**Chapter 2**

**Self-Review Exercises**

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

a) A ***Opening curly bracket({)*** begins the body of every method, and a ***Closing curly bracket(})***  ends the body of every method.

b) You can use the ***If*** statement to make decisions.

c) **// (double forward slashes.)** begins an end-of-line comment.

d)**SPACE** , **TAB** and **Newline** are called white space.

e) **keywords**  are reserved for use by Java.

f) Java applications begin execution at method **main** .

g) Methods**print()**,**println()** and**printf()** display information in a command window.

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

a) Comments cause the computer to print the text after the // on the screen when the program executes.

**False: comments starting with // are used for explanation for clarity. Hence they ignored by the compiler and do not affect the programs execution,**

b) All variables must be given a type when they’re declared.

**True: in java every variable must be decleared with a specific data type before it can be used example (int, String)**

c) Java considers the variables number and NuMbEr to be identical.

**False: java is case-sensitive on that note it treats “number” and “NuMbEr” as two different variables**

d) The remainder operator (%) can be used only with integer operands.

**True : In java the remainder operator (%) can only be used integer operands else it when it compiles it will result in an error**

e) The arithmetic operators \*, /, %, + and - all have the same level of precedence.

**False: The arithmetic operators in java all have specific order of procedence the**

**Multiplication,division and remainder(\*,/,%) operators usually evaluated before**

**Addition and subtraction(+,-).**

**2.4 Identify and correct the errors in each of the following statements:**

a) if (c < 7); System.out.println("c is less than 7");

**if (c < 7);**

**System.out.println("c is less than 7");**

b) if (c => 7) System.out.println("c is equal to or greater than 7");

**if (c >= 7)**

**System.out.println("c is equal to or greater than 7");**

**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 an **if statement**.

c) Calculations are normally performed by **Expression** statements.

d) The arithmetic operators with the same precedence as multiplication are **Division** and **Modulus** .

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

f) A location in the computer’s memory that may contain different values at various times throughout the execution of a program is called a **Variable**.

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

a) Java operators are evaluated from left to right.

**True**

b) The following are all valid variable names: \_under\_bar\_, m928134, t5, j7, her\_sales$, his\_$account\_total, a, b$, c, z and z2.

**True**

c) A valid Java arithmetic expression with no parentheses is evaluated from left to right.

**True: the arithmetic expression with no parentheses is evaluated from left to right following the order of operations precedence**

d) The following are all invalid variable names: 3g, 87, 67h2, h22 and 2h.

**True: Reason is 1: they start with a digit**

**2: The contain special characters that are not allowed $ is allowed but : is not allowed**

**2.10 Assuming that x=2 and y=3, what does each of the following statements display?**

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

**Ans: x = 2**

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

**Ans: value of 2 + 2 is 4**

c) System.out.printf("x =");

**Ans: x =**

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

**Ans:5 = 5**

**2.11 Which of the following Java statements contain variables whose values are modified?**

a) **p=i+j+k+ 7;**

**The variable p is assigned a new value based on the expression**

b) System.out.println("variables whose values are modified");

c) System.out.println("a = 5");

d) **value = input.nextInt();**

**The variable Value is assigned a new value based on the user’s input**

**2.12 Given that y = ax3 + 7, which of the following are correct Java statements for this equation?**

a) **y=a\*x\*x\*x+ 7; ##correct**

b) y = a \* x \* x \* (x + 7);

c) y = (a \* x) \* x \* (x + 7);

d) **y = (a \* x) \* x \* x + 7; ## correct**

e) **y = a \* (x \* x \* x) + 7; ##correct**

f) y = a \* x \* (x \* x + 7);

**2.13 State the order of evaluation of the operators in each of the following Java statements, and show the value of x after each statement is performed:**

a) **x = 7 + 3 \* 6 / 2 - 1;**

**1. Multiply 3 and 6: 3 \* 6 = 18**

**2. Divide 18 by 2: 18 / 2 = 9**

**3. Add 7 and 9: 7 + 9 = 16**

**4. Subtract 1 from 16: 16 - 1 = 15**

x = 15

b) **x = 2 % 2 + 2 \* 2 - 2 / 2;**

**1. Calculate modulus (2 % 2 = 0)**

**2. Multiply 2 and 2: 2 \* 2 = 4**

**3. Add 0 and 4: 0 + 4 = 4**

**4. Divide 2 by 2: 2 / 2 = 1**

**5. Subtract 1 from 4: 4 - 1 = 3**

x = 3

c) **x=(3 \* 9 \* (3 + (9 \* 3 / (3))));**

**1. Evaluate innermost parentheses: 9 \* 3 = 27, 27 / 3 = 9**

**2. Add 3 and 9: 3 + 9 = 12**

**3. Multiply 3 and 9: 3 \* 9 = 27**

**4. Multiply 27 and 12: 27 \* 12 = 324**

**x = 324**

2.19 What does the following code print? System.out.printf("\*%n\*\*%n\*\*\*%n\*\*\*\*%n\*\*\*\*\*%n");

**Ans: the code print**

**\*\***

**\***

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

2.20 What does the following code print?

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

**Ans: \***

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

**Ans: \*\***

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

**Ans: \*\*\*\*\***

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

**Ans: \*\*\*\***

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

**Ans: \*\***

2.21 What does the following code print?

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

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

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

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

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

**ANS: \*/\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**All the string are printed on the same line because print is used , The last string**

**Prints a newline because Println is used**

2.22 What does the following code print?

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

**Ans: \*\*\*\***

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

**Ans: \*\*\*\*\***

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

**Ans: \*\*\*\***

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

**Ans: \*\***

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

2.23 What does the following code print? System.out.printf("%s%n%s%n%s%n", "\*", "\*\*\*", "\*\*\*\*\*");

**Ans: the code prints:**

**\***

**\*\***