

**1.24** Develop an algorithm to determine whether or not a given integer is a prime number. Recall that a prime number is an integer larger than 1 and which is divisible only by itself and by 1.

**Solution**

By definition, a prime number is number that is divisible only by itself or the number one. There are many strategies for determining if a given integer is a prime number, with varying degrees of quickness. One obvious but particularly slow algorithm is given below:

- (1) Given an integer  $x > 2$ , for  $i = 2$  to  $x - 1$ , divide  $x/i$ .
- (2) Evaluate the remainder. If the remainder is zero, then stop, the given number is not a prime number. If the remainder is not zero, continue to step (3).
- (3) Repeat steps (1) and (2).

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