

Programme Name: \_\_\_\_\_\_\_\_**BCS HONS**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Course Code: \_\_**CSC 2624**\_\_\_\_\_\_\_\_

Course Name: \_\_\_\_\_\_\_**Distributed And Parallel Computing**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Assignment/ Lab Sheet / **Project** / Case Study No. \_**1**\_\_\_

Date of Submission: \_\_\_\_\_\_**9/10/2021**\_\_\_\_\_\_\_\_\_\_\_\_\_

**Submitted By: Submitted To:**

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IUKL ID: **041902900028** Department**: LMS**

Semester**: Fourth Semester**

Intake**: September 2019**

1. **Develop a web based web server log analyzer tool that aggregate the information and display it in a visual dashboard**

**Answer:**

Before Developing a web based web server log analyzer tool that aggregate the information and display it in a visual dashboard, let us discuss about logs, log analysis, web log analyzer and web log analyzer tools.

Logs are one of the most valuable assets when it comes to IT system management and monitoring. As they record every action that took place on your network, logs provide the insight you need to spot issues that might impact performance, compliance, and security.

**Log analysis** is the process of making sense of computer-generated log messages, also known as log events, audit trail records, or simply logs. Log analysis provides useful metrics that paint a clear picture of what has happened across the infrastructure. You can use this data to improve or solve performance issues within an application or infrastructure. Looking at the bigger picture, companies analyze logs to proactively and reactively mitigate risks, comply with security policies, audits, and regulations, and understand online user behavior.

Log analysis tools are essential for effective monitoring, enabling you to extract meaningful data from logs and troubleshoot app- or system-level errors. They allow you to detect trends and patterns and use these insights to anticipate and mitigate risks and even guide your business decisions.

Web log analysis software (also known as a web log analyzer) is a type of web analytics software that parses a server log file from a web server and derives indicators about when, how, and by whom a web server is visited based on the values contained in the log file. Reports are typically generated immediately, but data extracted from log files can be stored in a database and used to generate various reports on demand.

Modern organizations track and log data for virtually all business processes, which is why web server log analysis tools are vital for effectively using this information to gain a clear picture of the state of your network. Event logs, security logs, transactions, web server uptime and CDN traffic are just a few of the types of logs you will collect.

So why do you need a web server log analyzer? All of this data can quickly become overwhelming. To maximize data utilization, you must be able to easily find and analyze log files from a central location. Web log analysis tools allow you to filter logs, run live tail searches and query specific log data. These tools also present this data in a centralized view that can be accessed from anywhere.

In some cases, analysis tools will also provide log management capabilities. Instead of inspecting data after it’s been recorded, log management deals with how you handle this data. This can mean creating policies for how you generate and store logs or automating when logs are archived after a certain amount of time.

The Benefits of Log Analysis Tools

Effectively using the web log analysis tools can offer multiple benefits to make your job easy and ensure the efficiency of your network. Some of the benefits of log analysis tools include:

* You can identify key trends and anomalies to get a clear understanding of the health of your network and where there’s room for improvement.
* You can correlate event data with downtime across your network to identify the root cause of issues and troubleshoot them quickly.
* Use these logs to identify unauthorized user access or suspicious activity to prevent data breaches and locate points of entry.
* With all of your log files in a single location, you will reduce the time you spend alternating between different log locations to find the information most relevant to the task at hand.

