

C++ Programming

Inheritance Homework 4

Mostafa S. Ibrahim

Teaching, Training and Coaching since more than a decade!

Artificial Intelligence & Computer Vision Researcher

PhD from Simon Fraser University - Canada

Bachelor / Msc from Cairo University - Egypt

Ex-(Software Engineer / ICPC World Finalist)

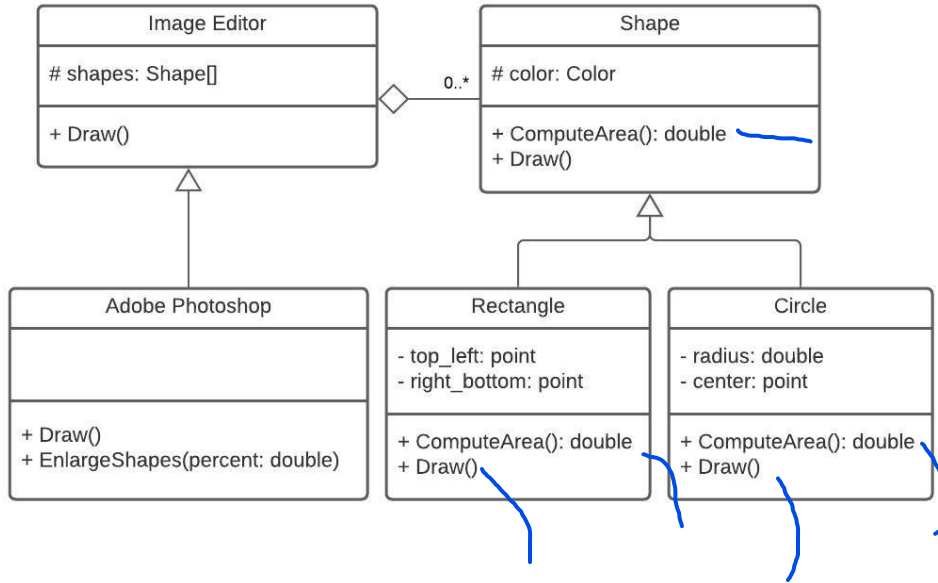


Homework 1: Decorated String

- The stl [string class](#) is a very powerful class to handle strings
 - Several constructors, operators and more functionalities
- There is a need for a class that has all features of string class, but
 - We need one extra functionality: member function decorate
 - If called, it converts some str to <<[[str]]>>

```
26 int main() {  
27     DecoratedString str = "I am learning CS";  
28  
29     str.decorate();  
30     cout << str << "\n";    // <<[[I am learning CS]]>>  
31     cout<<( str == "<<[[I am learning CS]]>>" ); // True  
32 }  
33
```

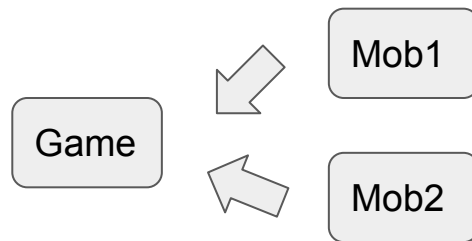
Homework 2: Image Editor



- Your Team leader provided this UML in your first week
 - Describe this UML Diagram
- Assume we wanna to implement
 - Give thoughts about that!

Homework 3: System Design

- In Medal of Honor game, there are millions of online players
 - Sometimes there is some **message** from the game to the players
- There are 2 ways to deliver the message:
 - Each app periodically contacts the server to see if there are new notifications or not
 - Then Game site provide an **API** to be contacted through it
 - Each mobile/desktop/tablet send/receive request/response
 - When user opens the application, a registration message is sent to the game
 - Whenever server has a new message, it iterates on whoever registered and send msg
 - Discuss the 2 options. Any notes on their implementations.



Homework 4: A new Startup

- In every country there are banks where people have money and services where they wanna pay money (Mobile & Electricity bills)
- With every new service to pay (e.g. new mobile network), each bank wants to support paying the bills to this new service.
- To implement that, a team per bank builds something on bank side and something on the service side so that they can communicate
- As an entrepreneur:
 - What are the current issues in this model?
 - E.g. How many software programs are built for N banks and M services?
 - Think in a startup proposal that can offers elegant solution to this problem?
 - How to validate your business model? Do most of startups fails or succeed?

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”