z'
- B. between 'a' and 'y'
- C. between 'b' and 'z'
- D. between 'b' and 'y'

30 Which of the following is the best for generating random integer 0 or 1?

- A. `(int)Math.random()`
- B. `(int)Math.random() + 1`
- C. `(int)(Math.random() + 0.5)`
- D. `(int)(Math.random() + 0.2)`
- E. `(int)(Math.random() + 0.8)`

31 _____ is to implement one method in the structure chart at a time from the top to the bottom.

- A. Bottom-up approach
- B. Top-down approach
- C. Bottom-up and top-down approach
- D. Stepwise refinement

32 _____ is a simple but incomplete version of a method.

- A. A stub
- B. A main method
- C. A non-main method
- D. A method developed using top-down approach

Key Answer Chapter 5 Methods

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19	20	21	22	23	24
Key								
Q#	25	26	27	28	29	30	31	32
Key								

Assignment (4-1)

Date: 5-3-2013

Dr. Essam Halim

1 What is the representation of the third element in an array called a?

- A. a[2]
- B. a(2)
- C. a[3]
- D. a(3)

2 If you declare an array `double[] list = {3.4, 2.0, 3.5, 5.5}`, `list[1]` is _____.

- A. 3.4
- B. 2.0
- C. 3.5
- D. 5.5
- E. undefined

3 Which of the following is incorrect?

- A. `int[] a = new int[2];`
- B. `int a[] = new int[2];`
- C. `int[] a = new int(2);`
- D. `int a = new int[2];`
- E. `int a() = new int[2];`

4 If you declare an array `double[] list = {3.4, 2.0, 3.5, 5.5}`, the highest index in array list is _____.

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

5 How many elements are in array `double[] list = new double[5]`?

- A. 4
- B. 5
- C. 6
- D. 0

6 What is the correct term for `numbers[99]`?

- A. index
- B. index variable
- C. indexed variable

- D. array variable
- E. array

7 Suppose `int i = 5`, which of the following can be used as an index for array `double[] t = new double[100]`?

- A. `i`
- B. `(int)(Math.random() * 100)`
- C. `i + 10`
- D. `i + 6.5`
- E. `Math.random() * 100`

8 Analyze the following code.

```
public class Test {  
    public static void main(String[] args) {  
        int[] x = new int[3];  
        System.out.println("x[0] is " + x[0]);  
    }  
}
```

- A. The program has a compile error because the size of the array wasn't specified when declaring the array.
- B. The program has a runtime error because the array elements are not initialized.
- C. The program runs fine and displays `x[0]` is 0.
- D. The program has a runtime error because the array element `x[0]` is not defined.

9 Which of the following statements is valid?

- A. `int i = new int(30);`
- B. `double d[] = new double[30];`
- C. `int[] i = {3, 4, 3, 2};`
- D. `char[] c = new char();`
- E. `char[] c = new char[4]{'a', 'b', 'c', 'd'};`

10 How can you initialize an array of two characters to 'a' and 'b'?

- A. `char[] charArray = new char[2]; charArray = {'a', 'b'};`
- B. `char[2] charArray = {'a', 'b'};`
- C. `char[] charArray = {'a', 'b'};`
- D. `char[] charArray = new char[]{'a', 'b'};`

11 What would be the result of attempting to compile and run the following code?

```
public class Test {  
    public static void main(String[] args) {  
        double[] x = new double[]{1, 2, 3};  
        System.out.println("Value is " + x[1]);  
    }  
}
```

```
}  
}
```

- A. The program has a compile error because the syntax `new double[] {1, 2, 3}` is wrong and it should be replaced by `{1, 2, 3}`.
- B. The program has a compile error because the syntax `new double[] {1, 2, 3}` is wrong and it should be replaced by `new double[3]{1, 2, 3}`;
- C. The program has a compile error because the syntax `new double[] {1, 2, 3}` is wrong and it should be replaced by `new double[] {1.0, 2.0, 3.0}`;
- D. The program compiles and runs fine and the output "Value is 1.0" is printed.
- E. The program compiles and runs fine and the output "Value is 2.0" is printed.

