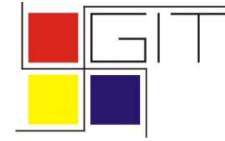




**GUJARAT TECHNOLOGICAL  
UNIVERSITY**  
Chandkheda, Ahmedabad



**Affiliated**

**GANDHINAGAR INSTITUTE OF TECHNOLOGY**

**A Report on**

**COMPUTER COMPONENTS SECURITY  
MANAGEMENT**

**Under the subject of  
Design Engineering – 1 A  
B.E. II, Semester-III  
(Computer Engineering Branch)**

**Submitted By**

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**Academic Year  
2019-2020**

## **Abstract**

Computer Components Security Management is basically designed for the security and protection of the different components of computers. As we see that most of the work is done through computers. So safety of it's different parts is required at the computer labs in schools, colleges, companies and many other places.

Generally, at these places computers are in more numbers so proper security is not there. Therefore, some people harm the computer and its parts, and some rob some parts. Due to this the owner comes in loss. But with our security management all components are protected with a software which connects all computers to one main computer of administrator/manager. So if some of the parts is removed or damaged such that it doesn't work then through our software the administrator will be notified through a message in his computer that which part has been removed and from which computer. So if anyone robs any parts or damages any part then the administrator will be known about it.

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# **Chapter 1**

## **Introduction**

### **1.1 About Domain**

Our project is Computer Components Security Management. It is based on the security of the different parts of the computer at labs where computers are used by many peoples for different purposes. Nowadays in the digital age where at every place computer are being used so their safety is also required. We have observed at many computer labs and cyber cafes and other places where components of computer are not functioning or not available because someone steal it. So our domain helps for the security of the components of the computer where the administrator/owner gets notified if some components have been removed or damaged from the computer from his lab. This software is helpful for administrator, manager, faculty, lab assistant, supervisor at places like schools, colleges, cyber cafes, Computer labs and other places also.

### **1.2 Design Thinking and its Importance**

What we understand about design thinking is that we want to take each project find its problems and design solutions which are very much useful for future. Design thinking is also an approach that can be used to consider issues, with a means to help resolve these issues, more broadly than within professional design practice and has been applied in business as well as social issues.

It's wonderful that design thinking is now applied to so many different problems designing better experiences for hospital patients, designing and implementing better client experiences at social-service agencies, starting new companies, teaching leadership, inventing new radio shows, changing organizational structures, and developing new products and services for people at the bottom of economic pyramid. Due to design engineering we can able to increase our thinking ability. From this we can learn how to manage or work together in team. This also increases our planning ability.

## Chapter 2

### AEIOU Summary

#### 2.1 Activities

- Rough Use
- Less Security
- Improper functioning
- Maintenance
- Creating files/Documents
- Web surfing

AEIOU framework: Group id: Date: Sheet No:

**Activities** Project Name :


General impressions / Observations	Sketch/photo- Summary of activities
<p>Rough Use</p> <p>Less Security</p> <p>Improper Functioning</p> <p>Broken Parts</p>	
<p>Elements, features and special notes</p> <p>Security</p> <p>Reliability</p> <p>Softwares</p> <p>Recovery</p>	

Fig 2.1 Activities

## 2.2 Environment

- Silent
- Busy
- Concentrating
- Doing work

AEIOU framework:

Group id: \_\_\_\_\_ Date: \_\_\_\_\_ Sheet No: \_\_\_\_\_

# Environment

Project Name : \_\_\_\_\_



General impressions / Observations (Style, materials & atmosphere )	Floor plan
<p>Doing Work</p> <p>Silent</p> <p>Concentrating</p> <p>Busy Atmosphere</p>	
Elements, features and special notes	Scene
<p>Proper Maintenance</p> <p>Security</p>	

Fig 2.2 Environment

## 2.3 Interaction

- Employee to manager
- Examinee to supervisor
- Students to faculty
- Common user to Administrator
- Person to computers

U framework: Group id: Date: Sheet No:

# Interactions

Project Name :

