Network

Technische Universiteit
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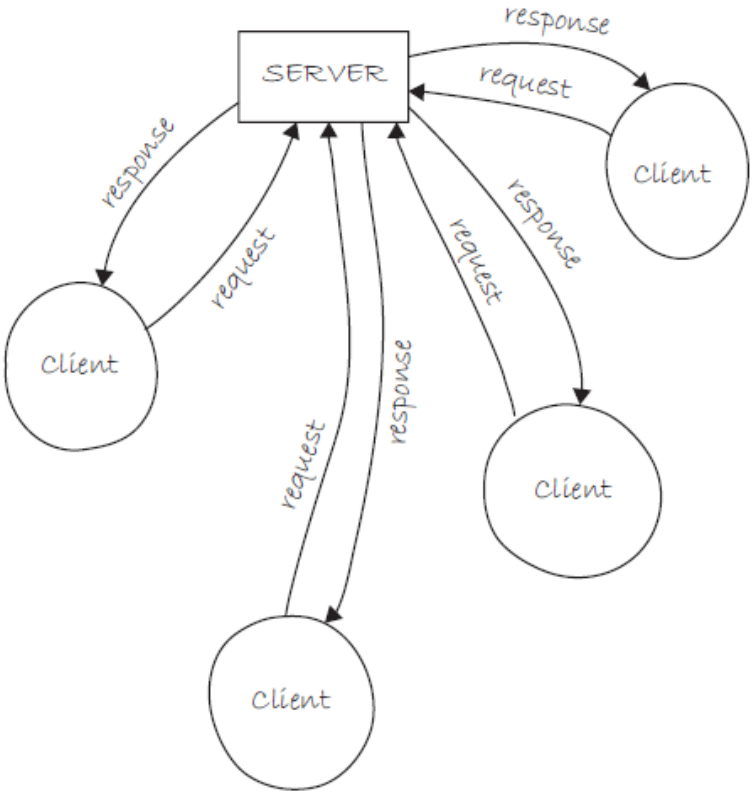
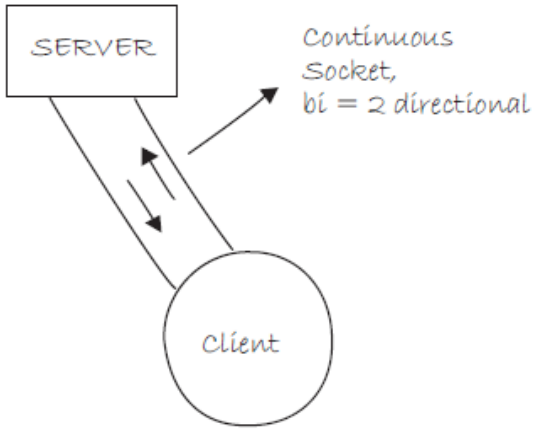
University of Technology

