Model – View – Controller

A Design Pattern

Hunter Chapman

Suggestions: PR @BootCoder

Why you care

- MVC gives your code a solid architecture.
- MVC code pattern makes it super easy for you to follow other Developers code.

M-V-C Basically:

- MVC is not much different than the code you are already writing.
- Just a bunch of classes and modules!
- The difference being a pattern of organization which allows us to separate out responsibilities in a standardized way.

Model – View – Controller

- What is it?
- In short: MVC is a design pattern.
- In not so short: MVC is a software architectural pattern for implementing user interfaces. It divides a given software application into three interconnected parts, so as to separate internal representations of information from the ways that information is presented to or accepted from the user.

Design Patterns

- A design pattern is a general reusable solution to a commonly occurring problem within a given context of software design.

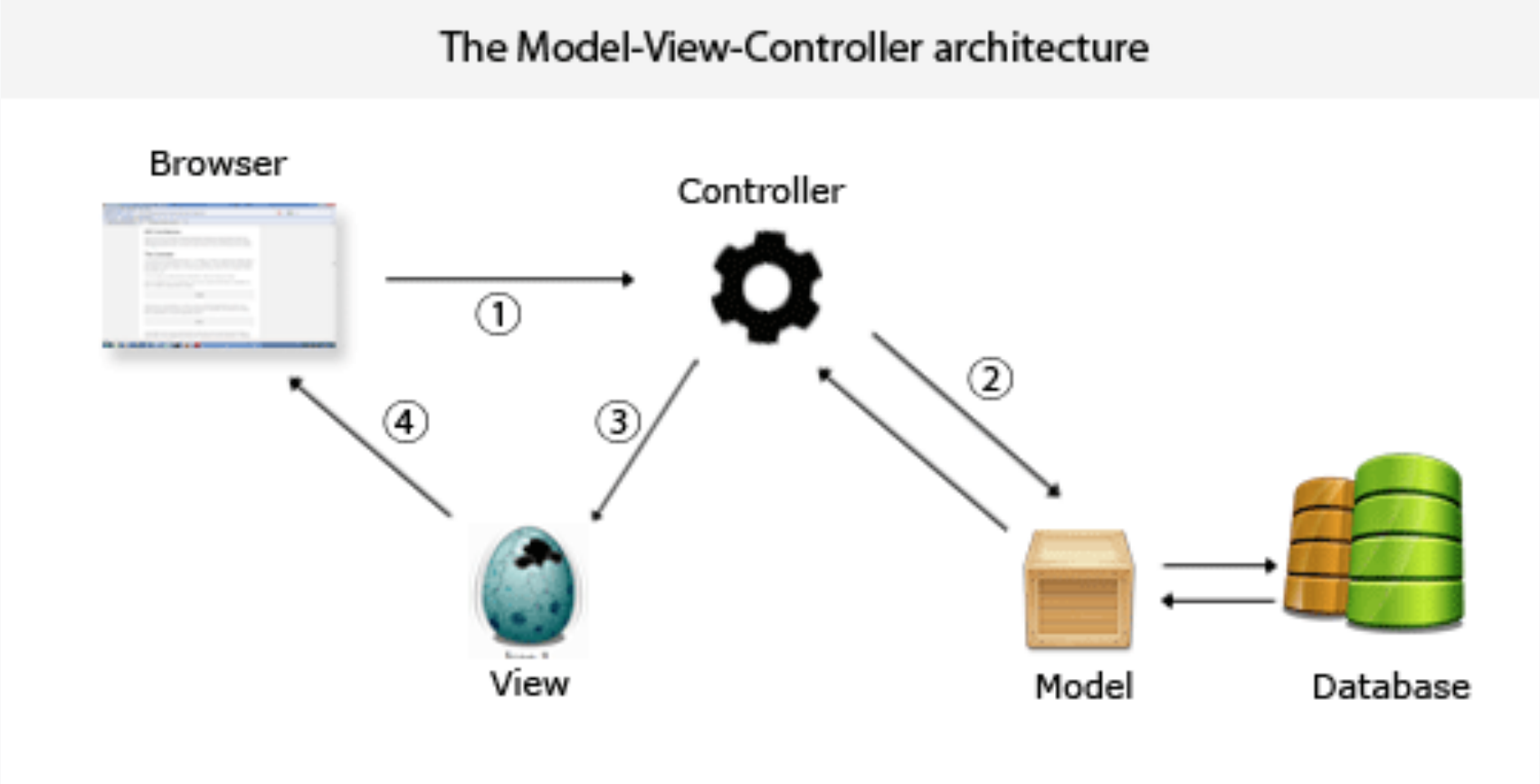
- Get used to this term. It can have a transformational impact on how you think about the art of code.

Design Patterns

- Start thinking of everything you do as implementing some pattern.

- You're just following a blueprint, filling in the gaps as needed with as little distinction from the standard pattern as possible.

M-V-C Summation:



There's a lot of data out there…

Sure, you can write all the codes… Where does it go?

- Whose business is it to talk to users?
- What about displaying output?
- Should your classes all know how to parse user input?
- Where do heavy algorithms run?
- How do you separate 10,000 lines of code into a manageable structure?

Think about a restaurant.

- Does your waiter make your food?
- Do they know all the recipes?
- Do they run the kitchen?
- What *is* a waiter responsible for?

Everyone has their own role.
If you want a well-run restaurant,
you need to divvy up the work.

WHAT ROLES DO WE NEED?

- The waiters handle customer interaction
- They take your order and deliver your food

- The Chef combines ingredients to make the food
- They know the recipes and gather ingredients

- The kitchen manager oversees the whole process
- They manage the orders coming in, tell the cooks what they need to make, and ensure the orders are properly put together for delivery to the waiter

M-V-C Bits:

- The model (chef) handles all the data

  Interacts with a DB, Web API or other data store, crunches the numbers and does the 'heavy lifting' in your application.

