Honors Computer Science Python
Mr. Clausen
Programs RRE 1

PROGRAM RRE_1A Give Me A Penny(20 points)

If you give someone one penny today, two pennies tomorrow, four pennies the next day, eight pennies the day after that, and continue to double the amount of pennies you give the person each day, how long would it take for that person to accumulate one million **dollars** (not pennies) or more?

1) **For our first program in repl.it, we don't need to use functions.**
   Use a `DocString` at the beginning of the program for your comments. Type comments at the beginning of the program to display your name and other information just like those used for program 1A. **Be sure to change the program name, program number, and program description.**

2) Leave a blank line after the DocString.

3) Initialize all of the variables that are to be used in this program. Initialize each variable on a separate line. (Initialize integers to 0 (zero), decimal numbers to 0.0, strings to "" (double quotes with nothing in between them, and Boolean variables to False). You will need variables for all of the following: dayNumber, dailyAmount, and sum. If you think that you might need more variables. Make sure that you use descriptive identifiers for all of your variables to model "self-documenting code".

4) Leave a blank line after the variable initialization statements.

5) Type the following comment:
   #----------Display My Information----------
   Follow this comment with print statements to display your name and period output just like those used for program 1A. **Be sure to change the program name, and program number.**

6) Leave a blank line after the print statements listed above.

7) Print a "header" for each of the three columns in your output. The day number, daily amount, total amount to date.

8) For the Calculations AND Output section, type the following comment:
   #----------Calculations & Output----------
   You will need to use a while loop to do the calculations and print the output for each day. The loop should stop after the total/sum is equal to or has exceeded $1,000,000. Your output should look like the following except that it will continue until the running total equals or exceeds one million **dollars**. You need to use print formatting in your print statements to make the output look nice. Remember that you can find a PDF version of the textbook in Google Classroom to

remind yourself how to do this.

```
Day        Daily Amount        Total Amount
  1                0.01                0.01
  2                0.02                0.03
  3                0.04                0.07
  4                0.08                0.15
  5                0.16                0.31
```

9) Leave a blank line after the calculations and output listed above.

10) Finish your program with these last 2 lines of code.
    print ("")
    input("Press enter to quit the program")

11) Save your program as LastNameFirstNameP_RRE1A.py.

12) When you are finished with your program, have tested it thoroughly to make sure that your program is correct, and are sure that you don't need to make any changes, then click the SUBMIT button repl.it to turn it in.

PROGRAM RRE_1B Probability Probably (30 points)

Write a program to give the user a choice to flip a coin or roll a standard and fair six sided die. Ask the user how many times they want to flip a coin or roll the die. Display each outcome and display how many of each were randomly determined. Display 10 coin outcomes or 10 die rolls across each line.

1) Use a `DocString` at the beginning of the program for your comments. Type comments at the beginning of the program to display your name and other information just like those used for program 1A. **Be sure to change the program name, program number, and program description.**

2) Leave a blank line after the DocString.

3) import random

4) Leave a blank line after the import statement.

5) Type a one line comment of all equal signs.
   #==========

6) Define the **main** function. The main function should declare and initialize all of the variables (**except any variables that are better left as local variables within other functions)** and call other functions. The last line of code in the main function should be:

input("Press enter to quit the program")

7) Initialize all of the variables that are to be used in this program **in the main function** and call all of the other functions from the main function. Initialize each variable on a separate line. (Initialize integers to 0 (zero), decimal (float) numbers to 0.0, strings to "" (double quotes with nothing in between them, and Boolean variables to False). Make sure that you use descriptive identifiers for all of your variables to model "self-documenting code", and that all variables are initialized at this place in the program.

8) After the main function, type a one line comment of subtraction signs. **Include this comment after each function as well.**
#----------

9) Define the function displayMyInfo. Inside this function use print statements to display your name and period output just like those used for program 1A. **Be sure to change the program name, and program number.** Include a comment line of subtraction signs after the function. Call this function from the main function and run your program to see if it works without errors. **See step #15.**

10) **For all function definitions from here to the end of the program, remember to include a DocString at the beginning of each function with a brief description of what the function does.**

11) Define the function "menu" that displays the menu (as pictured below) and asks the user to enter their choice and returns this choice to the main function. Upper and lower case values should work for the menu choice to quit. Pass the variable representing the user's choice to this function when calling it from the main function.

```
 Probability menu
1. Flip a coin
2. Roll a die
Q. Quit the program
Enter your choice

Enter your choice:
```

12) In the main() function, create a "while loop" that will quit when the user enters either a lowercase 'q' or upper case 'Q' and keep running otherwise.
Now call the "menu" function from the main function **inside the "while loop"** and run your program to see if it works without errors, and will quit when the user enters either an uppercase or lowercase letter 'Q'. You can add the "if, else" statements in the while loop in the main function to call the functions to flip a coin or roll the die. **See step #15.**

13) Define the function to flip a coin that asks the user how many times to flip the coin (no error trapping), uses a loop to generate random number representing heads or tails and counts the occurrences of each. Include your print statements in this function as well so that you are

repeatedly generating a random number, printing out heads or tails, keeping totals for each and then displaying how many heads and tails were chosen after the loop is over. Display each outcome and display how many of each were randomly determined. Display 10 coin outcomes across each line. **Make any variables used in this function local to this function.** Call this function from the main function **inside the "while loop"** and run your program to see if it works without errors. **See step #15.**

14) Define the function to roll the die that asks the user how many times to roll the die (no error trapping), uses a loop to generate random number representing a 1 through 6 and counts the occurrences of each. Include your print statements in this function as well so that you are repeatedly generating a random number, printing out the outcome, keeping totals for each and then displaying how many ones, twos, threes, etc. were chosen after the loop is over. Display each outcome and display how many of each were randomly determined. Display 10 die rolls across each line. **Make any variables used in this function local to this function.** Call this function from the main function **inside the "while loop"** and run your program to see if it works without errors. **See step #15.**

15) On a line by itself after all of the functions type: **main()** #You will need this line of code to call the main() function, or your program will not run.

16) Type two comment lines of equal signs to indicate that this is the end of the program.
```
#========================================
#========================================
```

17) Save your program as LastNameFirstNameP_RRE1B.py.

18) When you are finished with your program, have tested it thoroughly to make sure that your program is correct, and are sure that you don't need to make any changes, then click the SUBMIT button repl.it to turn it in.