Where innovation starts

Asynchronous vs. synchronous

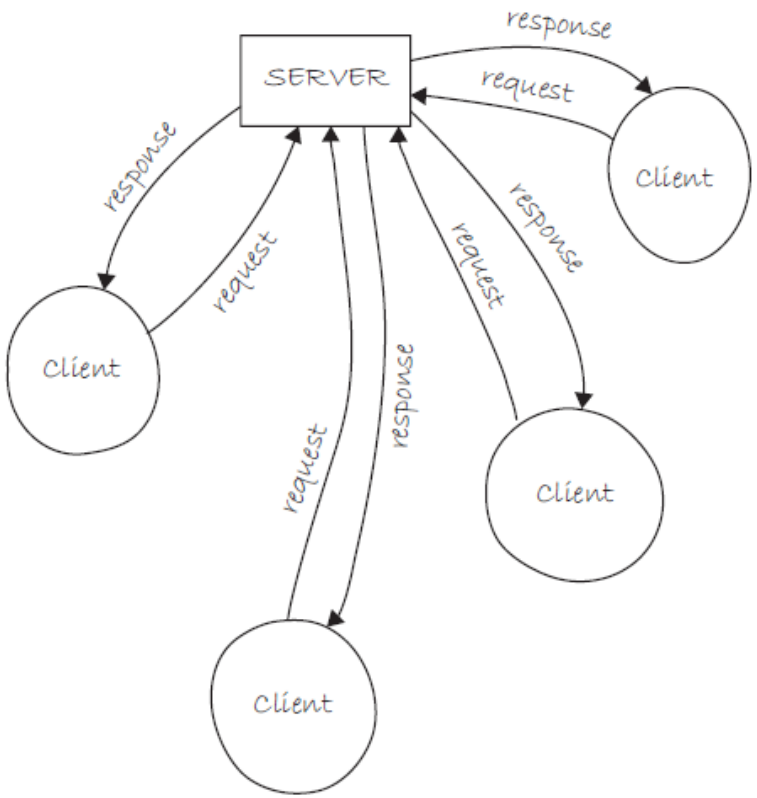


Asynchronous Request
(e.g., asking for a web page)



Socket Connection
(e.g., chat)

Asynchronous vs. synchronous



Asynchronous Request
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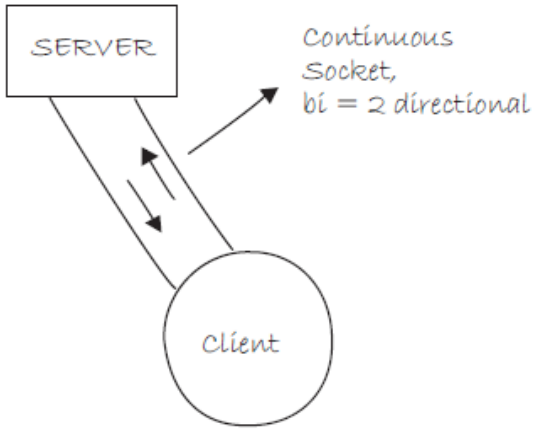


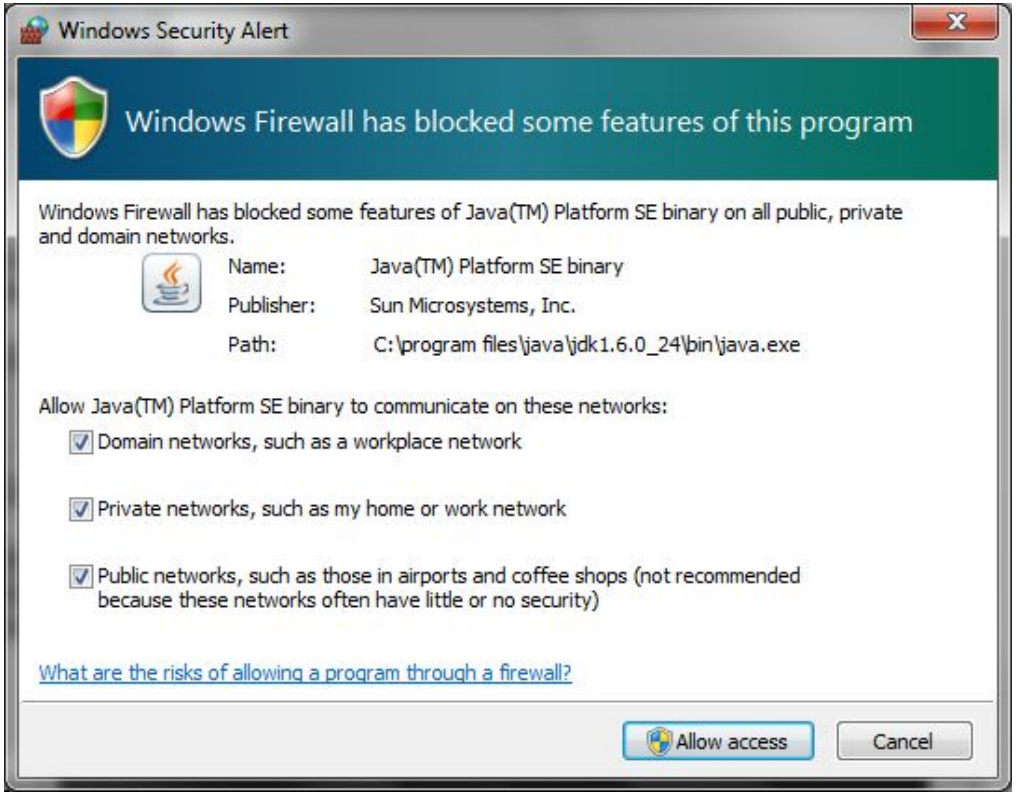
Socket Connection
(e.g., chat)

