

# **SYSTEM RESOURCE MONITOR**

Project submitted to the  
SRM University – AP, Andhra Pradesh  
for the partial fulfillment of the requirements to award the degree of

**Bachelor of Technology**  
In  
**Computer Science and Engineering**  
**School of Engineering and**  
**Sciences**

Submitted by  
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# **Certificate**

Date: 21 May,2023

This is to certify that the work present in this Project entitled “ **SYSTEM RESOURCE MONITOR**” has been carried out by “Nazeer Mastan , Harsha Vardhan , Charan Reddy ” under my/our supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology/Master of Technology in **School of Engineering and Sciences**.

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# Table of Contents

Certificate	2
Acknowledgements	3
Table of Contents	4
Abstract	5
List of Tables	6
1. Introduction	7
2. Methodology	8
3. Concluding remarks	11
4. Conclusion	10

## **Abstract**

The System Resource Monitor project aims to develop a software application that monitors and analyzes the resource utilization of a computer system. The project focuses on collecting data about various system resources, such as CPU usage, memory consumption, disk activity, and network traffic, and presenting this information in a user- friendly graphical interface. This monitoring tool provides valuable insights into the system's performance, allowing users to identify bottlenecks, optimize resource allocation, and troubleshoot issues effectively.

## **List of Tables**

Topic	Description
Abstract	Provides an overview of System Resource Monitor.
Introduction	Describes about of System Resource Monitor.
Methodology	Discusses about how the of System Resource Monitor works on.
Concluding Remarks	Concluding the remarks of the project.
Conclusion	Summarizes about the project.

This table outlines the different topics covered in the project report on the working of System Resource Monitor, providing a clear structure and organization for the content.

# 1. Introduction

A System Resource Monitor project is a software application or tool designed to track and display the usage of system resources on a computer. System resources refer to the various components and capabilities of a computer system that are necessary for it to function properly. These resources can include the CPU (Central Processing Unit), memory (RAM), disk space, network bandwidth, and more.

The main purpose of a System Resource Monitor is to provide real-time information about how these resources are being utilized by different processes and applications running on the computer. It helps users and system administrators to monitor the performance of the system and identify any bottlenecks or issues that may be affecting its efficiency.

## 2. Methodology

First, the project starts by identifying the specific resources that need to be monitored. Then the project implements a monitoring system that continuously collects data on these resources. This can be achieved through various techniques, such as utilizing built-in operating system functions or using specialized monitoring tools. The collected data is typically stored in a database or a log file for further analysis.

Once the monitoring system is in place, the project focuses on analyzing the collected data. This involves processing and aggregating the data to generate meaningful insights and visualizations. Then after, the project may incorporate alerting mechanisms to notify users or administrators when certain resource thresholds are exceeded.

Lastly, it ensures that the monitoring system can handle large amounts of data and that the resource utilization of the monitoring itself remains minimal. Overall, the System Resource Monitor project employs a systematic approach to collect, analyze, and visualize the performance metrics of a computer system, providing valuable insights for system administrators or users to optimize resource allocation and troubleshoot performance-related issues.



### 3. Source Code

#### Code:

```
import psutil
import time
import datetime
import matplotlib.pyplot as plt

def log_resource_usage(interval, duration):
    timestamps = []
    cpu_usage = []
    memory_usage = []
    io_counters = []
    network_counters = []

    iterations = int(duration / interval)

    for i in range(iterations):
        timestamp = datetime.datetime.now().strftime("%Y-%m-%d %H:%M:%S")
        timestamps.append(timestamp)

        cpu_percent = psutil.cpu_percent(interval=interval)
        cpu_usage.append(cpu_percent)

        mem_stats = psutil.virtual_memory()
        memory_usage.append(mem_stats.percent)

        io_stats = psutil.disk_io_counters()
        io_counters.append(io_stats.read_bytes + io_stats.write_bytes)

        net_stats = psutil.net_io_counters()
        network_counters.append(net_stats.bytes_sent + net_stats.bytes_recv)

        time.sleep(interval)

    plt.plot(timestamps, cpu_usage)
    plt.title("CPU Usage")
    plt.xlabel("Timestamp")
    plt.ylabel("Usage (%)")
    plt.show()

    plt.plot(timestamps, memory_usage)
    plt.title("Memory Usage")
    plt.xlabel("Timestamp")
    plt.ylabel("Usage (%)")
```

```
plt.show()
```