Here is the code **web server log analyzer tool homepage.**

<!DOCTYPE html>

<html lang="en">

<head>

   <title>DPP PROJECT</title>

   <meta charset="UTF-8">

   <meta name="viewport" content="width=device-width, initial-scale=1">

   <link href="css/style.css" rel="stylesheet">

   <style>

table, td, th {

  border: 3px solid black;

}

table {

  width: 50%;

  border-collapse: collapse;

}

</style>

</head>

<body>

<h2 style="color:blue">Welcome to Web Server Log Analysis</h2>

      <table>

      <tr>

      <th colspan="3">Web Server Log Analyzer</th>

      </tr>

       <tr>

        <th><a href="country\_wise.html">For Country Wise</a></th>

        <th> <a href="date\_wise.html">For Date Wise</a></th>

        <th> <a href="os\_wise.html">For Operating System Wise</a></th>

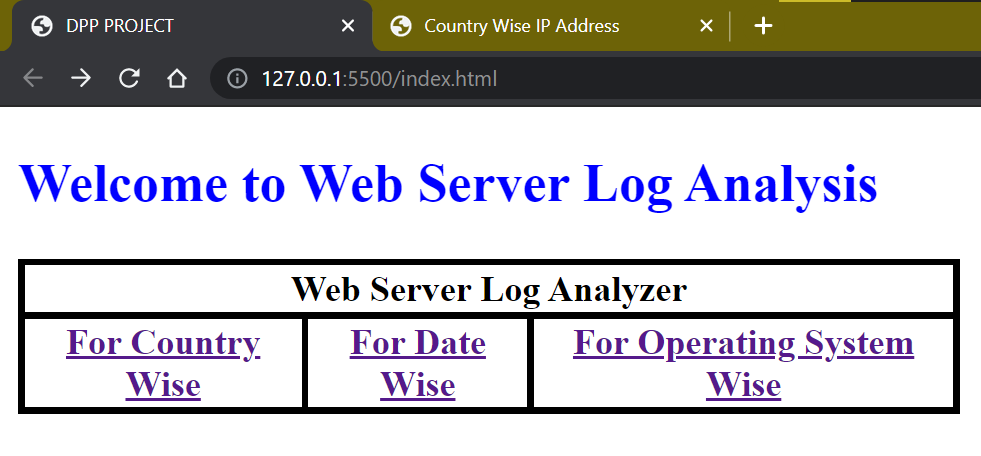
       </tr>

     </table>

</body>

</html>

**Output:**



For Country Wise:

With this we will know which country IP address just open our website or server.

Python code:

import re

import csv

from collections import Counter

*def* access\_log\_reader(*logfile*):

    myregex = *r*'\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3}'

    with open(*logfile*) as f:

        log = f.read()

        my\_iplist = re.findall(myregex, log)

        ipcount = Counter(my\_iplist)

        for k, v in ipcount.items():

            print("IP Address " + "=> " + str(k) +

                  " " + "Count " + "=> " + str(v))

        with open('ipaddress.csv', 'w') as f:

            for k, v in ipcount.items():

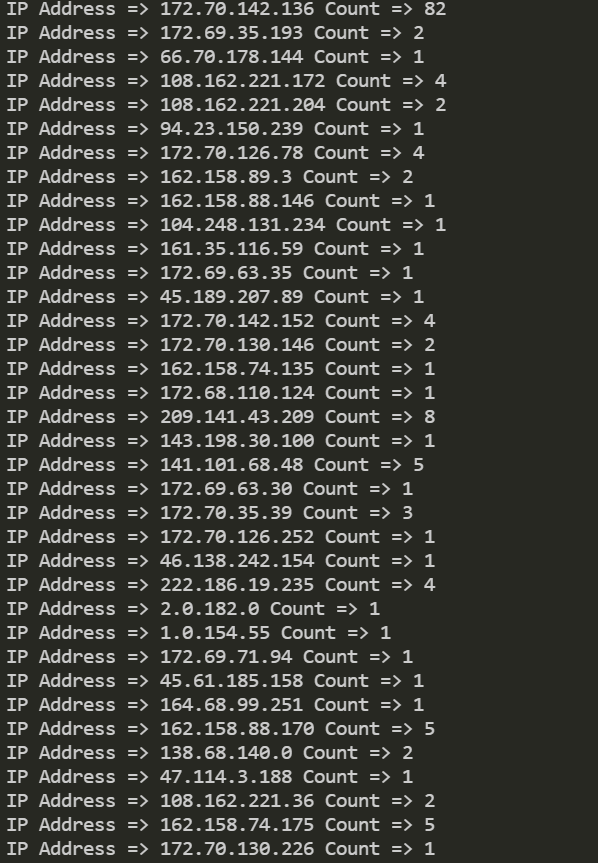
                f.write(str(k) + "\n")

