Engineering Internet Applications

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- Background
  - about me
  - about you

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- Aims/Objectives
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  - Describe in detail web development (using Ruby and Sinatra)
  - Understand the development process and organisation

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  - 2 hours lectures
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- Assessment
  - Group project in Ruby/Sinatra (70%)
  - Quiz in Java (30%)

Module Introduction, cont.

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    - http://mislav.uniqpath.com/poignant-guide/
  - Mr. Neighborly's Humble Little Ruby Book
    - http://humblelittlerubybook.com/
  - Sinatra: Up and Running (http://it-ebooks.info/book/547/)
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- Contact
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- Ask, ask, and when in doubt ask!!!

Expected Skills

- For the module
  - Basic knowledge of desired OS
    - Unix-based (recommended)
    - Windows

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- For the future
  - Start a personal project
  - Be passionate (work hard!)

Course Outline

- Week 1: Introduction to EIA and Ruby
- Week 2: Introduction to Ruby
- Week 3: Sinatra, MVC, (++) and Tiny App demonstrating Web Dev.
- Week 4: Environments, Sessions, Error handling, (++)
- Week 5: Associations, Migrations, Web Authentication, Web Services
- Week 6: Consolidation Week
- Week 7: Client-side / Presentation
- Week 8: Unit Testing, Functional Testing (++)
- Week 9: Web Development with Java
- Week 10: Web Development with Java
- Week 11: Web Development with Java
- Week 12: Revision Week

Coursework

- One project, in three phases / courseworks
  - requirement analysis and design (group)
  - basic implementation (group)
  - advanced implementation (individual)

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  - requirement analysis and design (group)
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  - advanced implementation (individual)
- Hard deadlines — no delays!
- Feedback is essential for following phases

Basics (Technical)

- Hypertext Transfer Protocol (HTTP)
  - request-response protocol
    - application layer (TCP/IP & OSI)
  - client-server model
  - `GET`, `POST`, `DELETE`, ...

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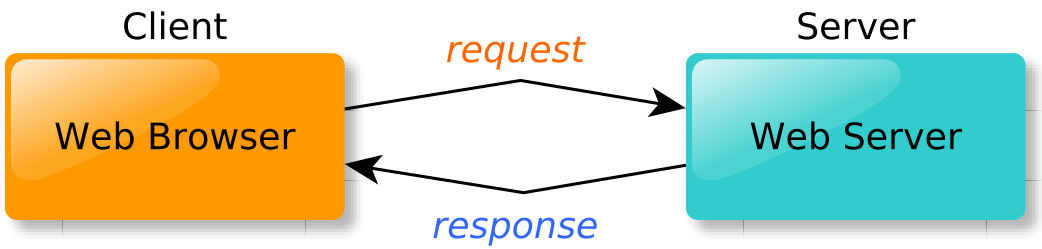
Trying 192.0.43.10...
Connected to www.example.com.
Escape character is '^]'.
GET / HTTP/1.1

