Lesson 6

Tic Tac Toe . Temperature Conversion . Project 1

Lesson objectives

- Tic Tac Toe
- Temperature Conversion Program
- Release of Project 1

Creating Tic Tac Toe - instruction

```
def instruction():
    print("""
This is a Tic Tac Toe game.
Player 1 will be 'x' and player 2 will be 'o'.
The position to place on the board will be as follow:
        1|2|3
        -----
        4|5|6
        -----
        7|8|9
""")
```

How to represent the state of game ?

- use a list to represent the state of the game

```
start_state = [' ',' ',' ',' ',' ',' ',' ',' ',' ']

start_state = [' ',' ',' ',
               ' ',' ',' ',
               ' ',' ',' ']

state_a = ['x',' ','o',
           'x','o',' ',
           'x',' ','o']

state_b = ['x','x','o',
           'x','o','o',
           'o','x','x']
```

this is a better format to express the state

Creating Tic Tac Toe – show board

```
def showBoard(state):
    print(state[0],'|',state[1],'|',state[2],sep='')
    print('-----')
    print(state[3],'|',state[4],'|',state[5],sep='')
    print('-----')
    print(state[6],'|',state[7],'|',state[8],sep='')
```

Creating Tic Tac Toe – update state

```
def update_state(player,position,state):
    if player == 1:
        state[position-1] = 'x'
    elif player == 2:
        state[position-1] = 'o'
```

Creating Tic Tac Toe – main function

```
def main():
    instruction()                #display instruction
    state = [' ',' ',' ',        #initial state
             ' ',' ',' ',
             ' ',' ',' ']

    while ' ' in state:          #condition to end game --> no more blank
        p1 = int(input('Player 1\'s move: '))    #p1 move
        update_state(1,p1,state)
        showBoard(state)              #display board after pl move
        if ' ' not in state:          #check whether board is full
            break
        p2 = int(input('Player 2\'s move: '))    #p2 move
        update_state(2,p2,state)
        showBoard(state)              #display board after p2 move


main()              #call main function
```

Assignment : Tic Tac Toe

- Create a complete 2 player Tic Tac Toe Game:
  - determine all the states that win game
  - check winner
  - check draw
  - determine winner
  - determine draw

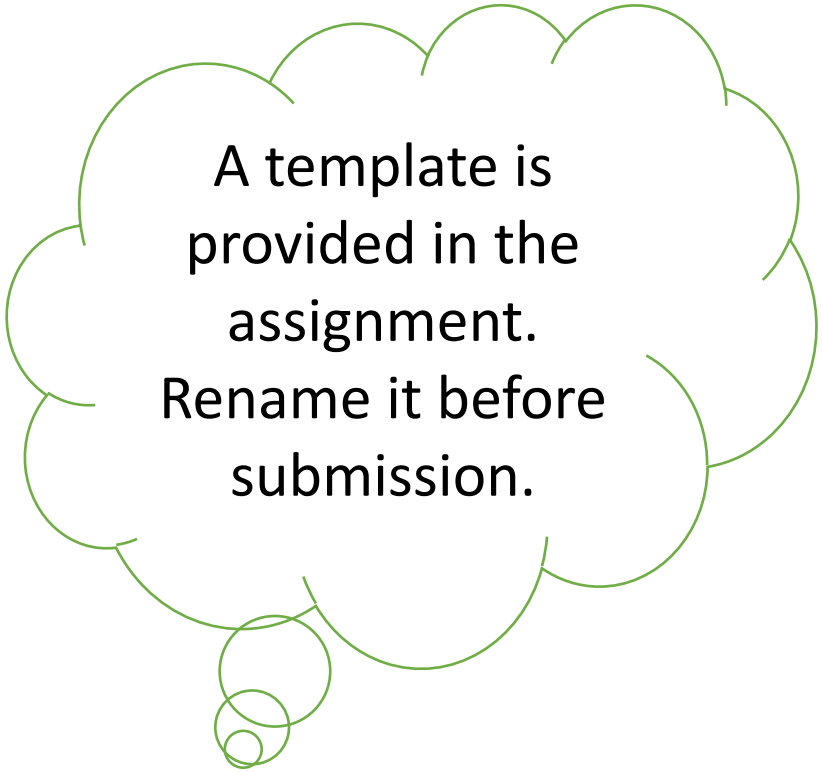
Temperature Conversion Program

```
This program will convert a range of temperatures
Enter (F) to convert Fahrenheit to Celsius
Enter (C) to convert Celsius to Fahrenheit

Enter selection: F
Enter starting temperature to convert: 65
Enter ending temperature to convert: 95

  Degrees  Degrees
Fahrenheit Celsius
   65.0     18.3
   66.0     18.9
   67.0     19.4
   68.0     20.0
   69.0     20.6
   70.0     21.1
   71.0     21.7
   72.0     22.2
   73.0     22.8
   74.0     23.3
   75.0     23.9
   76.0     24.4
   77.0     25.0
   78.0     25.6
   79.0     26.1
   80.0     26.7
   81.0     27.2
   82.0     27.8
   83.0     28.3
```

Assignment :
Temperature Conversion Program

- def displayWelcome()
- def getConvertTo()
- def displayFahrenToCelsius(start,end)
- def displayCelsiusToFahren(start,end)
- def main()

- call main()



Project 1: create a text based game

- Released: Lesson 6 (T1W10)
- Due: Lesson 11 (T2W5)
- Two paths:
  - Adventure RPG game (map creation, explore, tasks, win/lose game)
  - 5 in 1 game (mini games: tic tac toe, melting snowman, etc)
- Application of concepts:
  - Random
  - Data structure: list , tuple
  - String
  - Making decision
  - Game engine: while loop
  - Self defined functions

Project 1 : Text based Game

- 4 examples to show
- Zork
- http://textadventures.co.uk/games/play/5zyoqrsugeopel3ffhz_vq

Project 1: Deliverables

- Documentation (.txt file) → use notepad or any other text editor
  - What is your game about ?
  - What are some challenges you face ?
  - How did you overcome it ?
  - Three Key Takeaways from this project.

- Source file (.py file)
  - Comments are required for readability
  - Clear instructions for user
  - help function to help user ingame

Work to do . . .

- Revision 3
- Discussion Problem : tic tac toe
- Temperature Conversion Program
- Programming Assignment 6
- Work on your Project 1