PROJECT REPORT ON

Web Camera Security from spyware

Submitted by

JAHNAVI CHAMARTHI(ST#IS#6140)

Under the Supervision of

UPENDRA

Senior Security Analyst

KRISHNA

Junior Security Analyst

Registered And Head Office
D.NO: 11-9-18, 1st Floor,
Majjivari Street, Kothapeta,
Vijayawada - 520001.

+91 9550055338 / +91 7901336873

contact@suprajatechnologies.com

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1. Introduction

1.1 Overall Description

In today's world, we find ourselves significantly advanced in technology compared to past generations. We are fortunate to be born in this era, yet simultaneously confronted with serious privacy concerns stemming from the vulnerabilities of newly developed technologies. In the past, conflicts among nations revolved around wealth and dominance, whereas now, the battleground has shifted to the realm of data ownership.

The individuals attempting to access our information without consent are commonly referred to as hackers. When considering which types of devices are susceptible to such attacks, the answer invariably points to those connected to the internet. Among these, webcams stand out; unauthorized access to a webcam enables surveillance and the retrieval of sensitive data. To mitigate this threat, it's essential to deactivate webcam access when it's not in use. This can be achieved by adjusting settings in the registry editor, a default system application found on every desktop. Customizing the registry editor settings aligns the device's functionality with our specific security needs.

2. Existing System

In an existing system, preventing spyware from accessing the webcam is achievable through careful scrutiny of the links we intend to open. Additionally, we can exercise control over the webcam by disconnecting it when not in use. This can be done by accessing the registry editor, navigating to the appropriate webcam settings page, and modifying the values accordingly. Specifically, deleting the default value and adding a new value labeled "RWORD" with a value of 0 will effectively disconnect the webcam. Reconnecting the webcam involves deleting the previously created value register.

3. Proposed System

The system we are proposing involves the creation of an executable file (.exe) utilizing the Python programming language. This executable will provide a user-friendly tool for controlling the webcam. Disconnecting the webcam is as simple as clicking a button, and the same applies for reconnecting it.

Initially, the interface presents three buttons: "Developer Info", "Disable", and "Enable". Each button serves a distinct function. Clicking the "Developer Info" button displays information about the developers. The "Disable" button generates a random password and disables the camera, while the "Enable" button enables the camera.

4. System Design

4.1 Feasibility Study

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations in feasibility analysis are:

Economic Feasibility

Technical Feasibility

Social Feasibility

4.1.1 Economical Feasibility

This study is carried out to check the economic impact that the system will have on the organization. This project is developed to stop the spyware which is used to spy on the people. For doing the aim we just implemented a peace of 300 lines of code only .This is will be like a penny for the company ,but we can change to full-fledged application. Now we just developed the code for blocking the web cams on a laptop only but we can enhance it to the mobile phones also.

4.1.2 Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. We developed the software by using only one language which python. Which has immense number of libraries in it to use various applications. By using python one can do the data analysis, predicting the future of a product by using data science model etc..,

4.1.3 Social Feasibility

The aspect of study is to check the level of acceptance of the system by the user.We developed a very user friendly interface which is easily used by the user. Our landing interface will contain the two buttons, one is for disabling the camera and another one is for enabling the camera.We used a random password to shut down the camera and we stored the password in a file then we used the same password for enabling it also.

4.2 Input and Output Design

4.2.1 Input Design:

We developed the project to disable and enable the web cam on laptops and desktops for preventing them from the spyware. For this we created three interfaces one is our choosing the options like viewing the developers info or disabling the camera or enabling the webcam. Second window contains the main functionality of disabling the web cam. Third window contains the enabling functionality. For stopping the web cams from accessing we generated random password and stored it in a text file and reused it when ever it needed.

4.2.2 Objectives

1.   Developing a user-friendly interface for controlling webcam access, ensuring ease of use and minimizing errors in the management of permissions.

2.   Designing input screens to efficiently handle the configuration of webcam blocking settings, accommodating large volumes of data while facilitating error-free data entry.

3.   Implement validation checks to ensure the accuracy and validity of entered data related to webcam access permissions, with clear and timely feedback provided to users to prevent confusion.

4.   Provide comprehensive viewing capabilities for monitoring and managing webcam access settings, enabling efficient manipulation of data and configurations.

4.2.3 Output Design

In the entire project our aim is to disable or enable the web cam.So we used observed there is three output giving conditions which are explained below:

1.Developers Info:-Here we display the information of the developers like developers names ,mails etc..,

2.Disable the web cam:-After successful operation of disabling the web cam user should know his outcome of his actions ,So for that we used a text line which is ”**Camera disabled successfully**” At the bottom of the disable interface after successful disable operation.

3.Enable the web cam:-After successful operation of enabling the web cam user wants know the response for his series of operations so for that we used a text line which is “**Camera enabled successfully**” at the bottom of the enable interface after successful enable operation.

After completion of the project we written a detailed report containing the information about the project and we developed a PPT (power point presentation) for explaining our project..

5. Implementation

5.1 Module Description :

   This system comprises of 3 modules as follows,

5.1.1 Module 1: Developers Information

   In this module we display the developers information like who are developed this project and their mail id's,company name,starting and ending dates of the project.

5.1.2 Module 2 :Generating the password randomly

   In this module we generate the password randomly.

5.1.3 Module 2: Disabling the webcam

   In this Module,we have four functionalities like randomly generating the password and saving it and using the same password to disable the camera.Here disabling works with flow like deleting the past registry value and creating the new registry which can able to disable the camera.