HTTP/1.0 302 Found
Location: http://example.iana.org
Server: BigIP
Connection: Keep-Alive
Content-Length: 0
```

Basics (Technical), cont.



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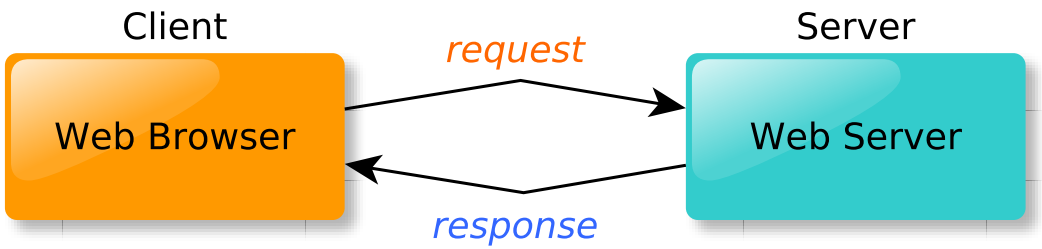

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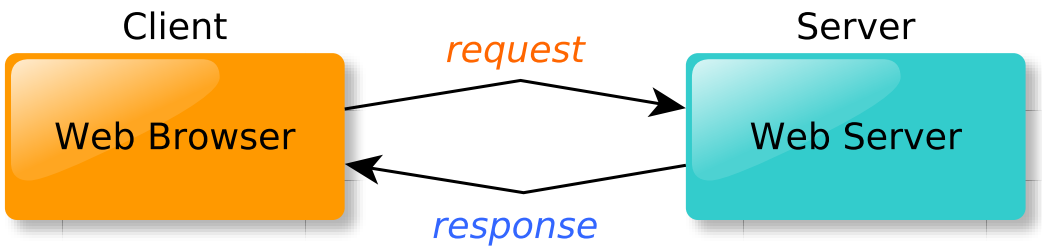

- Uniform Resource Identifier (URI)
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- `<scheme name>:<hierarchical path> [?<query>] [#<fragment>]`
- Web Browser
  - GET
  - `http://example.com/path?param1=value1&p2=v2`

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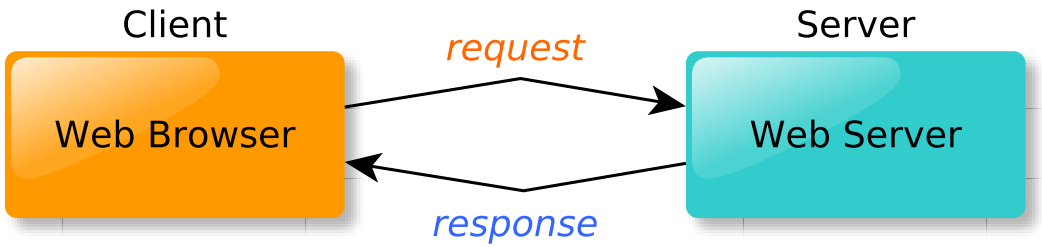

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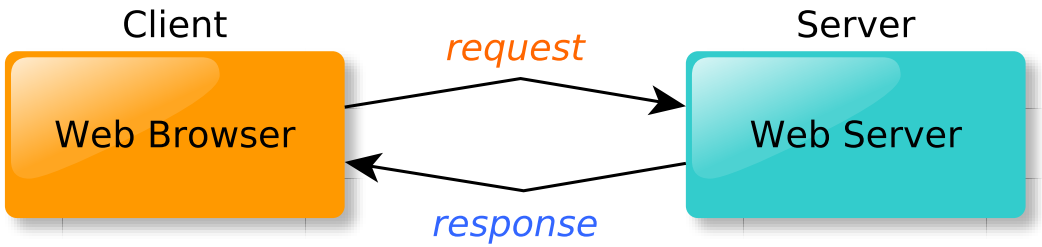

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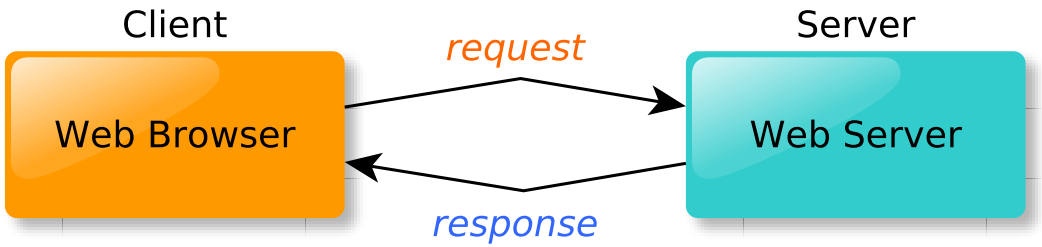