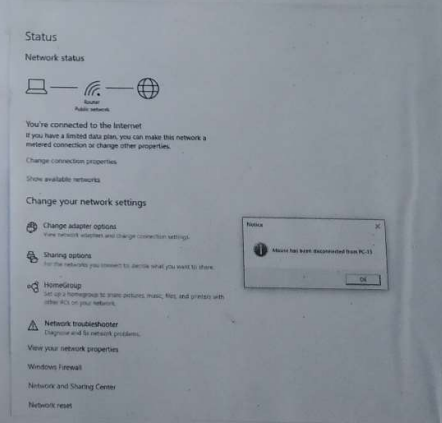
<p><b>General impressions / Observations</b> (Who is interacting with whom, what? )</p> <p>Employee to Managers</p> <p>Examinee to Supervisor</p> <p>Students to Faculty</p> <p>Common User to Administrator</p>	<p><b>Scene of interaction</b> (How it is being done)</p> 
<p><b>Elements, features and special notes</b></p> <p>Person to Computer</p> <p>Workers/Employees to Computers</p>	

Fig 2.3 Interactions

## 2.4 Objects

- Mouse
- Keyboard
- Processor
- Router
- RAM
- Printer

Network: \_\_\_\_\_ Group id: \_\_\_\_\_ Date: \_\_\_\_\_ Sheet No: \_\_\_\_\_

Project Name : \_\_\_\_\_

### Objects


General impressions / Observations (What components are involved?)	Inventory of key objects	
<div>Router</div> <div>Softwares</div>		
<div>Ram/Memory</div> <div>CPU</div>		
<div>Mouse</div> <div>Keyboard</div>		
<th>Elements, features and special notes (How objects are relating to the activities?)</th> <td></td>	Elements, features and special notes (How objects are relating to the activities?)	
<div>Typing</div> <div>Network</div>		
<div>Registering</div> <div>Transferring Data</div>		

Fig 2.4 Objects



## 2.5 Users

- Manager
- Faculty
- Supervisor
- Administrator
- Lab Assistant
- Head of department

U framework:      Group id:      Date:      Sheet No:

**Users**      Project Name :



<p>General impressions / Observations (Who is present roles &amp; responsibilities?)</p> <div> <div>Manager</div> <div>Faculty</div> <div>Supervisor</div> <div>Administrator</div> </div>	<p>Scene of users in context</p> <div>   </div>
<p>Elements, features and special notes (List of identified people involved)</p> <div> <div>Common People</div> <div>Employees</div> <div>Examinee</div> <div>Students</div> </div>	

Fig 2.5 Users

## Chapter 3

### Secondary Research and Diachronic and Synchronic Analysis towards Problem Definition

The following are solutions proposed by other people:

1. Proper Cameras should be fixed at different positions such that all the corners and other area of the computer lab are covered.
2. Registration should be done before entering the labs so that it can be known which person was using which computer.
3. Checking should be done at exit so if someone steals anything it can be known.
4. Bags or any other things similar to it should be avoided.
5. The user should have his ID card and show it to the administrator before using the computer.

At first the computer was made by Charles babbage in 19<sup>th</sup> century. The size of that computer was very large related to computer in modern days. Then more computer was made with reduced size then before and it was used for calculations and computations. So only few people use computer. But after then new computer were made with new function and size was also reduced so number of people were increased using it.

In old days cyber cafes were made but at first only 100 were there and the security at such places was also not proper. It was used for information exchange and have been used as places to read the paper, send postcard home, play traditional or electronic games and find out local information. In the schools, students were not provided computer labs for study of computer. But in modern days every school are having computer labs where it is compulsory for students to do practical in the labs. And the use of computer is increased in cyber cafes, companies and many more other similar places.

## Chapter 4

### MIND MAP

#### 4.1 Mind Mapping

Mind mapping refers to a technique that designers and engineers use to express and generate ideas. All that mind mapping really is, however, is a way to get all of the ideas in your head down onto paper. Mind mapping helps you to release all of the ideas in your head and gives you the opportunity to see those ideas visually.