        # Create entry point of our code

if \_\_name\_\_ == '\_\_main\_\_':

    access\_log\_reader("access.log")

Output:



HTML/ JavaScript

Country\_wise.html

<!DOCTYPE html>

<html lang="en">

<head>

   <meta charset="UTF-8">

   <meta http-equiv="X-UA-Compatible" content="IE=edge">

   <meta name="viewport" content="width=device-width, initial-scale=1.0">

   <title>Country Wise IP Address</title>

</head>

<body>

   <script src="https://unpkg.com/axios@0.21.1/dist/axios.min.js"></script>

   <script src="https://code.jquery.com/jquery-3.6.0.min.js"

      integrity="sha256-/xUj+3OJU5yExlq6GSYGSHk7tPXikynS7ogEvDej/m4=" crossorigin="anonymous"></script>

   <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>

   <script>

      $(document).ready(*function* () {

         $.ajax({

            type: "GET",

            url: "ipaddress.csv",

            dataType: "text",

            success: async *function* (*data*) {

*let* ipaddress = data.split("\r\n");

*let* details = [];

               for (*let* i = 0; i < 600; i++) {

*let* resp = await fetch(`http://geoip-db.com/json/${ipaddress[i]}`, { method: "GET" }).then(*res* *=>* res.json())

                  details[i] = resp;

               }

*let* newarray = details.filter((*thing*, *index*, *self*) *=>*

                  index === self.findIndex((*t*) *=>* (

                     t.country\_name === thing.country\_name

                  ))

               )

               // console.log(details);

               // console.log(newarray);

*let* final = []

               for (*let* i = 0; i < newarray.length; i++) {

*let* obj = ["", 0]

                  obj[0] = newarray[i].country\_name;

*let* count = details.filter(*i* *=>* i.country\_name === obj[0]).length

                  obj[1] = count;

                  final.push(obj)

               }

               // console.log(final)

               google.charts.load('current', {

                  'packages': ['geochart'],

                  'mapsApiKey': 'AIzaSyCcUq3WC6-Cidu0xjClk5DsYpsYzeS3Gk8'

               });

               google.charts.setOnLoadCallback(drawRegionsMap);

*function* drawRegionsMap() {

*var* data = google.visualization.arrayToDataTable([

                     ['Country', 'IP Address'],

                     ...final

                  ]);

*var* options = {};

*var* chart = new google.visualization.GeoChart(document.getElementById('regions\_div'));

                  chart.draw(data, options);

               }

            }

         });

      });