Homework

Client/Server

- **Help>Reference: Libraries : Network : Server**
- **Help>Reference: Libraries : Network : Client**

- **Before we continue…**



- **Find your IP**
- **On windows:**
  - **WIN+R, cmd, ipconfig**
- **On Mac:**
  - **Applications menu>Utilities>Terminal, ifconfig**

```
Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::c151:61d4:be20:6194%10
   IPv4 Address. . . . . . . . . . . : 192.168.105.47
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.105.1
```

Client/Server

```
import processing.net.*;
Server myServer;
int val = 0;

void setup() {
  size(200, 200);
  // Starts a myServer on port 5204
  myServer = new Server(this, 5204);
}

void draw() {
  val = (val + 1)%255;
  background(val);
  myServer.write(val);
}
```

```
import processing.net.*;
Client myClient;
int dataIn;

void setup() {
  size(200, 200);
  // Connect to the local machine at port 5204.
  // This example will not run if you haven't
  // previously started a server on this port
  myClient = new Client(this, "127.0.0.1", 5204);
}

void draw() {
  if (myClient.available() > 0) {
    dataIn = myClient.read();
  }
  background(dataIn);
}
```

Client/Server

- **Now try to change the server code:**
  - **Reacts to mouse clicks**
  - **Position of the mouse changes the background color**
  - **Send the background color to clients**

Client/Server

```
import processing.net.*;
Server myServer;
int val = 0;

void setup() {
  size(200, 200);
  // Starts a myServer on port 5204
  myServer = new Server(this, 5204);
}

void draw() {
  background(val);
}

void mousePressed(){
  val = mouseY;
  myServer.write(val);
}
```

```
import processing.net.*;
Client myClient;
int dataIn;

void setup() {
  size(200, 200);
  // Connect to the local machine at port 5204.
  // This example will not run if you haven't
  // previously started a server on this port
  myClient = new Client(this, "127.0.0.1", 5204);
}

void draw() {
  if (myClient.available() > 0) {
    dataIn = myClient.read();
  }
  background(dataIn);
}
```

Client/Server

- **Now try out with your neighbor Ms/r Nice:**
  - **Nice runs the server.**
  - **You replace “127.0.0.1” in your client with the IP address of Ms/r Nice’s computer**
  - **You run the client.**
  - **Try the opposite.**
  - **Later you can always try the same.**

Client/Server

- Now let's try the opposite
- Now try to change the client code:
  - Reacts to mouse clicks
  - Position of the mouse changes the background color
  - Send the background color to the server

Client/Server

```
import processing.net.*;
Server myServer;
Client c;
int val = 0;

void setup() {
  size(200, 200);
  // Starts a myServer on port 5204
  myServer = new Server(this, 5204);
}

void draw() {
  c = myServer.available();
  if(c != null){
     val = c.read();
     background(val);
  }
}
```

```
import processing.net.*;
Client myClient;
int val;

void setup() {
  size(200, 200);
  // Connect to the local machine at port 5204.
  // This example will not run if you haven't
  // previously started a server on this port
  myClient = new Client(this, "127.0.0.1", 5204);
}

void draw() {
  background(val);
}

void mousePressed(){
  val = mouseY;
  myClient.write(val);
}
```

Client/Server

- **Now let's synchronize the background of all clients and the server.**

Client/Server

```
import processing.net.*;
Server myServer;
Client c;
int val = 0;

void setup() {
  size(200, 200);
  // Starts a myServer on port 5204
  myServer = new Server(this, 5204);
}

void draw() {
  c = myServer.available();
  if(c != null){
     val = c.read();
     background(val);
     myServer.write(val);
  }
}

void mousePressed(){
  val = mouseY;
  background(val);
  myServer.write(val);
}
```

```
import processing.net.*;
Client myClient;
int val;

void setup() {
  size(200, 200);
  // Connect to the local machine at port 5204.
  // This example will not run if you haven't
  // previously started a server on this port
  myClient = new Client(this, "127.0.0.1", 5204);
}

void draw() {
  if(myClient.available()>0){
    val = myClient.read();
    background(val);
  }
}

void mousePressed(){
  val = mouseY;
  myClient.write(val);
}
```