

Assignment 7: Bonus

Winter Code Camp

DUE: January 10, 2021, 11:59PM

At the beginning of each python program, please include comments indicating your name and your student number

Example:

```
# Animesh Sarker  
# 105184718
```

Please submit this assignment as a **single zip file** called `FIRSTNAME_LASTNAME_assignment7.zip`.

1. Write a Python program that will ask the user for a quadratic equation. Have them enter an `a`, `b`, `c` values such that $y = ax^2 + bx + c$. Then ask the user for an `x` and `y` coordinate and test if it's on the parabola. [5 marks]

Sample input:

```
a = 5  
b = -17  
c = -69  
x = -2.385  
y = 0
```

Sample output: True

Explanation: The point $(-2.385, 0)$ lies on the quadratic

Save file as `bonusAssign1.py`

2. A common feature in product codes is to have an internal validation to ensure there is no mistake in the code. Write a Python program that reads in a product code and outputs whether it is valid or not based on some simple rules. [15 marks]

The rules:

- 1st part can contain only capital letters and 6 digits
- 2nd part is all digits and equals the product of the first 6 digits taken in groups of two from the left.

Sample input: AX6BYU56UX6CV6BNT7NM 287430

Sample output: True

Explanation: $65*66*67 = 287430$.

Save file as `bonusAssign2.py`

3. Since 1930 there have been 21 FIFA World cups in football (named soccer in Canada and USA), and some of countries won the FIFA World cup multiple times. Create a program that quizzes the user's knowledge of the winners of the World Cup. Your program will quiz the user on 8 different winners in 8 different years. All 8 questions should be multiple choice (3 answers offered, only 1 is correct). Tell them what percentage they got right and give a comment that reflects their level of knowledge. [25 marks]

Here is a list of all the winners from 1930 until 2018 in order:

```
["Uruguay", "Italy", "Italy", "Uruguay", "West Germany", "Brazil", "Brazil",  
"England", "Brazil", "West Germany", "Argentina", "Italy", "Argentina",  
"West Germany", "Brazil", "France", "Brazil", "Italy", "Spain", "Germany",  
"France"]
```

This is what a question should look like:

Which team won in the year 1946

1. West Germany
2. Uruguay
3. Brazil
4. France

Enter your choice: 2

Wrong! The correct answer was 1, West Germany.

Save file as bonusAssign3.py

4. Write a function called `pascal` that takes in 2 integers: a row and column. Then *recursively* compute the integers located in that row and column in Pascal's Triangle.

Remember that in Pascal's Triangle, you can compute a value at any row and column by adding two numbers above in the previous rows. [20 marks]

Note: NO USER INPUT REQUIRED

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
```

Sample run: `pascal(5, 2) = 4`

Sample run: `pascal(8, 4) = 35`

Save file as bonusAssign4.py

5. Create a function called `connect4` that takes a 7x7 list of integers where the values will be 0, 1 or 2, and returns `True` if there are four ones or four twos in a row, horizontally, vertically or diagonally and `False` otherwise [25 marks]

Note: NO USER INPUT REQUIRED

Sample Input:

```
[[0, 0, 0, 0, 0, 0, 0],  
[0, 0, 0, 0, 0, 0, 0],  
[0, 0, 0, 0, 0, 2, 0],  
[0, 0, 0, 0, 2, 2, 0],  
[0, 2, 0, 2, 1, 1, 0],  
[0, 1, 2, 1, 2, 2, 0],  
[1, 1, 1, 2, 1, 1, 0]]
```

Sample Output: `True`

Save file as `bonusAssign5.py`

6. Zain is sick of people using Chegg to answer WPCC questions. So he made a text file called `cheaters.txt`. This file contains a list of people who Zain suspects used Chegg answers for their assignment submissions. But the problem is that Zain doesn't know for sure who copied answers or not. Zain asks his wisest friend, Jagraj about this problem. He says:

“People who cheat are doomed to have names that have high ASCII sums; that is, when the sum of every letter's ASCII value in their names exceeds 1200.”

- Jagraj Aulakh, 2021

Write a Python program that will rat out the cheaters (print out their names). [10 marks]

Note: use the `ord()` function to find the ASCII value of a character.

Save file as `bonusAssign6.py`

7. Write a Python program that emulates Google search engine. The user will enter a search query and your program should scrape the web and find the most relevant links. [0 marks]

Sample Input: what's ligma?

Sample Output:

About 554,000 results (0.44 seconds)

[www.dictionary.com](#) > pop-culture > ligma ▾

[ligma | Dictionary.com](#)

📖 What does **ligma** mean? Don't fall for it! **Ligma** is a made-up disease and internet hoax claimed to have killed popular Fortnite video game streamer Ninja.

[www.urbandictionary.com](#) > define > term=LIGMA ▾

[LIGMA - Urban Dictionary](#)

📖 LIGMA is part of the BOFA spectrum of conditions. LIGMA (Loose Internal Gene Mi-Asinbits) is the second stage of BOFA (Biologically ... Guy2: **what's ligma**?

[www.urbandictionary.com](#) > define > term=what is ligma ▾

[what is ligma - Urban Dictionary](#)

📖 Jul 25, 2018 — **What** a totally unaware person would say in response to a statement with the word "**ligma**". The response to "**what is ligma**" would typically be ...

[www.narcity.com](#) > English - Canada > Life ▾

[What Is "Ligma" And Why Is Everyone Talking About It - Narcity](#)

📖 Jun 13, 2020 — It seems like every day there's a new disease, condition or plague that everyone's talking about. In 2018, we're constantly learning about new ...

[knowyourmeme.com](#) > memes > ligma ▾

[Ligma | Know Your Meme](#)

📖 Ligma is a fictional disease associated with a death hoax orchestrated by ... The intention of this joke was to prompt concerned fans to ask **what Ligma** is, ...