**Chapter 2**

**Exercises 2.1**

a) Opening brace {, Closing brace }

b) if

c) //

d) Spaces, tabs, and newline characters

e) Keywords

f) main

g) System.out.print, System.out.println, System.out.printf

**Exercises 2.2**

a) False - Comments are ignored by the compiler and do not affect program output.

b) True

c) False - Java is case-sensitive, so number and NuMbEr are different variables.

d) False - The remainder operator % can be used with both integers and floating-point numbers.

e) False - \*, /, and % have higher precedence than + and -.

**Exercises 2.3**

a) int c, thisIsAVariable, q76354, number;

b) System.out.print("Enter an integer: ");

c) int value = input.nextInt();

d) System.out.println("This is a Java program");

e) System.out.printf("%s%n%s%n", "This is a", "Java program");

f) if (number != 7) System.out.println("The variable number is not equal to 7");

**Exercises 2.4**

Errors & Corrections:

a) Error: The semicolon ; after the if statement prevents the body from executing properly.

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

b) Error: The operator => is incorrect; it should be >=.

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

**Exercises 2.5**

a) // This program calculates the product of three integers

b) Scanner input = new Scanner(System.in);

c) int x, y, z, result;

d) System.out.print("Enter first integer: ");

e) x = input.nextInt();

f) System.out.print("Enter second integer: ");

g) y = input.nextInt();

h) System.out.print("Enter third integer: ");

i) z = input.nextInt();

j) result = x \* y \* z;

k) System.out.printf("Product is %d%n", result);

**Exercises 2.6**

Complete Java Program:

import java.util.Scanner;

public class ProductCalculator {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter first integer: ");

int x = input.nextInt();

System.out.print("Enter second integer: ");

int y = input.nextInt();

System.out.print("Enter third integer: ");

int z = input.nextInt();

int result = x \* y \* z;

System.out.printf("Product is %d%n", result);

}

}

**Exercises 2.7**

a) Comments

b) if statement

c) Expression

d) Multiplication \*, Division /

e) Innermost

f) Variable

**Exercises 2.8**

a) System.out.print("Enter an integer: ");

b) a = b \* c;

c) // This program performs a payroll calculation

**Exercises 2.9**

a) False - Operators follow precedence rules, not just left-to-right evaluation.

b) True

c) False - Operator precedence affects evaluation order.

d) True - Variable names cannot start with a number.

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**Exercises 2.10**

Given x = 2, y = 3:

a) x = 2

b) Value of 2 + 2 is 4

c) x = (No newline after =)

d) 5 = 5

**Exercises 2.11**

Modified variables:

a) Yes, p is modified.

b, c) No modification.

d) Yes, value is assigned a new value.

Exercises 2.12

Correct statements for y = ax³ + 7:

✔ a) y = a \* x \* x \* x + 7;

✔ d) y = (a \* x) \* x \* x + 7;

✔ e) y = a \* (x \* x \* x) + 7;

Exercises 2.13

Order of execution:

a) x = 7 + (3 \* 6 / 2) - 1 = 7 + 9 - 1 = 15

b) x = (2 % 2) + (2 \* 2) - (2 / 2) = 0 + 4 - 1 = 3

c) x = (3 \* 9 \* (3 + (9 \* 3 / 3))) = (3 \* 9 \* (3 + 9)) = 3 \* 9 \* 12 = 324

Exercises 2.14 - 2.35

(Selected problems with Java solutions)

2.14 - Display Numbers

// a) One println statement

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

// b) Four print statements

System.out.print("1 ");

System.out.print("2 ");

System.out.print("3 ");

System.out.print("4\n");

// c) One printf statement

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

2.15 - Arithmetic Operations

import java.util.Scanner;

public class Arithmetic {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter first integer: ");

int num1 = input.nextInt();

System.out.print("Enter second integer: ");

int num2 = input.nextInt();

System.out.printf("Sum: %d%nProduct: %d%nDifference: %d%nQuotient: %d%n",

(num1 + num2), (num1 \* num2), (num1 - num2), (num1 / num2));

}

}

2.25 - Odd or Even

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

int num = input.nextInt();

if (num % 2 == 0)

System.out.println("Even");

else

System.out.println("Odd");

2.28 - Circle Calculations

System.out.print("Enter radius: ");

int r = input.nextInt();

System.out.printf("Diameter: %d%nCircumference: %.2f%nArea: %.2f%n",

2 \* r, 2 \* Math.PI \* r, Math.PI \* r \* r);