12 Assume `int[] t = {1, 2, 3, 4}`. What is `t.length`?

- A. 0
- B. 3
- C. 4
- D. 5

13 What is the output of the following code?

```
double[] myList = {1, 5, 5, 5, 5, 1};  
double max = myList[0];  
int indexOfMax = 0;  
for (int i = 1; i < myList.length; i++) {  
    if (myList[i] > max) {  
        max = myList[i];  
        indexOfMax = i;  
    }  
}  
System.out.println(indexOfMax);
```

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

14 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        int[] x = new int[5];  
        int i;  
        for (i = 0; i < x.length; i++)  
            x[i] = i;  
        System.out.println(x[i]);  
    }  
}
```

- A. The program displays 0 1 2 3 4.

- B. The program displays 4.
- C. The program has a runtime error because the last statement in the main method causes `ArrayIndexOutOfBoundsException`.
- D. The program has a compile error because `i` is not defined in the last statement in the main method.

15 (for-each loop) Analyze the following code:

```
public class Test {
    public static void main(String[] args) {
        double[] x = {2.5, 3, 4};
        for (double value: x)
            System.out.print(value + " ");
    }
}
```

- A. The program displays 2.5, 3, 4
- B. The program displays 2.5 3 4
- C. The program displays 2.5 3.0 4.0
- D. The program displays 2.5, 3.0 4.0
- E. The program has a syntax error because `value` is undefined.

16 What is the output of the following code?

```
int[] myList = {1, 2, 3, 4, 5, 6};

for (int i = myList.length - 2; i >= 0; i--) {
    myList[i + 1] = myList[i];
}
```

```
for (int e: myList)
    System.out.print(e + " ");
```

- A. 1 2 3 4 5 6
- B. 6 1 2 3 4 5
- C. 6 2 3 4 5 1
- D. 1 1 2 3 4 5
- E. 2 3 4 5 6 1

17 (Tricky) What is output of the following code:

```
public class Test {
    public static void main(String[] args) {
        int[] x = {120, 200, 016};
        for (int i = 0; i < x.length; i++)
            System.out.print(x[i] + " ");
    }
}
```

- A. 120 200 16
- B. 120 200 14

- C. 120 200 20
- D. 016 is a compile error. It should be written as 16.

18 What is output of the following code:

```
public class Test {  
    public static void main(String[] args) {  
        int list[] = {1, 2, 3, 4, 5, 6};
```

```
        for (int i = 1; i < list.length; i++)  
            list[i] = list[i - 1];
```

```
        for (int i = 0; i < list.length; i++)  
            System.out.print(list[i] + " ");
```

```
    }  
}
```

- A. 1 2 3 4 5 6
- B. 2 3 4 5 6 6
- C. 2 3 4 5 6 1
- D. 1 1 1 1 1 1

19 In the following code, what is the printout for list2?

```
class Test {  
    public static void main(String[] args) {  
        int[] list1 = {1, 2, 3};  
        int[] list2 = {1, 2, 3};  
        list2 = list1;  
        list1[0] = 0; list1[1] = 1; list2[2] = 2;  
        for (int i = 0; i < list2.length; i++)  
            System.out.print(list2[i] + " ");  
    }  
}
```

- A. 1 2 3
- B. 1 1 1
- C. 0 1 2
- D. 0 1 3

20 In the following code, what is the printout for list1?

```
class Test {  
    public static void main(String[] args) {  
        int[] list1 = {1, 2, 3};  
        int[] list2 = {1, 2, 3};  
        list2 = list1;  
        list1[0] = 0; list1[1] = 1; list2[2] = 2;  
  
        for (int i = 0; i < list1.length; i++)  
            System.out.print(list1[i] + " ");  
    }  
}
```

- A. 1 2 3

- B. 1 1 1
- C. 0 1 2
- D. 0 1 3

21 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        int[] x = {1, 2, 3, 4};  
        int[] y = x;
```

```
        x = new int[2];
```

```
        for (int i = 0; i < y.length; i++)  
            System.out.print(y[i] + " ");  
    }  
}
```

- A. The program displays 1 2 3 4
- B. The program displays 0 0
- C. The program displays 0 0 3 4
- D. The program displays 0 0 0 0

22 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        int[] x = {1, 2, 3, 4};  
        int[] y = x;
```

```
        x = new int[2];
```

```
        for (int i = 0; i < x.length; i++)  
            System.out.print(x[i] + " ");  
    }  
}
```

- A. The program displays 1 2 3 4
- B. The program displays 0 0
- C. The program displays 0 0 3 4
- D. The program displays 0 0 0 0

23 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        final int[] x = {1, 2, 3, 4};  
        int[] y = x;
```

```
        x = new int[2];
```

```
        for (int i = 0; i < y.length; i++)
```

```
System.out.print(y[i] + " ");
}
}
```

- A. The program displays 1 2 3 4
- B. The program displays 0 0
- C. The program has a compile error on the statement `x = new int[2]`, because `x` is final and cannot be changed.
- D. The elements in the array `x` cannot be changed, because `x` is final.

