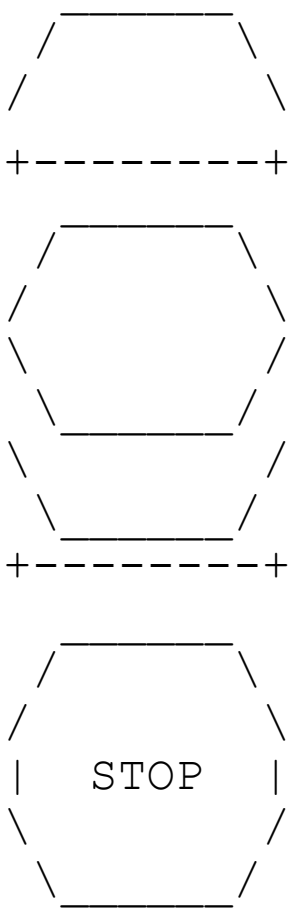
Assignment 4 – Python
Software System Development – Monsoon 2022
Due Date: 2 November 2022, 8.30 PM

Instructions:

- This assignment is an individual submission.
- Total Marks of 50 Marks with duration of 3 weeks.
- All script submissions should be submitted via Moodle.
- Inputs/output should fit the criteria mentioned in respective question.
- All other conditions are open to your interpretations.
- Evaluation will be conducted based on a fixed grading rubric (syntax, logic, input and output) and the marks are divided as per prescribed weightage in respective questions.
- For queries, reach out to TAs via Moodle.

Question 1: (10 marks)

Write a python script to output the below figure on the command prompt. Follow the most creative and efficient way to do this.



Question 2: (25 marks)

Build "Address Directory" in Python. Here, a directory consists of a list of entries. Each entry can store details such as First Name, Last Name, Address, City, State, Zip, Contact number, Email address, etc. In order to maintain an address directory, the following functionalities are required.

1. A user can add a new entry from command prompt.
2. Consider reading/loading entries from .csv file too.
3. Display the directory on terminal (in a table-like format).
4. Allow removing and updating entries in the directory.
5. Search for entries in the directory based on some attribute(s).

Question 3: (15 marks)

Person P is at location S and moves around in the 2D world based on sequence of input commands. You can consider S as any coordinate. Take user or file input for sequence of commands. For example, [(3mm, N), (4.5mm, NW), (2mm, SE)] is one such example of sequence of commands. It says that P moves for 3 millimeters in N direction from the current location. Next, P moves 4.5 mm in NW and so on. Here, N, S, W, E are North, South, West and East, respectively. Length can be taken in millimeters or centimeters.

1. Show a 2D plot that describes how P is moving in 2D world starting from S. Use library like Matplotlib in Python.
2. Interpret the current/last location of P with respect to the starting point S. (Example: North/North-East of S)
3. Calculate the total distance from the starting point S to the current/last location.

Submission Guidelines:

1. Create three files, one for each question (Q1: pattern.py; Q2: address.py; Q3: map.py). The code can be splitted into modules, but your submission must be executable from these files for each question.
2. Create one readme file which contains instructions for all the three questions on
    a. How to execute the code
    b. Every step that requires input
3. Add all the files in a directory named <rollnumber> and zip the contents as **<rollnumber>.zip**