5.1.4 Module 3: Enabling the webcam

   In this Module, we use the saved passwords and enable the camera.Here disabling works with deleting the registry value which is able to disable the camera.
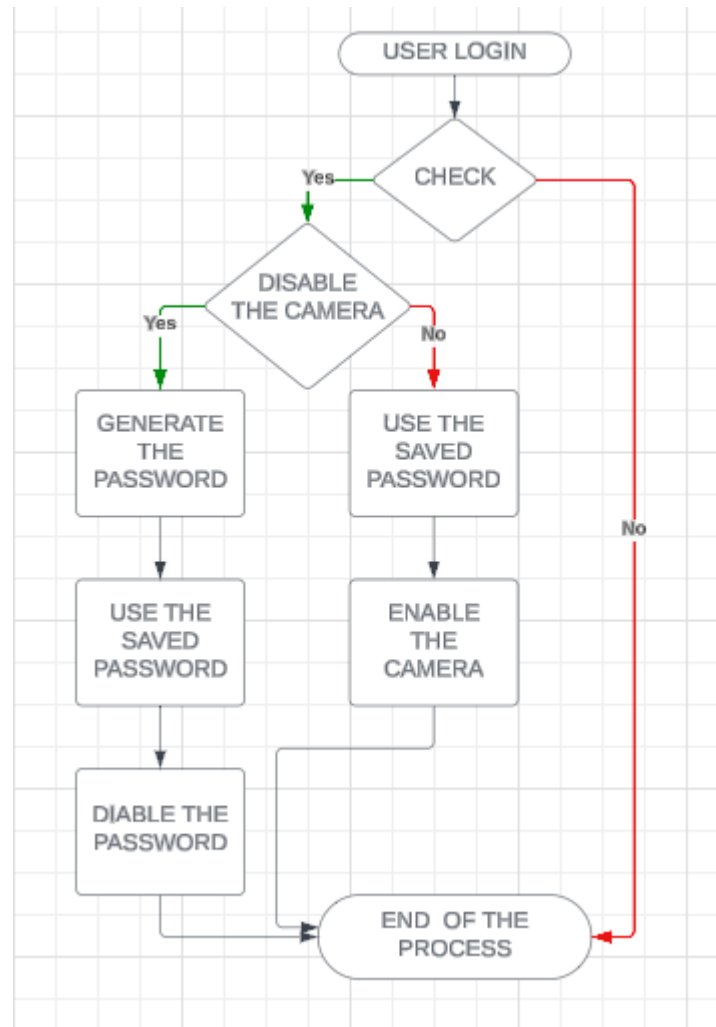
5.2 System Architecture :
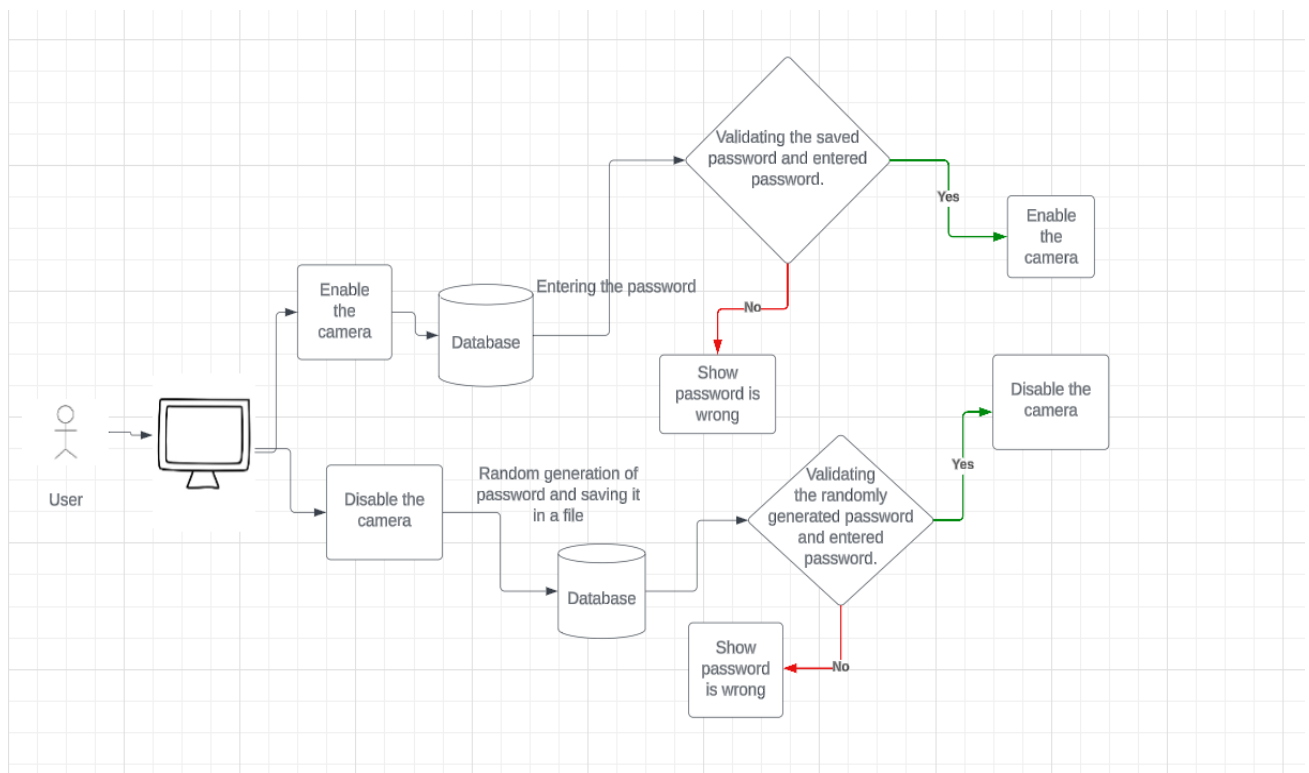
6. System Design

6.1 Data Flow Diagram

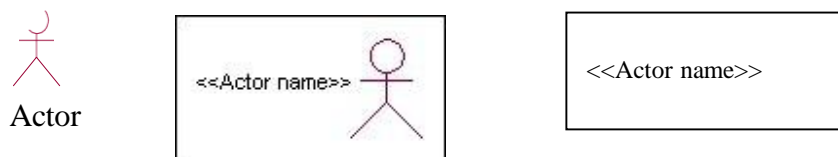## 6.1.1 User

6.2 Use case Diagram

The use case diagram is one of the UML diagrams which used in the software development to describe the who is going to use our final product and what are their requirements.