   </script>

   <!--     -->

   <script type="text/javascript">

   </script>

   <center>

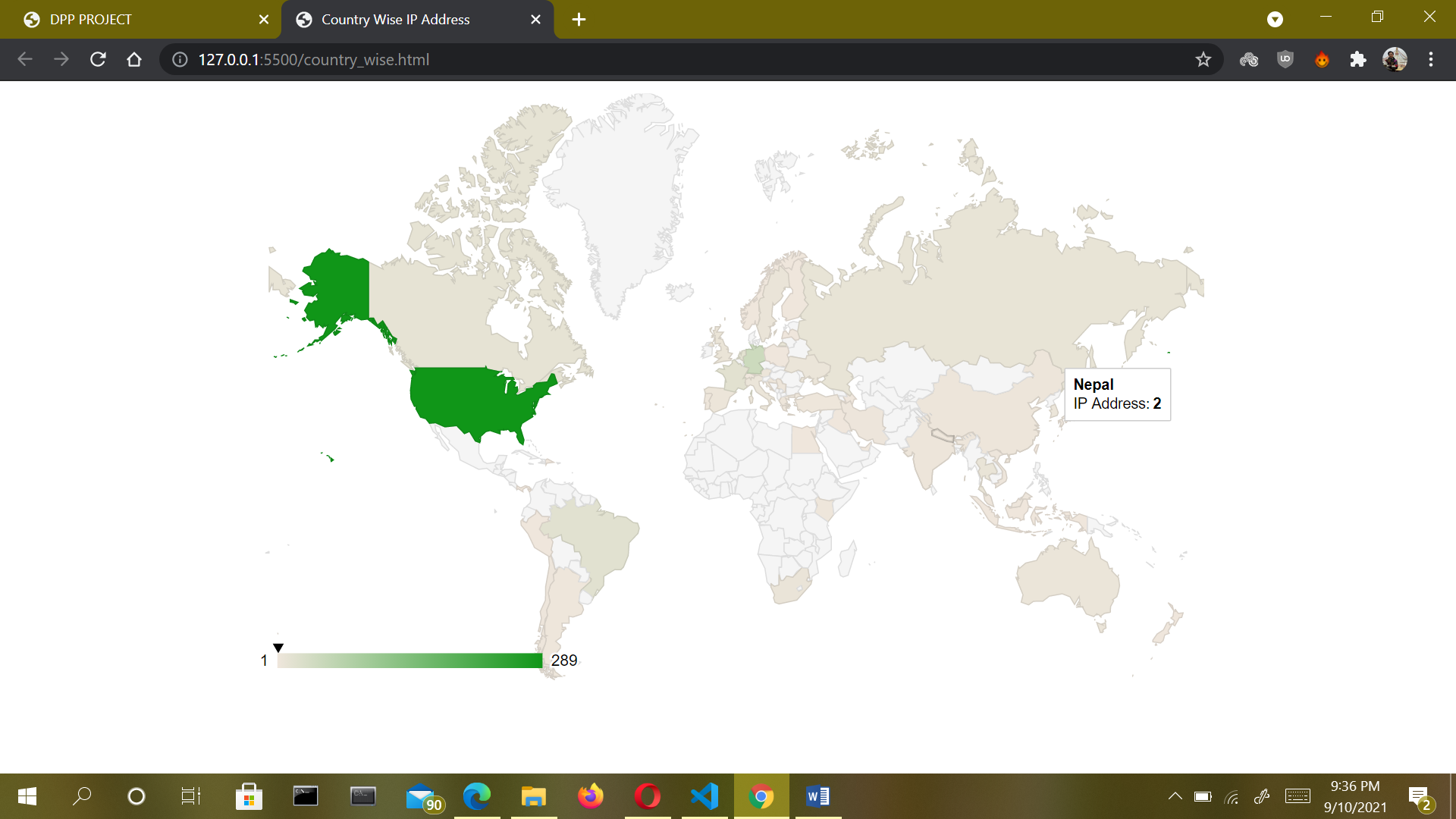
      <div id="regions\_div"></div>

   </center>

</body>

</html>

Output:



For Date wise:

It checks and record/manage the IP address according to date

Python code:

date.py

import re

import csv

from collections import Counter

*def* access\_log\_reader(*logfile*):

    myregex = *r*'[0-9]..\\\*.[a-zA-z].\\\*.[0-9].[0-9]..[0-9]..[0-9]..[0-9].'

    with open(*logfile*) as f:

        log = f.read()

        my\_datelist = re.findall(myregex, log)

        datecount = Counter(my\_datelist)

        for k, v in datecount.items():

            print("Date and Time " + "=> " + str(k) +

                  " " + "Count " + "=> " + str(v))

        with open('datetime.csv', 'w') as f:

            for k, v in datecount.items():

