Web Application Architectures

Module 5: Middleware
Lecture 1: What is Middleware?

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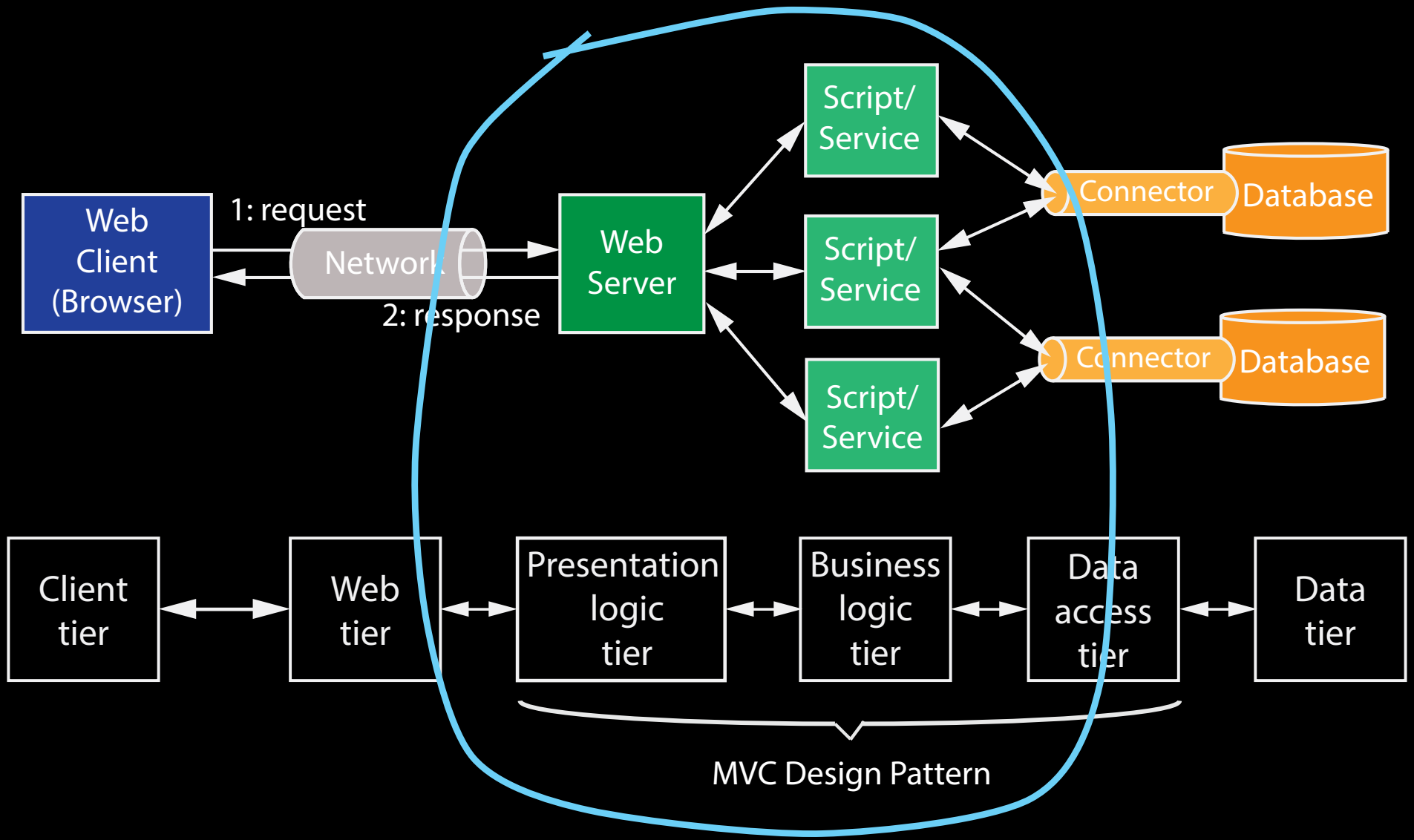
Focus of Attention



What is Middelware?

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- Middleware is the "software glue" between the operating system and applications on each side of a client-server architecture, some refer to it as the "dash" in client-server.
- I like to think of middleware as the software that provides services to applications beyond those available from the underlying operating system — it connects applications running on the server side, and passes data between them.
- Thus, middleware allows multiple processes running on different machines to interact (where natively they would not be able to).
- We're not going to dig deeply into the Rails middleware — we'll focus more on how the MVC design pattern is implemented on top of it.

Rails Middelware

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- In Rails, a middleware stack, called Rack, is automatically provided.
- Rack provides a unified and simple interface that that allows applications to "talk to" web servers, including Mongrel, Thin, Phusion, Apache, etc. I.e., Rack is responsible for handling HTTP requests and responses.
- Rack is used to group and organize modules, typically written in Ruby, and to specify the dependencies between them. `Rack::Builder` puts these together, creating a stack-like structure that can be used by a web application. To see the middleware installed in a Rails application, from the root of the application, type:

```
$ rake middleware
```

Rails Middelware

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- Other Ruby frameworks, e.g., Sinatra, are also built on top of Rack.
- In this class, we'll use the default middleware configuration that Rails provides – but it's useful to know what's "under the hood."
- When you execute:

```
$ rails server
```

  a `Rack::Server` object is created and attached to the web server (WEBrick by default), and the middleware components are loaded up.

  The `Rack::Server#start` method starts the web server running, listening on the designated port for HTTP requests.