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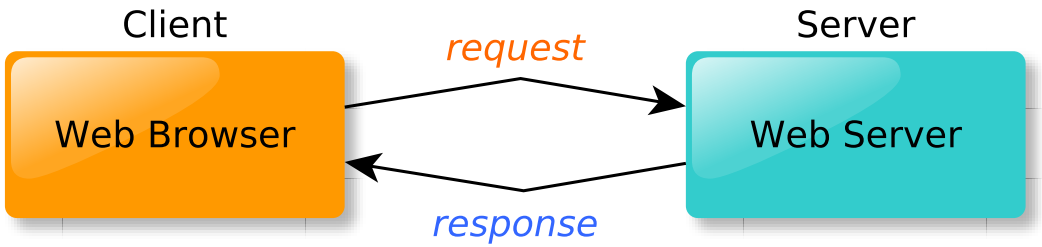

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- More details later during architectural discussions

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  - Libraries
  - C, Pascal, Basic, Modula, ...
- Object-oriented programming
  - Encapsulation (inheritance/polymorphism)
  - Interfaces
  - Powerful class libraries
  - Java, C++, C#, Python, *Ruby*, ...

Software Engineering: Abstraction & Reuse, cont.

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  - Defined rules and contracts for deployment and reuse
  - Potentially distributed
  - CORBA, COM/DCOM, EJB, CCA, ...

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- Web Services
