Proj1 – Http Proxy

Danyang Zhuo

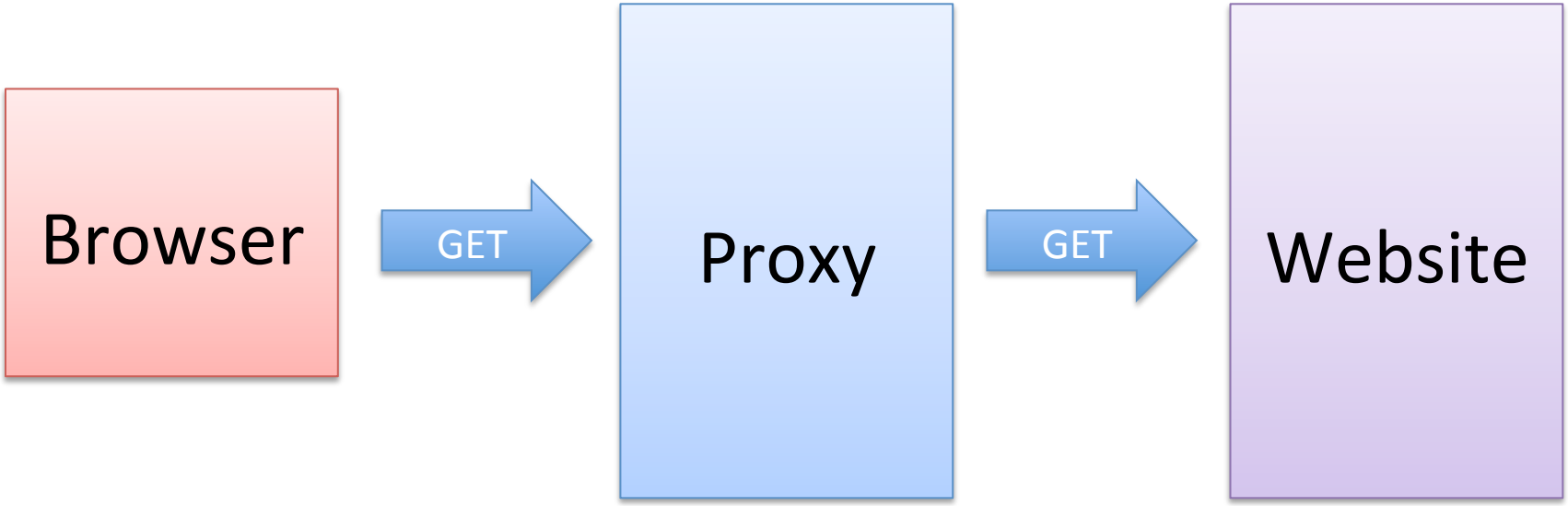
Proj1 – Http Proxy

- Due: Monday May 11 by 5pm
- Programming Language: Anything supported by attu1.cs.washington.edu
- Please add a script
  - .\run <port_num>

