**Problem Statement:**

C program that takes an IPv4 address as input and determines which class it belongs to. It also prints the network ID, broadcast ID, and default subnet mask for that class.

**Code:**

// C program to determine Class, Network ID, Host ID, Broadcast Id and Default Mask ID of an IPv4 address

#include <stdio.h>

#include <string.h>

char findClass(char str[]){

char arr[4];

int i = 0;

while (str[i] != '.'){

arr[i] = str[i];

i++;

}

i--;

int ip = 0, j = 1;

while (i >= 0){

ip = ip + (str[i] - '0') \* j;

j = j \* 10;

i--;

}

// Class A

if (ip >= 0 && ip <= 127)

return 'A';

// Class B

else if (ip >= 128 && ip <= 191)

return 'B';

// Class C

else if (ip >= 192 && ip <= 223)

return 'C';

// Class D

else if (ip >= 224 && ip <= 239)

return 'D';

else if (ip >= 239 && ip <= 255)

return 'E';

else

return 'R';

}

void separate(char str[], char ipClass){

char network[12], host[12];

for (int k = 0; k < 12; k++)

network[k] = host[k] = '\0';

if (ipClass == 'A'){

int i = 0, j = 0;

while (str[j] != '.')

network[i++] = str[j++];

i = 0;

j++;

while (str[j] != '\0')

host[i++] = str[j++];

printf("Valid IPV4 address");

printf("Given IP address belongs to Class %c\n", ipClass);

printf("Network ID: %s\n", network);

printf("Host ID: %s", host);

printf("Default subnet mask: 255.0.0.0\n");

printf("Broadcast ID:%s.255.255.255\n",network);

}

else if (ipClass == 'B')

{

int i = 0, j = 0, dotCount = 0;

while (dotCount < 2){

network[i++] = str[j++];

if (str[j] == '.')

dotCount++;

}

i = 0;

j++;

while (str[j] != '\0')

host[i++] = str[j++];

printf("Valid IPV4 address");

printf("Given IP address belongs to Class %c\n", ipClass);

printf("Network ID is %s\n", network);

printf("Host ID is %s", host);

printf("Default subnet mask is 255.255.0.0\n");

printf("Broadcast ID:%s.255.255\n",network);

}

else if (ipClass == 'C'){

int i = 0, j = 0, dotCount = 0;

while (dotCount < 3){

network[i++] = str[j++];

if (str[j] == '.')

dotCount++;

}

i = 0;

j++;

while (str[j] != '\0')

host[i++] = str[j++];

printf("Valid IPV4 address");

printf("Given IP address belongs to Class %c\n", ipClass);

printf("Network ID is %s\n", network);

printf("Host ID is %s", host);

printf("Default subnet mask is 255.255.255.0\n");

printf("Broadcast ID:%s.255\n",network);

}

else if (ipClass=='D'||ipClass=='E')

printf("In this Class, IP address is not divided into Network and Host ID\n");

else

printf("Invalid IPV4 address");

}

int main()

{

char str[20];

printf("Please enter the IPV4 address: ");

fgets(str,20,stdin);

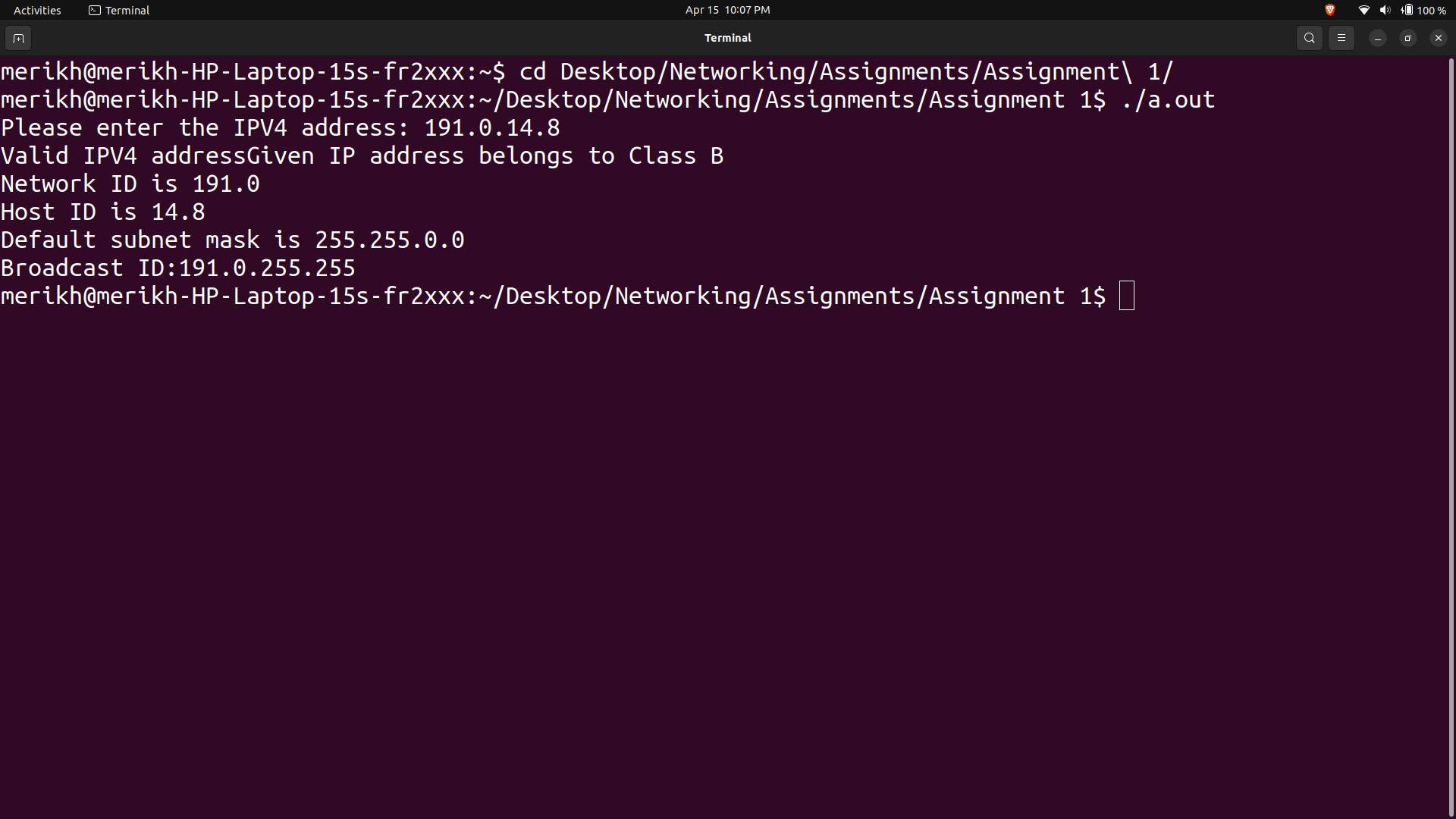
char ipClass = findClass(str);

separate(str, ipClass);

return 0;

}

**Output:**

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