Web Applications

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- Web Applications
- Apache Tomcat
- First Java Web App

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A web application is client-server application that uses the hyper-text transfer protocol (HTTP).

- HTTP request is sent from client to server
- HTTP response is sent back to client from server
- HTTP is stateless - there is no inherent relationship betwen request/response pairs
  - We simulate sessions (related request/response pairs) by setting cookies on the client.

Web browsers – Firefox, Chrome – are platforms for clients. Web servers – Apache, Tomcat, nginx – are plaforms for servers. A particular set of web pages running in a browser that communicate with a particular set of web server applications constitutes a web application.

HTTP Protocol

HTTP request message contain a request line, headers, and a body.
Each request line specifies a method. Methods we care about:

- GET - get a resource from a server running at a specified URI
- POST
- UPDATE
- DELETE

For example, if you type `http://www.gatech.edu/` in your browser's address bar, or follow a hyperlink whose target is `http://www.gatech.edu/`, you browser will send a GET request that looks something like this:

```
GET http://www.gatech.edu/ HTTP/1.1
```

By the way, the inclusion of the access mechanism http:// makes the URI above a URL. In gneral, though, it's a waste of mentons to distinguish between URIs and URLs.
For details see http://www.w3.org/Protocols/rfc2616/rfc2616-sec5.html

Web App Structure

Web applications can be arbitrarily rich, but the core functionality of most web applications is to manage resources by implementing four operations:

- Create - create a new instance of a resourece (new email message, new customer account object, etc) - maps to the HTTP POST method.
- Read - read a resource - maps to the HTTP GET method.
- Update - modify a resource - maps to the HTTP PUT method.
- Delete - delete a resource - maps to the HTTP DELETE method.

This paradigm is called “CRUD” and most web frameworks (and RESTful web services) are structured around these operations. In our sample application we’ll see a simple way to map these operations to HTTP methods

Tomcat and Sample Application

Now let's

- download, install and configure Tomcat, and
- discuss a simple web application usign Java servlets and JSPs.