Experiment No.: 2

Aim: *To* implement a Bluetooth network with application as transfer of a file from one device to another.

Theory:

Bluetooth is a wireless technology standard used for exchanging data between fixed and mobile devices over short distances using UHF radio waves in the industrial, scientific and medical radio bands, from 2.402 GHz to 2.480 GHz, and building personal area networks (PANs). It was originally conceived as a wireless alternative to RS-232 data cables.
Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 35,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics. The IEEE standardized Bluetooth as IEEE 802.15.1, but no longer maintains the standard. The Bluetooth SIG oversees development of the specification, manages the qualification program, and protects the trademarks. A manufacturer must meet Bluetooth SIG standards to market it as a Bluetooth device.

Transfer of words between two phones using Bluetooth is done below.
https://www.youtube.com/watch?v=5M4o5dGigbY

CODE:
Client (exp2.c):

```
#include <arpa/inet.h> // inet_addr()
#include <netdb.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <strings.h> // bzero()
#include <sys/socket.h>
#include <unistd.h> // read(), write(), close()
#define MAX 80
#define PORT 8080
#define SA struct sockaddr
void func(int sockfd)
{
char buff[MAX];
int n;
for (;;) {
bzero(buff, sizeof(buff));
printf("Enter the string : ");
n = 0;
while ((buff[n++] = getchar()) != '\n')
;
```

```
write(sockfd, buff, sizeof(buff));
bzero(buff, sizeof(buff));
read(sockfd, buff, sizeof(buff));
printf("From Server : %s", buff);

if ((strncmp(buff, "exit", 4)) == 0) {
printf("Client Exit...\n");
break;
}
}
}
int main()
{
int sockfd, connfd;
struct sockaddr_in servaddr, cli;
// socket create and verification
sockfd = socket(AF_INET, SOCK_STREAM, 0);
if (sockfd == -1) {
printf("socket creation failed...\n");
exit(0);
}
else
printf("Socket successfully created..\n");
bzero(&servaddr, sizeof(servaddr));
// assign IP, PORT
servaddr.sin_family = AF_INET;
servaddr.sin_addr.s_addr = inet_addr("127.0.0.1");
servaddr.sin_port = htons(PORT);
// connect the client socket to server socket
if (connect(sockfd, (SA*)&servaddr, sizeof(servaddr))
!= 0) {
printf("connection with the server failed...\n");
exit(0);
}
else
printf("connected to the server..\n");
// function for chat
func(sockfd);
// close the socket
close(sockfd);
}
```

Server (exp2c.c):

