Computer Network
Laboratory

Assignment 1

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Class: 3rd year, B.Tech CSE
Course: CSN-361

Four problems were given for this assignment. They are-

Question 1 :

Fork two children, and four grandchildren, and print their process ids' in the

console

Algorithms used :

1. Busy waiting.

Data structures used :

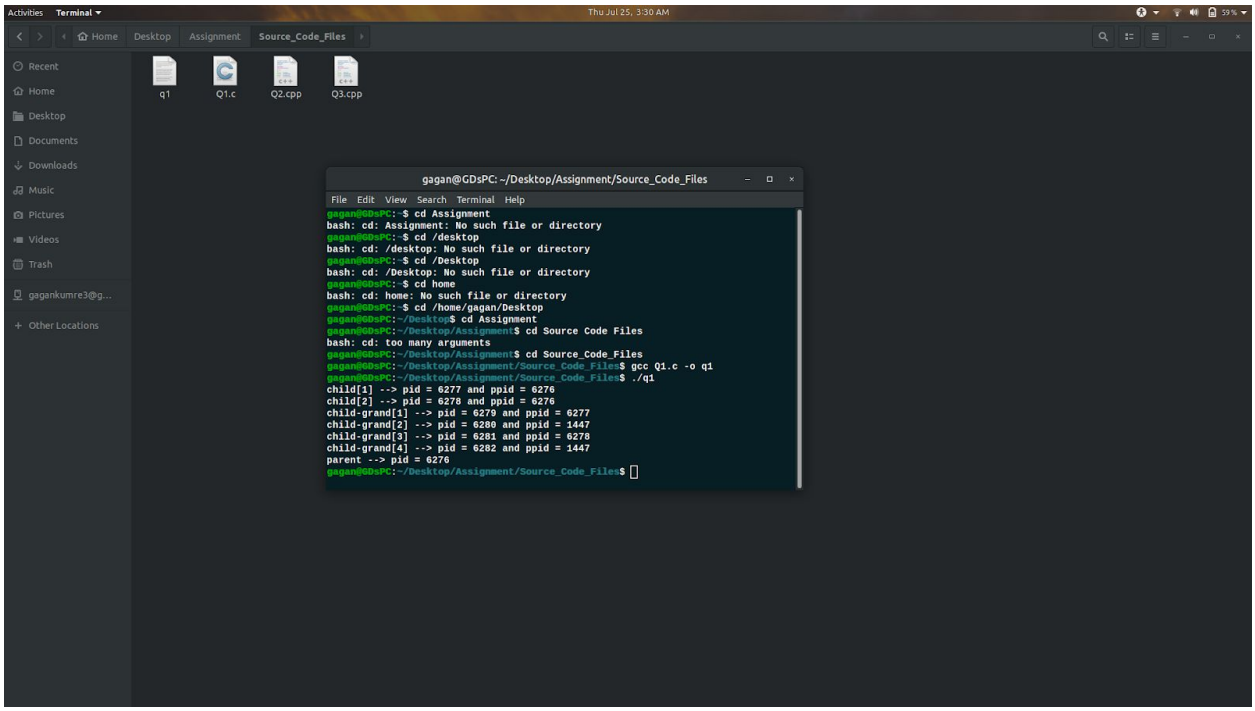
1. int: To store the process ids'.

2. Shared memory: So that all processes can copy the process ids to one

location in the memory.

3. Pid_t: C struct to store the process id.

Screenshot :



Question 2 :

Print the Media Control Access address of your computer.

Algorithms used :

1. ioctl: Input-Output Control Command. To make device-specific system calls.

2. socket: To create a socket for getting the address.