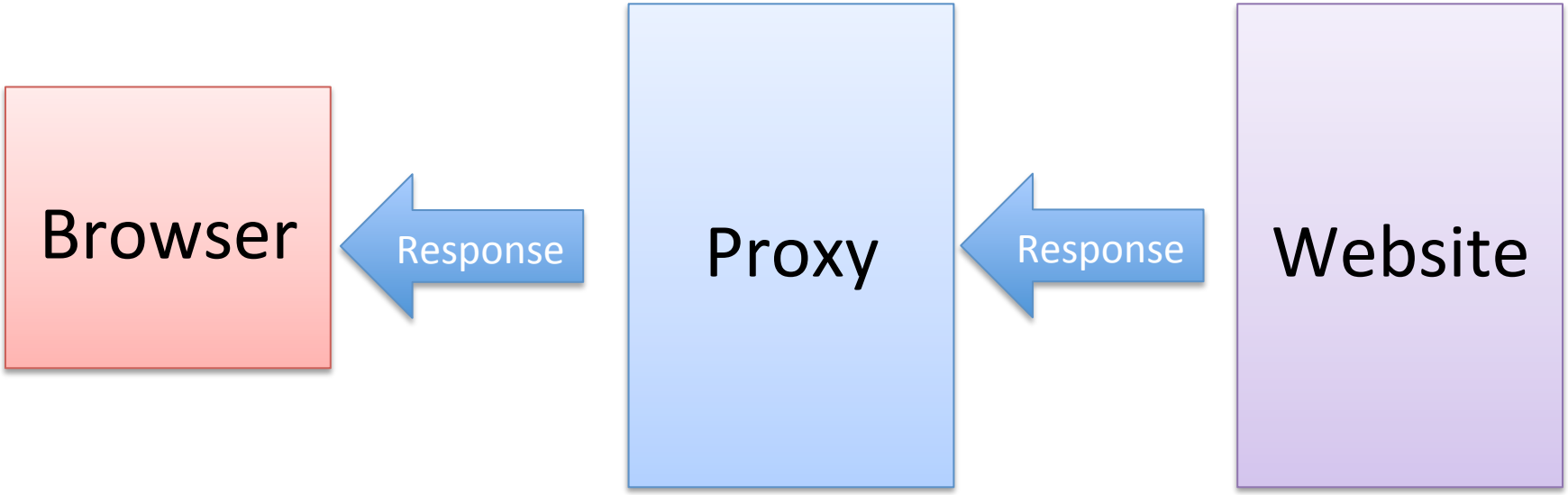
Page Load

- HTTP GET (url)/index.html
- Page is a HTML file pointing to resources:
  - Other HTML files
  - CSS files
  - Pictures
- Subsequent HTTP GET for each resource
- Construct the view
- Demo

Http Proxy for HTTP Traffic



Http Proxy for HTTP Traffic



Http Proxy for HTTP Traffic

GET google.com HTTP/1.1
Host: google.com
…
…
…
Connection: keep-alive
Proxy-Connection: keep-alive

Http Proxy for HTTP Traffic

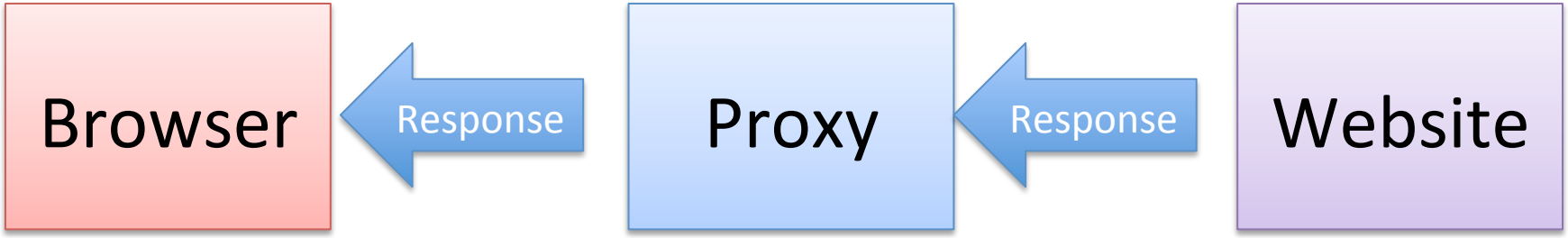
GET google.com HTTP/1.1
Host: google.com
…
…
…
Connection: keep-alive
Proxy-Connection: keep-alive

GET google.com HTTP/1.0
Host: google.com
…
…
…
Connection: close
Proxy-Connection: close

Use Wireshark to figure out your request format

- GET google.com HTTP/1.0 \r\n
- Host: google.com \r\n
- …
- …
- …
- Connection: close \r\n
- Proxy-Connection: close \r\n
- \r\n

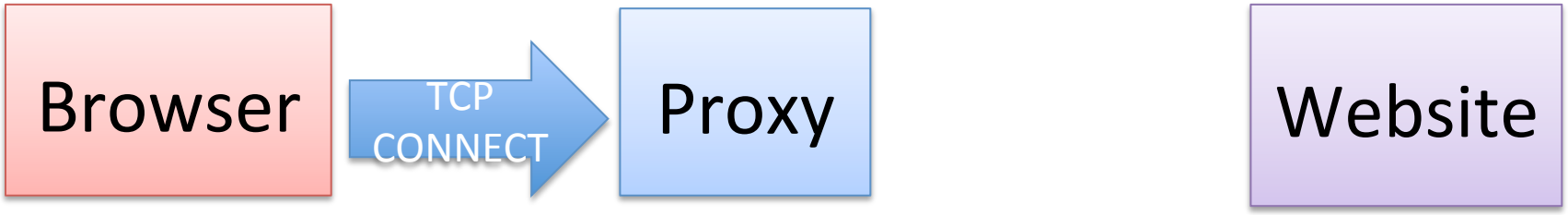
Please DO NOT do anything fancier than forwarding raw bits