Global Use Case Diagrams:

Identification of actors:

Actor: For the web cam security user will be the actor.
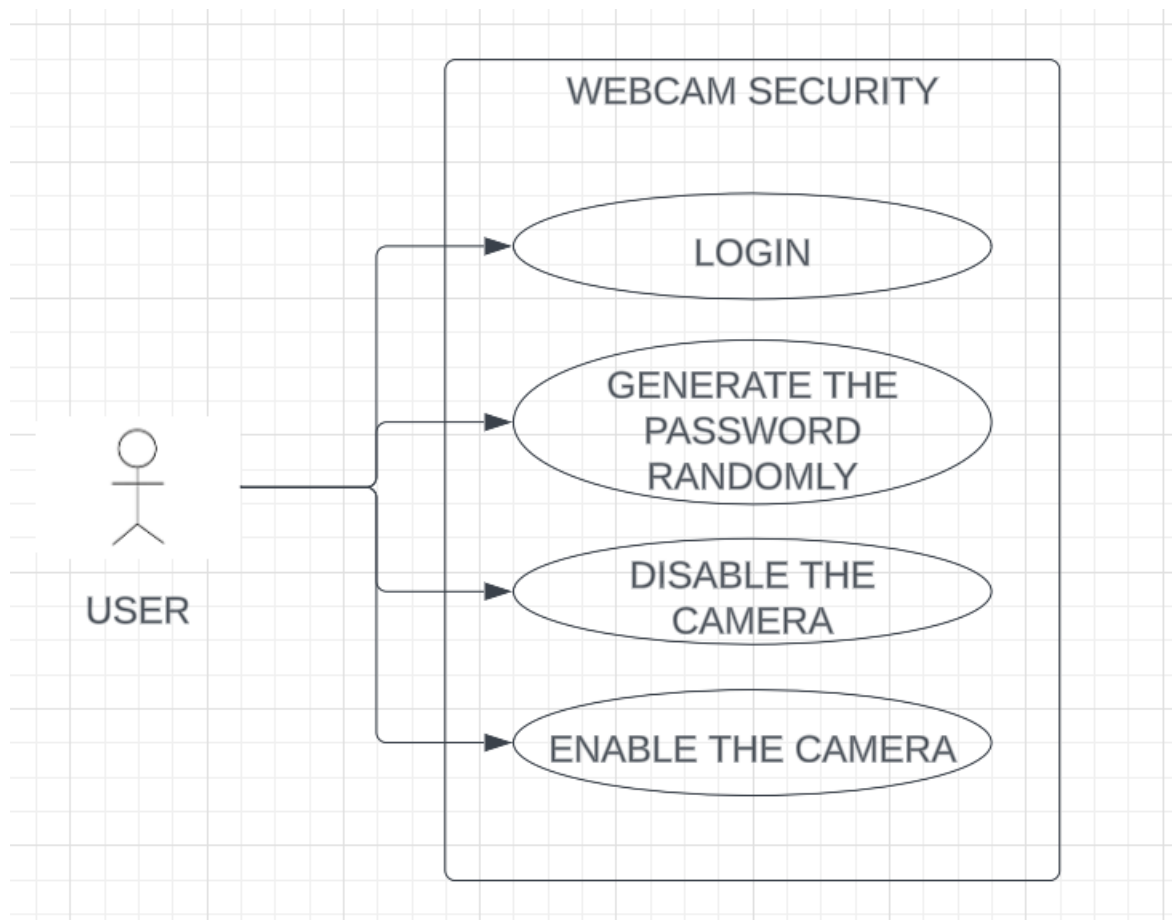Graphical representation:

An actor is someone or something that:
Interacts with or uses the system.

- The user in web cam security generates a random password and reuse it to enable or disable the camera.

6.2.1 User

Identification of usecases:

Usecase: A use case can be described as a specific way of using the system from a user's (actor's) perspective.

Graphical representation:

A more detailed description might characterize a use case as:

- Pattern of behavior the system exhibits
- A sequence of related transactions performed by an actor and the system
- Delivering something of value to the actor

Use cases provide a means to:

- capture system requirements
- communicate with the end users and domain experts
- test the system

Use cases identified are:-
1.Generating the password.
2.Disabling the camera.
3.Enabling the camera.

6.3 Class Diagram

Class diagram is a UML diagram which used to identify the datatype of the input and output. Class diagrams are also used to identify the operations that are performed by the user.
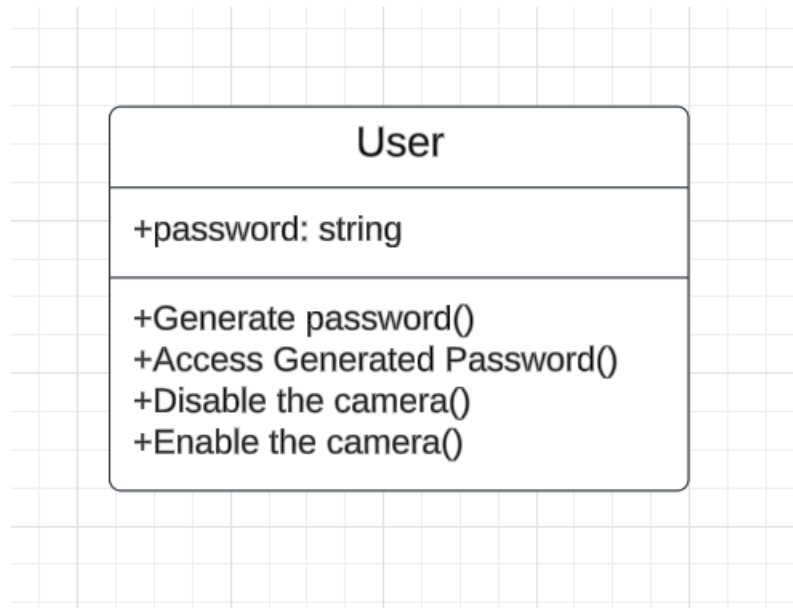
6.4 Sequence Diagram