In below snapshot of mind map which is divided in 6 groups: Places means in which place it can be used, User are person who will use computers, Objects are the components of the computer, advantages of the software and the people for whom it is made(stakeholders).

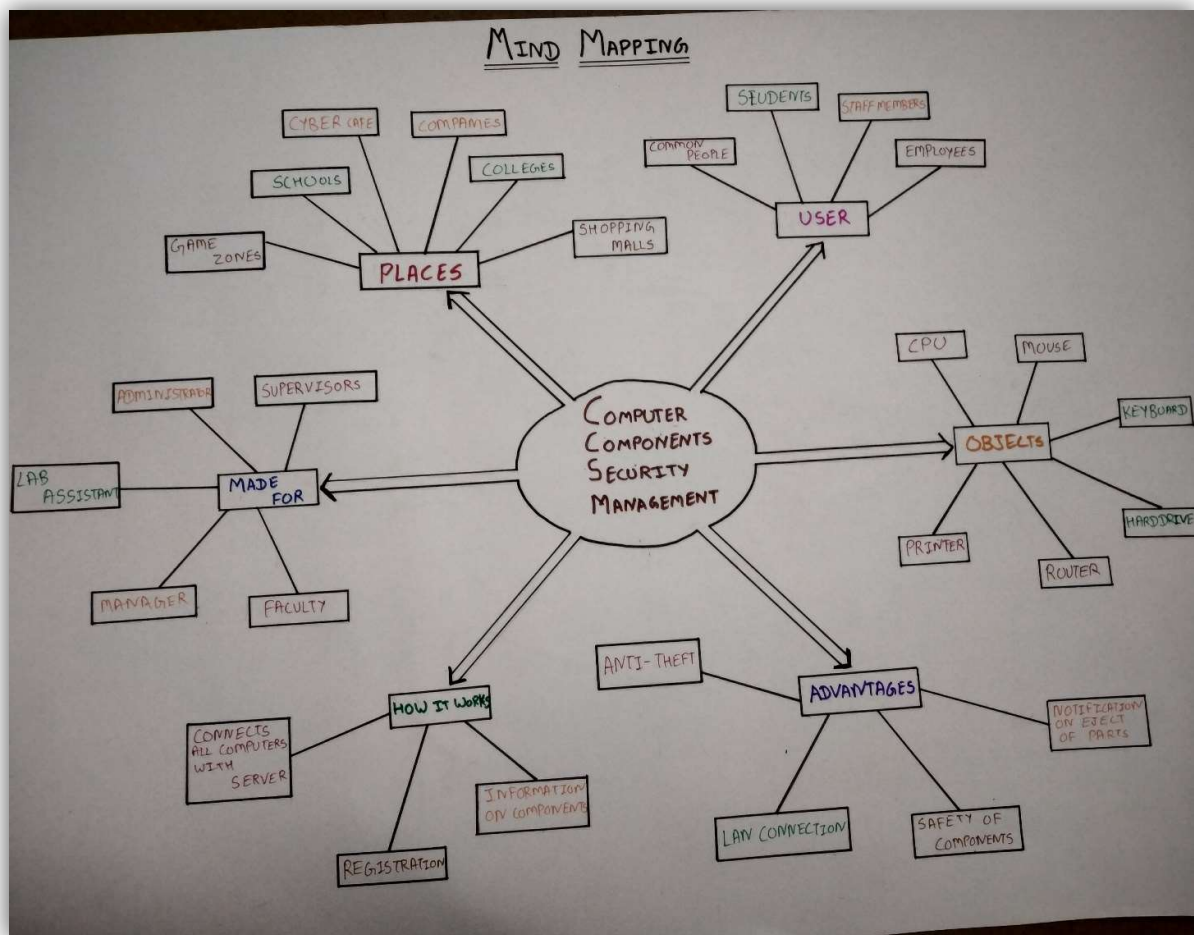


Fig 4 Mind Mapping

## **Chapter 5**

### **Empathy Canvas**

#### **5.1 Users**

- Students
- Employees
- Common People
- Staff members
- Examinee
- Scientists

#### **5.2 Stakeholders**

- Administrator
- Manager
- Supervisor
- Faculty
- Lab Assistant
- Head of Department

#### **5.3 Activities**

- Installing Software
- Web Surfing
- Registering Forms
- Studying
- Transferring Data
- Checking Mails
- Writing
- Online Examination
- Watching tutorials
- Printing
- Discussion
- Coding
- Gaming
- Computer Maintenance
- Creating Files/Documents.