- The view (waiter) handles user interaction

  Shows information to the user and gets user input

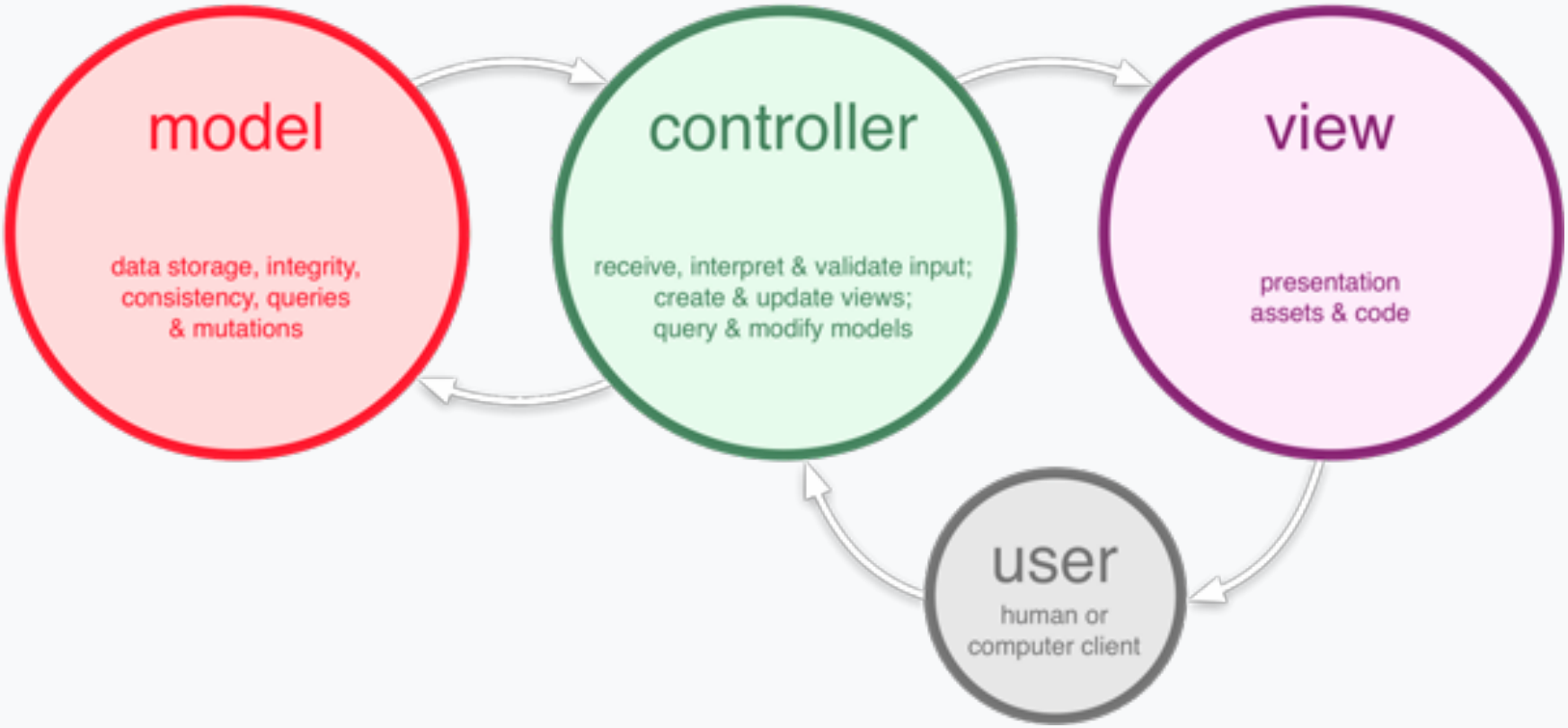
- The controller (manager) manages communication between the model and view. It runs everything!

  Kicks off various functionalities within your application based on the input it receives. Acquiring necessary information from the model, and passing it back to the view.

Recurring Problem solved with M-V-C

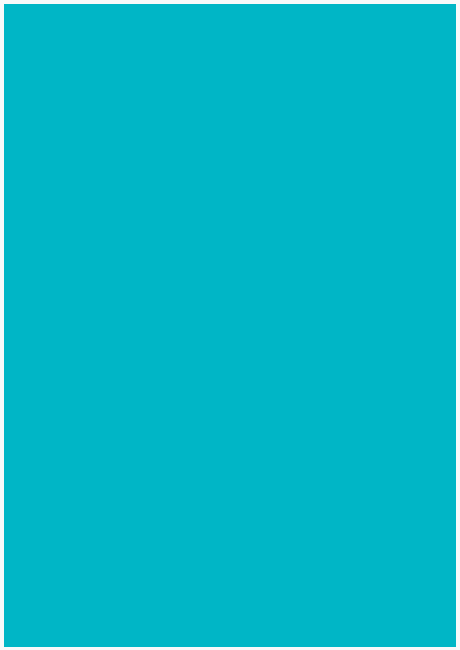
- You have some data and business logic that a backend team takes care of.
- Your user interface is changing on a regular basis and rendered across multiple devices.
- You need to facilitate communications between them.

