PROGRAMMING ASSIGNMENT 2

Subject : SCaRUBBING
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Submission Date : 05.11.2021
Due Date : 19.11.2021 23:00
Click here to accept your Programming Assignment 2.

1   Introduction

Imagine a toy car with a brush in front of it circulating in a room. The car is controlled by python application using control flows, loops and functions. Brush in the car can be in two different positions: above or below. When the brush is down, it paints the places where the vehicle goes and does nothing when the brush is up. It is expected you to implement this program in python.

2   Assignment

You will use an array to start with a user-specified N * N size. You will keep a record of where the vehicle is located, whether the brush is below or above, and the direction of the vehicle. If the vehicle is out of size, it will complete the command by entering from the other side. In other words, if you exit from the right of the matrix, it will continue by entering on the left and continue from above if you exit from below.

Assume that the vehicle is initially in position (0,0), the brush is up and the vehicle is facing to the right. The vehicle will be managed by the following command.

Command	Task
1	Brush down
2	Brush up
3	Turn right
4	Turn left
5_x	Move up to x (except the square where it is located.)
6	Jump (Jump as 3 square except the square where it is located. After jumping, the brush comes up)
7	Reverse direction (rotates 180 degrees)
8	View the matris
0	End program (if it sees 0, it will ignore subsequent commands.)

If the brush is down while the vehicle is passing from one square to another, a value of 1 will be assigned to the corresponding element in the array. Places with a value of 1 will be displayed as " * ".

Commands will be separated with each other by " + ". An exemplary command is as follows.

Commands: N (board size) +5_5+3+5_1+3+1+5_4+4+5_7+4+5_4+4+5_3+4+5_2+7+6+8+0

SAMPLE 1 for testing:

A sample image when you run your program with *python3 assignment2.py* command line:

As you see, after run your program, it prints the menu of the rules, and asks user for entering commands. After entering specified commands, for example, 20+5_5+3+5_1+3+1+5_4+4+5_7+4+5_4+4+5_ the output of the program is shown below.

If a number between 0-8 is not entered in the commands, it will give an error message, then

clear the console and asks user to enter a new command for output.

```
<-----RULES----->
1. BRUSH DOWN
2. BRUSH UP
3. VEHICLE ROTATES RIGHT
4. VEHICLE ROTATES LEFT
5. MOVE UP TO X
6. JUMP
7. REVERSE DIRECTION
8. VIEW THE MATRIX
0. EXIT
Please enter the commands with a plus sign (+) between them.
20+5_5+3+5_1+3+1+5_4+4+5_7+4+5_4+4+5_3+4+5_2+7+6+9+0
You entered an incorrect command. Please try again!
```

SAMPLE 2 for testing:

Commands: 9+3+1+5_3+4+5_4+4+5_3+7+6+3+5_2+4+1+5_3+2+5_2+1+3+5_9+8+0

```
<-----RULES----->
1. BRUSH DOWN
2. BRUSH UP
3. VEHICLE ROTATES RIGHT
4. VEHICLE ROTATES LEFT
5. MOVE UP TO X
6. JUMP
7. REVERSE DIRECTION
8. VIEW THE MATRIX
0. EXIT
Please enter the commands with a plus sign (+) between them.
9+3+1+5_3+4+5_4+4+5_3+7+6+3+5_2+4+1+5_3+2+5_2+1+3+5_9+8+0
+++++++++++
+*   *    +
+*   *    +
+*   *    +
+*****    +
+  *      +
+  *      +
+  *      +
+        +
+*********+
+++++++++++
```

3   Execution and Test

Assume that the commands will be taken from console, so to execute your code on dev, firstly use following command line in your terminal:
python3 assignment2.py

After executing this command line (*python3 assignment2.py*) in your terminal, the program will ask user to enter the commands that includes rules such as 12+5_3+1+4 etc. After entering commands, you will print the output.

Task	Point
Submitted	1
Compiled	10
Output	79
Error Handling	10
Total	100

4 Grading Policy

5 Important Notes

- Do not miss the submission deadline! Use the Github platform for submission. Submissions as e-mail attachments will not be accepted.

- Save all your work until the assignment is graded.

- Your assignment must be original and you must do it with your own individual work. Duplicate or very similar assignments are both going to be considered as cheating. You can ask your questions via Piazza and you are supposed to be aware of everything discussed on Piazza. At Piazza, you cannot share your source code completely or partially. Assignments will be checked for similarity, and there will be serious consequences if plagiarism is detected.

- You have 3 days extensions for this assignment. Please do not click and accept all the links below. Just click one of the related link if you use any extension. If you don't use any extension, then please do not click any link provided below.

- *Click here to accept your Programming Assignment 2 for 1 day late submission.* (It will be degraded over 90 points)

- *Click here to accept your Programming Assignment 2 for 2 days late submission.* (It will be degraded over 80 points)

- *Click here to accept your Programming Assignment 2 for 3 days late submission.* (It will be degraded over 70 points)

- Your programs will be executed in DEV machine, please make it work on dev before submitting.

- It is your duty to check the Piazza platform against any possible update about this assignment. If any instruction written by the TA violates any condition against this document, the new instruction(s) on Piazza is/are valid!

- You will submit your work as stated below:

  − assignment2.py

- You can lose points if you dont follow the rules defined above.