A sequence diagram is a graphical view of a scenario that shows object interaction in a time-based sequence what happens first, what happens next. Sequence diagrams establish the roles of objects and help provide essential information to determine class responsibilities and interfaces.

This UML diagram shows the time series execution of the operations

6.4.1 User

Login

Generate the
password

Disable the
camera

Enable the
camera

Password
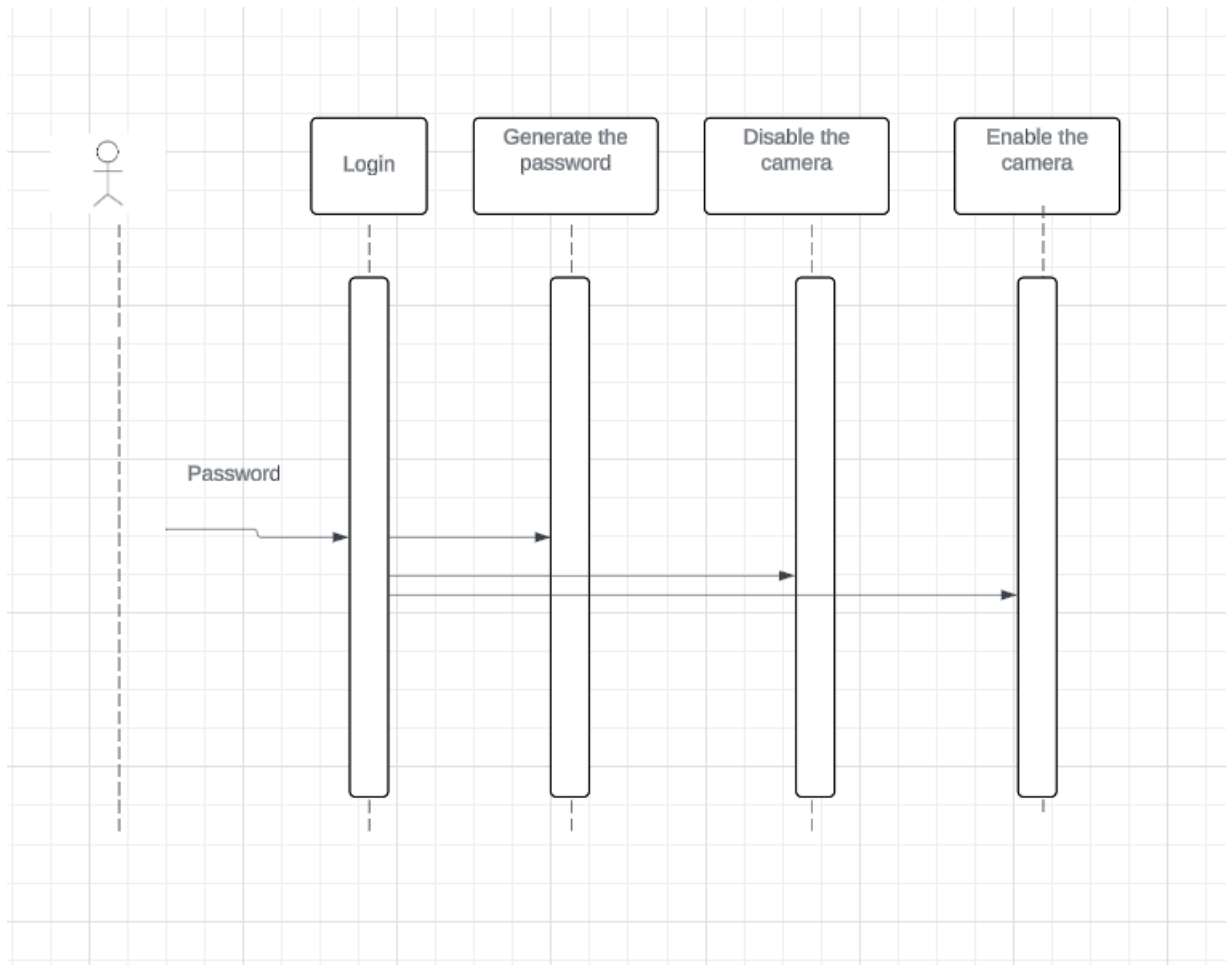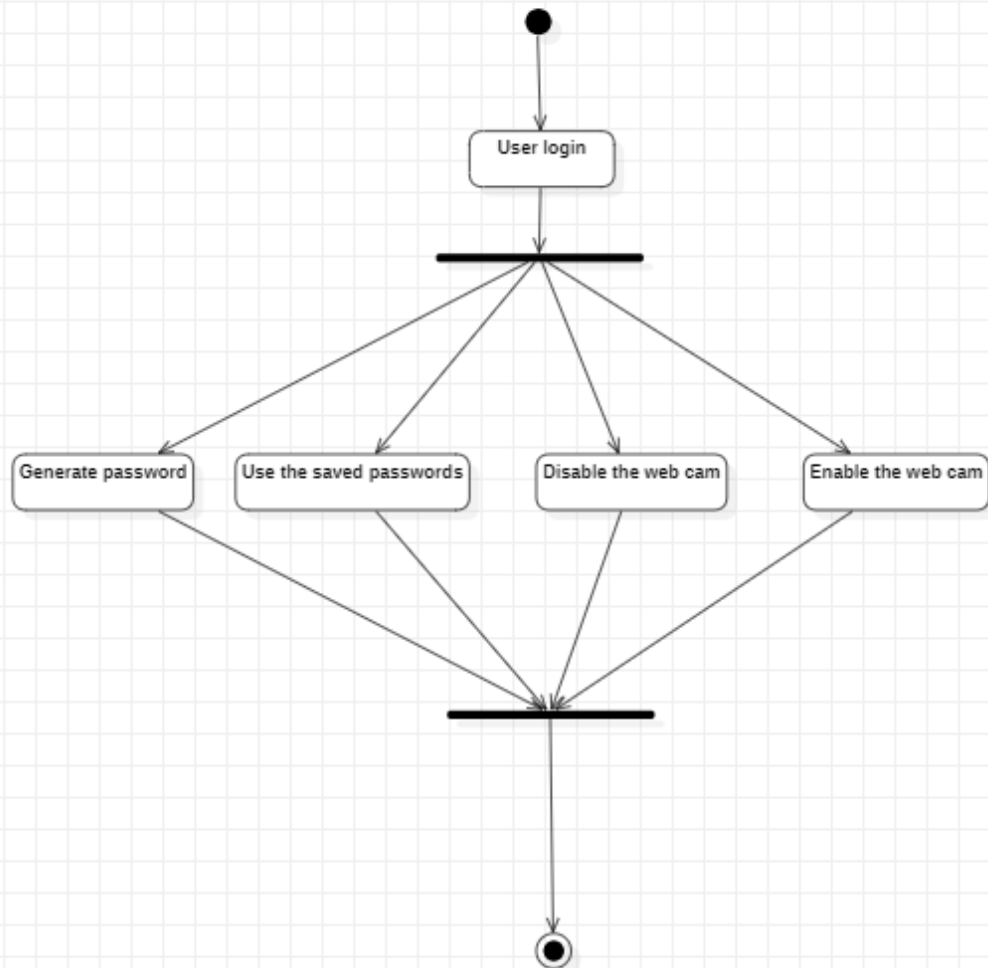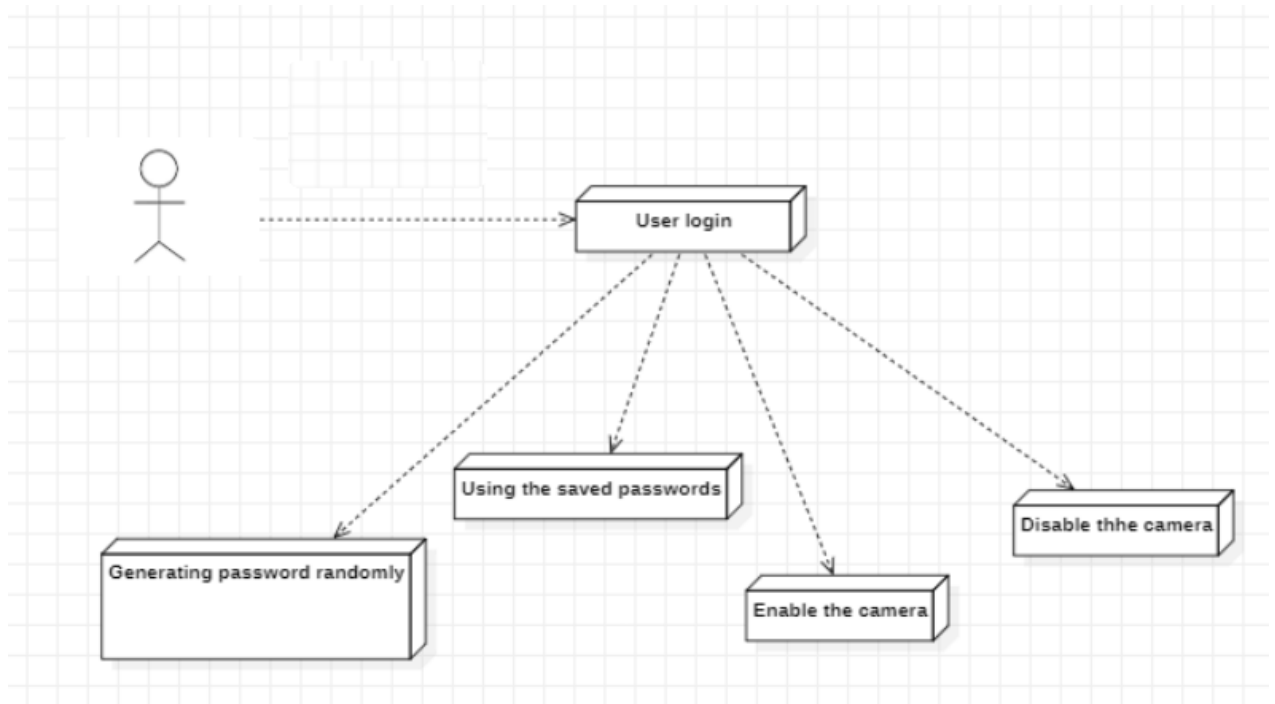
6.5 Activity Diagram