24 Analyze the following code.

```
int[] list = new int[5];
list = new int[6];
```

- A. The code has compile errors because the variable `list` cannot be changed once it is assigned.
- B. The code has runtime errors because the variable `list` cannot be changed once it is assigned.
- C. The code can compile and run fine. The second line assigns a new array to `list`.
- D. The code has compile errors because you cannot assign a different size array to `list`.

25 Analyze the following code:

```
public class Test {
public static void main(String[] args) {
int[] a = new int[4];
a[1] = 1;
a = new int[2];
System.out.println("a[1] is " + a[1]);
}
}
```

- A. The program has a compile error because `new int[2]` is assigned to `a`.
- B. The program has a runtime error because `a[1]` is not initialized.
- C. The program displays `a[1] is 0`.
- D. The program displays `a[1] is 1`.

26 The _____ method copies the `sourceArray` to the `targetArray`.

- A. `System.copyArrays(sourceArray, 0, targetArray, 0, sourceArray.length);`
- B. `System.copyarrays(sourceArray, 0, targetArray, 0, sourceArray.length);`
- C. `System.arrayCopy(sourceArray, 0, targetArray, 0, sourceArray.length);`
- D. `System.arraycopy(sourceArray, 0, targetArray, 0, sourceArray.length);`

27 When you pass an array to a method, the method receives _____.

- A. a copy of the array
- B. a copy of the first element
- C. the reference of the array
- D. the length of the array

28 Show the output of the following code:

```
public class Test {
public static void main(String[] args) {
int[] x = {1, 2, 3, 4, 5};
increase(x);

int[] y = {1, 2, 3, 4, 5};
increase(y[0]);

System.out.println(x[0] + " " + y[0]);
}

public static void increase(int[] x) {
for (int i = 0; i < x.length; i++)
x[i]++;
}

public static void increase(int y) {
y++;
}
}
```

- A. 0 0
- B. 1 1
- C. 2 2
- D. 2 1
- E. 1 2

29 Do the following two programs produce the same result?

Program I:

```
public class Test {
public static void main(String[] args) {
int[] list = {1, 2, 3, 4, 5};
reverse(list);
for (int i = 0; i < list.length; i++)
System.out.print(list[i] + " ");
}

public static void reverse(int[] list) {
int[] newList = new int[list.length];

for (int i = 0; i < list.length; i++)
newList[i] = list[list.length - 1 - i];

list = newList;
}
}
```

```
public static void reverse(int[] list) {
int[] newList = new int[list.length];

for (int i = 0; i < list.length; i++)
newList[i] = list[list.length - 1 - i];

list = newList;
}
}
```

Program II:

```
public class Test {
public static void main(String[] args) {
int[] oldList = {1, 2, 3, 4, 5};
reverse(oldList);
}
```

```
for (int i = 0; i < oldList.length; i++)
System.out.print(oldList[i] + " ");
}
```

```
public static void reverse(int[] list) {
int[] newList = new int[list.length];
```

```
for (int i = 0; i < list.length; i++)
newList[i] = list[list.length - 1 - i];
```

```
list = newList;
}
}
```

- A. Yes
- B. No

30 Analyze the following code:

```
public class Test {
public static void main(String[] args) {
int[] oldList = { 1, 2, 3, 4, 5 };
reverse(oldList);
for (int i = 0; i < oldList.length; i++)
System.out.print(oldList[i] + " ");
}
```

```
public static void reverse(int[] list) {
int[] newList = new int[list.length];
```

```
for (int i = 0; i < list.length; i++)
newList[i] = list[list.length - 1 - i];
```

```
list = newList;
}
}
```

- A. The program displays 1 2 3 4 5.
- B. The program displays 1 2 3 4 5 and then raises an `ArrayIndexOutOfBoundsException`.
- C. The program displays 5 4 3 2 1.
- D. The program displays 5 4 3 2 1 and then raises an `ArrayIndexOutOfBoundsException`.

