Metropolitan State University, Saint Paul, Minnesota

ICS 140 Computational Thinking with Programming

Lab 2

# Introduction to the Input Function

The input function is used to prompt the user for information which you can store in variables. Consider the example program below. It has inputs for name and age. It processes the age provided to project the age of the user next year. Then for output, it prints out the name and future age.  
A screenshot of a computer

Description automatically generated with medium confidence

On line 1, we have our first input function, the text within the quotes will be displayed to the user when prompting for input. The value they provide will be stored in the name variable as text.

On line 2, we have another input function. This input function has it’s input converted into an integer using the int() function. When working with numbers, it is ALWAYS necessary to convert input into a number before any mathematical operation can be performed.

On line 3, we take our age variable that was created from user input and add 1 to it. We store the sum into a new variable called next\_year\_age which we will use to print out the future age.

On line 4, we print out a mix of text and the variables we have created generating a response like the one below.

Graphical user interface, text

Description automatically generated

This is not a very useful program, but it does demonstrate some fundamental concepts you will use to build more advanced programs. In your programming challenge for this lab, you will need to prompt the user for text and numerical data. You will then use that data along with the turtle commands you used last week to create a dynamic drawing based on user input.

Hint: Turtle functions like my\_turtle.forward() can receive variables as arguments in their parenthesis in addition to static values like what we used last week. Same with the my\_turtle.color() function. It can receive static strings like “red” or variables that contain text with a valid color to determine the color of the drawing.

For the problem below, complete the following steps:

* Find the inputs, outputs and processing steps and store them in the table below.
* Create test cases with expected results based on example input
* Create Pseudocode for the example program
* Create Python Code
* Show Test Results

This lab will have you use the turtle library to draw a square. The color and size of the square will be determined by the user. After the user provides the color and length for one of the sides, draw the square using turtle and display it to the user.

|  |  |  |
| --- | --- | --- |
| **Inputs** | **Outputs** | **Processing** |
| Width and color | Width with designated color | Turtle.color(color)  Turtle.forward(width) |
| Length and color | Length with designated color | Turtle.color(color)  Turtle.forward(length) |

**Test Case 1**

**Example Input**

Color: green

Width: 100

Color: yellow

Length: 200

**Expected Output:**

Green and yellow rectangle with a width of 100p and a length of 200p

**Test Case 2**

**Example Input**

Color: black

Width: 50

Color: purple

Length: 50

**Expected Output:**

Black and purple square 50x50

**Pseudocode**

t=turtle.turtle()

input width color

input width

input length color

input length

forward width/2

right 90

forward length

right 90

forward width

right 90

forward length

right 90

forward width/2

**Python Code**

A computer screen shot of a program

Description automatically generated

**Test Results**

A screenshot of a computer

Description automatically generated