

The programming constructs that you used to solve the exercises in the previous chapter will continue to be useful as you tackle these problems. In addition, the exercises in this chapter will require you to use decision making constructs so that your programs can handle a variety of different situations that might arise. You should expect to use some or all of these Python features when completing these problems:

- Make a decision with an if statement,
 - Select one of two alternatives with an if-else statement,
 - Select from one of several alternatives by using an if-elif or if-elif-else statement,
 - Construct a complex condition for an if statement that includes the Boolean operators and, or and not,
 - Nest an if statement within the body of another if statement.
1. Write a program that reads an integer from the user. Then your program should display a message indicating whether the integer is even or odd.
 2. In this exercise you will create a program that reads a letter of the alphabet from the user. If the user enters a, e, i, o or u then your program should display a message indicating that the entered letter is a vowel. If the user enters y then your program should display a message indicating that sometimes y is a vowel, and sometimes y is a consonant. Otherwise your program should display a message indicating that the letter is a consonant.
 3. Write a program that determines the name of a shape from its number of sides. Read the number of sides from the user and then report the appropriate name as part of a meaningful message. Your program should support shapes with anywhere from 3 up to (and including) 10 sides. If a number of sides outside of this range is entered then your program should display an appropriate error message.
 4. The length of a month varies from 28 to 31 days. In this exercise you will create a program that reads the name of a month from the user as a string. Then your program should display the number of days in that month. Display "28 or 29 days" for February so that leap years are addressed.
 5. A triangle can be classified based on the lengths of its sides as equilateral, isosceles or scalene. All 3 sides of an equilateral triangle have the same length. An isosceles triangle has two sides that are the same length, and a third side that is a different length. If all of the sides have different lengths then the triangle is scalene. Write a program that reads the lengths of 3 sides of a triangle from the user. Display a message indicating the type of the triangle.
 7. The year is divided into four seasons: spring, summer, fall and winter. While the exact dates that the seasons change vary a little bit from year to year because of the way that the calendar is constructed, we will use the following dates for this exercise:

Season	First Day
Spring	March 20
Summer	June 21
Fall	September 22
Winter	December 21

Create a program that reads a month and day from the user. The user will enter the name of the month as a string, followed by the day within the month as an integer. Then your program should display the season associated with the date that was entered.

9. At a particular company, employees are rated at the end of each year. The rating scale begins at 0.0, with higher values indicating better performance and resulting in larger raises. The value awarded to an employee is either 0.0, 0.4, or 0.6 or more. Values between 0.0 and 0.4, and between 0.4 and 0.6 are never used. The meaning associated with each rating is shown in the following table. The amount of an employee's raise is \$2400.00 multiplied by their rating.

Rating	Meaning
0.0	Unacceptable performance
0.4	Acceptable performance
0.6	or more Meritorious performance

Write a program that reads a rating from the user and indicates whether the performance was unacceptable, acceptable or meritorious. The amount of the employee's raise should also be reported. Your program should display an appropriate error message if an invalid rating is entered.

10. Most years have 365 days. However, the time required for the Earth to orbit the Sun is actually slightly more than that. As a result, an extra day, February 29, is included in some years to correct for this difference. Such years are referred to as leap years. The rules for determining whether or not a year is a leap year follow:

- Any year that is divisible by 400 is a leap year,
- Of the remaining years, any year that is divisible by 100 is not a leap year,
- Of the remaining years, any year that is divisible by 4 is a leap year.
- All other years are not leap years.

Write a program that reads a year from the user and displays a message indicating whether or not it is a leap year.