Model – View – Controller



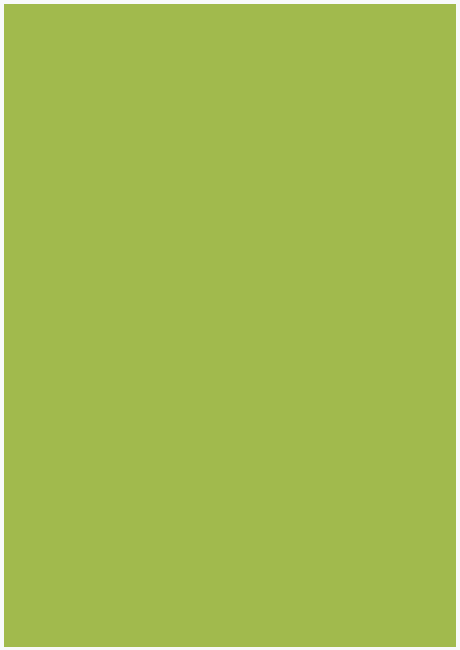
M-V-C Design Pattern

Model



Controller

View



M-V-C Design Pattern

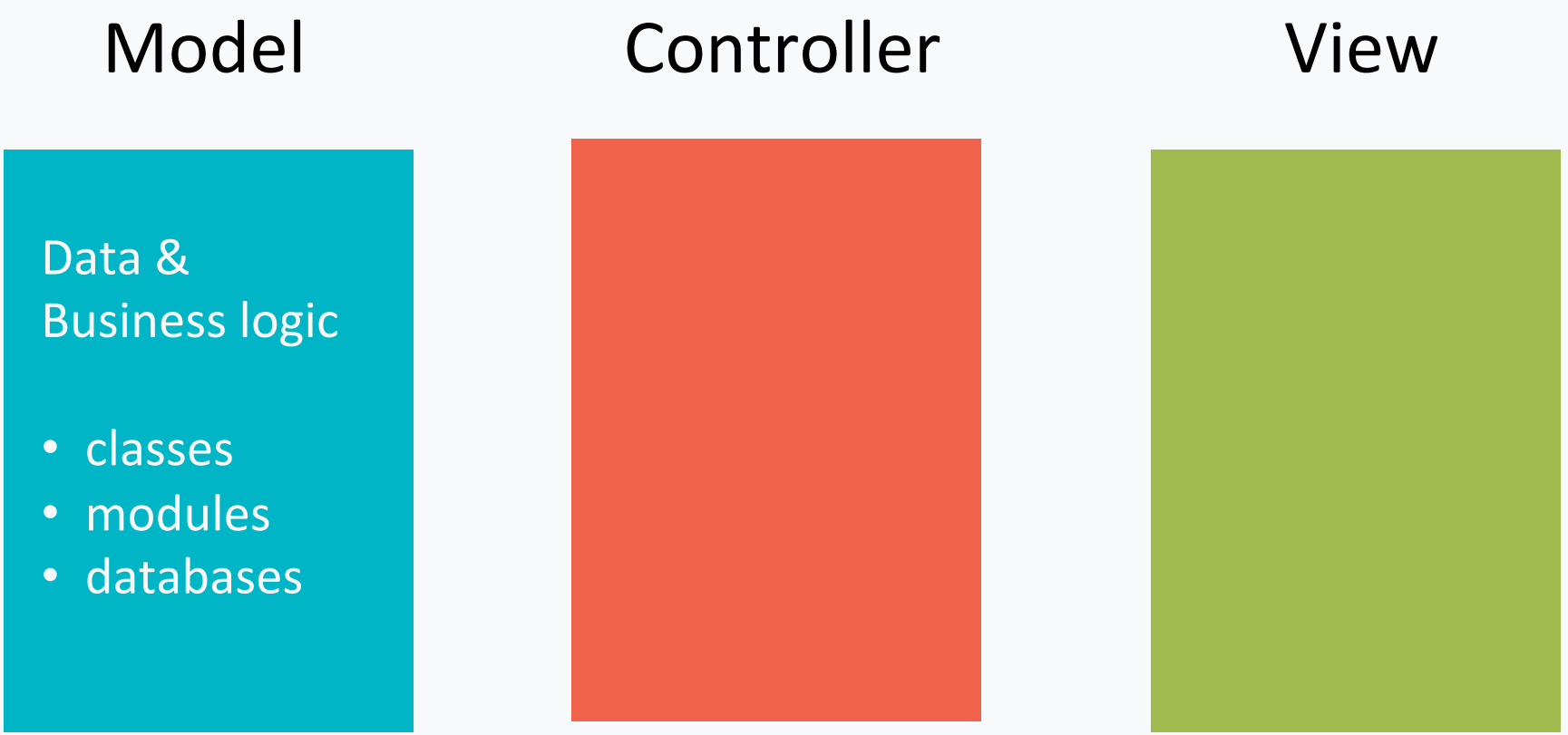
Model

Data &
Business logic

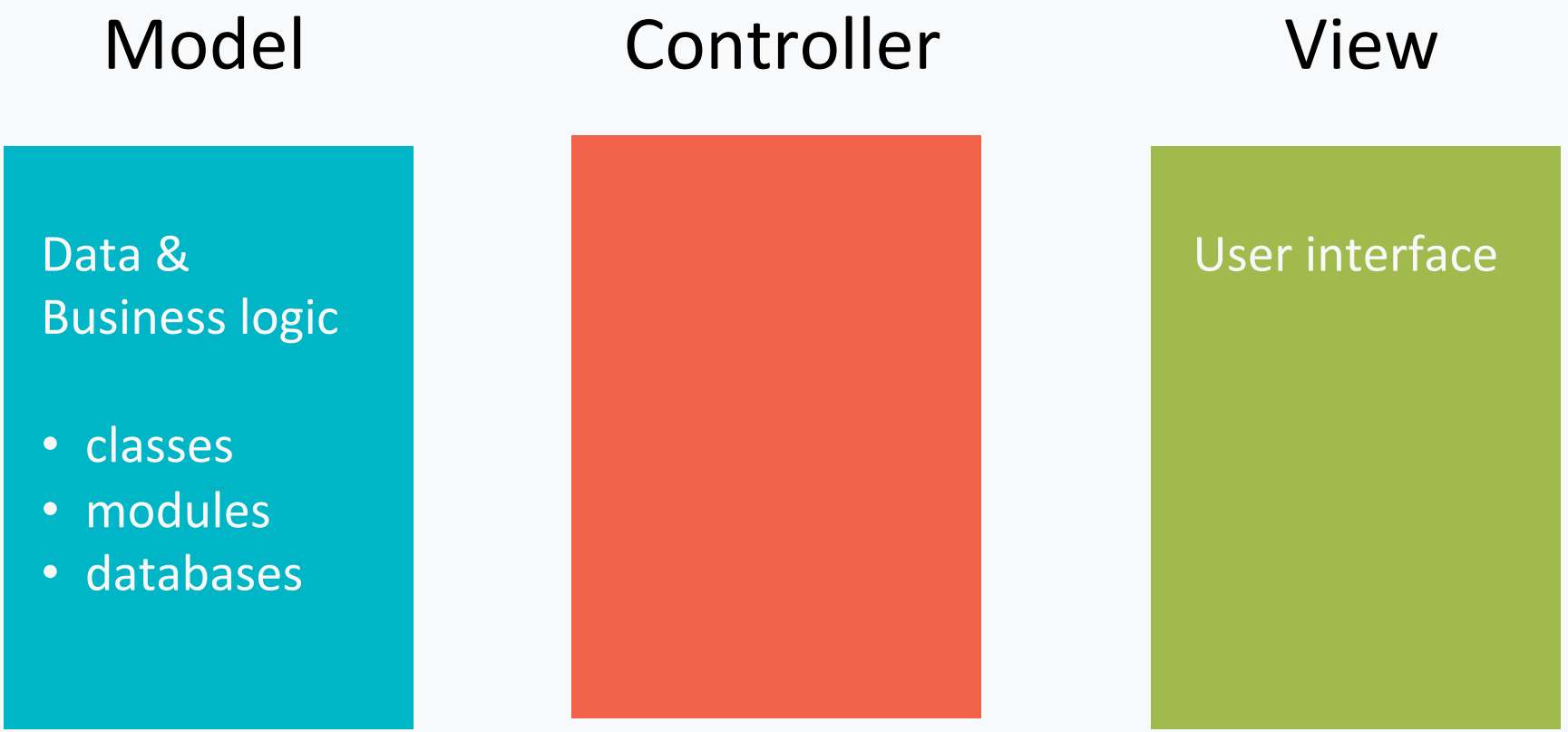
Controller

View

M-V-C Design Pattern



M-V-C Design Pattern



M-V-C Design Pattern

Model

Data &
Business logic

- classes
- modules
- databases

Controller

View

User interface

- get input
- display data from model
- HTML

M-V-C Design Pattern

Model

Data &
Business logic

- classes
- modules
- databases

Controller

Communicate

View

User interface

- get input
- display data from model
- HTML

M-V-C Design Pattern

Model

Data &
Business logic

- classes
- modules
- databases

Controller

Communicate

- handle input
- update model
- send data to view

View

User interface

- get input
- display data from model
- HTML

M-V-C TODO's

- How would TODO's look following the M-V-C pattern?

M-V-C TODO's

Model	Controller	View
Data & Business logic	Communicate	User interface

M-V-C TODO's

Model

Data &
Business logic

- List
- Task
- CSVParsing

Controller

Communicate

View

User interface

M-V-C TODO's

Model

Data &
Business logic

- List
- Task
- CSVParsing

Controller

Communicate

- TODO-Controller

View

User interface

M-V-C TODO's

Model

Data &
Business logic

- List
- Task
- CSVParsing

Controller

Communicate

- TODO-Controller

View

User interface

- Views
  - Options
  - Task List
  - Task View

Message Pattern

- All of programming is essentially passing messages between all the things.
- Start thinking of your methods/classes as a means of passing a message to a place.
- That place does a thing and passes some message back.

Single Responsibility

- A design pattern whereby you structure your methods to carry out one specific task.
- This DOES NOT mean everything you write is a one liner.
- Means of increasing the modularity and reusability of your code base.