31 Analyze the following code:

```
public class Test1 {
public static void main(String[] args) {
xMethod(new double[] { 3, 3 });
xMethod(new double [5]);
xMethod(new double [3] { 1, 2, 3 });
}
```

```
public static void xMethod(double[] a) {
System.out.println(a.length);
}
}
```


- A. The program has a compile error because `xMethod(new double[] {3, 3})` is incorrect.
- B. The program has a compile error because `xMethod(new double[5])` is incorrect.
- C. The program has a compile error because `xMethod(new double[3]{1, 2, 3})` is incorrect.
- D. The program has a runtime error because `a` is null.

32 The JVM stores the array in an area of memory, called _____, which is used for dynamic memory allocation where blocks of memory are allocated and freed in an arbitrary order.

- A. stack
- B. heap
- C. memory block
- D. dynamic memory

33 When you return an array from a method, the method returns _____.

- A. a copy of the array
- B. a copy of the first element
- C. the reference of the array
- D. the length of the array

34 Suppose a method `p` has the following heading:

```
public static int[] p()
```

What return statement may be used in `p()`?

- A. `return 1;`
- B. `return {1, 2, 3};`
- C. `return int[] {1, 2, 3};`
- D. `return new int[] {1, 2, 3};`

35 The `reverse` method is defined in the textbook. What is `list1` after executing the following statements?

```
int[] list1 = {1, 2, 3, 4, 5, 6};  
list1 = reverse(list1);
```

- A. `list1` is 1 2 3 4 5 6
- B. `list1` is 6 5 4 3 2 1
- C. `list1` is 0 0 0 0 0 0
- D. `list1` is 6 6 6 6 6 6

36 The `reverse` method is defined in this section. What is `list1` after executing the following statements?

```
int[] list1 = {1, 2, 3, 4, 5, 6};
```

`int[] list2 = reverse(list1);`

- A. list1 is 1 2 3 4 5 6
- B. list1 is 6 5 4 3 2 1
- C. list1 is 0 0 0 0 0 0
- D. list1 is 6 6 6 6 6 6

37 Which of the following declarations are correct?

- A. `public static void print(String... strings, double... numbers)`
- B. `public static void print(double... numbers, String name)`
- C. `public static double... print(double d1, double d2)`
- D. `public static void print(double... numbers)`
- E. `public static void print(int n, double... numbers)`

38 Which of the following statements are correct to invoke the `printMax` method in Listing 6.5 in the textbook?

- A. `printMax(1, 2, 2, 1, 4);`
- B. `printMax(new double[]{1, 2, 3});`
- C. `printMax(1.0, 2.0, 2.0, 1.0, 4.0);`
- D. `printMax(new int[]{1, 2, 3});`

39 For the `binarySearch` method in Section 6.9.2, what is `low` and `high` after the first iteration of the while loop when invoking `binarySearch(new int[]{1, 4, 6, 8, 10, 15, 20}, 11)`?

- A. `low` is 0 and `high` is 6
- B. `low` is 0 and `high` is 3
- C. `low` is 3 and `high` is 6
- D. `low` is 4 and `high` is 6
- E. `low` is 0 and `high` is 5

40 If a key is not in the list, the `binarySearch` method returns _____.

- A. insertion point
- B. insertion point - 1
- C. $-(\text{insertion point} + 1)$
- D. -insertion point

41 Use the `selectionSort` method presented in this section to answer this question. Assume list is {3.1, 3.1, 2.5, 6.4, 2.1}, what is the content of list after the first iteration of the outer loop in the method?

