CS 485
Advanced Object Oriented Design

Observer Pattern (Ch 18)

Spring 2017

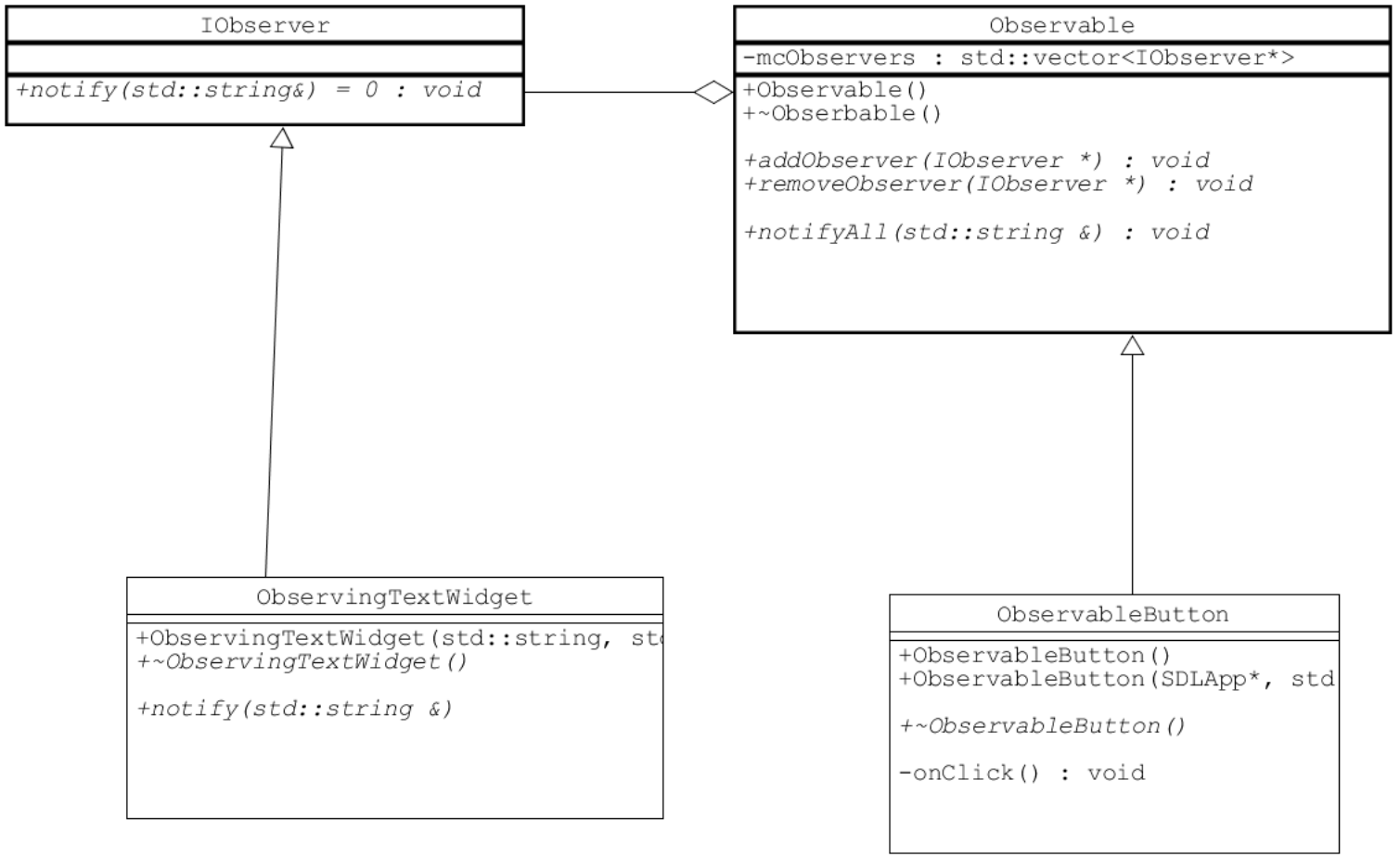
http://www.netobjectives.com/PatternRepository/index.php?title=PatternsByAlphabet

http://www.netobjectives.com/files/books/dpe/design-patterns-matrix.pdf

Observer

- Behavioral Pattern
- One object advertises itself as *observable*
- Other objects may register as *observers*
- Observers are notified when the observable object changes state.

UML


IObserver
+notify(std::string&) = 0 : void
Observable
-mcObservers : std::vector<IObserver*>
+Observable()
+~Obserbable()
+addObserver(IObserver *) : void
+removeObserver(IObserver *) : void
+notifyAll(std::string &) : void
ObservingTextWidget
+ObservingTextWidget(std::string, st
+~ObservingTextWidget()
+notify(std::string &)
ObservableButton
+ObservableButton()
+ObservableButton(SDLApp*, std
+~ObservableButton()
-onClick() : void

Goals

- Allow one object to be notified of a state change in another object
- Allow objects to *request* to be notified
- Notified objects may receive data in notification or request data after a notification
  - push vs pull

http://www.oodesign.com/observer-pattern.html

Often used for....

- View or Presenter may observe the Model
  - wait for state change in Model
  - update display based on notification
- UI Event Management
  - many widgets can register to be notified on a UI event
- News reader
  - register to get notified when an online news site publishes a new article

Example

```
class IObserver
{
public:

  virtual void notify (const std::string &rcData) = 0;

};
```

```
class Observable
{
public:

  Observable () = default;
  ~Observable () = default;

  virtual void addObserver (IObserver *pcObs);
  virtual void removeObserver (IObserver *pcObs);

  virtual void notifyAll (const std::string &rcData);


private:
  std::vector<IObserver *> mcObservers;
};
```

TicTacToe-MVP Repository