Data Structures and Algorithms - Ideal Full Marks Answer

Answer to: Write a Python program to check whether a number is a prime number

Explanation:

This Python program defines a reusable function called `is_prime` to check whether a given number is prime.

A prime number has exactly two distinct positive divisors: 1 and itself.

The function handles edge cases (numbers less than 2) and checks for divisibility up to the square root of the number.

It returns a boolean value (`True` if the number is prime, `False` otherwise), which makes the function suitable for unit testing and integration in other programs.

```
# Python program to check if a number is a prime number

def is_prime(num):
    """Returns True if num is a prime number, else False."""
    if num < 2:
        return False
    for i in range(2, int(num ** 0.5) + 1):
        if num % i == 0:
            return False
    return True

# Example usage
number = int(input("Enter a number: "))
if is_prime(number):
    print(number, "is a prime number.")
else:
    print(number, "is not a prime number.")
```