Single Responsibility

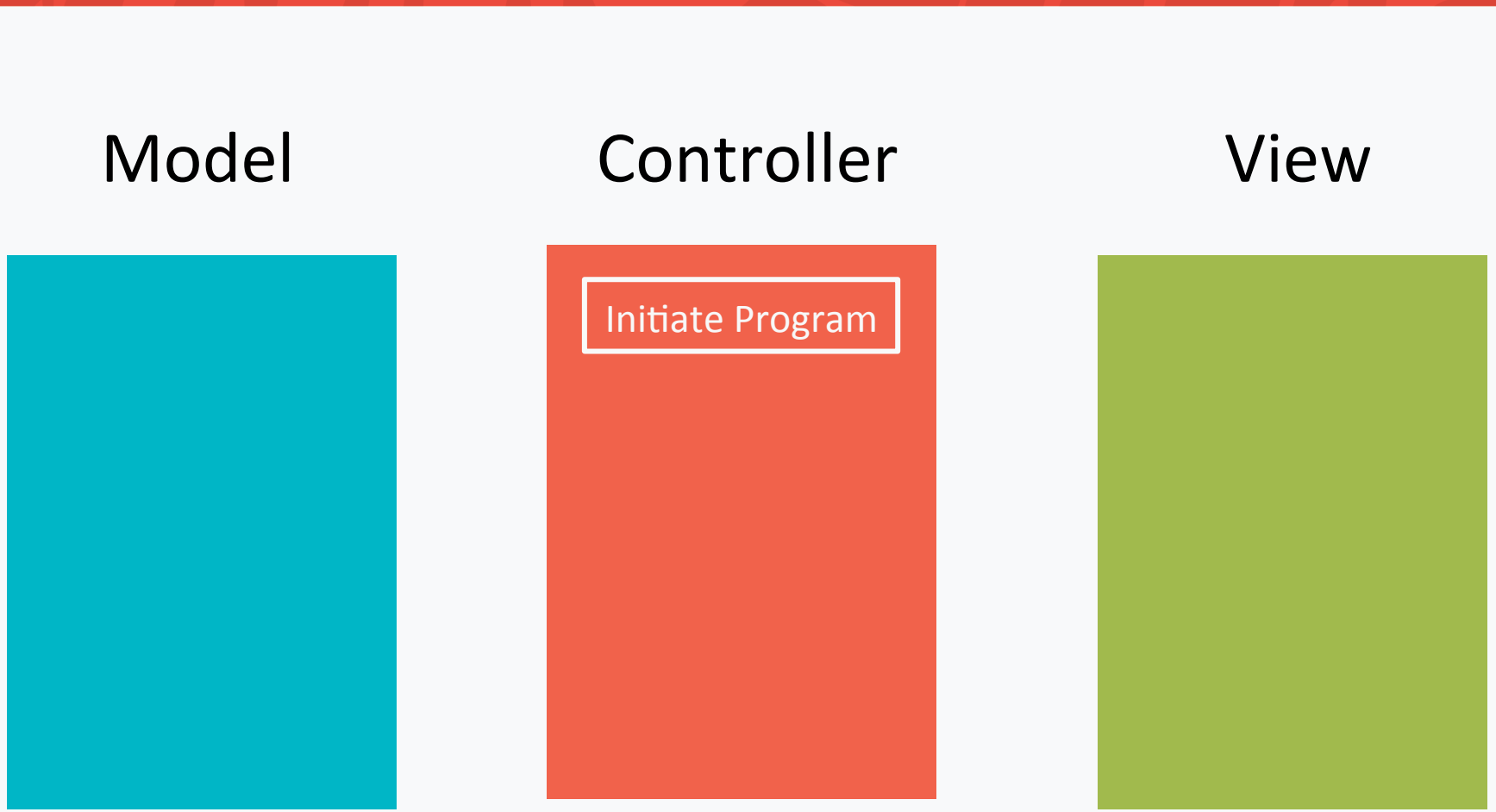
- Good walkthrough @

  http://jjbohn.info/blog/2014/07/28/single-responsibility-principle-a-solid-week/

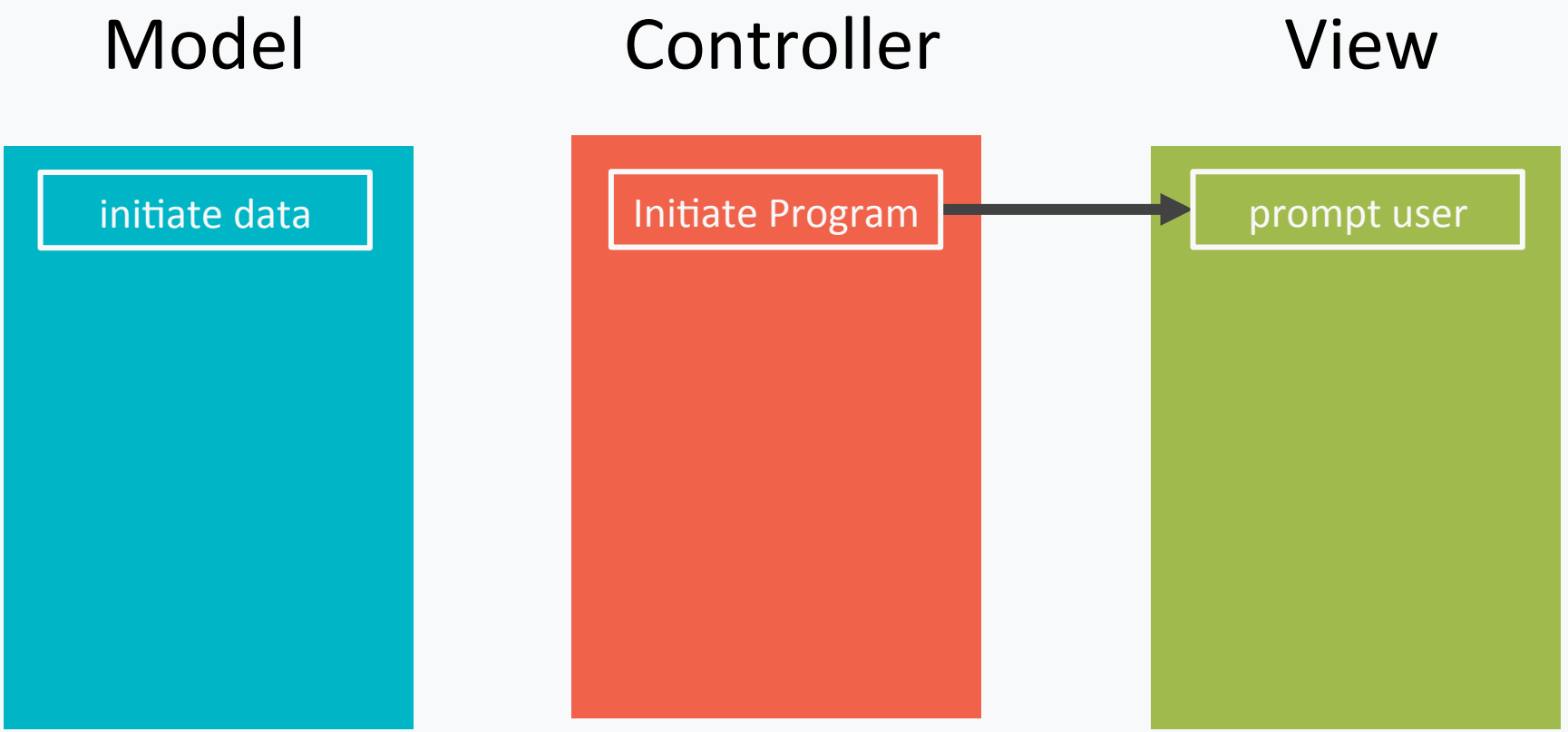
TODO's: List

What does the
Single Responsibility Message Pattern
look like in MVC?