Activity diagram consist of activities, states and transitions between activities and states.
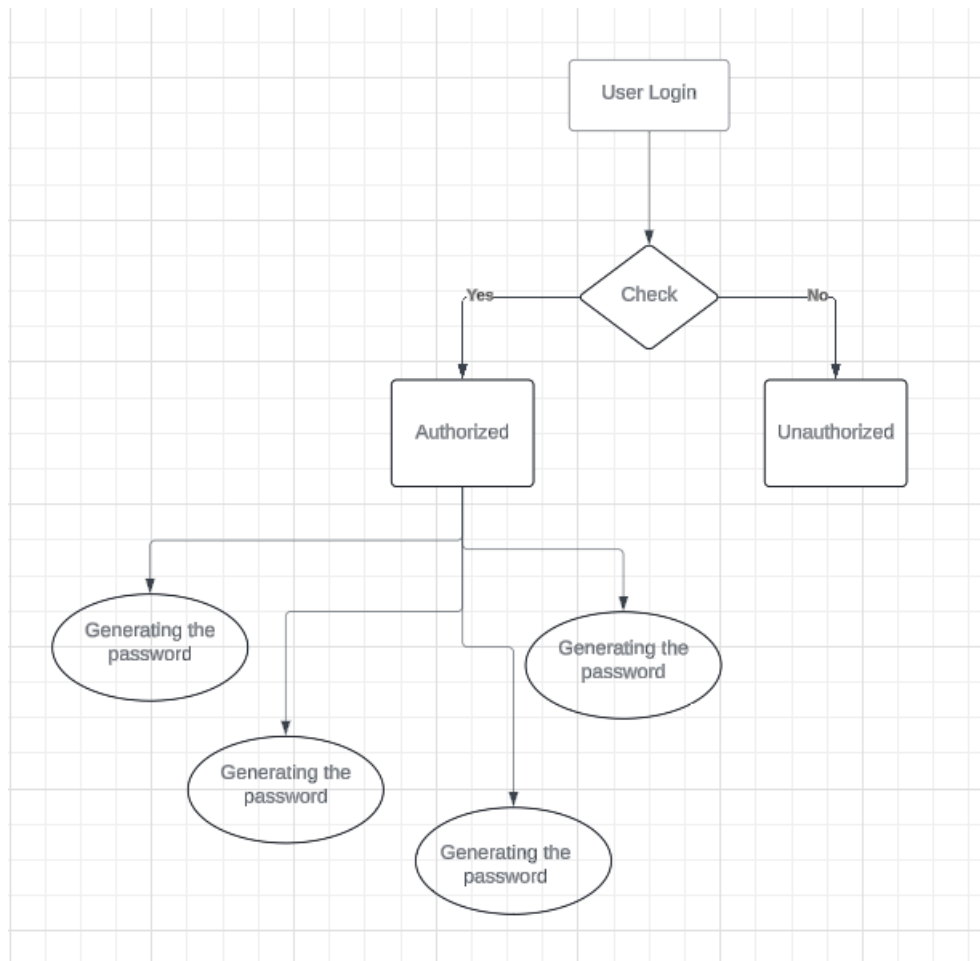**6.5.1 User**

6.6 Component Diagram

6.6.1 User

6.7 ER Diagram:

6.7.1 User

7. REQUIREMENT SPECIFICATION:

7.1 Functional Requirements
R1: user_accounts()

User account is used to generate the password and disable or enable the camera.

Input:-String

Output:-Operation performed.

R2: Data

In web cam security we use the password as data.The password is a set of alphabets,digits,special characters.

R4: Input

1.   Developing a user-friendly interface for controlling webcam access, ensuring ease of use and minimizing errors in the management of permissions.

2.   Designing input screens to efficiently handle the configuration of webcam blocking settings, accommodating large volumes of data while facilitating error-free data entry.

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R5: Output

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After completion of the project we written a detailed report containing the information about the project and we developed a PPT (power point presentation) for explaining our project.

R6: Disable

Here we develop a interface which includes the functionalities of disabling the web cam.

R7: Enable

Here we develop a interface which includes the functionalities of enabling the web cam.

7.2 Software Requirements

For developing the application the following are the Software Requirements:

1. Python

7.3 Operating Systems supported

1. Windows 7

2. Windows XP

3. Windows 8

4. Windows 10

7.4 Technologies and Languages used to Develop

1. Front-End   **:** Python.

2. Designing   **:** Html,css,javascript.

7.5 Hardware Requirements

For developing the application the following are the Hardware Requirements:

1. System   **:** Pentium IV 2.4 GHz

2. Hard Disk   **:** 40 GB.

3. Floppy Drive   **:** 1.44 Mb.

4. Monitor   **:** 14' Colour Monitor.

5. Mouse   **:** Optical Mouse.

6. Ram   **:** 2 GB.

8. System Test

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

8.1 Types of Tests

8.1.1 Unit testing:

Unit testing means testing the each module separately by giving the appropriate input and getting the appropriate output. First we developed the project in parts like disable is one part and Enable is one part and we have internal functionalities like generating the password randomly every time at the same time storing the generated password. We tested the each and every module thoroughly at the beginning phase we encountered so many errors we corrected them while they occur. At finally we completed the unit testing of our project.

8.1.2 Integration testing:

Integration tests are designed to test integrated software components to determine if they actually run as one program.After integration of project we encountered the variable name issues and function name issues and function issues but we corrected our errors and we successfully performed the integration testing.

8.1.3 Functional test:

After integration we do the output accuracy by giving the passwords wrong and giving the previously generated passwords as input. At the starting the previous and currently generated password getting saved in the same place and which makes big trouble and after we encountered through it we make the appropriate changes.

8.1.4 System Test:

System testing ensures that the entire integrated software system meets requirements.Our requirement is to preventing the web cam access points from others.At first we run the .exe file without administration access as a result we encountered the operation denied prompt after identifying the mistake we made the appropriate changes like giving the administrative access to the .exe file.

8.1.5 White Box Testing:

White Box Testing here we have the complete info about the code and it's functionality we changed the variable names and parameters names and function names so many times and we saved the password in different files as well.

8.1.6 Black Box Testing:

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. As we this testing only focuses on the input-output functionality here we gave so many different kinds of inputs and our developed project passed in each test case.

8.2 Test strategy and approach:

Field testing will be performed manually and functional tests will be written in detail.

