Tutorial Objectives

- Practice writing code using **conditional** statements

**Problem 1**
Write a program that asks the user for a letter and prints out whether that letter is a vowel or not.

**Sample Outputs (user input highlighted)**

Enter a letter: v
v is not a vowel

Enter a letter: e
e is a vowel

Enter a letter: y
y is sometimes a vowel

**Problem 2**
A leap year is a year that has 366 days instead of the normal 365. Leap years occur every 4 years, *except* every 100th year is **not** a leap year. However, every 400th year **is** a leap year.

Some examples:

- 1896 is a leap year
- 1996 is a leap year
- 1900 is not a leap year
- 2000 is a leap year
- 2018 is not a leap year
- 2020 is a leap year

Write a program that asks the user for a year, and outputs whether or not it is a leap year.
Problem 3

Write a program that performs the function of a simple integer calculator. This program should ask the user for an operation (including the functionality for at least addition, subtraction, multiplication, and long division) and after the user has selected a valid operation, ask the user for the two operands (i.e., the integers used in the operation). If the user enters an invalid operation, the program should print out a message telling them so.

Please also note that long division of integers requires that you provide both a quotient and a remainder - refer to https://docs.python.org/3/library/stdtypes.html - numeric-types-int-float-complex if you do not recall how to compute the remainder when you divide two integers.

Sample Outputs (user input highlighted)

(A)ddition
(S)ubtraction
(M)ultiplication
(D)ivision (Long)
Please select an operation from the list above: Vaporize
This program does not support the operation "Vaporize".

Please select an operation from the list above: M
Please provide the 1st integer: 3
Please provide the 2nd integer: 5

3 * 5 = 15

Please select an operation from the list above: D
Please provide the 1st integer: 16
Please provide the 2nd integer: 3

16 / 3 = 5 with remainder 1
**Bonus Problem**

Write a program that presents the user with four possible movies that an actor/actress has been in. The user should mentally select one of these movies. The program should then ask the user exactly two questions about the content of the movie they picked and, using the user's responses, determine which of the four possible movies was being considered by the user. To accomplish this your program will contain three calls to the `input()` function but only two of them will ever actually occur (i.e., the decision to ask the second or third question will depend on the response you receive for the first question).

This is known as an expert system and for this exercise you should restrict your expert system to movies starring a specific actor of your choice. Consider, as a clarifying example, the spoiler-filled sample output below for an expert system associated with Nicolas Cage:

**Sample Output (1 of 2)**

The actor being considered is Nicolas Cage.
The possible movies are: "The Wicker Man", "Next", "Kick-Ass", and "Con Air".

Does his character die by the end of the movie and stay dead? **Yes**  
Does his character ever use the phrase "Not the bees!"? **Yes**  

The movie you are thinking of is "The Wicker Man".

**Sample Output (2 of 2)**

The actor being considered is Nicolas Cage.  
The possible movies are: "The Wicker Man", "Next", "Kick-Ass", and "Con Air"

Does his character die by the end of the movie and stay dead? **No**  
Can his character see into the future? **No**  

The movie you are thinking of is "Con Air".