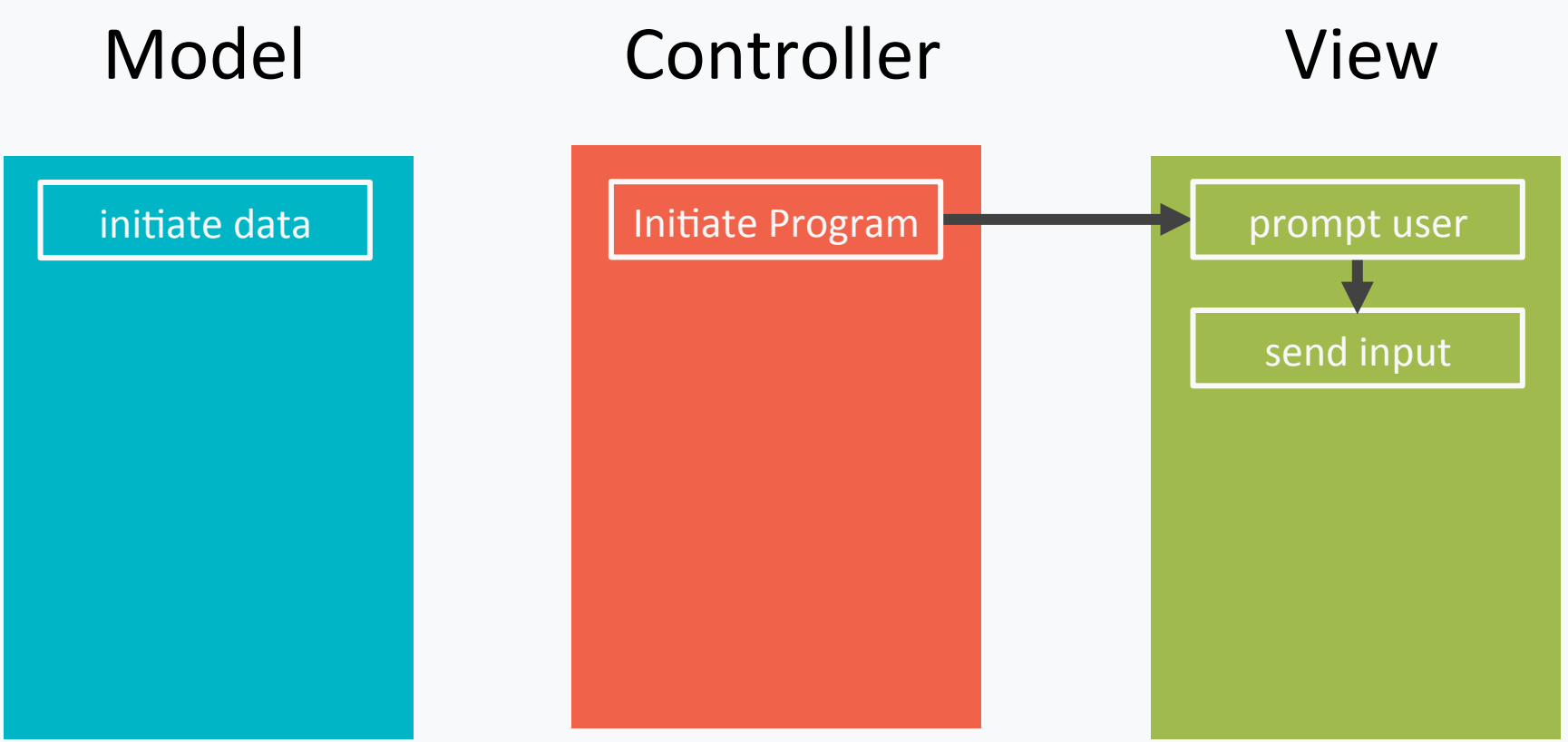
TODO's: List



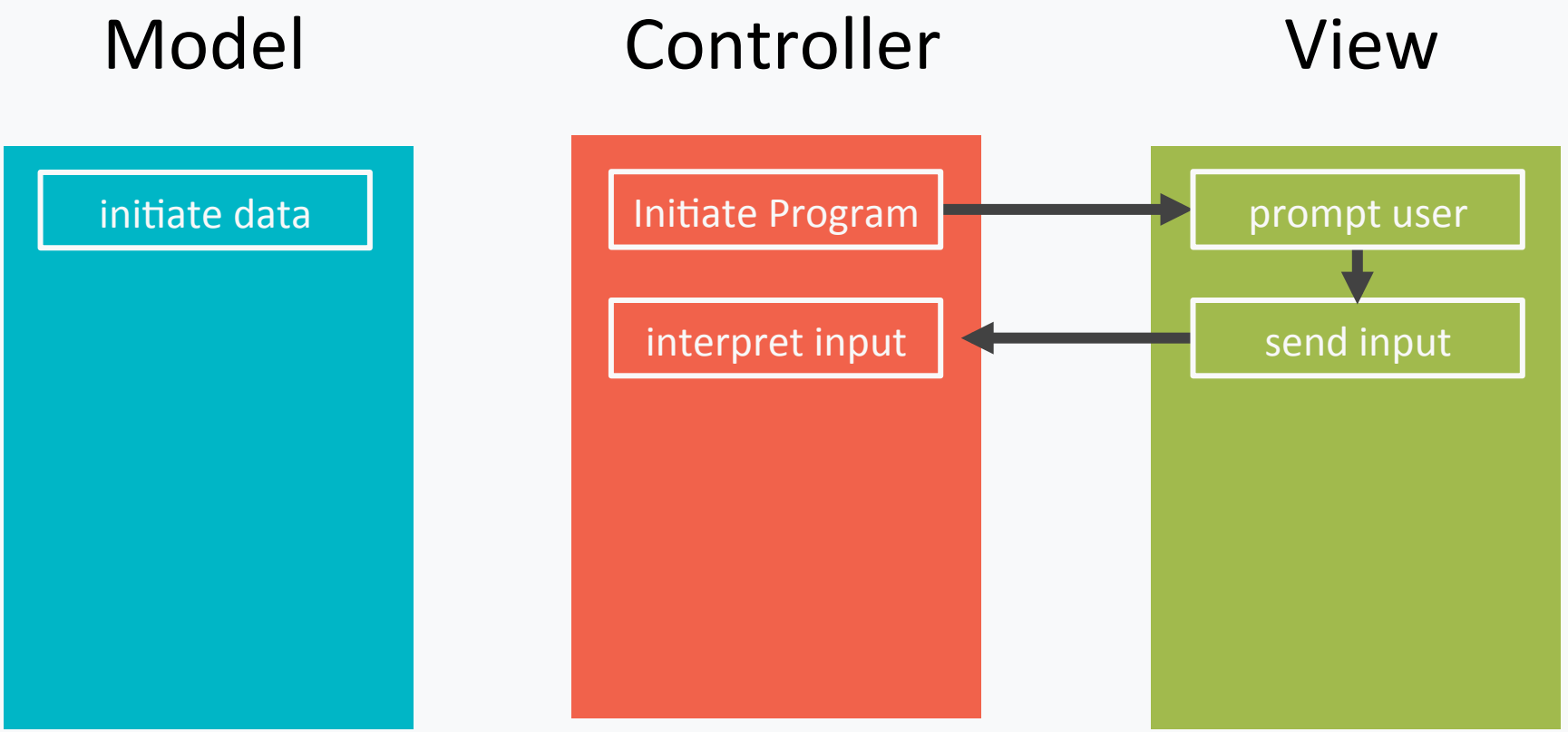
TODO's: List


Model
Controller
View
initiate data
Initiate Program
prompt user

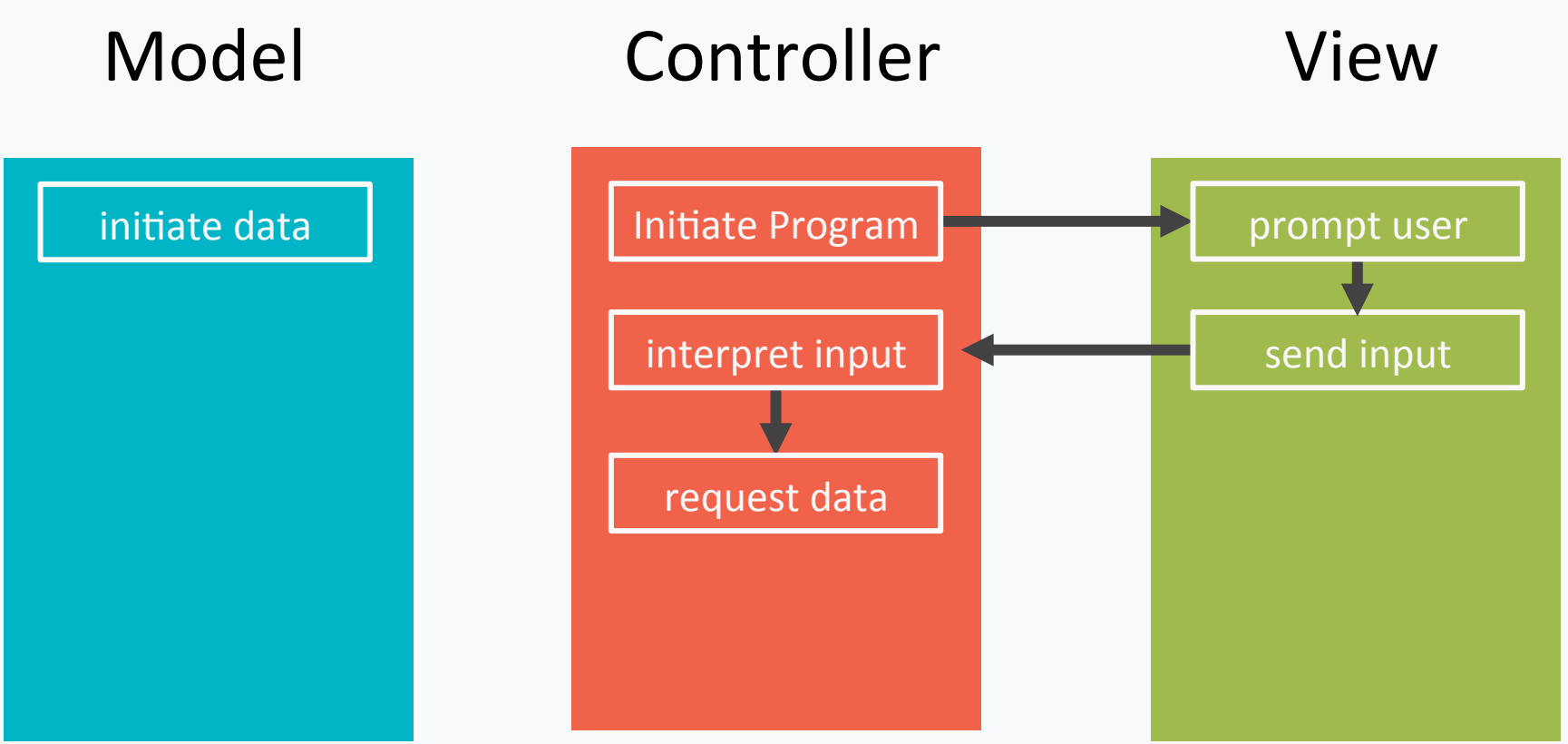
TODO's: List


