CS-UY 1114 Lab 3, Spring 2018

In this lab, you will learn about:

- Logic operators
- Boolean expressions
- Order of evaluation of logic operators
- Conditional statements (if/else)
- Nested conditionals

Problem 1: Write programs to get the following outputs:

Sample run:

```
>>> Enter a language: en
>>> Hello, world!

>>> Enter a language: es
>>> ¡Hola mundo!
```

Write an odd and even checker.
Sample run:

```
>>> Enter a number: 8
>>> Even

>>> Enter a number: 37
>>> Odd
```

Problem 2: Write a program that:

- Ask user to input a name.
- Ask user to input a graduation year.
- Ask user to input current year.
- Determined if they are not in college yet, freshman, sophomore, junior, senior or graduated

Assume the student is in a four-year college program. Display the current status/year the student is in.

Note: If graduation year equals to current year, status is 'Graduated'; if graduation year is four years after current year, status is 'Freshman'.

For example, an execution would look like:

```
Please enter your name: Jessica
Please enter your graduation year: 2019
Please enter current year: 2015
```

```
Jessica is a Freshman.
```

Problem 3: Write a program that:

- Ask user to input three integers in the order of first leg, second leg and hypotenuse.
- Determine if the entered lengths can form a right triangle.

For example, an execution would look like:

```
Please enter the first leg: 3
Please enter the second leg:  3
Please enter the hypotenuse:  4.24264
3, 3 and 4.24264 form a right triangle.
```

Problem 4: Write a program that:

- Ask user to input two integers *a* and *b*.
- Solve the linear equation . $ax + b = 0$

The program should display a message according to the solvability of the equation, i.e., infinite number of solutions, no solution or single solution. If the equation has single solution, also displays the solution.

For example, an execution would look like:

```
Please enter a: 2
Please enter b: 5
The equation has single solution and x = -2.5
```

Problem 5: Write a program that takes in an input of pounds, then output the weight in ounces and kilograms. (1 lb = 0.45 kg, 1 lb = 16 oz) **Take integer as input

Example Output:

```
Please  enter  a  weight  in  pounds: 3
3  pounds  is  equivalent  to  48  ounces  and  1.35  kilograms
```

Problem 6: Write a program that determines the shape based on number of sides and angles.

- Triangles have 3 sides
- Squares, rectangles and quadrilaterals have 4 sides.
- Pentagons have 5 sides

Sample Output:

```
Enter the number of sides: 3
The shape is triangle

Enter the number of sides: 4
Are the sides equal? (Y/N): N
Are the angles 90 degrees? (Y/N): N
The shape is quadrilateral
```

Problem 7: Write a program that:

- Ask user to input a string *s* which is time in 24hr format.
- Converts the time in s to 12hr format and print it.

For example, an execution would look like:

```
Please enter time in 24 hr format: 1227
12:27 in 12 hr format is: 12:27pm

Please enter time in 24 hr format: 0002
00:02 in 12 hr format is: 12:02am

Please enter time in 24 hr format: 0102
01:02 in 12 hr format is: 1:02am

Please enter time in 24 hr format: 1302
13:02 in 12 hr format is: 1:02pm
```