IDSN 542: Machine Intelligence

Lab 4 Due: 9/21/2025, 11:59pm

Goal

You will accept user input and then display factor frequencies.

Setup

- Create a Python file called **lab4.py**.
- Your **lab4.py** file must begin with comments in the following format (replace the name and email with your actual information):

```
'''
Name
IDSN 542, Fall 2025
USC email
Lab 4
'''
```

Requirements

Your program must perform the following:

- Ask the user for a number (we'll call it *n*).
- Generate that many random numbers between 0 and 50,000.
- Determine what numbers between 2 and 59 evenly divide each of the random numbers (we'll call those *factors*).
- Display a frequency chart that indicates which *factors* evenly divide each of the *n* random numbers. All you need is the number from *factors* and stars (using the asterisk) to indicate how many of the *n* random numbers it evenly divides.
- Do not display any factor (2 to 59) that has a count of 0
- **HINT:** Use a dictionary where the keys are numbers 2 through 59 and the values are initialized to 0.
- **HINT:** Use `random.randrange(X)` from the `random` module to generate the set of random numbers.

Sample output

Below is your target output for a full run-through of the program. User input is in **red**.

```
Give me a number: 100

For 100 random numbers, the factor frequencies are:
2  : **************************************************
3  : ************************************
4  : ********************************
5  : **************
6  : ****************
7  : ****************
```

```
8  : ******************
9  : ******************
11 : ********
12 : **********
13 : *********
14 : **********
15 : ****
16 : ******
17 : ******
18 : ******
19 : ****
21 : ******
<etc...>
```

Deliverables

1. A compressed folder containing **lab4.py**, named **lab4.zip**.