Model
Controller
View
initiate data
Initiate Program
prompt user
send input

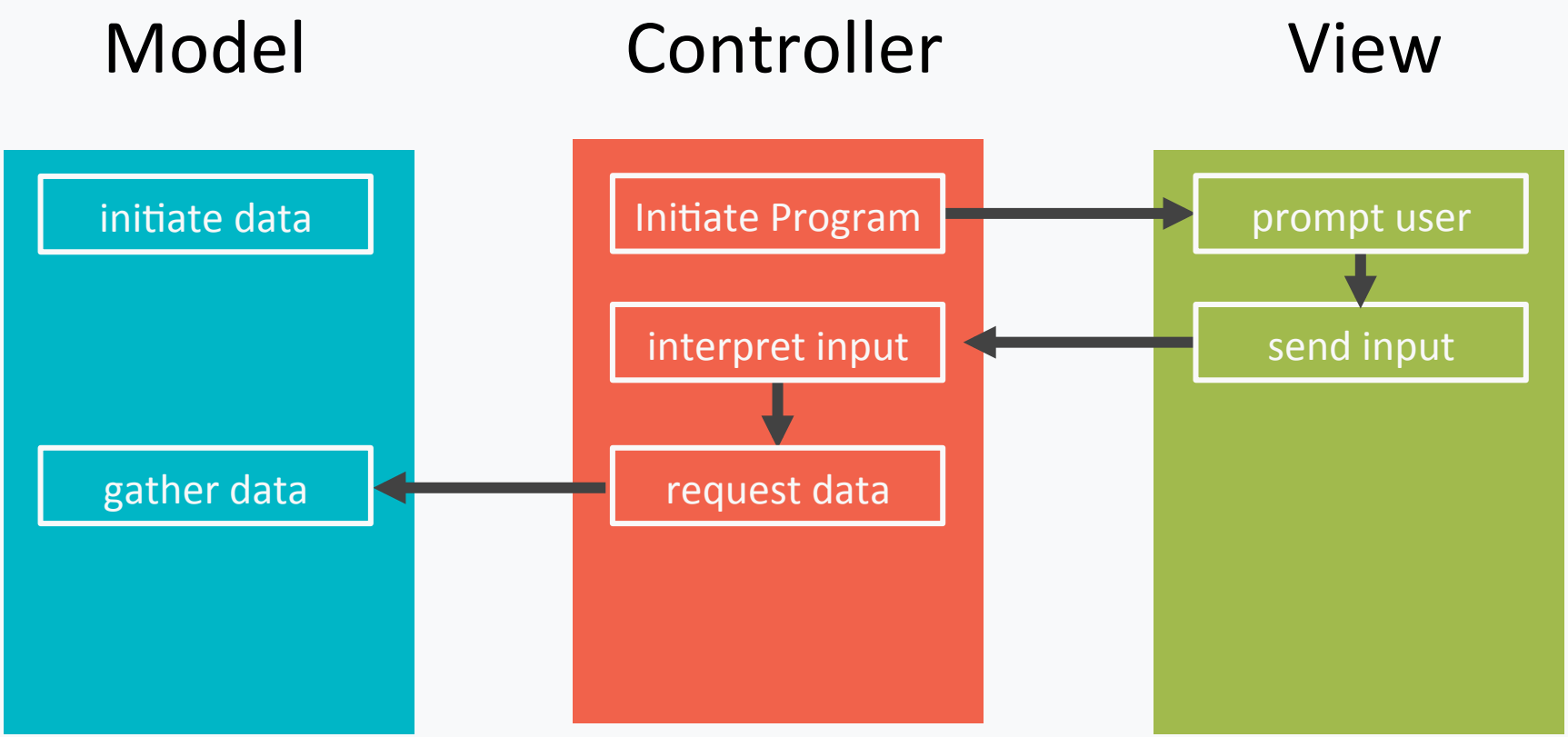
TODO's: List


Model
Controller
View
initiate data
Initiate Program
interpret input
prompt user
send input

