Assignment 1

Name:_____

Choose one (1) of the three (3) programs. Make sure to write the flowchart.

Green - **Standard**
Blue - **Intermediate**
Red - **Difficult**

Madlibs You want the user to fill in the blanks of the following phase:

< adjective > Macdonald had a(n) < noun >, E-I-E-O
and on that < noun > he had a(n) < animal >, E-I-E-O
with a(n) < noise > < noise > here
and a(n) < noise > < noise > there,
here a(n) < noise >, there a(n) < noise >,
everywhere a(n) < noise > < noise >,
< adjective > Macdonald had a(n) < noun >, E-I-E-O.

Write a program that

1. prompts the user to enter in the appropriate words separately.
2. prints the phrase with the words filled in the proper locations.

A possible output of the program is:

```
Enter an adjective: Jumpy
Enter a noun: table
Enter an animal: cat
Enter a noise: meow

Jumpy Macdonald had a(n) table, E-I-E-O
and on that table he had a(n) cat, E-I-E-O
with a(n) meow meow here
and a(n) meow meow there,
here a(n) meow, there a(n) meow,
everywhere a(n) meow meow,
Jumpy Macdonald had a(n) table, E-I-E-O.
```

Green text are inputs.

Calculating the Discriminant Given a quadratic expression

$$ax^2 + bx + c$$

where a, b, c are real numbers, the discriminant is

$$b^2 - 4ac.$$

Write a program that

1. prompts the user to enter each coefficient of a quadratic expression separately?
2. calculates the discriminant and stores it in a new variable.
3. prints the coefficients and the discriminant.

A possible output of the program is:

```
Enter the quadratic coefficient: 2
Enter the linear coefficient: 5
Enter the constant coefficient: 1.5

The discriminant of (2,5,1.5) is 13
```

Green text are inputs.

Body Mass Index The body mass index (BMI) measures the body fat of an adult. Its formula is

$$BMI = \frac{\text{weight (kg)}}{\big(\text{height (m)}\big)^2}$$

Write a program that

1. prompts the user to enter a weight in pounds.
2. prompts the user to enter a height in feet and inches.
3. converts the weight to kilograms and prints it.
   [1 kg = 2.20462 lb]
4. converts the height in feet and inches to meters and prints it.
   [1 ft = 12 in, 1 in = 2.54 cm, 1 m = 100 cm]
5. calculates and prints the BMI.

   show two decimal points for numerical outputs.

A possible output of the program is:

```
Enter your weight (lb): 150
Enter your height (ft in): 5 10

Your weight: 68.04 kg
Your height: 1.78 m
Your BMI is 21.52
```

Green text are inputs.