**TCP Scientific Calci**

**//CLIENT SIDE**

#include <stdio.h>

#include <stdlib.h>

#include <unistd.h>

#include <string.h>

#include <sys/types.h>

#include <sys/socket.h>

#include <netinet/in.h>

#include <netdb.h>

#include<arpa/inet.h>

#include<unistd.h>

#include<math.h>

void error(const char \*msg)

{

perror(msg);

exit(0);

}

int main(int argc, char \*argv[])

{

int sockfd, portno, n;

struct sockaddr\_in serv\_addr;

struct hostent \*server; char fname[25];

int choice,yes;

float angle,ans;

char buffer[256];

char s\_num[5];

int num;

if (argc < 3) {

fprintf(stderr,"usage %s hostname port\n", argv[0]);

exit(0);

}

portno = atoi(argv[2]);

sockfd = socket(AF\_INET, SOCK\_STREAM, 0);

if (sockfd < 0)

error("ERROR opening socket");

server = gethostbyname(argv[1]);

if (server == NULL) {

fprintf(stderr,"ERROR, no such host\n");

exit(0);

}

bzero((char \*) &serv\_addr, sizeof(serv\_addr));

serv\_addr.sin\_family = AF\_INET;

bcopy((char \*)server->h\_addr,

(char \*)&serv\_addr.sin\_addr.s\_addr,

server->h\_length);

serv\_addr.sin\_port = htons(portno);

if (connect(sockfd,(struct sockaddr \*) &serv\_addr,sizeof(serv\_addr)) < 0)

error("ERROR connecting");

A : bzero(buffer,256);

read(sockfd,buffer,256);

printf("%s\n",buffer);

bzero(buffer,256);

scanf("%d",&choice);

write(sockfd,&choice,sizeof(int));

if(choice==4)

goto T;

read(sockfd,buffer,256);

printf("%s\n",buffer);

bzero(buffer,256);

scanf("%f",&angle);

write(sockfd,&angle,sizeof(float));

read(sockfd,&ans,sizeof(float));

//ans=round(ans);

printf("Server- The Answer is : %.2f\n",ans);

read(sockfd,buffer,256);

printf("%s\n",buffer);

scanf("%d",&yes);

write(sockfd,&yes,sizeof(int));

if(yes==1)

goto A;

T : bzero(buffer,256);

read(sockfd,buffer,256);

printf("%s",buffer);

close(sockfd);

return 0;

}

**\*\*\*OUTPUT\*\*\***

Aj:~$ cc client4.c -o c4 -lm

Aj:~$ ./c4 192.168.0.109 65009

Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*

1. SINE

2. COSINE

3. TANGENT

4. EXIT

ENTER YOUR CHOICE

1

Server- Enter the ANGLE

60

Server- The Answer is : 0.87

Server- Do You Want More Calculation(1/0) ?

1

Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*

1. SINE

2. COSINE

3. TANGENT

4. EXIT

ENTER YOUR CHOICE

2

Server- Enter the ANGLE

60

Server- The Answer is : 0.50

Server- Do You Want More Calculation(1/0) ?

1

Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*

1. SINE

2. COSINE

3. TANGENT

4. EXIT

ENTER YOUR CHOICE

3

Server- Enter the ANGLE

60

Server- The Answer is : 1.73

Server- Do You Want More Calculation(1/0) ?

1

Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*

1. SINE

2. COSINE

3. TANGENT

4. EXIT

ENTER YOUR CHOICE

2

Server- Enter the ANGLE

90

Server- The Answer is : 0.00

Server- Do You Want More Calculation(1/0) ?

1

Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*

1. SINE

2. COSINE

3. TANGENT

4. EXIT

ENTER YOUR CHOICE

4

Server- Exited

**//SERVER SIDE**

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <unistd.h>

#include <sys/types.h>

#include <sys/socket.h>

#include <netinet/in.h>

#include<arpa/inet.h>

#include<math.h>

#define PI 3.14159

void error(const char \*msg)

{

perror(msg);

exit(1);

}

int main(int argc, char \*argv[])

{

int sockfd, newsockfd, portno;

socklen\_t clilen;

char menu[100]="NO VALUE";

char buffer[256],m[5];

struct sockaddr\_in serv\_addr, cli\_addr;

int n,choice,yes;

float angle,ans;

if (argc < 2) {

fprintf(stderr,"ERROR, no port provided\n");

exit(1);

}

sockfd = socket(AF\_INET, SOCK\_STREAM, 0);

if (sockfd < 0)

error("ERROR opening socket");

bzero((char \*) &serv\_addr, sizeof(serv\_addr));

portno = atoi(argv[1]);

serv\_addr.sin\_family = AF\_INET;

serv\_addr.sin\_addr.s\_addr = INADDR\_ANY;

serv\_addr.sin\_port = htons(portno);

if (bind(sockfd, (struct sockaddr \*) &serv\_addr,

sizeof(serv\_addr)) < 0)

error("ERROR on binding");

listen(sockfd,5);

clilen = sizeof(cli\_addr);

newsockfd = accept(sockfd,

(struct sockaddr \*) &cli\_addr,

&clilen);

if (newsockfd < 0)

error("ERROR on accept");

bzero(buffer,256);

S : strcpy(menu,"Server- \*\*\*\*\*\*\*TRIGO - CALCULATOR\*\*\*\*\*\*\*\n1. SINE\n2. COSINE\n3. TANGENT\n4. EXIT\n\nENTER YOUR CHOICE");

write(newsockfd,menu,strlen(menu));

read(newsockfd,&choice,sizeof(int));

printf("Client- The choice is : %d\n",choice);

if(choice==4)

goto M;

write(newsockfd,"Server- Enter the ANGLE",strlen("Server- Enter the ANGLE"));

read(newsockfd,&angle,sizeof(float));

printf("Client- Angle is : %f\n",angle);

M :

switch(choice)

{

case 1:

ans=sin((angle/180)\*PI);

break;

case 2:

ans=cos((angle/180)\*PI);

break;

case 3:

ans=tan((angle/180)\*PI);

break;

case 4:

goto Q;

break;

}

write(newsockfd,&ans,sizeof(float));

write(newsockfd,"Server- Do You Want More Calculation(1/0) ? ",strlen("Server- Do You Want More Calculation(1/0) ? "));

read(newsockfd,&yes,sizeof(int));

if(yes==1)

{

printf("Client- I want More Calculation \n");

goto S;

}

Q : write(newsockfd,"Server- Exited\n",strlen("Server- Exited\n"));

printf("Client- Exited\n");

close(newsockfd);

close(sockfd);

return 0;

}

**\*\*\*OUTPUT\*\*\***

Aj:~$ cc server4.c -o s4 -lm

Aj:~$ ./s4 65009

Client- The choice is : 1

Client- Angle is : 60.000000

Client- I want More Calculation

Client- The choice is : 2

Client- Angle is : 60.000000

Client- I want More Calculation

Client- The choice is : 3

Client- Angle is : 60.000000

Client- I want More Calculation

Client- The choice is : 2

Client- Angle is : 90.000000

Client- I want More Calculation

Client- The choice is : 4

Client- Exited