8.2.1 Test objectives:

We have only one input field here that is working properly.

8.2.2 Features to be tested:

We gave so many types of inputs the software takes the appropriate one.
All the buttons are working properly and all pages redirecting correctly.

8.3 Integration Testing:

Integration tests are designed to test integrated software components to determine if they actually run as one program.After integration of project we encountered the variable name issues and function name issues and function issues but we corrected our errors and we successfully performed the integration testing.

8.3.1 Test Results: All the test cases mentioned above passed successfully. No defects encountered.

8.4 Acceptance Testing:

We gave our software to our friends they used it and they say it is very handy to use and they said some improvements and we did them too.

8.4.1 Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Execution:-

Project Information

This project was developed by **Vikram , Bhavana , Jahnavi** as part of **cybersecurity Internship**. This project is designed to **Secure the Organisation in Real World from Cyber Frauds performed by Hackers**.

Project Details	Value
Project Name	Web Cam Security from spyware
Project Description	Implementing Physical Security Policy on Web Cam in Devices to Prevent Spyware Activities
Project Start Date	17-Febrauary-2024
Project End Dte	17-March-2024
Project Status	**Completed**

Developer Details

Name	Email
V.Vikram	Vemanaboinavikram04@gmail.com
Ch.Bhavana	bhavanachimmili15@gmail.com