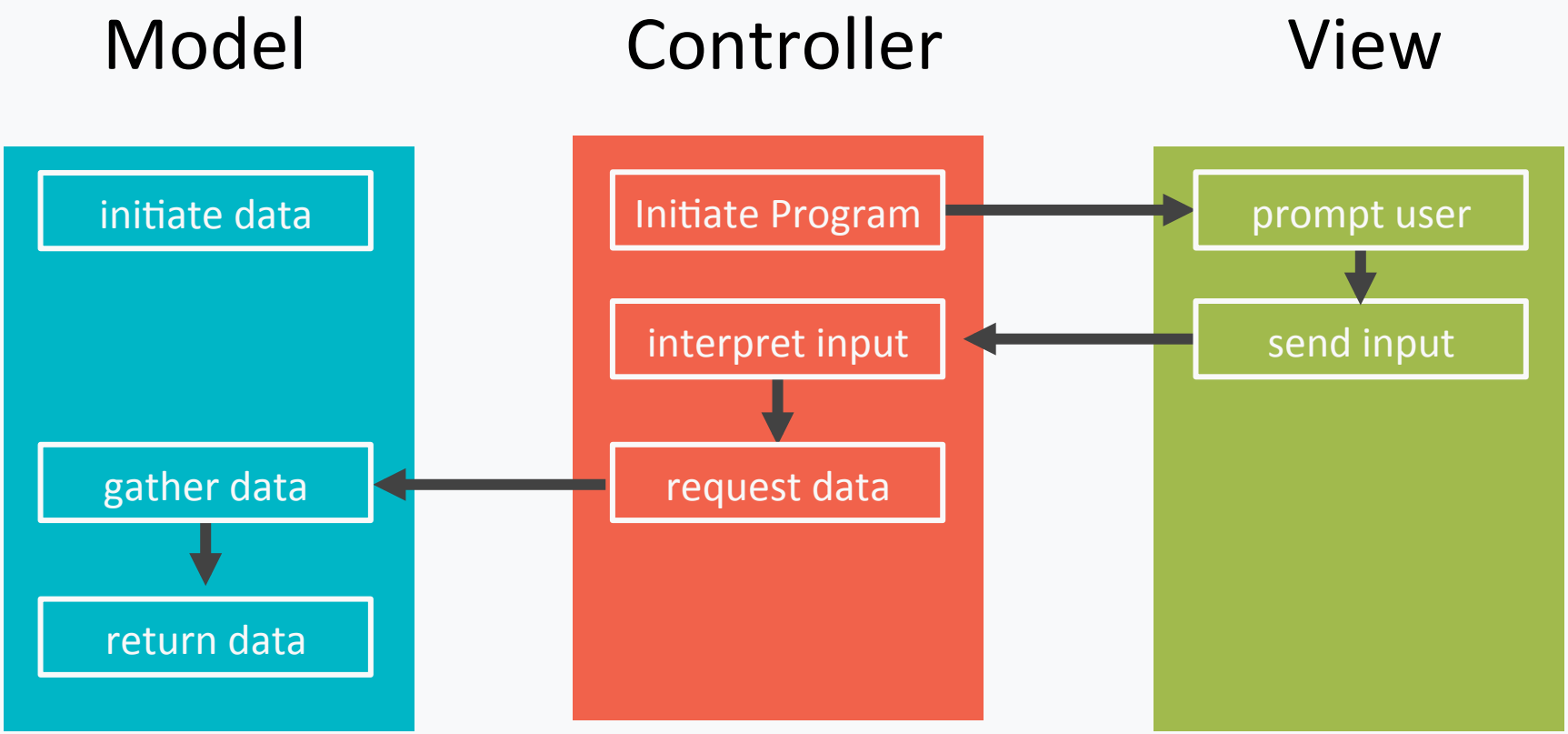
TODO's: List


Model
Controller
View
initiate data
Initiate Program
interpret input
request data
prompt user
send input

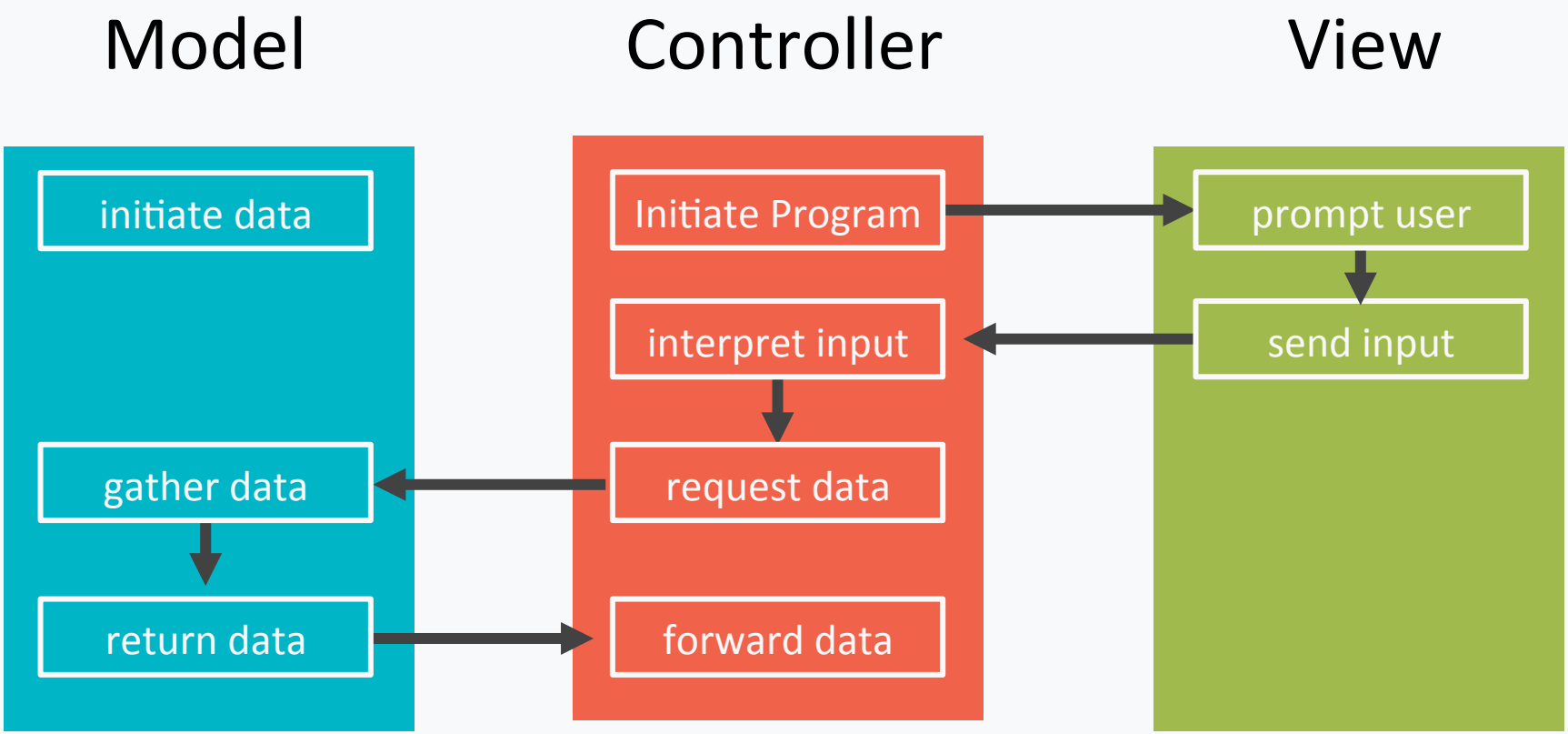
TODO's: List


Model
Controller
View
initiate data
gather data
Initiate Program
interpret input
request data
prompt user
send input

