Chapter 2
Console Input and Output

■ Multiple Choice

1) Valid arguments to the System.out object's println method include:
   (a) "Anything with double quotes"
   (b) String variables
   (c) Variables of type int
   (d) All of the above
   Answer: D

2) Which statement or group of statements produces the output: Java programming is fun!
   (a) System.out.print(Java programming);
       System.out.print(is fun!);
   (b) System.out.println(Java programming is fun!);
   (c) System.out.println("Java programming");
       System.out.println(" is fun!");
   (d) System.out.print("Java programming")
       System.out.println(" is fun!");
   Answer: D

3) If a hyphen is added after the % in a format specifier, the output will be _____.
   (a) Left justified
   (b) Right justified
   (c) Centered
   (d) None of the above
   Answer: A

4) The statement: System.out.printf("%6.2f", 597.7231); displays:
   (a) 597.723
   (b) 597.72
   (c) 000597.72
   (d) None of the above
   Answer: B

5)   The Java method printf is based on the _____ language.
  (a) Pascal
  (b) C++
  (c) C
  (d) ADA
  Answer: C

6)   The class NumberFormat allows you to specify a constant representing which country's currency format should be used. To use this constant you must import:
  (a) java.util.Locale
  (b) java.util.Currency
  (c) java.util.Properties
  (d) None of the above.
  Answer: A

7)   Standard code libraries in Java are called:
  (a) Methods
  (b) Classes
  (c) Packages
  (d) Statements
  Answer: C

8)   What does the following code output?

      DecimalFormat percent = **new** DecimalFormat("0.00%");

      System.out.println(percent.format(0.308));

  (a) 3.080%
  (b) 30.80%
  (c) .0308%
  (d) 308.0%
  Answer: B

9)   What does the following code output?

DecimalFormat dfQuestion = **new** DecimalFormat("#0.##E0");

System.out.println(dfQuestion.format(12.7896987));

(a) 12.79E0
(b) 12.8E0
(c) 1.28E1
(d) .13E2
Answer: A

10)   What Java package includes the class Scanner?
(a) awt
(b) swing
(c) io
(d) util
Answer: D

■   **True/False**

1)   Efficiency is lost in importing the entire package instead of importing the classes you use.
Answer: False

2)   Every Java program automatically imports the java.util package.
Answer: False

3)   The new line character is represented as '\n'.
Answer: True

4)   The method printf is used the same way as the method println but has the added feature that allows you to add formatting instructions.
Answer: False

5)   The printf method can be used to output multiple formatted values.
Answer: True

6)   The Scanner class has a method next that allows an entire line of string text to be read.
Answer: False

7)   Echoing input is good programming practice because it can reveal problems in the input.

Answer: True

■   **Short Answer/Essay**

1)   Write a Java statement to display your name in the console window.

Answer:

```
System.out.println("Wally Wonders");
```

2)   Write **ONE** Java statement to display your first and last name on two separate lines.

Answer:

```
System.out.print("Wally\nWonders");
```

3)   Write Java statements to apply currency formatting to the number 100. Indicate the package you need to import.

Answer:

```
import java.text.NumberFormat;

NumberFormat nfMoney = NumberFormat.getCurrencyInstance();

System.out.println(nfMoney.format(100));
```

4)   Write a Java program to create and display 57.32% using the DecimalFormat class. Include the necessary import statement to use the DecimalFormat class.

Answer:

```
import java.text.DecimalFormat;

public class decimalClass

{

        public static void main(String[] args)
```

```
                    {

                            DecimalFormat df = new DecimalFormat("00.00%");

                            System.out.println(df.format(.5732));

                    }

            }
```

5) Explain the significance of the pattern string used by the DecimalFormat object, and give an example of a valid pattern.

Answer: The pattern string represents the format in which the number passed to the DecimalFormat object is formatted. The pattern can either specify the exact number of digits before and after the decimal, or it can specify the minimum numbers of digits. The character '0' is used to represent a required digit and the character '#' is used to represent optional digits. Valid patterns include: "0.00", "#0.0##".

6) What does it mean to prompt the user?

Answer: Prompting the user means to display a meaningful message to the user asking for some type of input. An example of prompting the user would be displaying a JOptionPane to ask the user to input their name.

7) Why is echoing user input a good programming practice?

Answer: Echoing input is a technique that is commonly used to allow the user to check their input for accuracy before it is actually sent to the program for processing. This technique reduces the chances of errors in the program.

8) If there is no loss of efficiency in importing an entire Java package instead of importing only classes you use into your program, why would you not just import the entire package?

Answer: Importing only the classes you need into your program makes your program easier to read as well as aiding in documenting the program. Program readability is very important since humans read computer programs, too.

9) Write a complete Java console application that prompts the user for two numbers, multiplies the numbers, and then displays the result to the user.

Answer:

```
import java.util.Scanner;


public class  ConsoleMultiply
```

```
    {
      public static void main(String[] args)
      {
              //Create the scanner object for console input
              Scanner keyboard = new Scanner(System.in);

              //Prompt the user for the first number
              System.out.print("Enter the first integer: ");

              //Read the input
              int firstNumber = keyboard.nextInt();

              //Prompt the user for the second number
              System.out.print("Enter the second integer: ");

              //Read the second number
              int secondNumber = keyboard.nextInt();

              System.out.println(firstNumber + "*" + secondNumber + " is "
                      + firstNumber * secondNumber);
      }
    }
```

10) What do the format specifiers d, f, e, g, s and c represent?

Answer: The format specifiers d, f, e, and g are all used for numeric representation. Specifier d represents a decimal integer, specifier f represents a fixed-point floating-point number, specifier e represents E-notation floating-point, and specifier g represents general floating-point in which Java secedes whether to use E-notation.

The format specifiers s and c are used for string and character representation, respectively.

11) Write a Java statement to create and initialize a Scanner object named input.

Answer: Scanner input = new Scanner(System.in);

12) What is whitespace and why is it import when reading input from the keyboard using the Scanner class?

Answer: Whitespace is any string of characters, such as blank spaces, tabs, and line breaks, that prints as whitespace when written on (white) paper. Whitespace servers as delimiters for many of the Scanner class methods.