Practical 2

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1 Introduction

In this practical work, we write a C program that show the IP address of the domain name.
- Use the function gethostbyname() to resolve a domain name.
- Show the resolved IP address

2 Implementation

2.1 Include library
This is very important step, without library, the program won't able to be executed!
Here is all the library that we need to include in out program:

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

2.2 Get input name from user

```c
    char hostname[256];
    scanf("%256s", hostname);
    printf("Host name : %s \n",hostname);
```

The array "char hostname[256]" is to store the input of the user
In "scanf" we need to limit the size of the input (256 bytes) to avoid buffer overflow attack.

```
host_name = gethostbyname(hostname);
 if (host_name == NULL){
    printf("Invalid host name!\n");
    exit(1);
 }
```

This step is to check the host name that user input is valid or not. If it not valid, it will send a message and close the program

2.3 Resolved the Ip address (IPv4)

```
else{
    for(int i=0; host_name->h_addr_list[i] != NULL; i++){
       printf("IP address: %s \n", inet_ntoa(*(struct in_addr *)
          (host_name->h_addr_list[i])));
    }
 }
```

This code is to print all the IP address of a domain name

3   Result

3.1 On laptop
First, we complile the file:

```
gcc 02.practical.work.gethostbyname.c
```

Then run it with the input: "google.com"

```
./a.out
```

And the result:

```
Enter host domain name: google.com
Host name : google.com
IP address: 172.217.25.14
```

3.2 On VPS
First, we need to connect to the server

```
root@{server ip address}
```

Then we compile the C file and run it like we did above
With the input :"google.com"

```
Enter host domain name: google.com
Host name : google.com
IP address: 142.251.10.139
IP address: 142.251.10.138
IP address: 142.251.10.113
```

```
IP address: 142.251.10.102
IP address: 142.251.10.100
IP address: 142.251.10.101
```

3.3 Explain

As you can see, the result on my local laptop and on my VPS is different. Because the geological distance can make a domain have a multiple addresses.