**Supplementary exercises**

1. A palindrome is a number, a word, or a sentence that remains identical whether read from left to right or from right to left. For example, each of the following five-digit numbers is a palindrome: 12321, 55555, 45554, 11611. Write a program capable of reading a positive integer (greater than 0) with five digits, and of determining whether this integer is a palindrome. (Hint: use the modulus and division operators to separate the different digits composing the numbers.)

1. Write a program that converts the input of positive integer greater than 0 that is composed only of the digits 0 and 1 (that is, a “binary” integer) in order to display its decimal equivalent. (Hint: use the modulus and division operators to process the digits of the “binary” number one at a time, from right to left.)

1. Write a program that calculate the square and the cube of the numbers from 0 to 10.
2. Write a program that reads three non-zero integers and that determines and displays whether these integers could form the sides of a right-angled triangle.
3. A company desires to transmit data by telephone, but is concerned about the fact that their telephone lines can be secretly listened in on. All of this data is transmitted in the form of four-digit integers. You are asked to write a program able to encrypt this data, in order to ensure a more secure transmission. Your program should read a four-digit integer and execute the encryption in the following way: replace each of the digits in the integer by ((this digit + 7) modulo 10). Then, exchange the first digit with the third digit, and exchange the second digit with the fourth, and display the encrypted integer.  
   Write a separate program for encrypting the four-digit integer entered, and for decrypting the encrypted integer in order to find the original number.

1. The factorial of a non-negative integer is written with the expression *n*! (pronounced “*n* factorial”), and is defined in the following way:

*n*! = *n* \* (*n* – 1) \* (*n* – 2) \* … \* 1 (for *n* ≥ 1)

and

*n*! = 1 (for *n* = 0)

For example, 5! = 5 \* 4 \* 3 \* 2 \* 1 = 120.

Write a program that reads a non-negative integer, and then calculates and displays its factorial.

1. Write a program that calculates and displays the product of all the odd numbers between 1 to 15, inclusively.