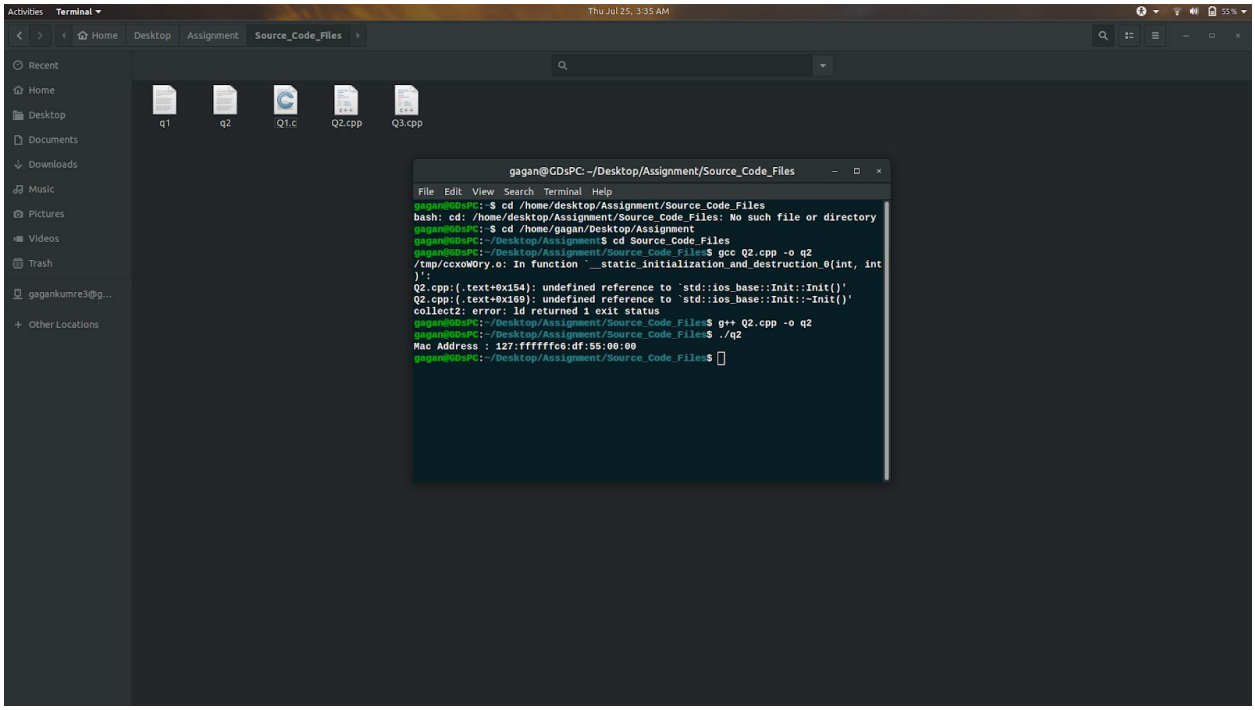
Data Structures used :

1. ifreq: C++ struct to store the mac address.

2. SIOCGIFHWADDR: code to request the hardware address through the ioctl

command.

Screenshot :



Question 3 :

Write a ping program in C.

Algorithms used :

1. gethostbyname: to get the IP address of the host.

2. inet_addr: for proper conversion of the IP address returned.

3. socket: to create a socket of AF_INET address family.

4. getpid : system call of the process id.

5. in_cksum: code to calculate the checksum.

6. FD_ZERO: clear an fdset.

7. FD_SET: add a socket descriptor to the fdset.

8. select: select return values from different sockets without multithreading.

9. sendto: To send the data to the opened socket to the specified IP address.

10. recvfrom: To receive the data from the socket.

11. gettimeofday: To calculate the ping time.

Data Structures used :

1. hostent: to store data about a specific host

2. sock_addr_in: to specify a transport address and port for the AF_INET

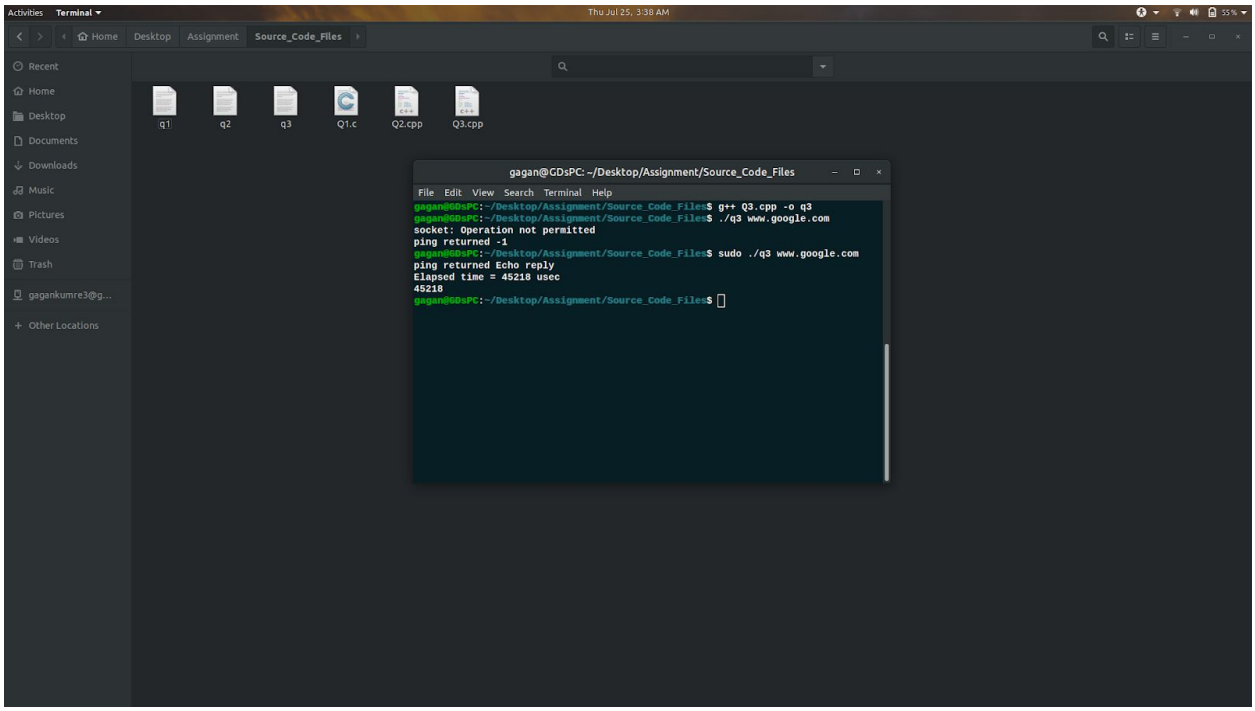
address family.

