CECS 174 – LAB ASSIGNMENT 6

OBJECTIVES:

- Able to use a Python 3.x IDE to build Python program(s)
- Implement a solution that use knowledge of **chapter 7 – String Methods**
- Write Python code following an algorithm.
- Form a sophisticated conditional expression in Python

INSTRUCTIONS:

PART 1

Develop a race between a hare (a type of rabbit) and a tortoise.

- For every tick of time, each animal will move, (or remain in one position)
- Each animal will run within its lanes; so, no collision will happen. Both will start at possition of 1 and when one reaches mark 70, it will win, (or it will be in a tie if the other animal reach mark 70 at the same time).
- Each animal will move according to its pattern shown below. Note that it may slip back to the left but it should not slip lower than mark 1.

Animal	Move type	Percentage of the time	Actual move
Tortoise	Fast plod	50%	3 squares to the right
	Slip	20%	6 squares to the left
	Slow plod	30%	1 square to the right
Hare	Sleep	20%	No move at all
	Big hop	20%	9 squares to the right
	Big slip	10%	12 squares to the left
	Small hop	30%	1 square to the right
	Small slip	20%	2 squares to the left

- A race could happen like the following output

```
Rabbit pos: 10, tortoise pos: 1
---------R-----------------------------------------------------------------
T-----------------------------------------------------------------------
Rabbit pos: 11, tortoise pos: 4
----------R----------------------------------------------------------------
---T-------------------------------------------------------------------
Rabbit pos: 11, tortoise pos: 7
----------R----------------------------------------------------------------
------T----------------------------------------------------------------
Rabbit pos: 9, tortoise pos: 10
--------R-----------------------------------------------------------------
---------T----------------------------------------------------------------
Rabbit pos: 7, tortoise pos: 13
```

….

```
Rabbit pos: 34, tortoise pos: 68
---------------------------------R-----------------------------------
-------------------------------------------------------------------T--
Rabbit pos: 43, tortoise pos: 71
-------------------------------------------R--------------------------
-----------------------------------------------------------------------T

TORTOISE WON
Press any key to continue . . .
```

- Another run:

```
Rabbit pos: 1, tortoise pos: 2
R-----------------------------------------------------------------------
-T----------------------------------------------------------------------
```

…

```
Rabbit pos: 61, tortoise pos: 25
-------------------------------------------------------------R---------
------------------------T-----------------------------------------------
Rabbit pos: 70, tortoise pos: 19
-----------------------------------------------------------------------R
-----------------T-----------------------------------------------------

Rabit won!
Press any key to continue . . .
```

- Hint: get a random number between 1-10. Base on the number and select a move pattern

For Your Information

Make sure you comment your code. Also turn in an algorithm with pseudocode, and your Python code. If you write your pseudocode after to write and test-run your program, it is called reverse-engineering. Reverse engineering is a useful engineering process.

Turn in

- Turn in **your pseudocode, Python code and images of your test runs**, (i.e. several runs) in **1 single PDF document**.
- Your turn in document must be in **PDF format.** Upload to the BeachBoard account of this class.