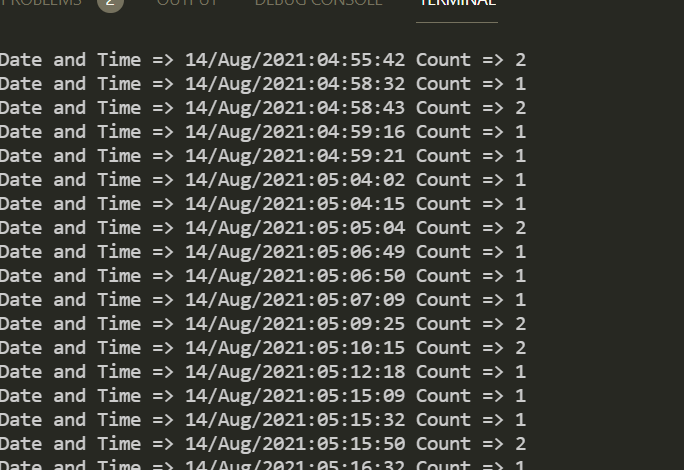
                f.write(str(k) + "\n")

        # Create entry point of our code

if \_\_name\_\_ == '\_\_main\_\_':

    access\_log\_reader("access.log")

Output:



HTML/JavaScript

Date\_wise.html

<!DOCTYPE html>

<html lang="en">

<head>

   <meta charset="UTF-8">

   <meta http-equiv="X-UA-Compatible" content="IE=edge">

   <meta name="viewport" content="width=device-width, initial-scale=1.0">

   <title>Time and Date - Users</title>

</head>

<body>

   <script src="https://cdn.anychart.com/releases/8.0.0/js/anychart-base.min.js"></script>

   <script src="https://cdn.anychart.com/releases/8.0.0/themes/dark\_earth.min.js" type="text/javascript"></script>

   <script src="https://unpkg.com/axios@0.21.1/dist/axios.min.js"></script>

   <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>

   <script src="https://momentjs.com/downloads/moment.min.js"></script>

   <script src="https://code.jquery.com/jquery-3.6.0.min.js"

      integrity="sha256-/xUj+3OJU5yExlq6GSYGSHk7tPXikynS7ogEvDej/m4=" crossorigin="anonymous"></script>

   <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>

   <script>

      $(document).ready(*function* () {

         $.ajax({

            type: "GET",

            url: "datetime.csv",

            dataType: "text",

            success: async *function* (*data*) {

*let* datetime = data.split("\r\n");

               // console.log(datetime.length);

               // console.log(datetime);

*let* details = [];

*let* count = 0

               for (*let* i = 0; i < datetime.length; i++) {

*let* time = datetime[i].split(":");

*let* date = time[0].split("/");

*let* temp = `${date[2]}  ${getMonthFromString(date[1])}  ${date[0]}`

*let* final = moment(temp).format("dddd");

                  time = time[1]

                  if (time !== undefined && final !== "Invalid date") {

                     details[count] = { day: final, time }

                     count++

                  }

               }

               console.log(details)

*let* newarrayoftime = details.filter((*thing*, *index*, *self*) *=>*

                  index === self.findIndex((*t*) *=>* (

                     t.time === thing.time && t.day === thing.day

                  ))

               )

*let* newarrayofday = details.filter((*thing*, *index*, *self*) *=>*

                  index === self.findIndex((*t*) *=>* (

                     t.day === thing.day

                  ))

               )

               console.log(newarrayoftime)

               console.log(newarrayofday)

*let* fi = [];

               for (*let* p = 0; p < newarrayoftime.length; p++) {

*let* t = ["", "", 0];

                  t[0] = newarrayoftime[p].day;

                  t[1] = newarrayoftime[p].time;

*let* num = details.filter(*det* *=>* {

                     return (det.day === t[0] && det.time === t[1])

                  }).length

                  t[2] = num;

                  fi.push(t)

               }

               console.log(fi);

               // for chart

*let* fridayCount = 0;

               for (*let* friday = 0; friday <= 17; friday++) {

                  fridayCount += fi[friday][2];