  - Design focus is on services interface
  - Loosely coupled (distributed) applications
    - Integration at the interface (contract) level
    - ...no implementation dependencies

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"Web Service; just a Web page that is meant to be consumed by an autonomous program as opposed to a human."

— me :)

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  - basic
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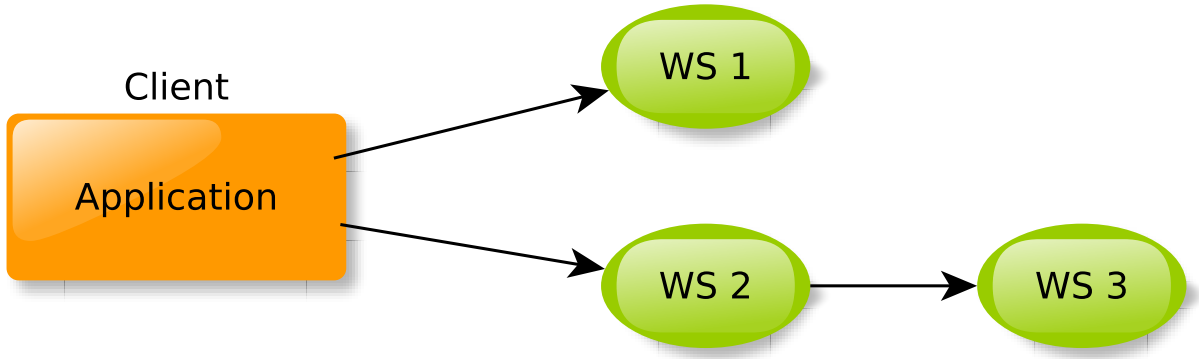

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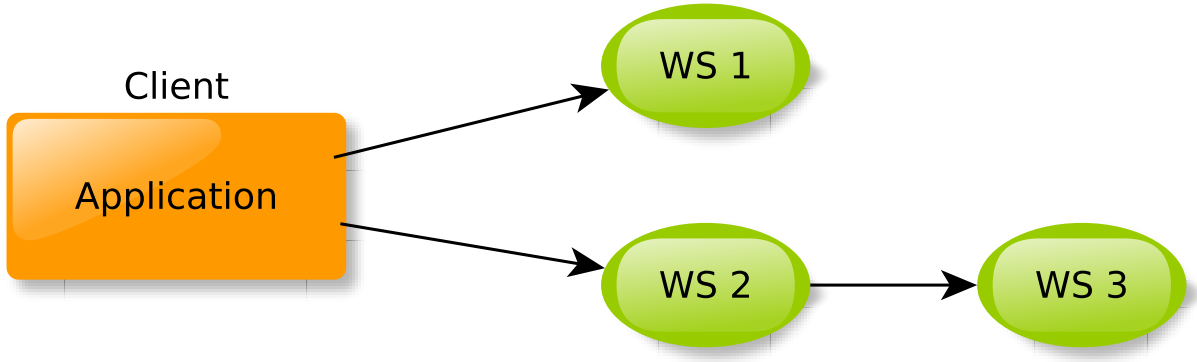

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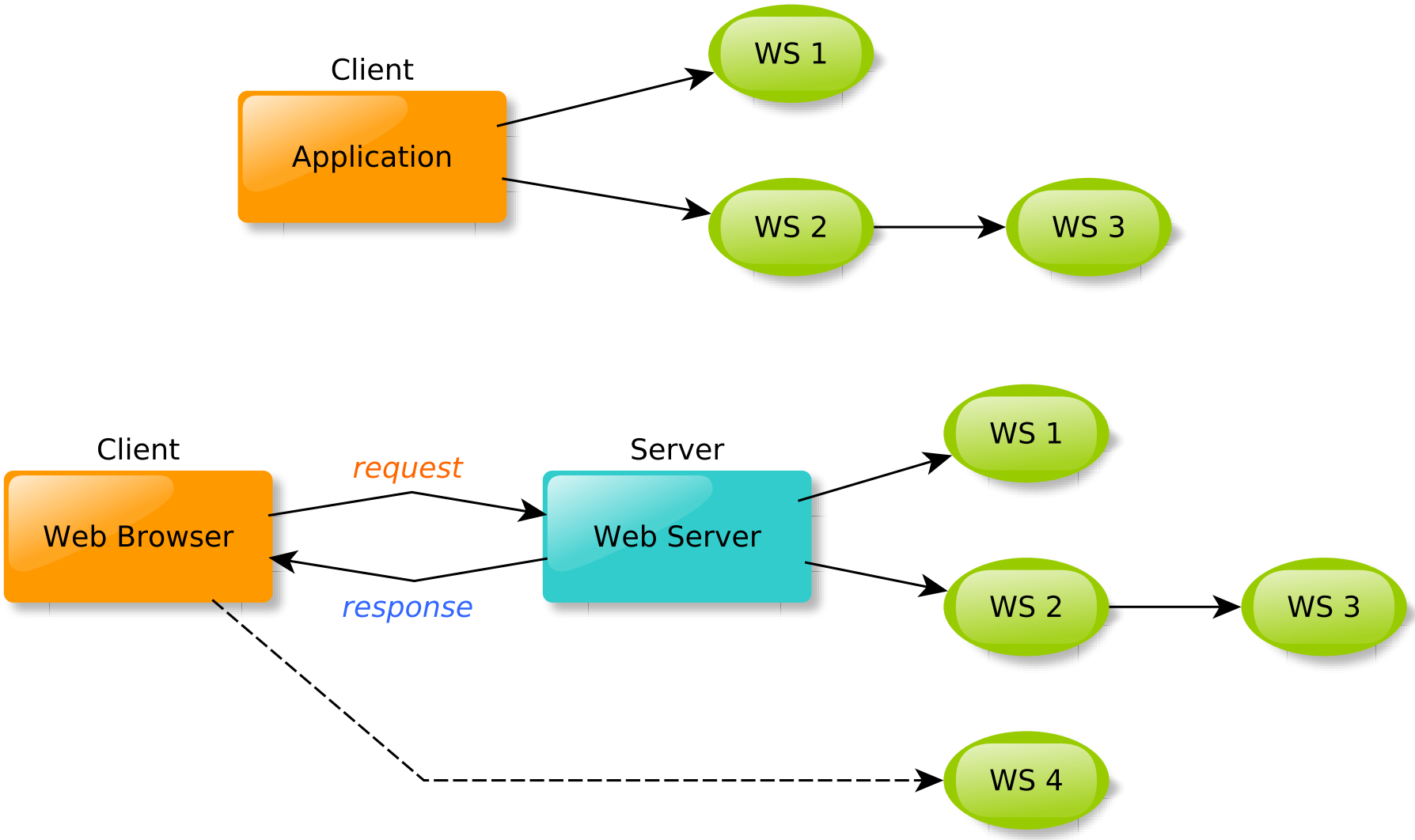

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Coursework

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