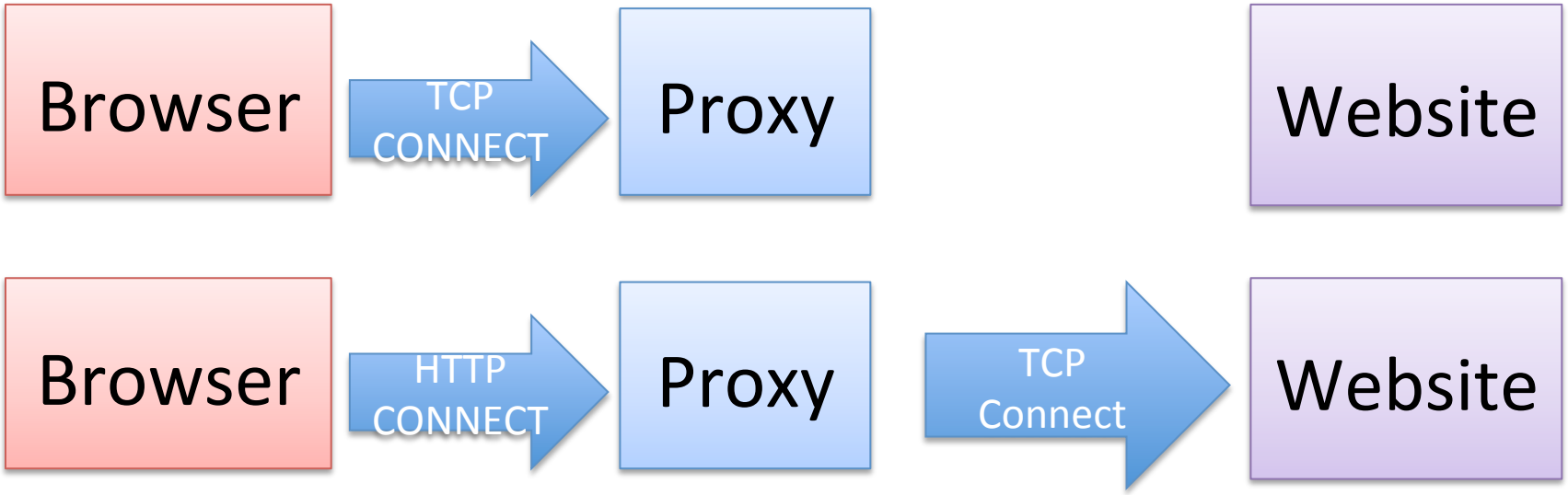
- (Java programmer) Do not use Scanner, BufferedReader, CharBuffer, …. because those modules assume you are forwarding text

- Does not work for gzip and picture!!
- Use BufferedInputStream/BufferedOutputStream

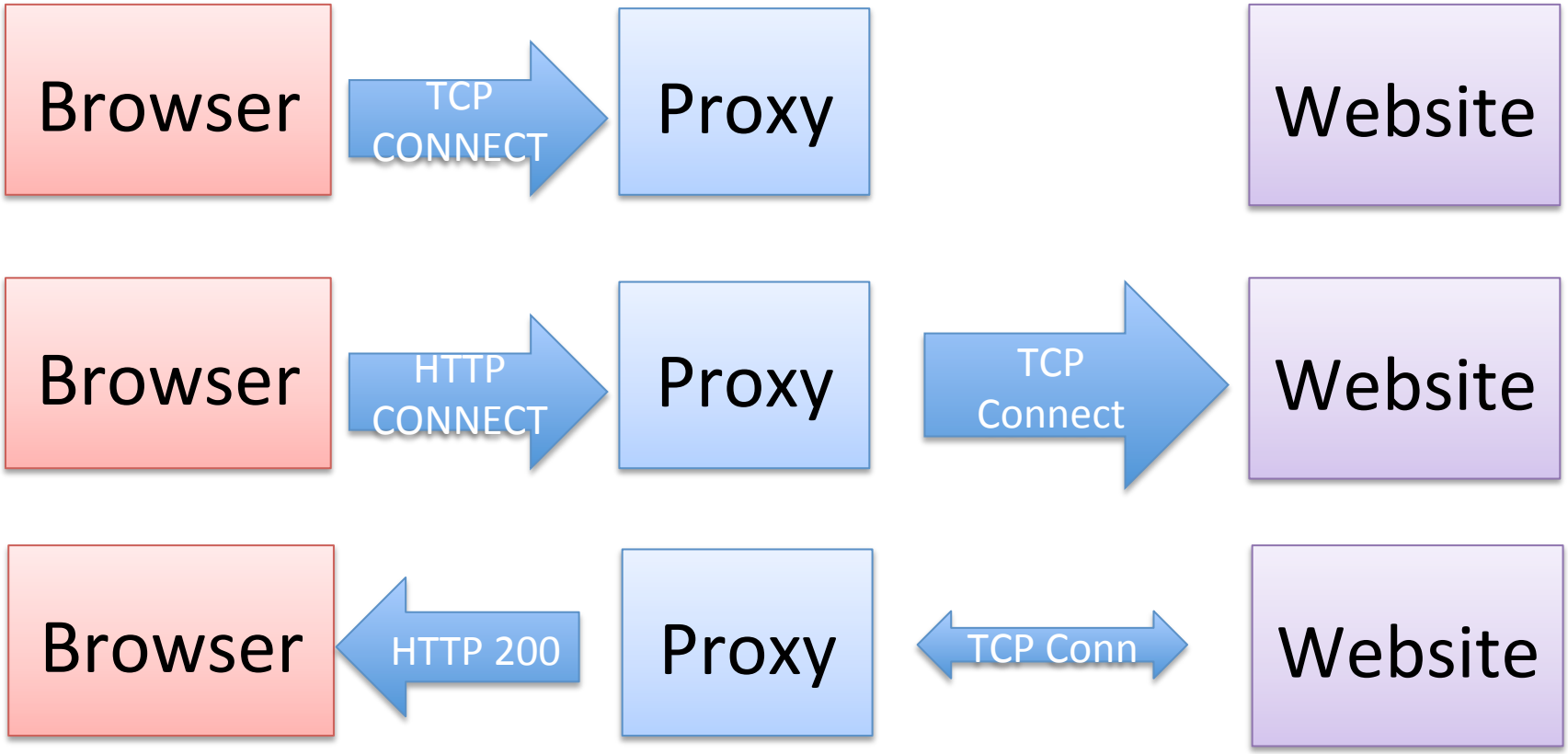
Http Tunnel



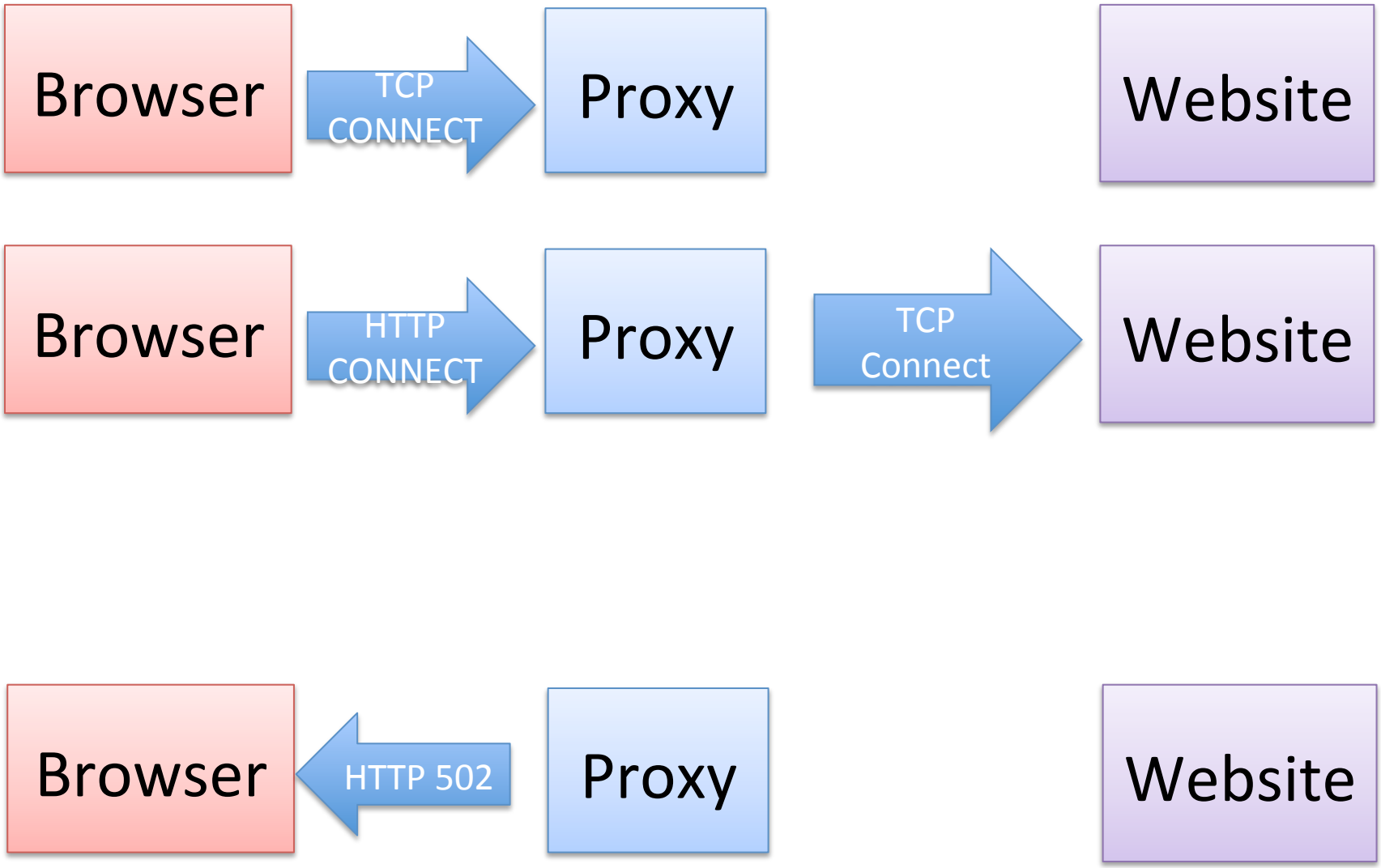
Http Tunnel


Browser
TCP
CONNECT
Proxy
Website
Browser
HTTP
CONNECT
Proxy
TCP
Connect
