

Simple Shapes

Goals for this assignment

1. Refresh your Object Oriented Design, C++, and Visual Studio skills
2. Use inheritance, dynamic memory, virtual functions, operator>>, and virtual destructors.
3. Use event driven programming to respond to UI events from the user
4. Work with simple design issues as shown in Shalloway.
5. Build a project we can use throughout the semester for in-class labs.

You must implement the Shapes example presented in Chapter 1 of Shalloway. The partial design presented in the book is on page 24. A complete UML Class Diagram is attached to this assignment.

◆ Turn the UML Design in to working C++ code. You **must** follow the UML Design.

You are given:

- The SDLApp2 project which includes the classes: SDLApp, SDLTextWidget, and Color, among others.
- main.cpp, ShapesApp.h, ShapesApp.cpp
- an example executable

Your project must build the classes:

- Shape
- Circle
- Square
- Collection
- ShapeDataBase

Your project (a Win32 Project) will present the user with a 640x640 window with a white background. At the bottom ($x=10, y=600$), place an SDLTextWidget that allows the user to enter a file name. When the user enters a file name and presses enter, the application must read the file using a ShapeDataBase and append the shapes in the file to a Collection. Opening multiple files in succession should display the shapes from all the files on the screen at once. Be sure to limit your Collection to 100 shapes, however. An example of how to use the SDLTextWidget is on GitLab.

Notes:

- We will use this project again this semester and requirements will change.
 - You will gain new C++ and design knowledge to improve the project
 - Some future changes we make will reveal bad design
 - Some future changes we make will be easy and reveal good design
 - At this point, you are to follow the design in the book and specified in class
- ShapeDataBase must retrieve a set of Shapes and fill a Collection with those Shapes

- File format
 - The format for a Square is: topleftx toplefty red green blue alpha sidelength
 - The format for a Circle is: centerx centery red green blue alpha radius
 - All the above data are ints, whitespace separated,
 - One shape per line: a Square is preceded with an S and a Circle is preceded with a C
- SDLApp will encapsulate SDL data and functionality as much as possible.
- Collection must be backed by a static array of size 100.
- The SDL library code and instructions are provided on the class schedule website. The library code must be installed on your personal computer as specified.

Grading:

- This assignment will be graded with a traditional 70/30 rubric (70% execution, 30% coding standards/design) since the design is handed to you.

Submission

- You must provide the instructor a hard copy (color, double sided, stapled) at 3:30pm on the day the project is due.
- You do not need to submit electronically, the instructor will checkout the project from your version control repository
- No late submissions are accepted.
- Follow the coding standards posted on the class website
 - <http://zeus.cs.pacificu.edu/chadd/cs485s19/index.html>