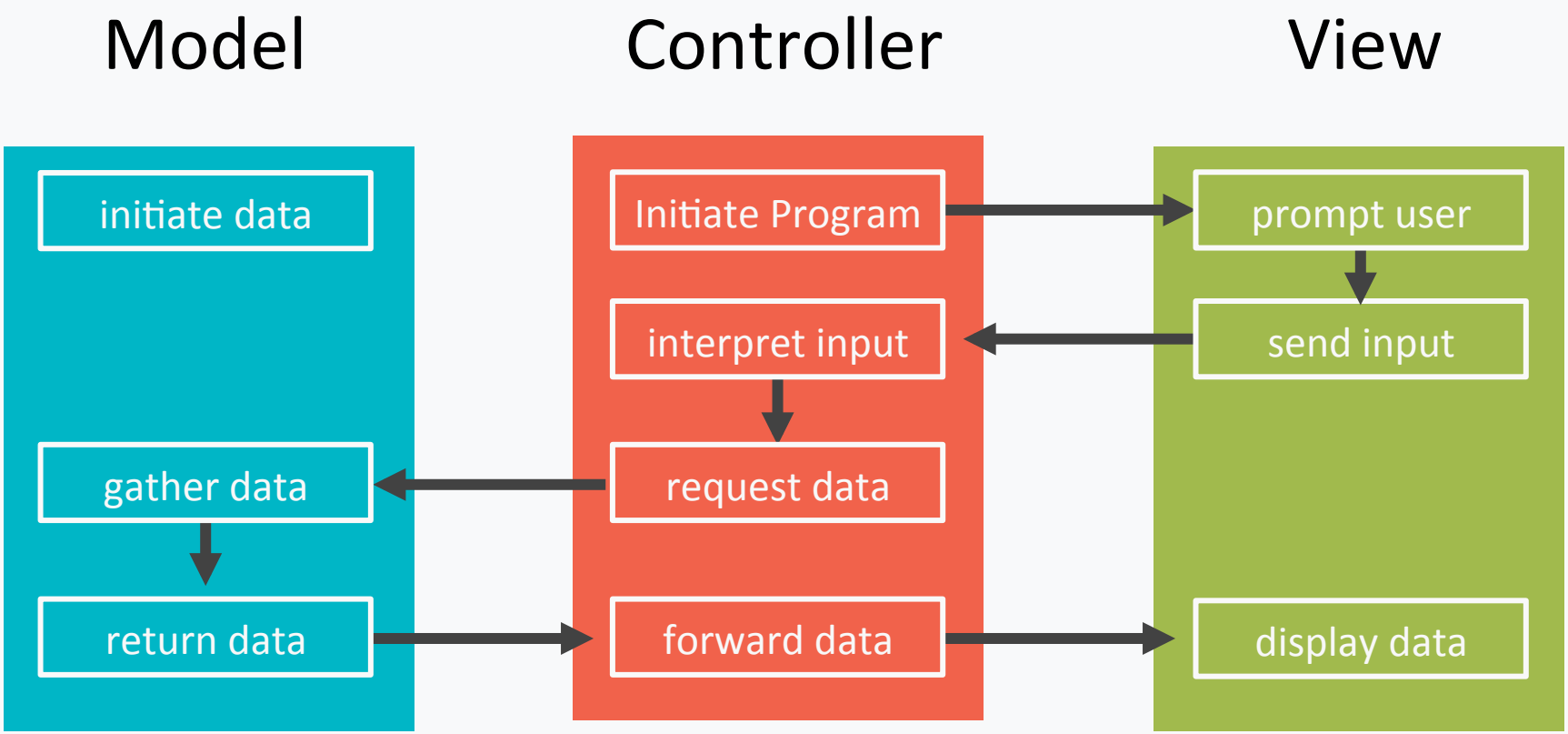
TODO's: List


Model
Controller
View
initiate data
gather data
return data
Initiate Program
interpret input
request data
prompt user
send input

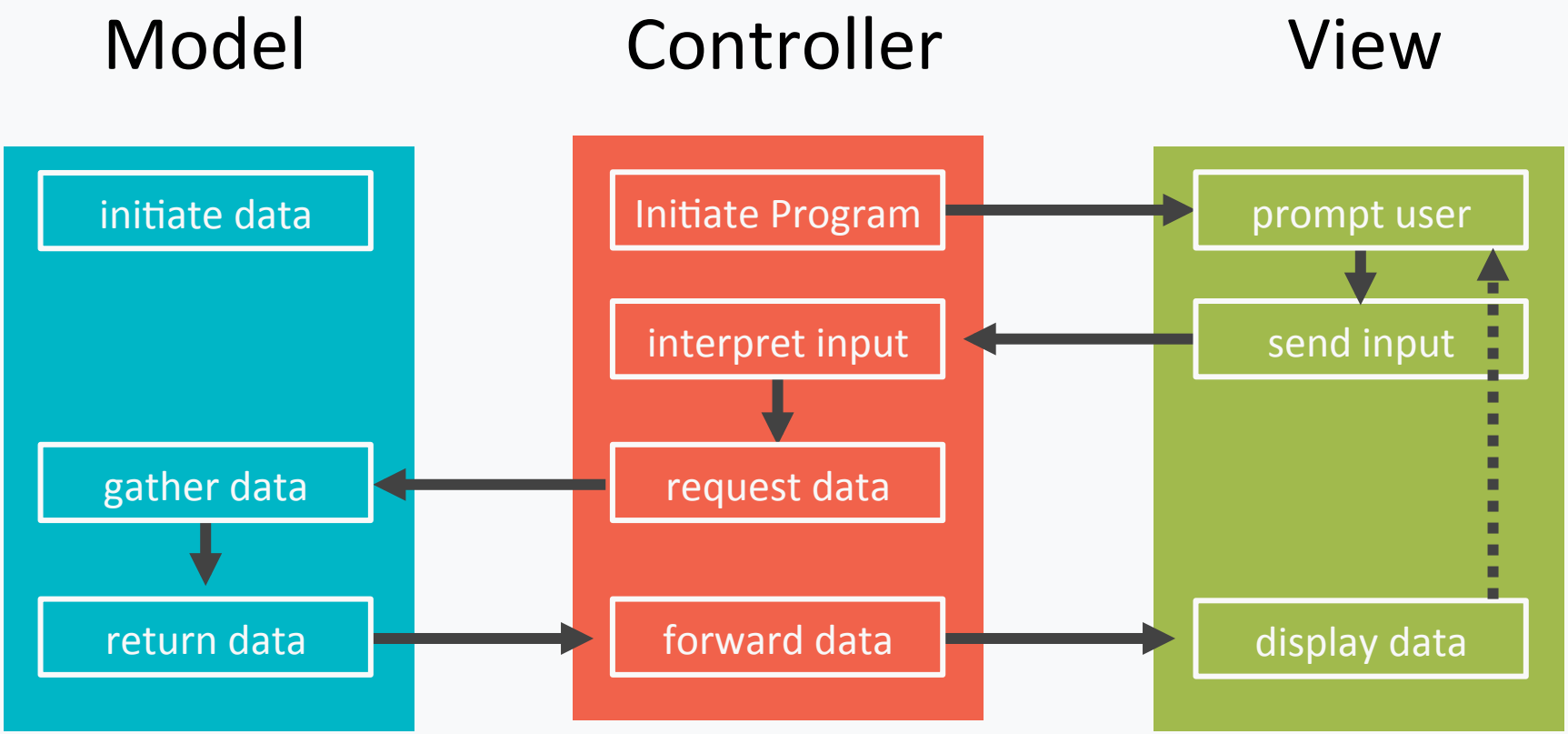
TODO's: List


Model
Controller
View
initiate data
Initiate Program
prompt user
interpret input
send input
gather data
request data
return data
forward data

TODO's: List


Model
Controller
View
initiate data
Initiate Program
prompt user
interpret input
send input
gather data
request data
return data
forward data
display data

Everything you need to visualize MVC:



FIN: