Computer Network Laboratory

Assignment 1

Name: Hemant Singh

Enrollment Number: 17114038

Class: 3rd year, B.Tech CSE

Course: CSN-361

Problem Statements:

Problem 1 :

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

Algorithms used :

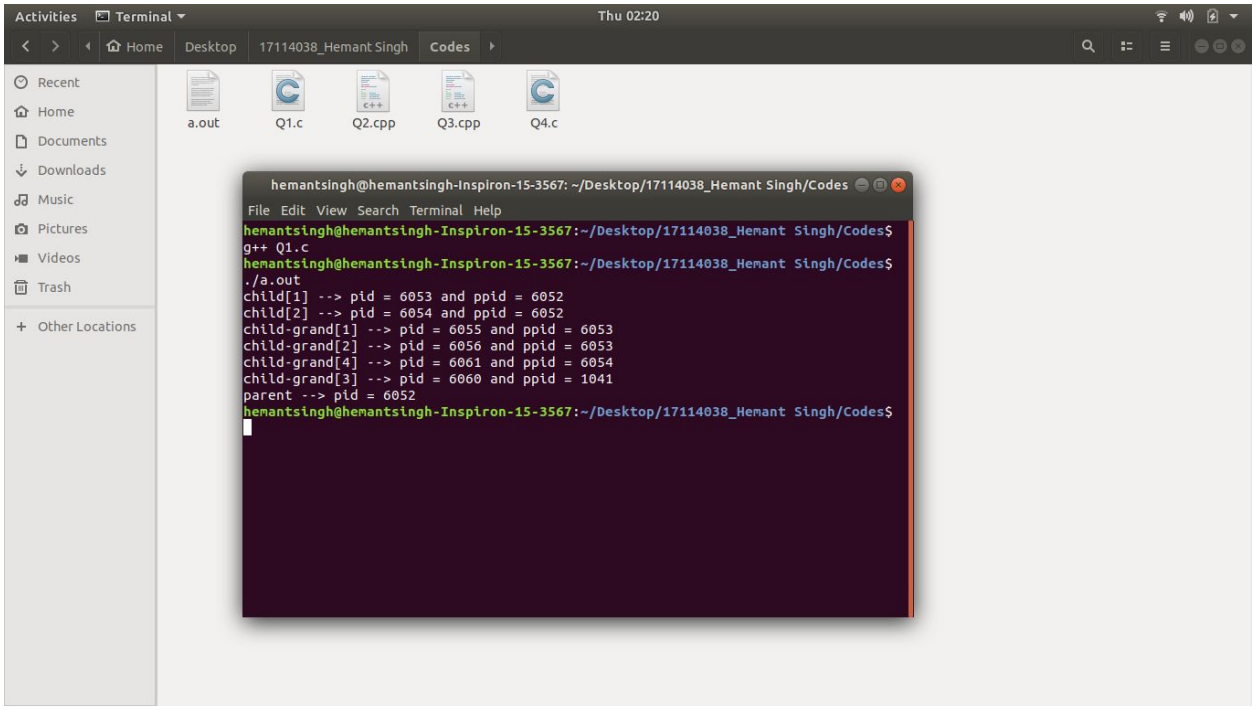
1. Busy waiting.

Data structures used :

1. int: To store the process ids'.

2. Shared memory: For all processes to copy the process ids to one location in the memory.

Screenshot :



Problem 2 :

Print the Media Control Access(MAC) address of your computer.

Algorithms used :

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

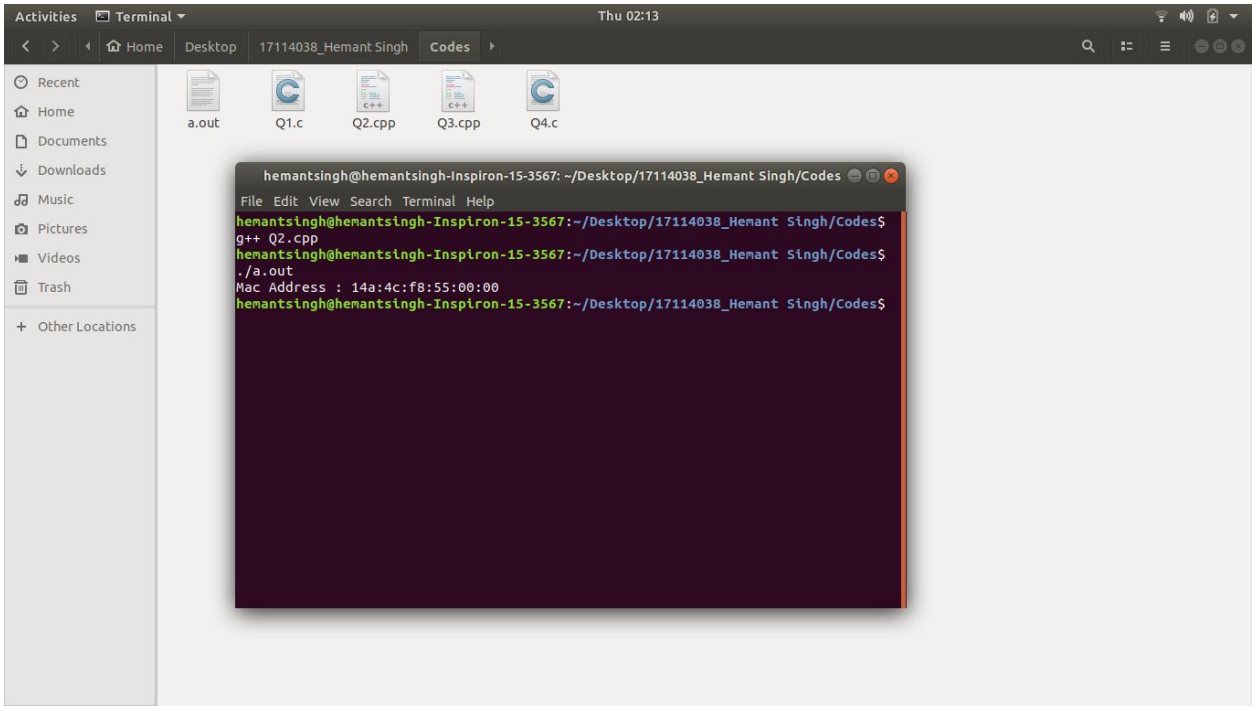
2. socket: To create a socket for getting the address.

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 :



Problem 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. timeval: checking interval for the socket.

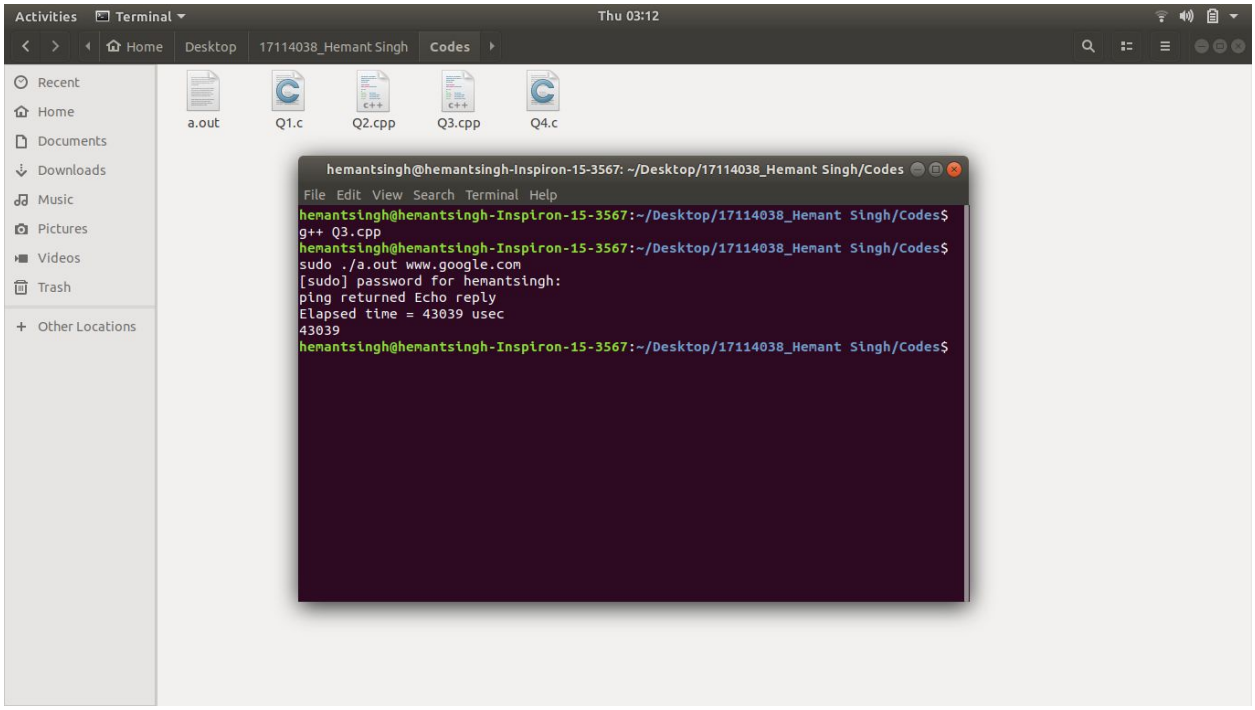
address family.

3. icmp: icmp header.

4. ip: IP header.

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

Screenshot :



Problem 4 :

Find the hostname from IP address.

Algorithms used :

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

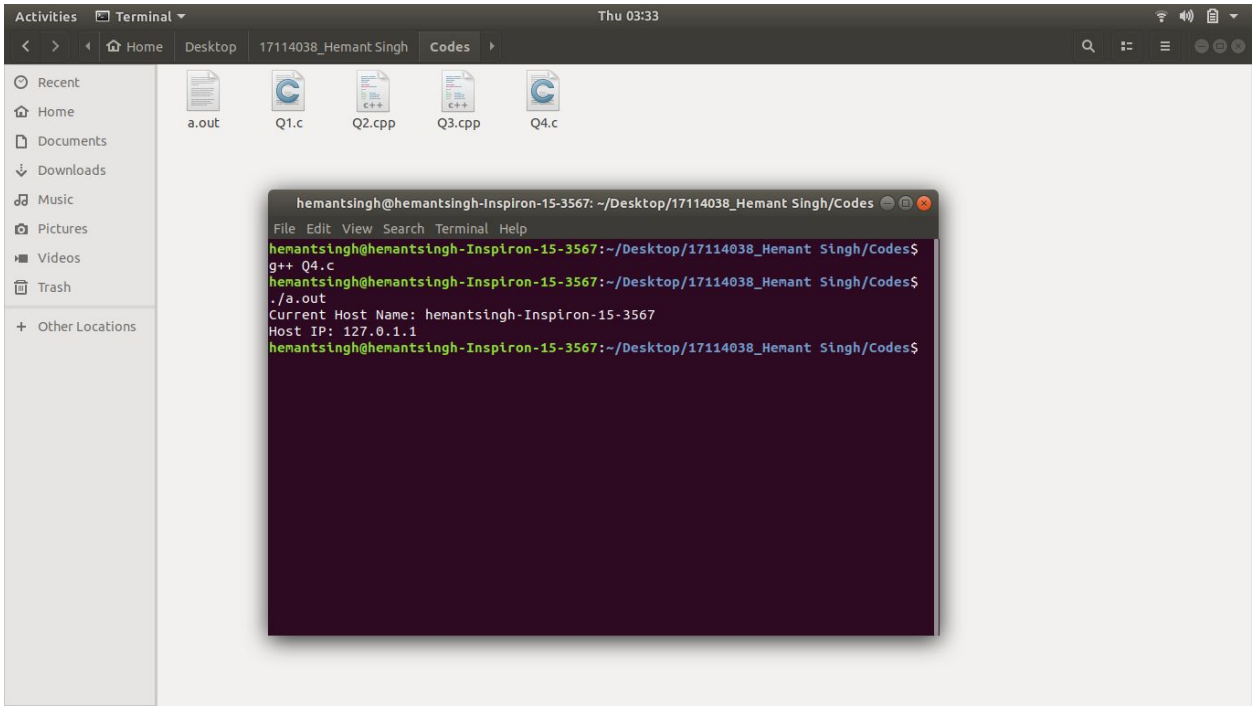
2. inet_ntoa: returns the dots-and-numbers string format of the IP address.

Data Structures used :

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

2. in_addr: To store the internet address.

Screenshot :


Activities
Terminal
Thu 03:33
Home
Desktop
17114038_Hemant Singh
Codes
Recent
Home
Documents
Downloads
Music
Pictures
Videos
Trash
Other Locations
a.out
Q1.c
Q2.cpp
Q3.cpp
Q4.c
hemantsingh@hemantsingh-Inspiron-15-3567: ~/Desktop/17114038_Hemant Singh/Codes
File Edit View Search Terminal Help
hemantsingh@hemantsingh-Inspiron-15-3567:~/Desktop/17114038_Hemant Singh/Codes$
g++ Q4.c
hemantsingh@hemantsingh-Inspiron-15-3567:~/Desktop/17114038_Hemant Singh/Codes$
./a.out
Current Host Name: hemantsingh-Inspiron-15-3567
Host IP: 127.0.1.1
hemantsingh@hemantsingh-Inspiron-15-3567:~/Desktop/17114038_Hemant Singh/Codes$