3. ip: IP header.

4. icmp: icmp header.

5. timeval: checking interval for the socket.

Screenshot :



Question 4 :

Print the IP address when a hostname is given.

Algorithms used :

1. gethostbyname: returns details about a host if we give a hostname.

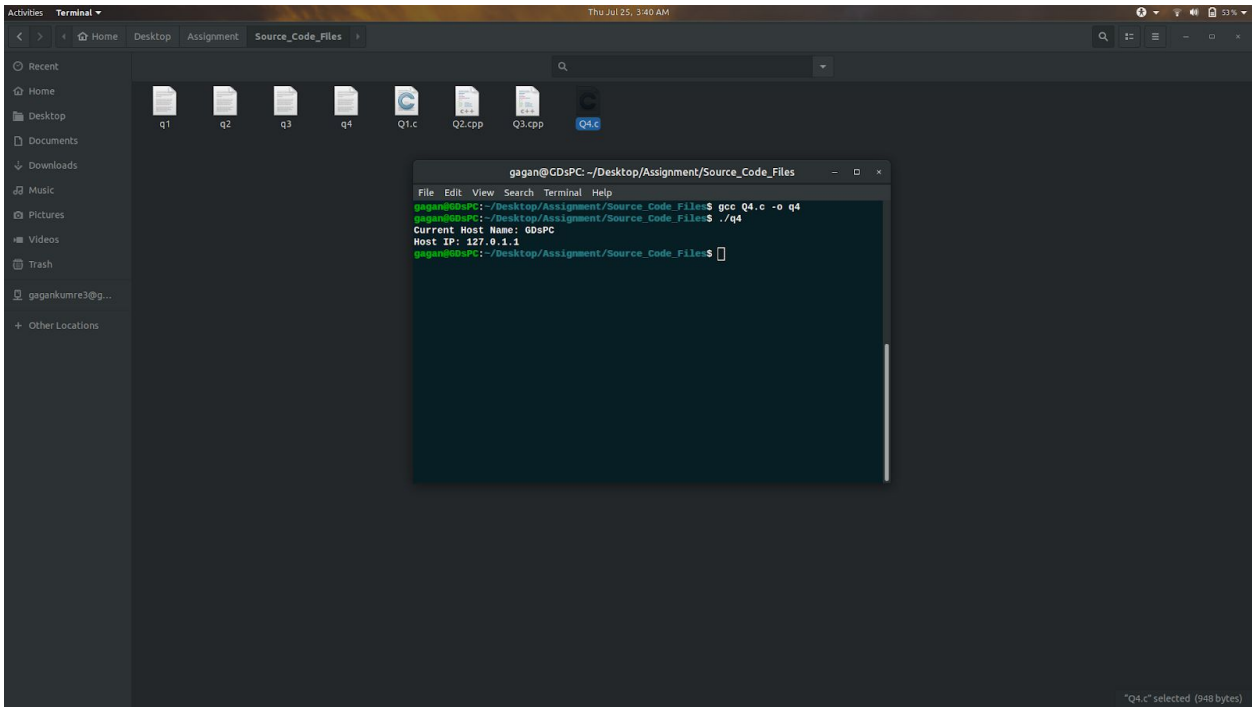
2. inet_ntoa: returns the dots-and-numbers string format of the IP address.

Data Structures used :

1. hostent: To store the return value of gethostbyname().

2. in_addr: To store the internet address.

Screenshot :


Activities
Terminal
Thu Jul 25, 3:40 AM
Home
Desktop
Assignment
Source_Code_Files
Recent
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Trash
gagankumre3@g...
Other Locations
q1
q2
q3
q4
Q1.c
Q2.cpp
Q3.cpp
Q4.c
gagan@GDsPC: ~/Desktop/Assignment/Source_Code_Files
File Edit View Search Terminal Help
gagan@GDsPC:~/Desktop/Assignment/Source_Code_Files$ gcc Q4.c -o q4
gagan@GDsPC:~/Desktop/Assignment/Source_Code_Files$ ./q4
Current Host Name: GDsPC
Host IP: 127.0.1.1
gagan@GDsPC:~/Desktop/Assignment/Source_Code_Files$
"Q4.c" selected (948 bytes)