- A. 3.1, 3.1, 2.5, 6.4, 2.1

- B. 2.5, 3.1, 3.1, 6.4, 2.1
- C. 2.1, 2.5, 3.1, 3.1, 6.4
- D. 3.1, 3.1, 2.5, 2.1, 6.4
- E. 2.1, 3.1, 2.5, 6.4, 3.1

42 Use the selectionSort method presented in this section to answer this question. What is list1 after executing the following statements?

```
double[] list1 = {3.1, 3.1, 2.5, 6.4};  
selectionSort(list1);
```

- A. list1 is 3.1, 3.1, 2.5, 6.4
- B. list1 is 2.5 3.1, 3.1, 6.4
- C. list1 is 6.4, 3.1, 3.1, 2.5
- D. list1 is 3.1, 2.5, 3.1, 6.4

43 The _____ method sorts the array scores of the double[] type.

- A. java.util.Arrays(scores)
- B. java.util.Arrays.sorts(scores)
- C. java.util.Arrays.sort(scores)
- D. Njava.util.Arrays.sortArray(scores)

44 Assume int[] scores = {1, 20, 30, 40, 50}, what value does java.util.Arrays.binarySearch(scores, 30) return?

- A. 0
- B. -1
- C. 1
- D. 2
- E. -2

45 Assume int[] scores = {1, 20, 30, 40, 50}, what value does java.util.Arrays.binarySearch(scores, 3) return?

- A. 0
- B. -1
- C. 1
- D. 2
- E. -2

Key Answer Chapter 6 Single-Dimensional Arrays

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19	20	21	22	23	24
Key								
Q#	25	26	27	28	29	30	31	32
Key								
Q#	33	34	35	36	37	38	39	40
Key								
Q#	41	42	43	44	45			
Key								

Assignment (4-2)

Date: 5-3-2013

Dr. Essam Halim

1 Which of the following statements are correct?

- A. `char[][] charArray = {'a', 'b'};`
- B. `char[2][2] charArray = {{'a', 'b'}, {'c', 'd'}};`
- C. `char[2][] charArray = {{'a', 'b'}, {'c', 'd'}};`
- D. `char[][] charArray = {{'a', 'b'}, {'c', 'd'}};`

2 Assume `double[][] x = new double[4][5]`, what are `x.length` and `x[2].length`?

- A. 4 and 4
- B. 4 and 5
- C. 5 and 4
- D. 5 and 5

3 What is the index variable for the element at the first row and first column in array `a`?

- A. `a[0][0]`
- B. `a[1][1]`
- C. `a[0][1]`
- D. `a[1][0]`

4 When you create an array using the following statement, the element values are automatically initialized to 0.

```
int[][] matrix = new int[5][5];
```

- A. True
- B. False

5 How many elements are array `matrix` (`int[][] matrix = new int[5][5]`)?

- A. 14
- B. 20
- C. 25
- D. 30

6 Analyze the following code:

```
public class Test {  
    public static void main(String[] args) {  
        boolean[][] x = new boolean[3][];  
        x[0] = new boolean[1]; x[1] = new boolean[2];  
        x[2] = new boolean[3];
```

```
        System.out.println("x[2][2] is " + x[2][2]);  
    }  
}
```

- A. The program has a compile error because new boolean[3][] is wrong.
- B. The program has a runtime error because x[2][2] is null.
- C. The program runs and displays x[2][2] is null.
- D. The program runs and displays x[2][2] is true.
- E. The program runs and displays x[2][2] is false.

7 Assume int[][] x = {{1, 2}, {3, 4}, {5, 6}}, what are x.length and x[0].length?

- A. 2 and 1
- B. 2 and 2
- C. 3 and 2
- D. 2 and 3
- E. 3 and 3

8 Assume int[][] x = {{1, 2}, {3, 4, 5}, {5, 6, 5, 9}}, what are x[0].length, x[1].length, and x[2].length?

- A. 2, 3, and 3
- B. 2, 3, and 4
- C. 3, 3, and 3
- D. 3, 3, and 4
- E. 2, 2, and 2

9 What is the printout of the following program?

```
public class Test {
    public static void main(String[] args) {
        int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

        int v = values[0][0];
        for (int row = 0; row < values.length; row++)
            for (int column = 0; column < values[row].length; column++)
                if (v < values[row][column])
                    v = values[row][column];

        System.out.print(v);
    }
}
```

- A. 1
- B. 3
- C. 5
- D. 6
- E. 33

10 What is the printout of the following program?

```
public class Test {
public static void main(String[] args) {
int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

int v = values[0][0];
for (int[] list : values)
for (int element : list)
if (v > element)
v = element;

System.out.print(v);
}
}
```

