

Part I: Introduction

1.- Write a program that asks the user to enter two numbers, obtains them from the user, and prints their sum, product, difference, quotient, and remainder.

2.- Write a program that prints the numbers 1 to 4 on the same line. Write the program using the following methods.

- a) Using one printf statement with no conversion specifiers.
- b) Using one printf statement with four conversion specifiers.
- c) Using four printf statements.

3.- Write a program that asks the user to enter two integers, obtains the numbers from the user, then prints the larger number followed by the words "is larger." If the numbers are equal, print the message "These numbers are equal." Use only the single-selection form of the if statement you learned in this chapter.

4.- Write a program that inputs three different integers from the keyboard, then prints the sum, the average, the product, the smallest and the largest of these numbers. Use only the single-selection form of the if statement you learned in this chapter. The screen dialogue should appear as follows:

```
1 Input three different integers: 13 27 14
2 Sum is 54
3 Average is 18
4 Product is 4914
5 Smallest is 13
6 Largest is 27
```

5.- Write a program that reads in the radius of a circle and prints the circle's diameter, circumference, and area. Use the constant value 3.14159 for π . Perform each of these calculations inside the printf statement(s) and use the conversion specifier %f.

6.- Write a program that prints the following shapes with asterisks.

```
1 *****      ***      *      *
2 *      *      *      *      ***      *      *
3 *      *      *      *      *****      *      *
4 *      *      *      *      *      *      *      *
5 *      *      *      *      *      *      *      *
6 *      *      *      *      *      *      *      *
7 *      *      *      *      *      *      *      *
8 *      *      *      *      *      *      *      *
9 *****      ***      *      *
```

7.- What does the following code print?

```
1 printf( "\n**\n**\n***\n****\n" );
```

8.- Write a program that reads in five integers and then determines and prints the largest and the smallest integers in the group. Use only the programming techniques you have learned in this chapter.

9.- Write a program that reads an integer and determines and prints whether it is odd or even. [Hint: Use the remainder operator. An even number is a multiple of two. Any multiple of two leaves a remainder of zero when divided by 2.]

10.- Print your initials in block letters down the page. Construct each block letter out of the letter it represents as shown below.

```
1 P P P P P P P P
2   P   P
3   P   P
4   P   P
5   P P
6
7   J J
8   J
9   J
10  J
11  J J J J J J
12
13 D D D D D D D D
14 D       D
15 D       D
16 D       D
17  D D D D D
```

11.- Write a program that reads in two integers and determines and prints if the first is a multiple of the second. [Hint: Use the remainder operator.]

12.- Display the following checkerboard pattern with eight printf statements and then display the same pattern with as few printf statements as possible.

```
1 * * * * *
2  * * * * *
3 * * * * *
4  * * * * *
5 * * * * *
6  * * * * *
7 * * * * *
8  * * * * *
```

13.- Write a program that inputs one five-digit number, separates the number into its individual digits and prints the digits separated from one another by three spaces each. [Hint: Use combinations of integer division and the remainder operation.] For example, if the user types in 42139, the program should print

```
1 4 2 1 3 9
```

14.- Using only the techniques you learned in this chapter, write a program that calculates the squares and cubes of the numbers from 0 to 10 and uses tabs to print

the following table of values:

1	number	square	cube
2	0	0	0
3	1	1	1
4	2	4	8
5	3	9	27
6	4	16	64
7	5	25	125
8	6	36	216
9	7	49	343
10	8	64	512
11	9	81	729
12	10	100	1000