Ex: 5

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DAYTIME SERVER USING UDP

Write a UDP socket program to implement daytime server. Use menu driven concept to get Day, Date, Time etc. from the client. Consider multiple client requests for the day time server

Server Code:

```
#include<stdio.h>

#include<sys/types.h>

#include<sys/socket.h>

#include<netinet/in.h>

#include<string.h>

#include<netdb.h>

#include<stdlib.h>

#include<unistd.h>

#include<arpa/inet.h>

#include<time.h>

#define PORT 7228

struct input
{
    int option;
    int id;
};
```

```c
int main(int argc,char **argv)
{
    int sockfd, ret,len,n,fromlen;
    struct sockaddr_in serverAddr;

    int newfd;
    struct sockaddr_in clientAddr;

    struct tm* local;

    //socklen_t addr_size;

    char buffer[1024];
    char str[1000];
    pid_t child;

    sockfd = socket(AF_INET, SOCK_DGRAM, 0);
    if(sockfd < 0){
        printf("---------Error in connection.\n");
        exit(1);
    }
    //printf("---------Server Socket is created.\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");

    ret = bind(sockfd, (struct sockaddr*)&serverAddr, sizeof(serverAddr));

    fromlen = sizeof(struct sockaddr_in);

    len = sizeof(clientAddr);
```

```c
    int no_clients=1;

    //time_t rawtime;

    //time(&rawtime); // 0 or NULL also works .....

    // printf(" Time = ",asctime(local));

    struct input i;

    int x;


    while(1)
    {
        n = recvfrom(sockfd,&i,sizeof(i),0,(struct sockaddr
*)&clientAddr,&len);

        printf("\nRequest from Client %d\n",i.id);

        time_t rawtime;

        time(&rawtime);

        local = localtime(&rawtime);

        x = i.option;

        if (x == 1)

        {

            strftime(buffer,sizeof(buffer)," %x .",local);

        }

        else if(x == 2)

        {

            strftime(buffer,sizeof(buffer)," %A .",local);

        }

        else if(x == 3)

        {

            strftime(buffer,sizeof(buffer)," %B .",local);

        }

        else if(x == 4)

        {

            strftime(buffer,sizeof(buffer)," %Y .",local);

        }

        else if(x == 5)

        {
```

```c
            strftime(buffer,sizeof(buffer)," %I:%M %p .",local);
        }
        else if(x == 6)
        {
            struct tm *t;
            time_t toronto;
            t = gmtime(&rawtime);
            t -> tm_hour -=4;
            toronto = mktime(t);
            t = localtime(&toronto);
            strftime(buffer,sizeof(buffer)," %c .",local);
        }
        printf("\nMessage sent to client %d\n",i.id);


        sendto(sockfd,buffer,sizeof(buffer),0,(struct
sockaddr*)&clientAddr,len);
    }
    return 0;
}
```

Client Code:

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

```c
#include<arpa/inet.h>
#include<time.h>

#define PORT 7228

struct input
{
    int option;
    int id;
};


int main(int argc, char  **argv)
{
    /* code */
    int sockfd , ret,n,len;
    struct sockaddr_in serverAddr;
    char buffer[1024];
    char str[1000];

    struct input i;

    printf("\nEnter the client id :");
    scanf("%d",&i.id);

    struct tm* local;

    sockfd = socket(AF_INET,SOCK_DGRAM,0);
    if(sockfd < 0)
    {
        printf("-----Error in Connection-----.\n");
        exit(1);
    }
    //printf("-----Client Socket is Created!.\n");
```

```c
bzero(&serverAddr,sizeof(serverAddr));

serverAddr.sin_family = AF_INET;

serverAddr.sin_addr.s_addr = inet_addr("127.0.0.1");

serverAddr.sin_port = htons(7228);


len = sizeof(serverAddr);


printf("\nRequesting to the server!");

//time_t rawtime;

//time(&rawtime);

char ans;


int x;

while(1)

{


    printf("\n1.Date\n2.Day\n3.Month\n4.Year\n5.Time\n6.Toronto\nEnter your option:");

    scanf("%d",&i.option);

    x = i.option;

    if (x < 1|| x > 6)

        continue;

    sendto(sockfd,&i,sizeof(i),0,(struct sockaddr *)&serverAddr,len);

    recvfrom(sockfd,buffer,sizeof(buffer),0,(struct sockaddr *)&serverAddr,&len);

    if (x==1)

        printf("\nThe Date is %s\n",buffer);

    else if (x==2)

        printf("\nThe Day is %s\n",buffer);

    else if (x==3)

        printf("\nThe Month is %s\n",buffer);

    else if (x==4)

        printf("\nThe year is %s\n",buffer);

    else if (x==5)
```

```c
            printf("\nThe Time is %s\n",buffer);
        else if (x==6)
        {
            time_t rawtime;
            time(&rawtime);
            local = localtime(&rawtime);
            strftime(str,sizeof(str),"%c ",local);
            printf("\nThe Local time is %s\n",str);
            printf("\nThe Toronto time is %s\n",buffer);
        }
        printf("\nDo you want to continue(1/0):");
        scanf("%d",&x);
        if (x == 0 )
            break;
    }
}
```

Output:

client.c - A5 UDP day time server - Visual Studio Code

File　Edit　Selection　View　Go　Run　Terminal　Help

PROBLEMS　OUTPUT　DEBUG CONSOLE　TERMINAL

1: bash, bash, bash ∨

```
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ gcc se
rver.c -o server
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ./serv
er

Request from Client 1

Message sent to client 1

Request from Client 1

Message sent to client 1

Request from Client 4

Message sent to client 4

Request from Client 4

Message sent to client 4

Request from Client 4

Message sent to client 4

Request from Client 1

Message sent to client 1
^C
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ▉
```

```
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ gcc cli
ent.c -o client
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ./clien
t

Enter the client id :1

Requesting to the server!
1.Date
2.Day
3.Month
4.Year
5.Time
6.Toronto
Enter your option:2

The Day is  Friday .

Do you want to continue(1/0):1

1.Date
2.Day
3.Month
4.Year
5.Time
6.Toronto
Enter your option:3

The Month is  September .

Do you want to continue(1/0):3

1.Date
2.Day
3.Month
4.Year
5.Time
6.Toronto
Enter your option:3

The Month is  September .

Do you want to continue(1/0):0
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ▢
```

```
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ./clie
nt

Enter the client id :4

Requesting to the server!
1.Date
2.Day
3.Month
4.Year
5.Time
6.Toronto
Enter your option:6

The Local time is Fri Sep 18 00:28:29 2020

The Toronto time is  Thu Sep 17 14:58:29 2020 .

Do you want to continue(1/0):1

1.Date
2.Day
3.Month
4.Year
5.Time
6.Toronto
Enter your option:5

The Time is  12:28 AM .

Do you want to continue(1/0):0
sree@sree-VirtualBox:~/Desktop/Networks Lab/A5 UDP day time server$ ▢
```

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