Website

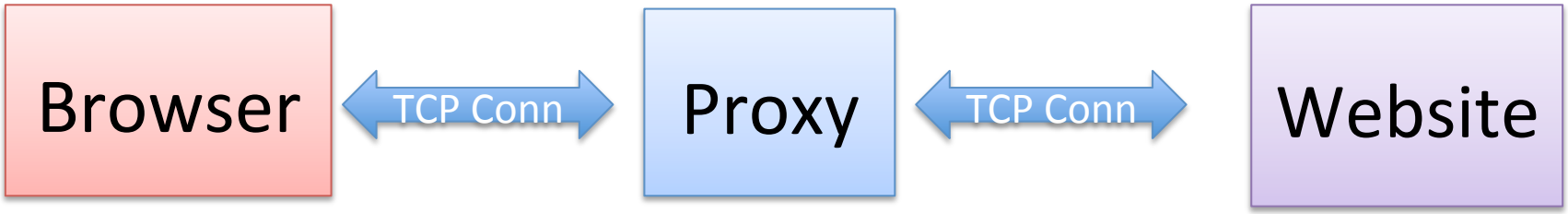
Http Tunnel


Browser
TCP CONNECT
Proxy
Website
Browser
HTTP CONNECT
Proxy
TCP Connect
Website
Browser
HTTP 200
Proxy
TCP Conn
Website

