# Design Patterns

- Well-documented solution to a recurring problem
  - Also referred to as an architectural pattern
- Software design pattern
  - Reusable solution to commonly occurring problems
  - Gang of four: E. Gamma et al. *Design Patterns: Elements of Reusable Object-Oriented Software,* Addison-Wesley, 1994

https://en.wikipedia.org/wiki/Software_design_pattern

The Model-View-Controller (MVC) Framework

- Software engineering architecture pattern
  - Isolation of domain logic from user interface
  - Permits independent development, testing and maintenance (**separation of concerns**)

Controller

View

Model

http://en.wikipedia.org/wiki/Model–View–Controller
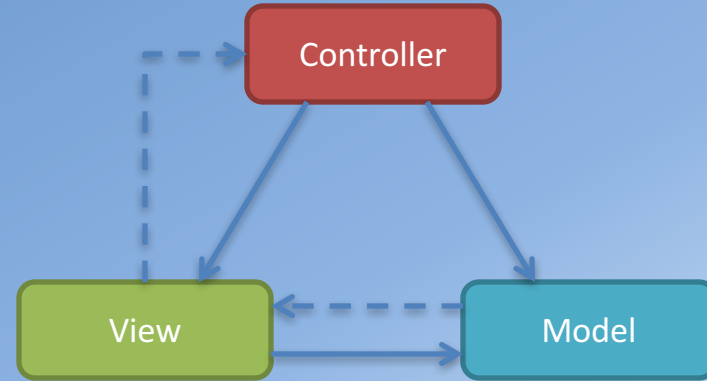
MVC Framework

- Model
  - manages the behavior and data of the application domain
  - responds to requests for information about its state (usually from the view)
  - responds to instructions to change state (usually from the controller)
  - In event-driven systems, the model notifies observers (usually views) when the information changes so that they can react
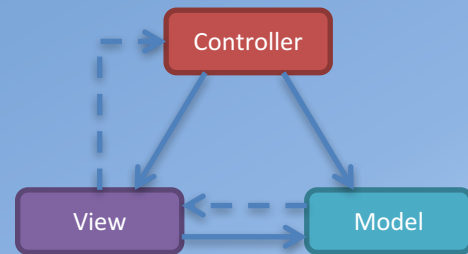
MVC Framework

- View
  - renders the model into a form suitable for interaction, typically a user interface element
  - Multiple views can exist for a single model for different purposes
  - A viewport typically has a one to one correspondence with a display surface and knows how to render to it

Controller
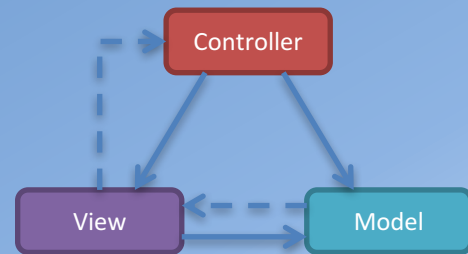
View

Model

MVC Framework

- Controller
  - receives user input and initiates a response by making calls on model objects
  - A controller accepts input from the user and instructs the model and viewport to perform actions based on that input
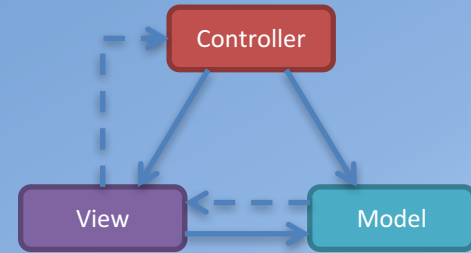
Model View View-Model (MVVM)

- Descendent of MVC
- Sometimes called Model-View-Binder
- View model
  - Abstraction of the view that exposes public properties and commands
  - Declarative data binding

DataBinding

| View | | View Model | | Model |

Presentation and Presentation Logic

Business Logic and Data