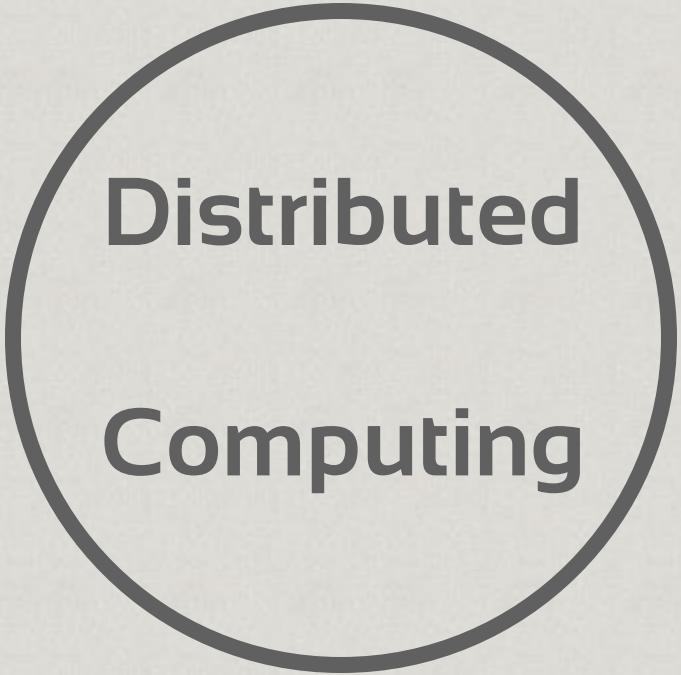

Client/Server

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AGENDA

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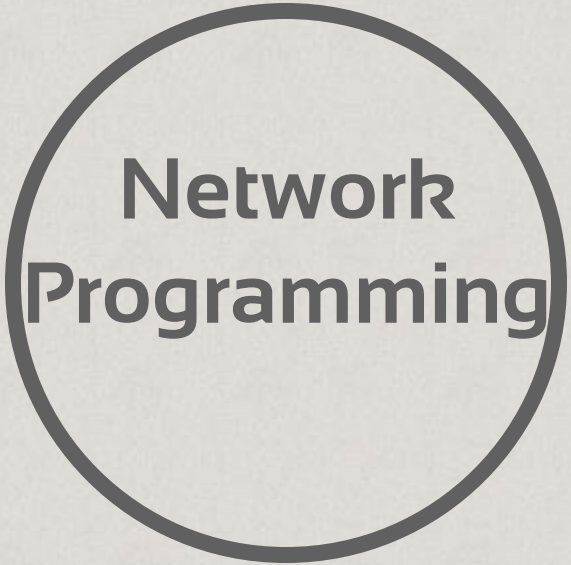

Definition and Types

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Network Programming

- The term network programming refers to writing programs that execute across multiple devices (computers), in which the devices are all connected to each other using a network.
- The *java.net package* of the *J2SE* APIs contains a collection of classes and interfaces that provide the low-level communication details, allowing you to write programs that focus on solving the problem at hand.

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Network Programming cont.

- The java.net package provides support for the two common network protocols:
  - TCP: TCP stands for Transmission Control Protocol, which allows for reliable communication between two applications. TCP is typically used over the Internet Protocol, which is referred to as TCP/IP.
  - UDP: UDP stands for User Datagram Protocol, a connection-less protocol that allows for packets of data to be transmitted between applications.

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Network Programming cont.

- There are two types of network programming:
  - Socket Programming: This is most widely used concept in Networking and it's about opening sockets.
  - URL Processing: write Java programs that communicate with a URL

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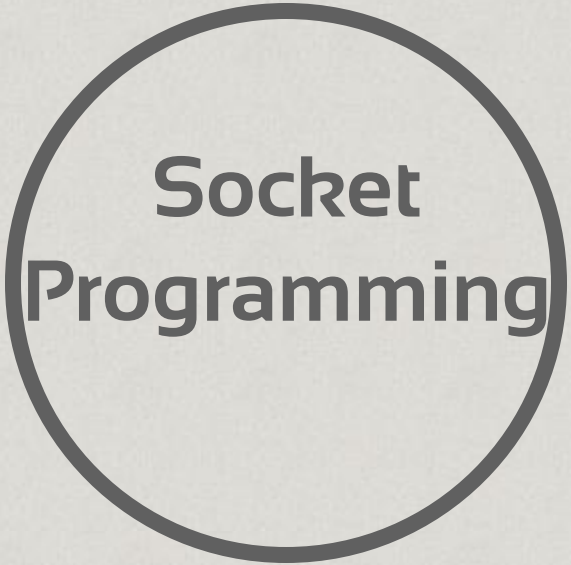

Main topic

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Socket Programming

- Sockets provide the communication mechanism between two computers using TCP.
- A client program creates a socket on its end of the communication and attempts to connect that socket to a server.
- When the connection is made, the server creates a socket object on its end of the communication. The client and server can now communicate by writing to and reading from the socket.

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Establishing a TCP connection between two computers using sockets

- The server instantiates a ServerSocket object, denoting which port number communication is to occur on.
- The server invokes the accept() method of the ServerSocket class. This method waits until a client connects to the server on the given port.
- After the server is waiting, a client instantiates a Socket object, specifying the server name and port number to connect to.

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Establishing a TCP connection between two computers using sockets cont.

- The constructor of the Socket class attempts to connect the client to the specified server and port number. If communication is established, the client now has a Socket object capable of communicating with the server.
- On the server side, the accept() method returns a reference to a new socket on the server that is connected to the client's socket.

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Sever and client example

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URL Processing

- URL stands for Uniform Resource Locator and represents a resource on the World Wide Web, such as a Web page or FTP directory.
- A URL can be broken down into these sections:

```
protocol://host:port/path?query#ref
```


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URL processing Examples

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QUESTIONS

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THANK YOU!

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