**Command Line Argument, Variable Argument Handling Assignment**

1. Write a program to

a. read a name (of max length 40 characters), ip address (as char \* string in dotted notation) and port number (unsigned short) of the cloud server as command line arguments.

b. Validate if the required number of arguments have been received before proceeding. Else report error and return.

c. Validate every argument received for valid range of values. [Refer ip address range, port range to do validations]

d. Store the values in a data structure and display using a function passing data structure

void display(struct server \*servercfg);

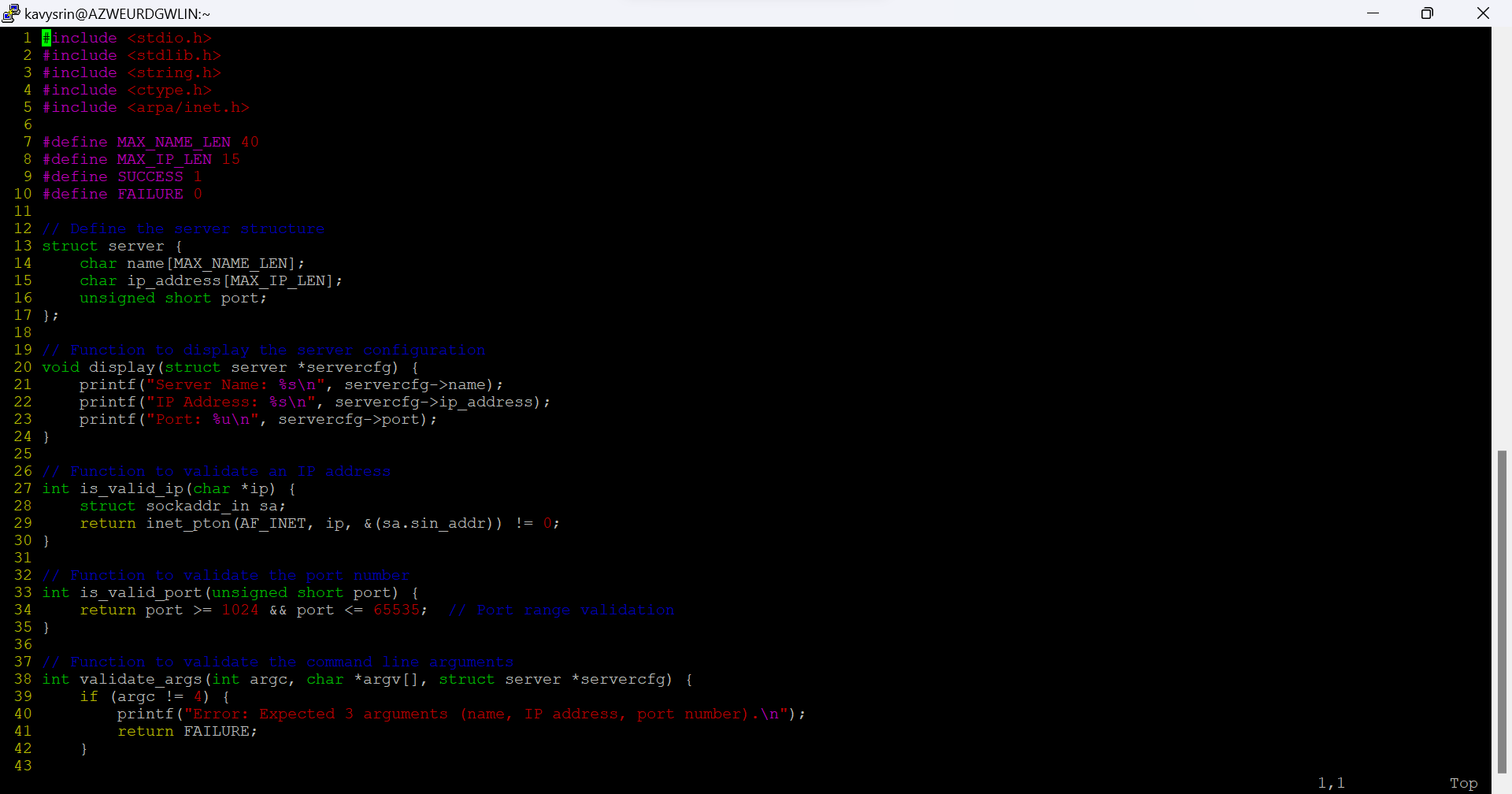
e. Implement a function update() to prompt user, to modify all the server attributes and to display the updated configuration.

// to read, update configuration and return status as SUCCESS/FAILURE

Int update(struct server \*servercfg);

f. Specify atleast 6 test cases (positive and negative ( ) to test command line inputs and update operations

g. Check for memory leaks and fix them.



**$ ./server\_config "CloudServer" "192.168.1.1" "8080"**

Server Name: CloudServer

IP Address: 192.168.1.1

Port: 8080

Enter new server name (max 39 characters): NewServer

Enter new IP address: 192.168.1.2

Enter new port number (1024-65535): 9090

Updated Server Configuration:

Server Name: NewServer

IP Address: 192.168.1.2

Port: 9090

**$ ./server\_config "CloudServer" "192.168.1.1"**

Error: Expected 3 arguments (name, IP address, port number).

**$ ./server\_config "CloudServer" "300.300.300.300" "8080"**

Error: Invalid IP address.

**$ ./server\_config "CloudServer" "192.168.1.1" "999"**

Error: Port number must be between 1024 and 65535.

**$ ./server\_config "CloudServer" "192.168.1.1" "8080"**

Enter new server name (max 39 characters): UpdatedServer

Enter new IP address: 300.300.300.300

Invalid IP address entered.

Failed to update server configuration.

**$ ./server\_config "CloudServer" "192.168.1.1" "8080"**

Enter new server name (max 39 characters): UpdatedServer

Enter new IP address: 192.168.1.2

Enter new port number (1024-65535): 80

Invalid port number entered.

Failed to update server configuration.

2. Implement a log() with signature as below to display all the input arguments as per their type. [Hint: In log() , use vfprintf() to display the received inputs]

void log(const char \*format, …);

For e.g.

int main()

{

int count = 10;

char prefix = ‘h’;

char label[] = “India”;

…

log(“count:%d, prefix:%c, label:%s”, count, prefix, label);

…

}

Expected Output:

count:10,prefix:h,label:India

A screenshot of a computer program

Description automatically generated

A screen shot of a computer

Description automatically generated

3. Refer the code “find\_max.c”. Add a function below to accept variable number of strings and to return the string with maximum length to the caller. In case of strings with same length, return the first string in the input sequence

max\_len\_string(<variable number of arguments>)

Eg. Code below shoud output “hello”

char \*ptr = max\_len\_string(“hi”, “hello”, “How”, “ Are”, “END”);

printf(“%s”, ptr);

A screenshot of a computer screen

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