               }

*let* saturdayCount = 0;

               for (*let* saturday = 18; saturday <= 24; saturday++) {

                  saturdayCount += fi[saturday][2];

               }

               // Bar chart

               new Chart(document.getElementById("bar-chart"), {

                  type: 'bar',

                  data: {

                     labels: ["Friday", "Saturday"],

                     datasets: [

                        {

                           label: "Number of users",

                           backgroundColor: ["blue", "purple", "red", "yellow", "green"],

                           data: [fridayCount, saturdayCount]

                        }

                     ]

                  },

                  options: {

                     legend: { display: false },

                     title: {

                        display: true,

                        text: 'Users By Date and Time'

                     }

                  }

               });

            }

         });

      });

*function* getMonthFromString(*mon*) {

         return new *Date*(*Date*.parse(mon + " 1, 2012")).getMonth() + 1

      }

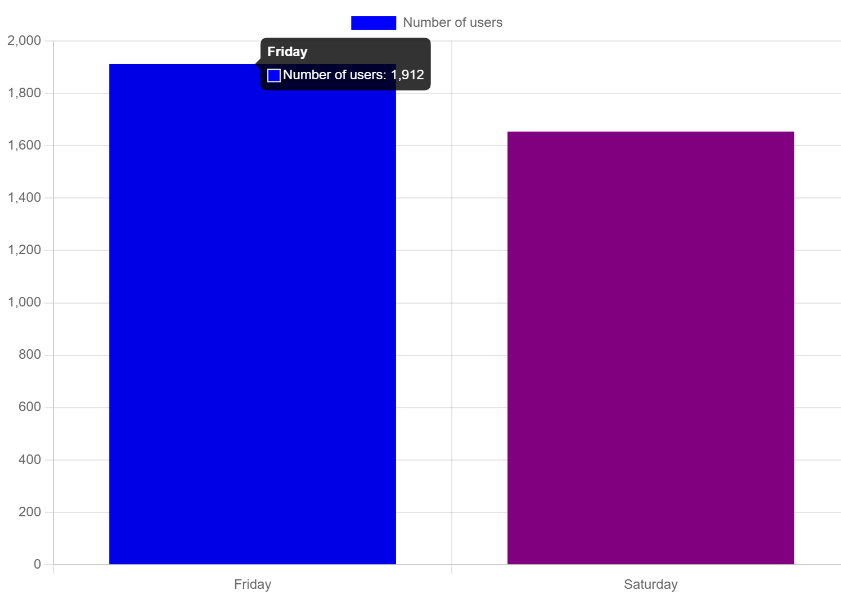
   </script>

   <div><canvas id="bar-chart" width="500" height="350"></canvas></div>

</body>

</html>

Output:



For Operating System:

This record and manage according to the user operating system

Python code:

Operatingsystem.py

import re

import csv

from collections import Counter

*def* access\_log\_reader(*logfile*):

    myregex1 = *r*'Windows'

    myregex2 = *r*'Ubuntu'

# count windows

    with open(*logfile*) as f:

        log = f.read()

        my\_windows = re.findall(myregex1, log)

        windows\_count = Counter(my\_windows)

        for k, v in windows\_count.items():

            print("IP Address " + "=> " + str(k) +

                  " " + "Count " + "=> " + str(v))

        with open('os.csv', 'w') as f:

            for k, v in windows\_count.items():

                f.write(str(k) + ","+str(v)+",")

# count ubuntu

    with open(*logfile*) as f:

        log = f.read()

        my\_ubuntu = re.findall(myregex2, log)

        ubuntu\_count = Counter(my\_ubuntu)

        for k, v in ubuntu\_count.items():

            print("IP Address " + "=> " + str(k) +

                  " " + "Count " + "=> " + str(v))

        with open('os.csv', 'a') as f:

            for k, v in ubuntu\_count.items():

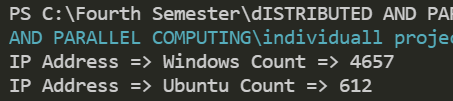
                f.write(str(k) + ","+str(v))

