

Network Programming

TCP Socket Programming (Example in C/C++ and Java)

// client-side (includes omitted)

```
int main() {  
    int sockfd, status;  
    char buffer[1024];  
    const char *hello = "Hello from client";  
    struct sockaddr_in servaddr;
```

```
    if ( (sockfd = socket(AF_INET, SOCK_STREAM, 0)) < 0 ) {  
        perror("socket creation failed");  
        exit(EXIT_FAILURE);  
    }
```

```
    memset(&servaddr, 0, sizeof(servaddr));  
  
    servaddr.sin_family = AF_INET;  
    servaddr.sin_port = htons(8080);  
    servaddr.sin_addr.s_addr = INADDR_ANY;
```

```
    int n;  
  
    if ((status = connect(sockfd, (struct sockaddr*)&servaddr,  
        sizeof(servaddr))) < 0) {  
        printf("\nConnection Failed \n");  
        return -1;  
    }
```

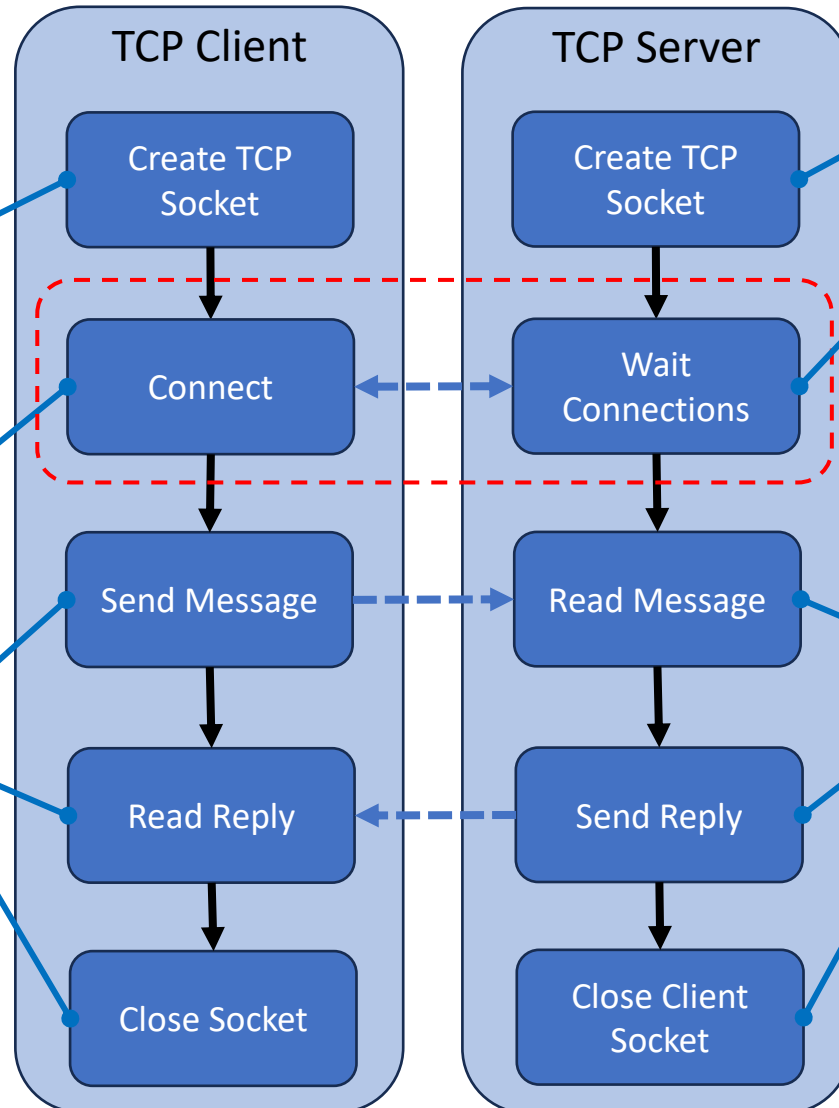
```
    send(sockfd, hello, strlen(hello), 0);  
    std::cout<<"Hello message sent."<<std::endl;
```

```
    n = read(sockfd, buffer, 1024);  
    std::cout<<"Received \""<<buffer<<"\"<<std::endl;
```

```
    close(sockfd);
```

```
    return 0;  
}
```

**TCP client in C/C++
from previous lesson!**



```
import java.io.*;  
import java.net.*;
```

```
public class TCP_server {  
    public static void main(String[] args) {  
        if (args.length < 1) return;
```

```
        int port = Integer.parseInt(args[0]);
```

```
        try (ServerSocket welcome_socket = new ServerSocket(port)) {  
            System.out.println("Server is listening on port " + port);
```

```
            while (true) {  
                Socket new_socket = welcome_socket.accept();
```

```
                InputStream input = new_socket.getInputStream();  
                BufferedReader reader = new BufferedReader(  
                    new InputStreamReader(input));
```

```
                OutputStream output = new_socket.getOutputStream();  
                PrintWriter writer = new PrintWriter(output, true);
```

```
                System.out.println("New client connected");
```

```
                String msg = reader.readLine();  
                System.out.println("Received: " + msg);
```

```
                writer.println("Hello from Server");
```

```
                new_socket.close();  
                System.out.println("Connection closed");  
            }
```

```
        } catch (IOException ex) {  
            System.out.println("Server exception: " + ex.getMessage());  
            ex.printStackTrace();  
        }  
    }  
}
```