**Module 6: Lab Activity – An Introduction to Python Modules**

**Deliverables:**

Python programs for the following problems. Use the names listed below:

* Problem 1 – randomrange.py
* Problem 2 – randomint.py
* Problem 3 – randomday.py
* Problem 4 – pi.py
* Problem 5 – pythagorean.py
* Problem 6 – factorial.py

**All submitted code must include comments:**

# Your Name

# The Date

# The Problem Number and Description

# Any other information throughout your code that is helpful

Python modules facilitate modular programming. Modular programming refers to the process of breaking a complex program into smaller subtasks, modules. You can use and reuse modules to build a larger application.

Advantages include:

Simplicity – focus on small portions of a problem instead of the entire problem.

Maintainability – designed to use logical boundaries between different problems

Reusability – can reuse by other parts of an applications and removes duplicate code

Scoping – define a separate namespace

All modules use an import statement: import <module\_name>. We used this one last week.

import turtle

All modules use dot notation to call objects in that module. We used this one last week.

alex.forward()

**The Random Module**

This module provides access to functions that support the generation of random numbers. You can find all of the random functions here:<https://docs.python.org/3/library/random.html#module-random>

**Problem 1:** Use a for loop and random.randrange to print 10 random integers between 25 and 35.

**Problem 2:** Use random.randrange to print an odd integer between 0 and 100.

**Problem 3:** Use random.choice to select a day of the week from a list and print that day.

**The Math Module**

This module provides access to many mathematical functions. You can find all of the math functions here: <https://docs.python.org/3/library/math.html#module-math>

**Problem 4:** Redo lab activity 3 problem 4:  
“Write a program that will compute the area of a circle. Prompt the user to enter the radius and print a nice message back to the user with the answer.”

But this time, use math.pi from the math module in the equation.

Equation for the area of a circle: Area = pi \* radius2

**Problem 5**: Write a program that takes two user inputs, a and b, and uses them to calculate the Pythagorean theorem using the sqrt() and pow() functions found in the math module.

Here's the equation:

**Problem 6:** Write a program that takes a number from a user and calculates the factorial of that number in two ways:

1. Using a for loop to calculate the factorial of a user input value.
2. Using the math module. You’ll need to do some research to find the function you need.

Be sure to print both answers.