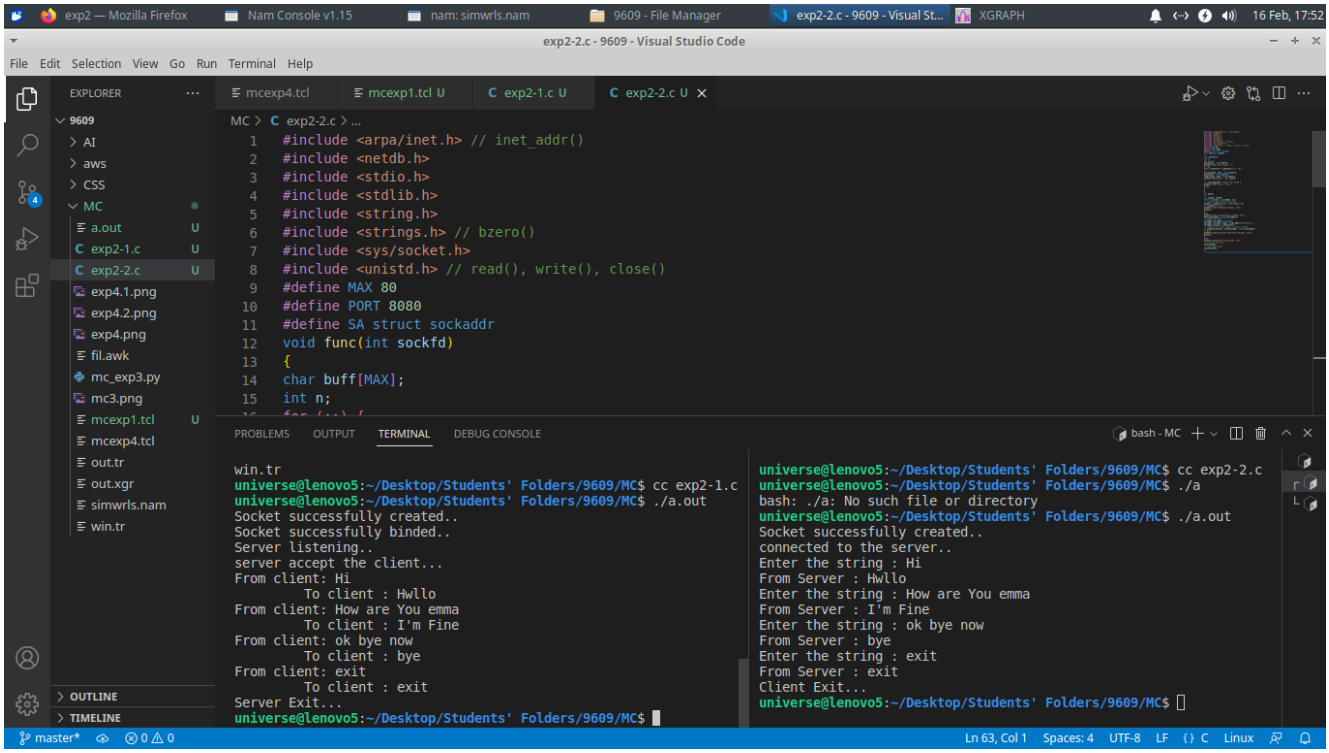
```
#include <stdio.h>
#include <netdb.h>
#include <netinet/in.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/types.h>

#include <unistd.h> // read(), write(), close()
#define MAX 80
#define PORT 8080
#define SA struct sockaddr
// Function designed for chat between client and server.
void func(int connfd)
{
char buff[MAX];
int n;
// infinite loop for chat
for (;;) {
bzero(buff, MAX);
// read the message from client and copy it in buffer
read(connfd, buff, sizeof(buff));
// print buffer which contains the client contents
printf("From client: %s\t To client : ", buff);
bzero(buff, MAX);
n = 0;
// copy server message in the buffer
while ((buff[n++] = getchar()) != '\n')
;
// and send that buffer to client
write(connfd, buff, sizeof(buff));
// if msg contains "Exit" then server exit and chat ended.
if (strncmp("exit", buff, 4) == 0) {
printf("Server Exit...\n");
break;
}
}
}
// Driver function
int main()
{
int sockfd, connfd, len;
struct sockaddr_in servaddr, cli;
```

```
// socket create and verification
sockfd = socket(AF_INET, SOCK_STREAM, 0);
if (sockfd == -1) {
printf("socket creation failed...\n");
exit(0);
}
else
printf("Socket successfully created..\n");

bzero(&servaddr, sizeof(servaddr));
// assign IP, PORT
servaddr.sin_family = AF_INET;
servaddr.sin_addr.s_addr = htonl(INADDR_ANY);
servaddr.sin_port = htons(PORT);
// Binding newly created socket to given IP and verification
if ((bind(sockfd, (SA*)&servaddr, sizeof(servaddr))) != 0) {
printf("socket bind failed...\n");
exit(0);
}
else
printf("Socket successfully binded..\n");
// Now server is ready to listen and verification
if ((listen(sockfd, 5)) != 0) {
printf("Listen failed...\n");
exit(0);
}
else
printf("Server listening..\n");
len = sizeof(cli);
// Accept the data packet from client and verification
connfd = accept(sockfd, (SA*)&cli, &len);
if (connfd < 0) {
printf("server accept failed...\n");
exit(0);
}
else
printf("server accept the client...\n");
// Function for chatting between client and server
func(connfd);
// After chatting close the socket
close(sockfd);
}
```

OUTPUT:



Conclusion:

Thus, we have performed successfully the experiment of transferring data between two mobile phone using Bluetooth network and after that have checked and it performed.