

1. (Multiple of 3) Write a program that inputs a series of integers and passes them one at a time to function `isMultiple3`, which uses the remainder operator to determine whether an integer is a multiple of 3. The function should take an integer argument and return `true` if the integer is a multiple of 3 and `false` otherwise.
2. (Find the Minimum) Write a program that inputs three double-precision, floating-point numbers and passes them to a function that returns the smallest number.
3. (Prime Numbers) An integer is said to be prime if it's divisible by only 1 and itself. For example, 2, 3, 5 and 7 are prime, but 4, 6, 8 and 9 are not.

a) Write a function that determines whether a number is prime.

b) Use this function in a program that determines and prints all the prime numbers between 2 and 10,000. How many of these numbers do you really have to test before being sure that you've found all the primes?

c) Initially, you might think that $n/2$ is the upper limit for which you must test to see whether a number is prime, but you need only go as high as the square root of n . Why?

Rewrite the program, and run it both ways. Estimate the performance improvement.