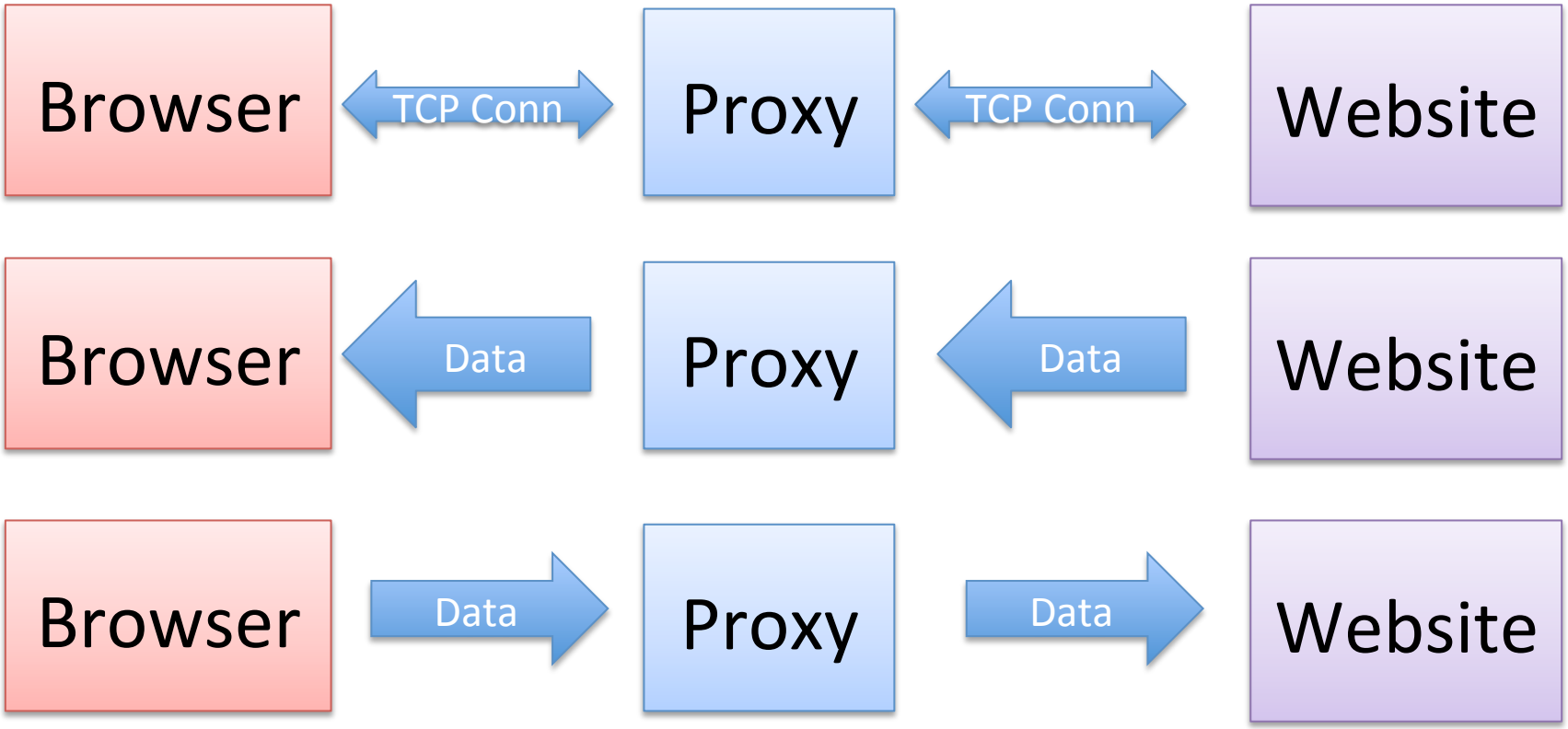
Http Tunnel


Browser
TCP CONNECT
Proxy
Website
Browser
HTTP CONNECT
Proxy
TCP Connect
Website
Browser
HTTP 502
Proxy
Website

Http Tunnel



Http Tunnel


Browser
TCP Conn
Proxy
TCP Conn
Website
Browser
Data
Proxy
Data
Website
Browser
Data
Proxy
Data
Website

Buffer-less Proxy

- Only Buffer Header

- (Async Proxy Programmer) Only forward when the writing socket and reading socket are both ready
- Do not try to read everything then write

TCP

Server:

```
Socket = new Socket()
Socket.bind('localhost', 9999)
Socket.listen()
While 1:
    conn = Socket.accept()
    data = conn.recv()

    conn.close()
Socket.close()
```

Client:

```
Socket = new Socket()

Socket.connect('localhost',9999)
Socket.send('hahaha')
Socket.close()
```

Design and Implementation

Main Thread

```
While 1:
    conn = socket.accept()
    start new thread for conn
```

Per-ConnectionThread

```
If HTTP CONNECT:
    Connect to Server
    if not succeed:
        send 502 to client
        return
    send 200 to client
    start forwarding
ELSE:
    Connect to Server
    Modify request
    Send Request to server
    Forward response to client
```