

Extra Credit 1

Due: October 15, 2025**Points:** 25

In the given examples, what you type is in **red** and the program prints what is in black. Your program output should look *exactly* like the output in the examples, except that what you type won't be in red, and the results may differ in the last few digits.

- E1. (10 points) For the SI model for which the equation is given in homework 1, print the proportion of the population infected for each day, up to and including the number of days entered as input. Remember to check your input as in the homework problem.

To turn in: Please turn in the program in the file *siloop.py*.

Example:

```
Number of days: 10
1  0.0012211323960795992
2  0.00149109134209279
3  0.0018206220327889482
4  0.0022228167755574827
5  0.0027136190661283567
6  0.0033124316939081035
7  0.00404284825698398
8  0.004933530020258307
9  0.006019252361985584
10 0.007342146711703001
```

- E2. (15 points) Change the focus of your program for the SI model. For this, read in a floating point number greater than 0 but less than 1. Then determine the number of days after which that proportion of the population will be infected.

To turn in: Please turn in the program in the file *siupto.py*.

Examples:

```
Proportion of population (between 0 and 1, non-inclusive): 0.5
In 35 days, at least 0.5 of the population will be infected
The actual proportion will be 0.5232944296657519
```

```
Proportion of population (between 0 and 1, non-inclusive): 0.25
In 30 days, at least 0.25 of the population will be infected
The actual proportion will be 0.287664368675717
```

```
Proportion of population (between 0 and 1, non-inclusive): 1
You must enter a decimal fraction between 0 and 1, non-inclusive!
```

```
Proportion of population (between 0 and 1, non-inclusive): 3/4
You must enter the proportion as a decimal fraction between 0 and 1 non-inclusive
```