        # Create entry point of our code

if \_\_name\_\_ == '\_\_main\_\_':

    access\_log\_reader("access.log")

Output:



HTML/ JavaScript

Operating\_System.html

<!DOCTYPE html>

<html lang="en">

<head>

   <meta charset="UTF-8">

   <meta http-equiv="X-UA-Compatible" content="IE=edge">

   <meta name="viewport" content="width=device-width, initial-scale=1.0">

   <title>Operating System - Users</title>

</head>

<body>

   <script src="https://cdn.anychart.com/releases/8.0.0/js/anychart-base.min.js"></script>

   <script src="https://cdn.anychart.com/releases/8.0.0/themes/dark\_earth.min.js" type="text/javascript"></script>

   <script src="https://unpkg.com/axios@0.21.1/dist/axios.min.js"></script>

   <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>

   <script src="https://momentjs.com/downloads/moment.min.js"></script>

   <script src="https://code.jquery.com/jquery-3.6.0.min.js"

      integrity="sha256-/xUj+3OJU5yExlq6GSYGSHk7tPXikynS7ogEvDej/m4=" crossorigin="anonymous"></script>

   <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>

   <script>

      $(document).ready(*function* () {

         $.ajax({

            type: "GET",

            url: "os.csv",

            dataType: "text",

            success: async *function* (*data*) {

*let* os = data.split(",");

               console.log(os.length);

               console.log(os);

               // Bar chart

               new Chart(document.getElementById("doughnut-chart"), {

                  type: 'doughnut',

                  data: {

                     labels: [os[0], os[2]],

                     datasets: [

                        {

                           label: "Number of users",

                           backgroundColor: ["blue", "yellow", "red", "green", "purple"],

                           data: [os[1], os[3]]

                        }

                     ]

                  },

                  options: {

                     title: {

                        display: true,

                        text: 'Users By Operating System'

                     }

                  }

               });

            }

         });

      });

   </script>

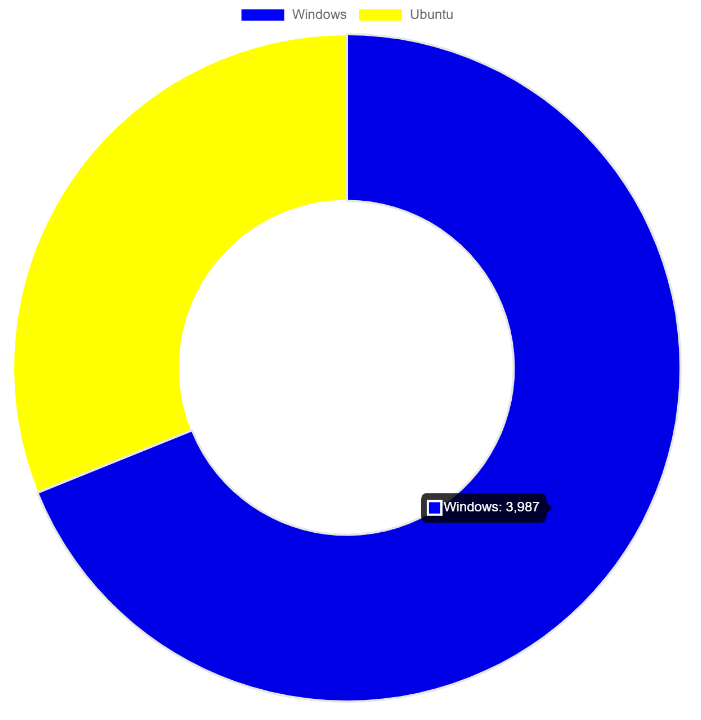
   <div class="div1">

   <canvas id="doughnut-chart" style-"width:50%; height:10px; padding: 10px;"></canvas></div>

</body>

</html>

Output:



**Thank You**