Date: 29 Oct 2020 **Subham Sagar Paira** **1841017020** CSIT A

EXPERIMENT 2

Objective 1
To implement the program where client read a number and send to server and server display it at the client end.

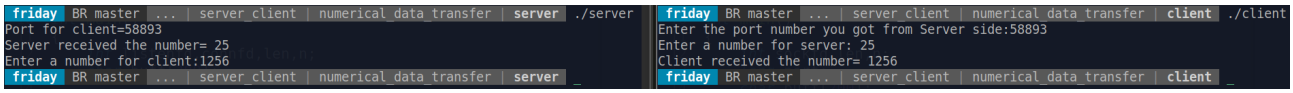
Code:
server.c

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

int main()
{
	int listenfd,connfd,len,n;
	char buff[200];

	struct sockaddr_in servaddr,cliaddr;
	len=sizeof(servaddr);
	servaddr.sin_family=AF_INET;

	servaddr.sin_addr.s_addr=htons( INADDR_ANY);

	servaddr.sin_port=htons(0);
	listenfd=socket(AF_INET,SOCK_STREAM,0);
	bind(listenfd, (struct sockaddr *)&servaddr,len);
	getsockname(listenfd,(struct sockaddr *)&servaddr ,&len);
	printf("Port for client=%ld\n",(long)ntohs(servaddr.sin_port));
	listen(listenfd,5);
	connfd=accept(listenfd,(struct sockaddr *)&cliaddr ,&len);
	n=read(connfd , buff ,sizeof(buff));

	buff[n]=0;
	int num = atoi(buff);

	printf("Server received the number= %d\n" , num);

	printf("Enter a number for client:");
	scanf("%s" , buff);
	write(connfd, buff ,sizeof(buff));

	return 0;
}
```

client.c

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

int main()
{
        int sockfd,len,n;
        long port;
        char buff[200];
        struct sockaddr_in cliaddr;
        len=sizeof(cliaddr);

        printf("Enter the port number you got from Server side:");
        scanf("%ld" ,&port);

        cliaddr.sin_family=AF_INET;
        cliaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
        cliaddr.sin_port=htons(port);
        sockfd=socket(AF_INET,SOCK_STREAM,0);
        connect(sockfd,(struct sockaddr *)&cliaddr,len);
        printf("Enter a number for server: ");
        scanf("%s", buff);
        write(sockfd, buff ,sizeof(buff));
        n=read(sockfd,buff ,sizeof(buff));

        buff[n]=0;
        int num = atoi(buff);

        printf("Client received the number= %d\n" , num);

        return 0;
}
```

Output:



Objective 2
To implement the program where client reads 10 numbers and send to server and server sorts them and display them at the client end.

Code:

server.c

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

int compare(const void * a, const void * b)
{
   return ( *(int*)a - *(int*)b );
}

int main()
{
        int listenfd,connfd,len,n;
        char buff[200], data[500];

        struct sockaddr_in servaddr,cliaddr;
        len=sizeof(servaddr);
        servaddr.sin_family=AF_INET;

        servaddr.sin_addr.s_addr=htons( INADDR_ANY);

        servaddr.sin_port=htons(0);
        listenfd=socket(AF_INET,SOCK_STREAM,0);
        bind(listenfd, (struct sockaddr *)&servaddr,len);
        getsockname(listenfd,(struct sockaddr *)&servaddr ,&len);
        printf("Port for client=%ld\n",(long)ntohs(servaddr.sin_port));
        listen(listenfd,5);
        connfd=accept(listenfd,(struct sockaddr *)&cliaddr ,&len);

        n=read(connfd , buff ,sizeof(buff));
        buff[n]=0;
        int num = atoi(buff);

        n=read(connfd , data ,sizeof(data));
        data[n]=0;

        int arr[num], i = 0;
        char* temp = strtok(data, " ");
```

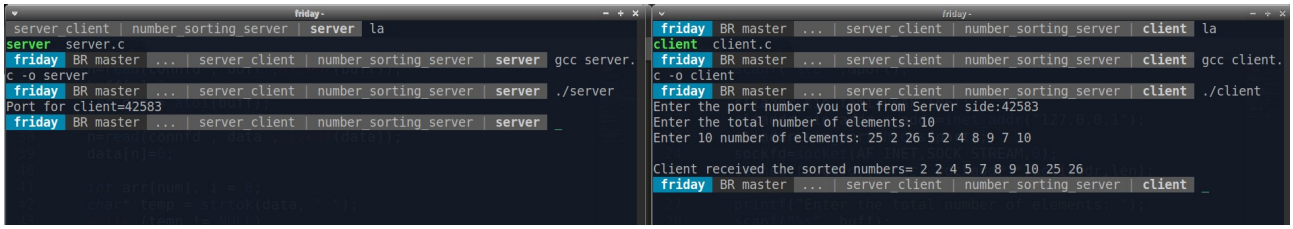
```
	while (temp != NULL)
	{
		arr[i++] = atoi(temp);
		temp = strtok(NULL, " ");
	}

	qsort(arr, num, sizeof(int), compare);

	strcpy(data, "");
	for(int i = 0; i < num; i++)
	{
		char temp[50];
		sprintf (temp, "%d", arr[i]);
		strcat(data, temp);
		strcat(data, " ");
	}

	write(connfd, data ,sizeof(data));

	return 0;
}
```

client.c

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

int main()
{
	int sockfd,len,n;
	long port;
	char buff[200], data[500] = { '\0' };
	struct sockaddr_in cliaddr;
	len=sizeof(cliaddr);

	printf("Enter the port number you got from Server side:");
	scanf("%ld" ,&port);

	cliaddr.sin_family=AF_INET;
	cliaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
	cliaddr.sin_port=htons(port);
	sockfd=socket(AF_INET,SOCK_STREAM,0);
	connect(sockfd,(struct sockaddr *)&cliaddr,len);

	printf("Enter the total number of elements: ");
```

```
        scanf("%s", buff);
        int num = atoi(buff);
        write(sockfd, buff ,sizeof(buff));

        printf("Enter %d number of elements: ", num);
        for(int i = 0; i < num; i++)
        {
                scanf("%s", buff);
                strcat(data, buff);
                strcat(data, " ");
        }

        write(sockfd, data ,sizeof(data));

        n=read(sockfd,data ,sizeof(data));

        data[n]=0;

        printf("\nClient received the sorted numbers= %s\n" , data);

        return 0;
}
```

Output:



Submitted by:

Subham Sagar Paira (www.subhamsagarpaira.com)
1841017020
CSIT A

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