CS1580 - Introduction to Programming Lab (FS2024)
Lab 5

Lab Objectives

In this lab, you will be implementing the following topics:

- Function overload
- Default arguments

Lab Task: Shapes.

Write a program to compute the area and volume of a circle, a rectangle and a cylinder.

1. Implement the following functions.
    a.
```
double computeArea(const double radius){
      //write your code here
}
```

    b.
```
double computeArea(const double length, const double width){
      //write your code here
}
```

    c.
```
double computeVolume(const double radius, const double height){
      //write your code here
}
```

    For computeVolume(), **declare default arguments** for radius and height as 5.0 and 10.0 respectively.

2. Inside your main():
    a. Take **user input for radius** and compute the area of circle by calling computeArea()

    b. Take **user inputs for length & width** and compute the area of rectangle by calling computeArea()
    Note: Here, you are calling a function with same name but different parameters. This is function overloading!

    c. Compute volume of the cylinder with **default arguments**.

    d. Take **user input for radius of cylinder only** and compute volume of cylinder by calling computeVolume()

    e. Take **user input for height of cylinder only** and compute volume of cylinder by calling computeVolume()

Formulas

- Area of circle: PI x radius x radius (where PI = 3.1416)
- Area of rectangle: length x width
- Volume of cylinder: PI x radius x radius x height

Gitlab Cloning Instructions

- Open the browser and go to https://git-classes.mst.edu/. Click on the Lab4 repository named *2024-FS-303-lab5-<your_username>*
- Click on 'Clone' button and copy the HTTPS link.
- Open Putty and
    - Change the directory to SDRIVE: `cd SDRIVE`
    - Clone the repository: `git clone <copy_the_HTTPS_link_here>`
    - Change the directory to cloned repository: `cd 2024-FS-303-lab5<your_username>`
- Start coding by opening a new file in nano: `nano lab5.cpp`

Compiling Instructions

- To run your code, `fg++ lab5.cpp`
- To get the output, `./a.out`

Submission Instructions

Push your code to your gitlab account.

- Add all your files to the repository, `git add .`
- Commit your changes, `git commit -m "<your_message_goes_here>"`
- Push the changes, `git push`