Project 1
Web client and server

EECS 340
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Project Goals

• Implement a simple WWW client and server
  – Examples
• Use a restricted subset of HTTP
• Use socket programming
• To give you experience with HTTP and sockets programming
HTTP Protocol

Sockets
HTTP Usage

- HTTP is the protocol that supports communication between web browsers and web servers.

- A “Web Server” is a HTTP server.

- Most clients/servers today speak version 1.1, but 1.0 is also in use.
Request - Response

• HTTP has a simple structure:
  – client sends a request
  – server returns a reply.
HTTP 1.0+ Request

• Lines of text (ASCII).

• Lines end with CRLF “\r\n”

• First line is called “Request-Line”
Request Line

Method URL HTTP-Version

- The request line contains 3 tokens (words).
- Space characters " " separate the tokens.
- Newline (\n) seems to work by itself (but the protocol requires CRLF)
The Header Lines

• After the Request-Line come a number (possibly zero) of HTTP header lines.

• Each header line contains an attribute name followed by a “:” followed by a space and the attribute value.

The Name and Value are just text.
Headers

• Request Headers provide information to the server about the client
  – what kind of client
  – what kind of content will be accepted
  – who is making the request

• There can be 0 headers (HTTP 1.0)
• HTTP 1.1 requires a Host: header
Example HTTP Headers

Accept: text/html

Host: www.northwestern.edu

From: neytmann@cybersurg.com

User-Agent: Mozilla/4.0
Example GET Request

GET /~akuzma/index.html HTTP/1.1
Accept: */*
Host: www.cs.northwestern.edu
User-Agent: Internet Explorer
From: cheater@cs.northwestern.edu

There is a blank line here
Well Known Address

• The “well known” TCP port for HTTP servers is port 80.

• Other ports can be used as well...
Four parts

• 0: Get build, configure and run the minet stack
• 1: HTTP Client
• 2: Connection-at-a-time HTTP Server
• 3: Simple select-based Multiple-connection-at-a-time server
• 4: Complex … (Extra Credit)