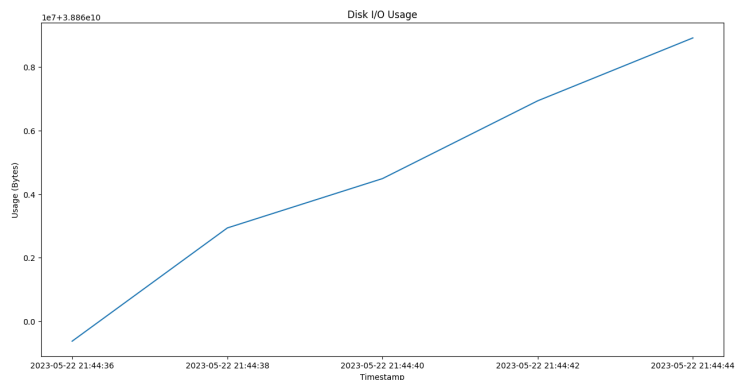
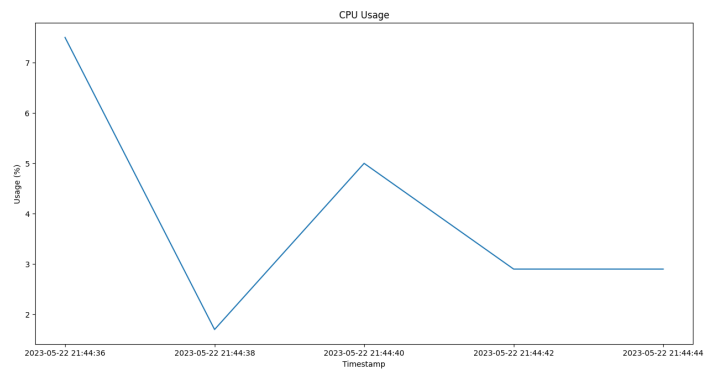
```
plt.plot(timestamps, io_counters)
plt.title("Disk I/O Usage")
plt.xlabel("Timestamp")
plt.ylabel("Usage (Bytes)")
plt.show()
```

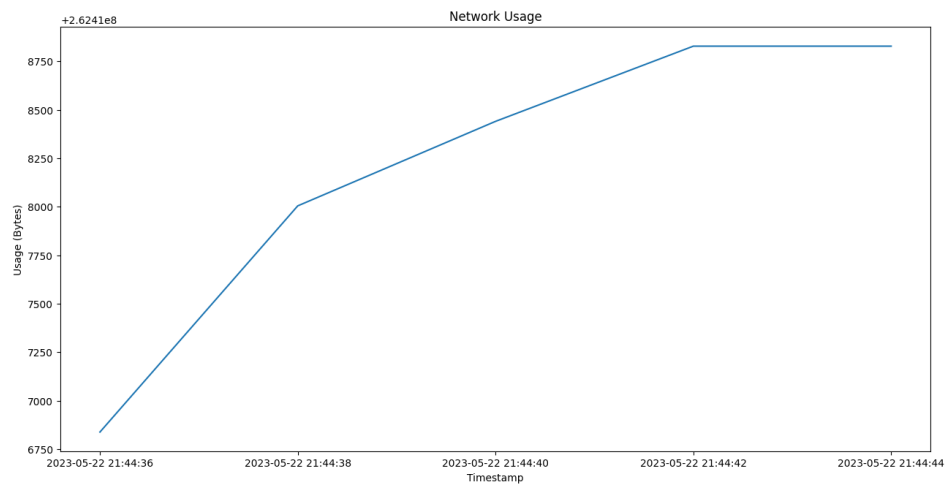
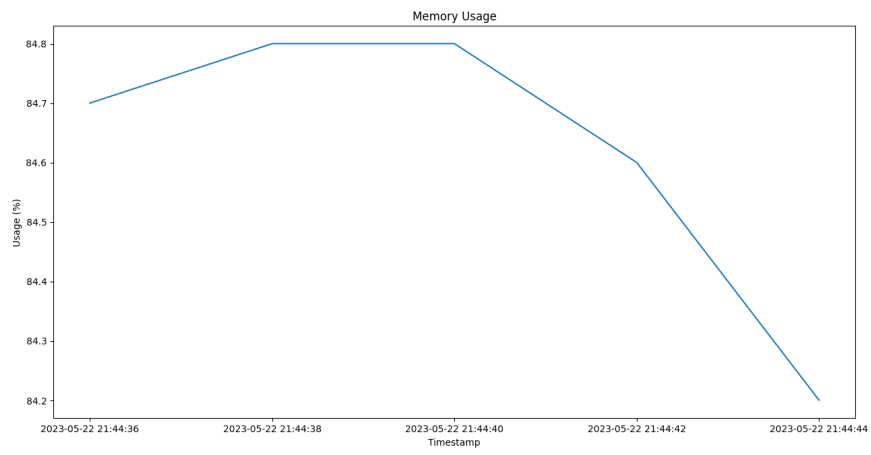
```
plt.plot(timestamps, network_counters)
plt.title("Network Usage")
plt.xlabel("Timestamp")
plt.ylabel("Usage (Bytes)")
plt.show()
```

```
log_resource_usage(1, 5)
```

## 3.1 Output:

Cpu usage:





### **3. Concluding remarks**

The System Resource Monitor project presents a comprehensive solution for monitoring and analyzing system resource utilization. By providing real-time insights into CPU, memory, disk, and network usage, the tool empowers users to optimize resource allocation, identify performance bottlenecks, and enhance system efficiency.

The project serves as a solid foundation for future enhancements, including advanced analytics, resource optimization recommendations, remote monitoring capabilities, and cloud platform integration. The System Resource Monitor project contributes to improving system performance, enabling users to make informed decisions and enhance the overall computing experience.

## 4. Conclusion

In conclusion, a system resource monitor project can be valuable for both individual users and system administrators. It helps users understand how their system resources are being utilized and allows them to make informed decisions regarding resource management. By monitoring resource usage, users can identify and address any issues that may be affecting system performance or causing inefficiencies. Overall, a well-designed and implemented system resource monitor can significantly contribute to optimizing system performance and enhancing overall user experience.