Company Details

Name	Email
Supraja Technologies	contact@suprajatechnologies.com
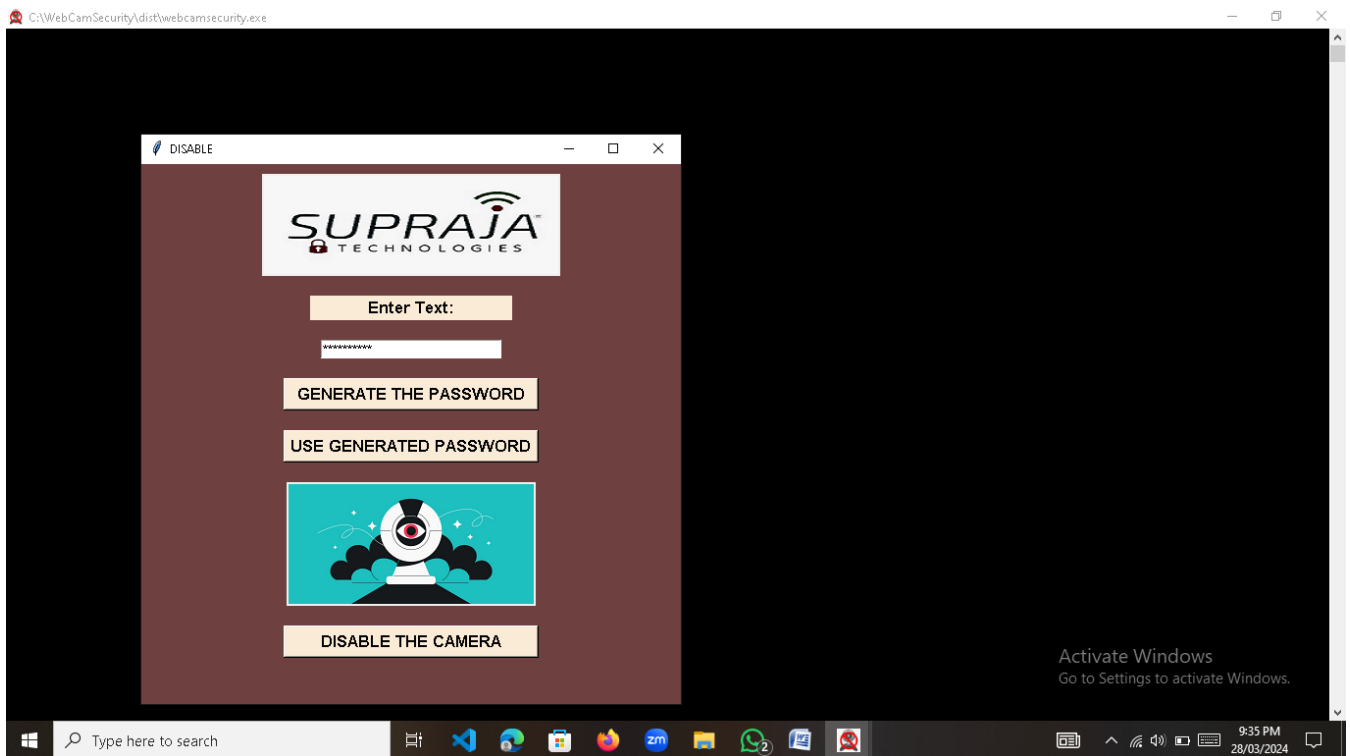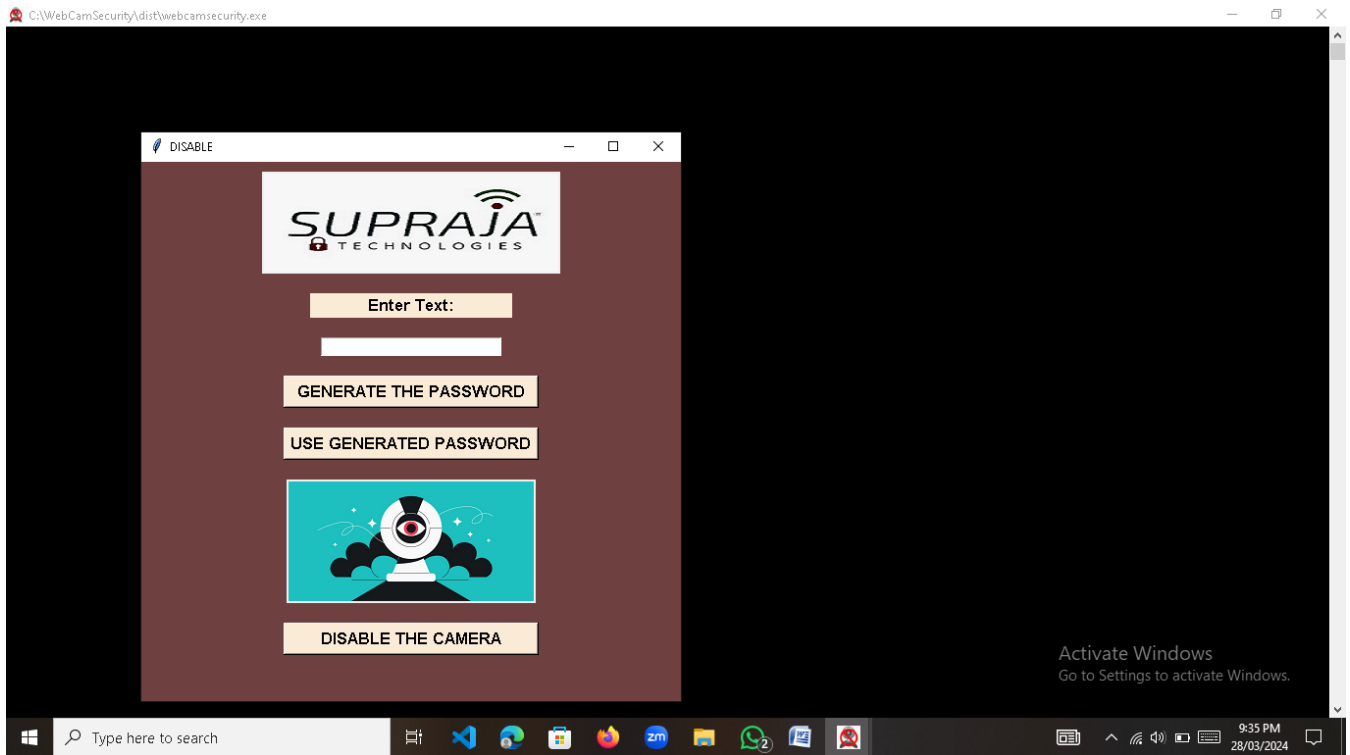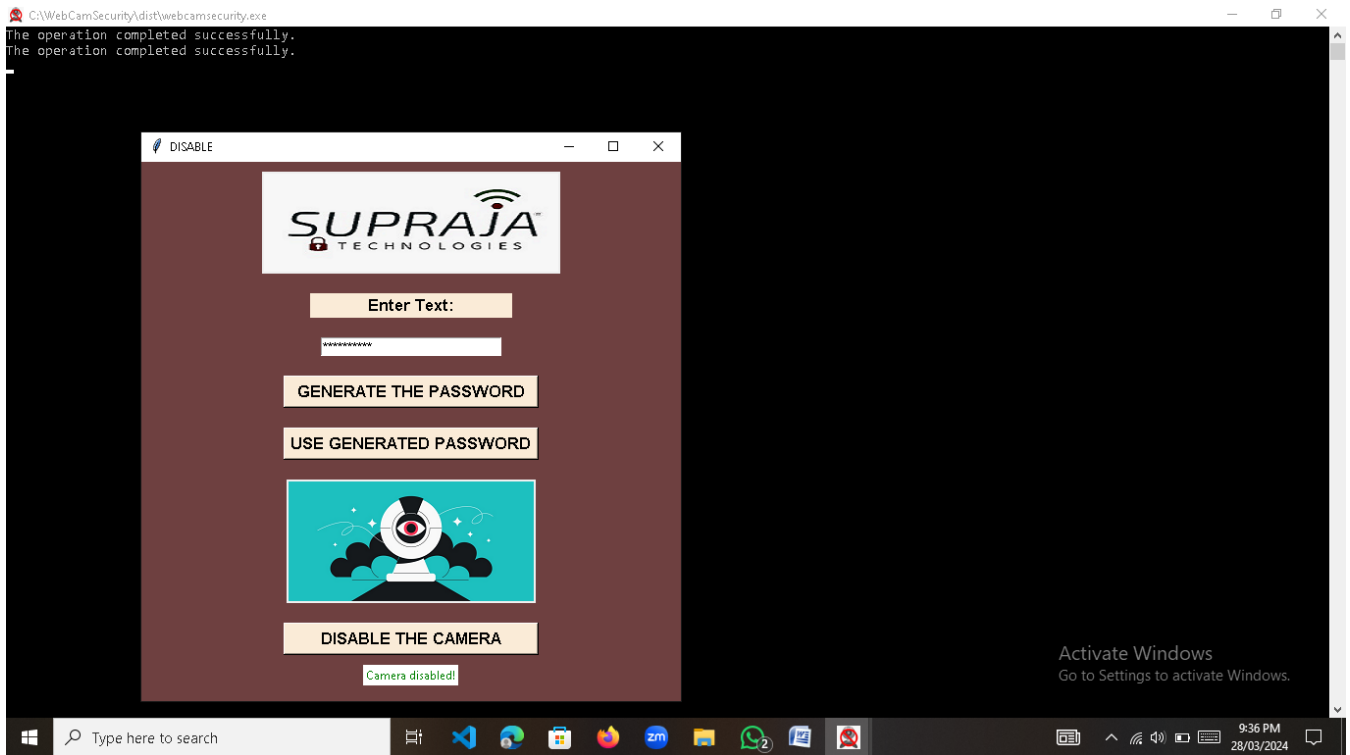
9. Conclusion:

To be away from the spyware we should be careful by having awareness about the cyber crimes which are going around the world and be aware what kind of links we are opening. Spyware mostly spread through the phishing links which are spread by unknow persons. So be aware data is crucial in current old.