TCP/IP file transfer

Group 9

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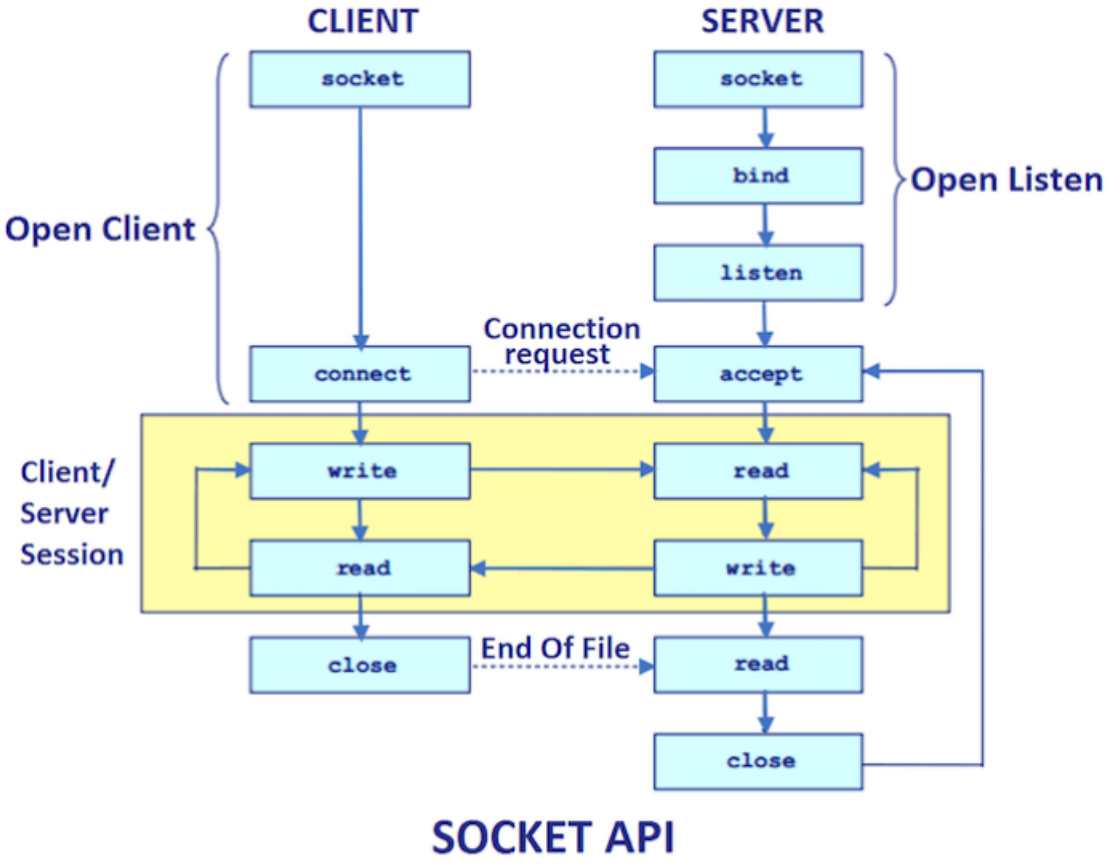
1 Protocol Design

1.1 Figure



We start create 2 socket both for server and client

1.2 Open Session

- The server socket will be bound to port 4444 after created
- The server socket then listening to any message/data received

1.3 End open listen of server

- After getting the server socket to listening, the client socket will try to connect to the server

1.4 End open client socket

- In client/Server session, both client and server sending each other message alternatively until ones decided to close.

2 System Organizing

3 Code Implementation

3.1 Client

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/types.h>
#include <netinet/in.h>
#include <arpa/inet.h>

#define PORT 4444
int main(){

   int clientSocket;
   struct sockaddr_in serverAddr;
   char buffer[1024];
     // socket create and verification
   clientSocket = socket(PF_INET, SOCK_STREAM, 0);
   printf("[+]Client Socket Created Sucessfully.\n");
   memset(&serverAddr, '\0', sizeof(serverAddr));
   serverAddr.sin_family = AF_INET;
   serverAddr.sin_port = htons(PORT);
   serverAddr.sin_addr.s_addr = inet_addr("127.0.0.1");
   // Server is ready to listen and verification
   connect(clientSocket, (struct sockaddr*)&serverAddr,
       sizeof(serverAddr));
   printf("[+]Connected to Server.\n");
   // Receiver from the sever receiver messeger from sever
   recv(clientSocket, buffer, 1024, 0);
   printf("[+]Data Recv from sever: %s\n", buffer);
   strcpy(buffer, "hillo");
   send(clientSocket, buffer, strlen(buffer), 0);
   printf("[+]Closing the connection.\n");
   return 0;
}
```

Implementing

```
hung8585@Hung8585s-MacBook ~ % cd
    "/Users/hung8585/Downloads/TCP-file_transfer/" && gcc TCP-client.c
    -o TCP-client &&
    "/Users/hung8585/Downloads/TCP-file_transfer/"TCP-client

[+]Client Socket Created Sucessfully.
[+]Connected to Server.
[+]Data Recv from sever: hello
[+]Closing the connection.
```

3.2 Server

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/types.h>
#include <netinet/in.h>
#include <arpa/inet.h>

#define PORT 4444

int main(){

   int sockfd;
   struct sockaddr_in serverAddr;

   int newSocket;
   struct sockaddr_in newAddr;

   socklen_t addr_size;
   char buffer[1024];
    // socket create and varification
   sockfd = socket(AF_INET, SOCK_STREAM, 0);
   printf("[+]Server Socket Created Sucessfully.\n");
   memset(&serverAddr, '\0', sizeof(serverAddr));
       // assign IP, PORT
   serverAddr.sin_family = AF_INET;
   serverAddr.sin_port = htons(PORT);
   serverAddr.sin_addr.s_addr = inet_addr("127.0.0.1");
      // Binding newly created socket to given IP and verification
   bind(sockfd, (struct sockaddr*)&serverAddr, sizeof(serverAddr));
   printf("[+]Bind to Port number %d.\n", 4444);
     // Server is ready to listen and verificatio
   listen(sockfd, 5);
   printf("[+]Listening...\n");

   newSocket = accept(sockfd, (struct sockaddr*)&newAddr, &addr_size);
      // Send the messeger to client and receiver messeger from client
   strcpy(buffer, "hello");
   send(newSocket, buffer, strlen(buffer), 0);
   recv(newSocket, buffer, 1024, 0);
   printf("[+]Data Recv from client: %s\n", buffer);
   printf("[+]Closing the connection.\n");
   return 0;
}
```

Implementing

```
[Running] cd "/Users/hung8585/Downloads/TCP-file_transfer/" && gcc
    TCP-sever.c -o TCP-sever &&
    "/Users/hung8585/Downloads/TCP-file_transfer/"TCP-sever
[+]Server Socket Created Sucessfully.
[+]Bind to Port number 4444.
[+]Listening...
[+]Data Recv from client: hillo
[+]Closing the connection.
```

4 Group participation

- Nguyen Trung Dung - BI8029 : Complete and implement the code
- Ngruyen Trong Son - BI8153: Protocol Explanation
- Nguyen Khanh Nam - BI8122 : System Explanation
- Pham Viet Minh Duc BI8045 - : Draw Figure
- Do Anh Tu - BI8157: Checking and smoothing
- Do Thi Minh Ngoc - BI8129: Complete Report