Lab 2

Height Converter (10 pts)

Write a Python program that converts a person’s height from centimeters into feet and inches.

- The program should use `input()` to ask the user for their height in centimeters.
- The output should be in the format: `x'y"` , where `x` is the number of feet and `y` is the remaining inches.
- Remember:
  - 1 inch = 2.54 cm
  - 1 foot = 12 inches

Example Run:

```
Enter height in cm: 170
Height: 5'6"
```

Prime Number (20 pts)

Write a Python program that determines whether a given integer is a prime number.

- The program should use `input()` to ask the user for a number.
- The program should then print whether the number is **prime** or **not prime**.
- A prime number is greater than 1 and divisible only by 1 and itself.

Example Runs:

```
Enter a number: 7
7 is a prime number.
```

Hints for checking primality:
To check whether a number is prime, you only need to check divisibility up to the **square root** of the number (because if `n = a × b` , at least one of `a` or `b` must be ≤ $\sqrt{n}$).

- Use the **modulus operator (`%`)** to check if the number is divisible by another number.

- If you find a divisor (other than 1 and itself), the number is not prime.
- 1 is not a prime number

Bitwise Password Encoder (20 pts)

Write a Python program that encodes a numeric password using a private key with the **bitwise XOR operator**.

- The program should first ask the user for a **private key** (an integer).
- Then it should ask the user for a **numeric password** (also an integer).
- The program should **encode** the password by computing:

  ```
  encoded = password ^ private_key
  ```

  (where `^` is the bitwise XOR operator in Python).
- Finally, print the encoded password.
- To **decode** the password, XOR the encoded value with the same key again:

  ```
  decoded = encoded ^ private_key
  ```

Example Run:
Enter private key: 123
Enter numeric password: 4567
Encoded password: 4444
Decoded password: 4567