**EXERCISES**

**2.7** Fill in the blanks in each of the following statements:

a**) COMMENTS** are used to document a program and improve its readability.

b) A decision can be made in a Java program with a(n) **IF SELECTION STATEMENT**

c) The arithmetic operators with the same precedence as multiplication are DIVISION and **REMAINDER**

d) When parentheses in an arithmetic expression are nested, the **INNERMOST** set of parentheses is evaluated first.

e) A location in the computer’s memory that may contain different values at various times throughout the execution of a program is called a(n) **VARIABLE**

**2.8** Write Java statements that accomplish each of the following tasks:

a) Display the message "Enter an integer:", leaving the cursor on the same line.

System.out.print("Enter an Integer:");

b) Assign the product of variables b and c to the int variable a.

a = b \* a

c) Use a comment to state that a program performs a sample payroll calculation

// This program performs a sample payroll calculation

**2.9** State whether each of the following is true or false. If false, explain why.

a) Addition is executed first in the following expression: a \* b / (c + d) \* 5 .

This is False because in the Rules of operator precedence multiplication and division gets executed first because it has a higher precedence than addition.

b) The following are all valid variable names: AccountValue, $value, value\_in\_$, account\_no\_1234, US$, her\_sales\_in\_$, his\_$checking\_account, X!, \_$\_, a@b, and \_name.

This is True because a valid variable does not begin with a digit and does not have have a space in between. However, all the mentioned variables did not start with a digit and do not have any space between them.

c) In 2 + 3 + 5 / 4, addition has the highest precedence.

This is False because division has a higher precedence than addition.

d) The following are all invalid variable names: name@email.com, 87, x%, 99er, and 2\_

This is True because those variables started with numbers.

**2.10** Assuming that x = 5 and y = 1, what does each of the following statements display?

a) System.out.printf("x = %d%n", x + 5);

x= 10

b) System.out.printf("Value of %d \*%d is %d\n", x, y, (x \* y) );

Value of 5\*1 is 5

c) System.out.printf("x is %d and y is %d", x, y);

x is 5 and y is 1

d) System.out.printf("%d is not equal to %d\n", (x + y), (x \* y) );

6 is not equal to 5

**2.11** Which of the following Java statements contain variables whose values are not modified?

a) int m = (p + 2) + 3;

b) System.out.println("m = m + 1");

c) int m = p / 2;

d) int j = k + 2;

Answer; None is modified

**2.12** Given that y = ax2 + 5x + 2, which of the following are correct Java statements for this equation?

a) y = a \* x \* x + 5 \* x + 2;

b) y = a \* x \* x + (5 \* x) + 2;

c) y = a \* x \* x + 5 \* (x + 2);

d) y = a \* (x \* x) + 5 \* x + 2;

e) y = a \* x \* (x + 5 \* x) + 2;

f) y = a \* (x \* x + 5 \* x + 2);

The answer is option (a)

**2.13** What is the output that will be printed after execution of the following Java code snippet? Explain why.

int p = 5;

System.out.printf("%d", p + 2 \* 4);

System.out.printf("%d", p \* 2 + 4);

Output; 5 + 2 \* 4 = 13

5 \* 2 + 4 = 14

Because in order of precedence, multiplication gets executed first

**2.14** Write an application that displays the numbers 1 to 4 on the same line, with each pair of adjacent numbers separated by one space. Use the following techniques:

a) Use one System.out.println statement.

b) Use four System.out.print statements.

c) Use one System.out.printf statement.

Answer;

System.out.println("1 2 3 4");

System.out.print("1");

System.out.print("2");

System.out.print("3");

System.out.print("4");

System.out.printf("%d,%d,%d,%d", 1 2 3 4);

**2.19** What does the following code print?

System.out.printf(" \*\*\*\*%n \*\*\*\*\*\*%n\*\*\*\*\*\*\*%n \*\*\*\*\*\*%n \*\*\*\*%n");

It prints out;

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**2.20** What does the following code print?

System.out.println("\*");

System.out.println("\*\*\*");

System.out.println("\*\*\*\*\*");

System.out.println("\*\*\*\*");

System.out.println("\*\*");

It prints out;

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**2.21** What does the following code print?

System.out.print("\*");

System.out.print("\*\*\*");

System.out.print("\*\*\*\*\*");

System.out.print("\*\*\*\*");

System.out.println("\*\*");

It prints out;

\*\*\*\*\*\*\*\*\*\*\*\*\*

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**2.22** What does the following code print?

System.out.print("\*");

System.out.println("\*\*\*");

System.out.println("\*\*\*\*\*");

System.out.print("\*\*\*\*");

System.out.println("\*\*");

It prints out;

\*

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\*\*\*\*\*  
\*\*\*\*  
**\*\***

**2.23** What does the following code print?

System.out.printf("%s%n%s%n%s%n%s%n", " \*", " \*\*\*", "\*\*\*\*\*", " \*\*\*", " \*");