

Objectives:

Use arrays or vectors, strings, manipulating array content, use input/output files, functions.

Bobcats Hosting Inc. (BHI) is a website hosting company. BHI logs the IP addresses of all visitors into a log file (text file). An IP address is a unique numerical label assigned to every computer that accesses a TCP/IP network (the Internet). It consists of four decimal numbers each ranging between 0 and 255 separated by periods (e.g. 132.235.9.120).

For each website BHI hosts, it logs the visitors IP addresses. The list of IP addresses is stored in a log file (see the log file sample below). BHI would like to figure out the number of unique IP addresses for each site and the number of total visitors.

Write a C++ program that reads a log file of website names and removes all duplicate IP addresses. The program should then output each site with the number of total visitors, number of unique visitors, and the unique IP addresses into a separate file. A series of 5 dashes, "-----", separates each website data.

The input and output file names must be entered as a command line argument (i.e. utilize argc and argv). Report an error if the number of command line arguments are incorrect or the program encounters a file error.

Your program must implement the following functions:

1. One of the following:
 - A function that reads all the IP addresses of a **single** website into an array/vector of strings and determines the number of IP addresses read. If you choose, you can design this function to only accept unique IP addresses and return the visit count and the unique count.
 - **Hint:** Write a search function that determines if an IP address is in the array already.
- OR**
- A function that reads all the IP addresses into the array and then write a separate function to eliminate the duplicate IPs from the array of strings and return the visit count and the unique count.
 - **Hint:** write a function that removes a single IP address from the array at a certain position.
2. A function to output the website name, number of visitors, the number of unique visitors, and all of the unique IP addresses.

You are encouraged to add other functions.

Sample Input file (included in the starter repository)

```
ohio.edu
123.23.12.234 234.123.10.1 123.23.12.234 123.23.12.234
78.34.89.123 123.23.12.234 123.23.12.234 78.34.89.123
234.123.10.1 123.78.56.222 123.23.12.234
-----
yahoo.com
245.89.9.23 45.67.23.190 201.23.245.10 167.34.234.15
132.235.67.89 45.67.23.190 167.34.234.15 132.235.19.60
45.67.23.190 45.67.23.190 167.34.234.15 167.34.234.15
167.34.234.15 167.34.234.15 245.89.9.23 245.89.9.23
78.34.89.123 78.34.89.123
-----
google.com
122.243.12.234 224.123.10.1 13.23.12.234 13.23.12.234
78.34.89.123 123.23.12.234 12.23.12.234 78.34.89.123
234.123.10.1 12.78.56.222 123.23.12.234 245.89.9.23
45.67.23.190 201.23.245.10 167.34.234.15 132.235.67.89
45.67.23.190 167.34.234.15 132.235.19.60 45.67.23.190
45.67.23.190 167.34.234.15 167.34.234.15 167.34.234.15
167.34.234.15 245.89.9.23 245.89.9.23 78.34.89.123
78.34.89.123 245.89.9.23 45.67.23.190 201.23.245.10
167.34.234.15 132.235.67.89 45.67.23.190 167.34.234.15
132.235.19.60 45.67.23.190 45.67.23.190 167.34.234.15
167.34.234.15 167.34.234.15 167.34.234.15 245.89.9.23
245.89.9.23 78.34.89.123 78.34.89.123 245.89.9.23 45.67.23.190
201.23.245.10 167.34.234.15 132.235.67.89 45.67.23.190
167.34.234.15 132.235.19.60 45.67.23.190 45.67.23.190
167.34.234.15 167.34.234.15 167.34.234.15 167.34.234.15
245.89.9.23 245.89.9.23 79.34.89.111 79.34.89.111
-----
notinteresting.org
132.235.16.12
-----
```

Sample Output File

```
ohio.edu | Number of visitors: 11 | Unique visitors: 4
  123.23.12.234
  123.78.56.222
  234.123.10.1
  78.34.89.123

yahoo.com | Number of visitors: 18 | Unique visitors: 7
  132.235.67.89
  167.34.234.15
  201.23.245.10
  245.89.9.23
  45.67.23.190
  132.235.19.60
  78.34.89.123

google.com | Number of visitors: 65 | Unique visitors: 15
  122.243.12.234
  123.23.12.234
  13.23.12.234
  132.235.67.89
  12.23.12.234
  12.78.56.222
  167.34.234.15
  201.23.245.10
  234.123.10.1
  224.123.10.1
  45.67.23.190
  245.89.9.23
  78.34.89.123
  132.235.19.60
  79.34.89.111

notinteresting.org | Number of visitors: 1 | Unique visitors: 1
  132.235.16.12
```

Grading:

- Programs that contain syntax errors will earn zero points.
- Programs that do not include functions, other than the main, will earn zero points.
- Programs that use global variables, other than constants, will earn zero points.

35 points:

- 5 points - Error checking and using command line arguments
- 20 points - Function 1
- 5 points - Function 2
- 5 points - User interface and clarity of the output

5 points:

- Programming Style & documentation.

Programming style:**Follow the coding style outline on GitHub:**

- <https://github.com/nasseef/cs2400/blob/master/docs/coding-style.md>