Protocols

- A protocol is a set of rules governing the format and exchange of messages in a computing system.
  - What messages can a client exchange with a server?
  - What is the syntax of a message?
  - What do the messages mean?
  - What are legal replies to a message?
  - What sequence of messages are legal?
  - How are errors conveyed?

- A protocol is (roughly) the network equivalent of an API.

HTTP Requests

- General form:
  ```
  [METHOD] [request-uri] HTTP/[version]\r\n  [headerfield1]: [fieldvalue1]\r\n  [headerfield2]: [fieldvalue2]\r\n  ...
  [headerfieldN]: [fieldvalueN]\r\n  \r\n  [request body, if any]
  ```
  - Type of Action to take: [METHOD]
  - Resource to act on: [request-uri]
  - In this class, 1.1
  - Any # of headers (designed for flexibility)
  - Blank line to indicate the end of the headers.
  - \r\n  is used to indicate a "new line" in HTTP

HTTP Responses

- General form:
  ```
  HTTP/[version] [status code] [reason]\r\n  [headerfield1]: [fieldvalue1]\r\n  [headerfield2]: [fieldvalue2]\r\n  ...
  [headerfieldN]: [fieldvalueN]\r\n  \r\n  [response body, if any]
  ```
  - A number
  - A Human readable string
  - Typically the requested resource

Status Codes and Reason

- Code: numeric outcome of the request – easy for computers to interpret
  - A 3-digit integer with the 1st digit indicating a response category
    - 1xx: Informational message
    - 2xx: Success
    - 3xx: Redirect to a different URL
    - 4xx: Error in the client's request
    - 5xx: Error experienced by the server
- Reason: human-readable explanation
  - e.g. "OK" or "Moved Temporarily"
Are the following statements True or False?

**Q1**
- A. False  False
- B. False  True
- C. True  False
- D. True  True
- E. We're lost...

**Q2:** Clients and servers use the same header fields.

Which HTTP status code family do you think the following Reasons belong to?

**Q1**
- A. 4xx  2xx
- B. 4xx  3xx
- C. 5xx  2xx
- D. 5xx  3xx
- E. We're lost...

**Q2:** No Content