24-780B—ENGINEERING COMPUTATION

Assigned: Wed. Oct. 26, 2022

Problem Set 7

Due: Tues. Nov. 1, 2022

Note, I really, really, really want you to put a lot of the effort this week into the demo project. Thus, I've kept this assignment short and to the point (3-4 hours effort). For this one, we are reaching back to PS03 and PS04, so once again, feel free to use my own solution as a starting point (with some adaptation if using MacOS). I added graphical editing and translucent fill to my newest solution, so it may be worth it just for that 😊.

IsContained Function

Write a member function for *Shape* class that take a coordinate point as input (or x and y values) and determines if that point is inside the shape. The function declaration should look a lot like this:

```
bool isContained(Point2D testPnt, bool isInclusive = true);
bool isContained(float testX, float testY, bool isInclusive = true);
```

As part of testing your function, add something into *ShapeManager* class so that when you are in Edit Mode, something happens (a sound, a color change, etc.) when you *right-click* inside the current shape. In the code I am sharing, this part is already implemented as a "ding" when the right-click is in the shape and "buzzer" when it is out. If you go your own route, you can do whatever seems right.

We will discuss the algorithm (ray casting) in lecture.

Deliverables

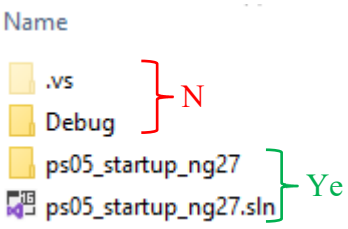
6 files (zipped together):

ShapeManager.h and ShapeManager.cpp

Shape2D.h and Shape2D.cpp

Line2D.h and Line2D.cpp (no change, probably)

Alternatively, if you are using Visual Studio, it may be easier to submit your entire solution rather than a collection of files. To do this, create a *zip file* of the whole project (the .sln file and the associated folder), being careful NOT to include the hidden folder called ".vs". This folder is used only to manage the IDE and is typically huge (>100MB). Erasing or omitting it will just force Visual Studio to rebuild it when needed. The Debug folder should also be kept out of the zip file to avoid including executable files that some firewalls may disallow. *The name of the project should include your AndrewID*



Learning Objectives

Use of classes and objects in C++.

Implementing algorithms developed by others.

Adapting code written by others.