

# Recap: HTTP request/response



Server

HTTP request

`http://red1.cs.panam.edu/~etomai/links/first.html`



- Hostname is resolved to IP address (e.g. 129.113.132.218)
- Request type is GET or POST
- Request headers give information about the *agent*
- Additional data may be sent
  - Variable/value pairs in a query string
    - `first.html?name=emmett&number=7`
  - POSTed in the body from an HTML form



Client

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HTTP response



Client

- If the request specifies a static file
  - HTML, image, video, text, etc...
  - The file is retrieved from the server filesystem
- Response headers specify type of data
  - Using MIME types (e.g. text/html)
- The file contents are *streamed* (printed) back to the client

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HTTP response



Client

- If the request specifies a CGI script
  - An executable program
- The program is executed on the server
  - Request headers and the URL are made available to the program
  - All output from the program to stdout (cout) is sent back to the client
    - Should include HTTP response headers

# Problems with CGI

- Too much work
  - Unpacking and verifying the data is tedious
    - Tedious leads to sloppiness - bugs, security risks
    - Tedious code is hard to maintain
  - Using << to generate HTML stinks
- Better solutions?
  - Create libraries for common data-handling tasks
  - Put static HTML in separate files and read them in

# Server-side scripting

- One of many solutions
- “scripting” usually means lightweight, simple
  - Emphasis on ease of development
  - Not intended for high-performance applications
  - Not intended for large-scale code organization
- Server-side scripting languages
  - Java Server Pages (JSP), Active Server Pages (ASP.NET), PHP Hypertext Preprocessor (PHP)
  - Executed on the server, like CGI programs
  - Allow a mixture of static and dynamic content
    - Code fragments are *embedded* in static HTML