

# Lab 4: Functions

CSE/IT 107

NMT Computer Science

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“If you don’t think carefully, you might believe that programming is just typing statements in a programming language.”

— W. Cunningham

“Only ugly languages become popular. Python is the exception.”

— Donald Knuth

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## 1 Introduction

This lab will mainly not contain a lot of text, but instead point you to places in your text book to read. While we think that repetition is useful, the book often does a better job of explaining concepts and certainly does a better job with graphics than we do in the labs.

## 2 Turtle

Please see pages 711-719 in *The Practice of Computing Using Python* for more turtle commands that you will need in this lab; for example, those involving color.

### Warning

The book lists a lot of turtle commands, but does so without prepending the method name with `turtle.`. This is because instead of using `import turtle`, they write `from turtle import *`. We will not be using this method; please continue to use `import turtle` and `turtle.method()`. For example, use `turtle.begin_fill()` instead of `begin_fill()`.

## 3 Functions

Functions are covered by *Chapter 6* in *The Practice of Computing Using Python*.

## 4 Exercises

### **functions.py**

1. Write a function that takes as input a string and prints the total number of vowels and the total number of consonants in the sentence. The function returns nothing. Note that the sentence could have special characters like dots, dashes, and so on.
- 2.

### **hailstone.py**

**flags.py** Draw the United States flag using at least *four* functions. The regular polygons in the US flag are natural candidates for functions.

Hint: Take a look at `polygons.py` and `star.py` from previous labs.

- (a) Draw the flag with the 13 stars arranged in rows as shown on page 276 in your book.
- (b) Draw the flag with the 14 stars in a circle. (Hint: Is it really a circle or is it some other *regular* figure?)

## 5 Submitting

Files to submit:

- See all files of Section 4.

You may submit your code as either a tarball (instructions below) or as a .zip file. Either one should contain all files used in the exercises for this lab. The submitted file should be named either `cse107_firstname_lastname_lab4.zip` or `cse107_firstname_lastname_lab4.tar.gz` depending on which method you used.

For Windows, use a tool you like to create a .zip file. The TCC computers should have 7z installed. For Linux, look at lab 1 for instructions on how to create a tarball or use the “Archive Manager” graphical tool.

**Upload your tarball or .zip file to Canvas.**