Vishwakarma Institute of Technology, Pune -37

Department Of Artificial Intelligence and Data Science

COMPUTER NETWORK
Assignment 3

Class: - SY BTECH	Branch: - AIDS
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Write a program to find class and type of a given IP address.

```c
#include <stdio.h>
#include <string.h>
#include <stdlib.h>

char findClass(int firstOctet) {    if
(firstOctet >= 1 && firstOctet <= 126)
return 'A';
   else if (firstOctet >= 128 && firstOctet <= 191)
return 'B';
   else if (firstOctet >= 192 && firstOctet <= 223)
return 'C';
   else if (firstOctet >= 224 && firstOctet <= 239)
return 'D';
   else if (firstOctet >= 240 && firstOctet <= 255)
return 'E';    else
     return 'X'; // Invalid IP
}

int isPrivate(int firstOctet, int secondOctet) {
   if ((firstOctet == 10) ||
     (firstOctet == 172 && secondOctet >= 16 && secondOctet <= 31) ||
     (firstOctet == 192 && secondOctet == 168))
{     return 1;
   }
return 0;
}

int main()
{    char ip[16];
   int octets[4];

   printf("Enter an IP address (e.g., 192.168.1.1): ");
scanf("%15s", ip);

   if (sscanf(ip, "%d.%d.%d.%d", &octets[0], &octets[1], &octets[2], &octets[3]) != 4)
{     printf("Invalid IP address format!\n");     return 1;
   }

   for (int i = 0; i < 4; i++) {      if
(octets[i] < 0 || octets[i] > 255) {
     printf("Invalid IP address! Each octet must be between 0 and 255.\n");
return 1;
     }
```

```c
    }

    char ipClass = findClass(octets[0]);

    if (ipClass == 'X')
{       printf("Invalid IP address
class!\n");
        return 1;
    }

    int privateFlag = isPrivate(octets[0], octets[1]);

    printf("IP Address: %s\n", ip);
printf("Class: %c\n", ipClass);
    printf("Type: %s\n", privateFlag ? "Private" : "Public");

    return 0;
}
```

OUTPUT:

```
Enter an IP address (e.g., 192.168.1.1): 10.0.0.5
IP Address: 10.0.0.5
Class: A
Type: Private
```

```
Enter an IP address (e.g., 192.168.1.1): 172.16.5.4
IP Address: 172.16.5.4
Class: B
Type: Private
```

```
Enter an IP address (e.g., 192.168.1.1): 100.100.100.100
IP Address: 100.100.100.100
Class: A
Type: Public
```

```
Enter an IP address (e.g., 192.168.1.1): 255.255.255.255
IP Address: 255.255.255.255
Class: E
Type: Public
```