- A. 1
- B. 3
- C. 5
- D. 6
- E. 33

11 What is the printout of the following program?

```
public class Test {
public static void main(String[] args) {
int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

for (int row = 0; row < values.length; row++) {
java.util.Arrays.sort(values[row]);
for (int column = 0; column < values[row].length; column++)
System.out.print(values[row][column] + " ");
System.out.println();
}
}
}
```

- A. The program prints two rows 3 4 5 1 followed by 33 6 1 2
- B. The program prints on row 3 4 5 1 33 6 1 2
- C. The program prints two rows 3 4 5 1 followed by 33 6 1 2
- D. The program prints two rows 1 3 4 5 followed by 1 2 6 33
- E. The program prints one row 1 3 4 5 1 2 6 33

12 What is the output of the following code?

```
public class Test {
public static void main(String[] args) {
int[][] matrix =
{{1, 2, 3, 4},
{4, 5, 6, 7},
{8, 9, 10, 11},
```



```
{12, 13, 14, 15}};
```

```
for (int i = 0; i < 4; i++)  
System.out.print(matrix[i][1] + " ");  
}  
}
```

- A. 1 2 3 4
- B. 4 5 6 7
- C. 1 3 8 12
- D. 2 5 9 13
- E. 3 6 10 14

13 What is the output of the following code?

```
public class Test5 {  
public static void main(String[] args) {  
int[][] matrix =  
{ {1, 2, 3, 4},  
  {4, 5, 6, 7},  
  {8, 9, 10, 11},  
  {12, 13, 14, 15}};
```

```
for (int i = 0; i < 4; i++)  
System.out.print(matrix[1][i] + " ");  
}  
}
```

- A. 1 2 3 4
- B. 4 5 6 7
- C. 1 3 8 12
- D. 2 5 9 13
- E. 3 6 10 14

14 Suppose a method p has the following heading:

```
public static int[][] p()
```

What return statement may be used in p()?

- A. return 1;
- B. return {1, 2, 3};
- C. return int[] {1, 2, 3};
- D. return new int[] {1, 2, 3};
- E. return new int[][] {{1, 2, 3}, {2, 4, 5}};

15 What is the printout of the following program?

```
public class Test {
```

```

public static void main(String[] args) {
int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

for (int row = 0; row < values.length; row++) {
System.out.print(m(values[row]) + " ");
}
}

public static int m(int[] list) {
int v = list[0];
for (int i = 1; i < list.length; i++)
if (v < list[i])
v = list[i];
return v;
}
}

```

- A. 3 33
- B. 1 1
- C. 5 6
- D. 5 33
- E. 33 5

16 Assume `double[][][] x = new double[4][5][6]`, what are `x.length`, `x[2].length`, and `x[0][0].length`?

- A. 4, 5, and 6
- B. 6, 5, and 4
- C. 5, 5, and 5
- D. 4, 5, and 4

17 Which of the following statements are correct?

- A. `char[][][] charArray = new char[2][2][];`
- B. `char[2][2][] charArray = {'a', 'b'};`
- C. `char[][][] charArray = {'a', 'b'}, {'c', 'd'}, {'e', 'f'};`
- D. `char[][][] charArray = {{{'a', 'b'}, {'c', 'd'}, {'e', 'f'}};`

18 What is the printout of the following code?

```

public class Test {
public static void main(String[] args) {
int[][][] data = {{{1, 2}, {3, 4}},
{{5, 6}, {7, 8}}};

System.out.print(data[1][0][0]);
}
}

```

- A. 1
- B. 2

- C. 4
- D. 5
- E. 6

19 What is the printout of the following code?

```
public class Test {
public static void main(String[] args) {
int[][][] data = {{{1, 2}, {3, 4}},
{{5, 6}, {7, 8}}};
```

```
System.out.print(ttt(data[0]));
}
```

```
public static int ttt(int[][] m) {
int v = m[0][0];
```

```
for (int i = 0; i < m.length; i++)
for (int j = 0; j < m[i].length; j++)
if (v < m[i][j])
v = m[i][j];
```

```
return v;
}
}
```

- A. 1
- B. 2
- C. 4
- D. 5
- E. 6

Key Answer Chapter 7 Two-Dimensional Array Basics

Q#	1	2	3	4	5	6	7	8
Key								
Q#	9	10	11	12	13	14	15	16
Key								
Q#	17	18	19					
Key								