Design For Date	Design By Version
<b>USER</b> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Students</p> <p>Scientists</p> <p>Common People</p> </div> <div style="width: 45%;"> <p>Employees</p> <p>Staff Members</p> <p>Examinee</p> </div> </div>	<b>STAKEHOLDERS</b> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 30%;"> <p>Administrator</p> <p>Faculty</p> </div> <div style="width: 30%;"> <p>Managers</p> <p>Lab Assistant</p> </div> <div style="width: 30%;"> <p>Supervisor</p> <p>Head of Department</p> </div> </div>
<b>ACTIVITIES</b> <div style="display: grid; grid-template-columns: repeat(4, 1fr); gap: 10px; margin-top: 10px;"> <div>Installing Software</div> <div>Registering Forms</div> <div>Studying</div> <div>Web Surfing</div> <div>Transferring Data</div> <div>Checking Mails</div> <div>Creating Files</div> <div>Printing</div> <div>Watching Tutorials</div> <div>Online Examination</div> <div>Waiting</div> <div>Discussion</div> <div>Coding</div> <div>Computer Maintenance</div> <div>Gaming</div> </div>	
<b>STORY BOARDING</b> <p><b>HAPPY</b> Once a man entered a Cyber Cafe. He entered cyber cafe with a plan of stealing hard drive from a particular PC. So he found a corner computer where the camera can't focus on him. He sat on that PC and do some work normally. But after some time he found someone was watching so he opened CPU and steal the hard drive. But as soon as he removed it, the administrator gets notified that on which PC hard drives is missing and he caught that person.</p> <p><b>HAPPY</b> There was a school where computer was a subject in which practical were necessary to attend. So the students went to the computer lab and start doing the practical which their teacher gave them. After some time due to some work teacher went out of lab. So some naughty students start misbehaving and handle computer in improper way and broke a mouse. Due to fear they tried to hide the mouse but they didn't know that the lab assistant also already got informed about this broken mouse. So they got Fined.</p> <p><b>SAD</b> An IT company built few hi tech computers whose parts were very costly. This computers was going to next year and were made for testing purpose. But due to some virus issue system of security manager was shut down. During this period a new employee of the company steal parts from hi tech computers &amp; sell to the other IT company. Due to software system shut down, it didn't work and company was at loss.</p> <p><b>SAD</b> In an online examination centre, exam was conducted. A student came with a pendrive which was infected with virus and can shut down the computers which were connected. As the software was not made for detecting the external hard drives. His plan was succeed and all the computers in the examination centre went off.</p>	

Fig 5 Empathy Canvas

## Chapter 6

### IDEATION CANVAS

#### 6.1 People

The following are the list of peoples involved: -

- Students
- Staff Members
- Employees
- Workers
- Teachers
- Manager
- Engineers
- Examinee
- Faculty
- Operators
- Scientists
- Common users

#### 6.2 Activities

The following are the list of activities that are being done in the places: -

- Web Surfing
- Creating Documents
- Software Installation
- Studying
- Registration
- Filling online forms
- Proper Maintenance
- Online Examination
- Gaming

#### 6.3 Situation/Context/Location

The following are list of Situation/Context/Location where the domain can be used: -

- Cyber Cafe
- Colleges
- Schools
- Labs
- Offices
- Game zones
- Coaching centre
- Universities
- Companies



## 6.4 Props/Possible Solutions

The following is the list of Props/Possible Solutions: -

- Installed Anti-Virus
- Proper Security
- Maintenance
- Non-Defective Parts
- Latest Operating system
- Regular checking of components
- Proper Cameras
- Avoid Bags
- Entry Registration
- Checking on exit

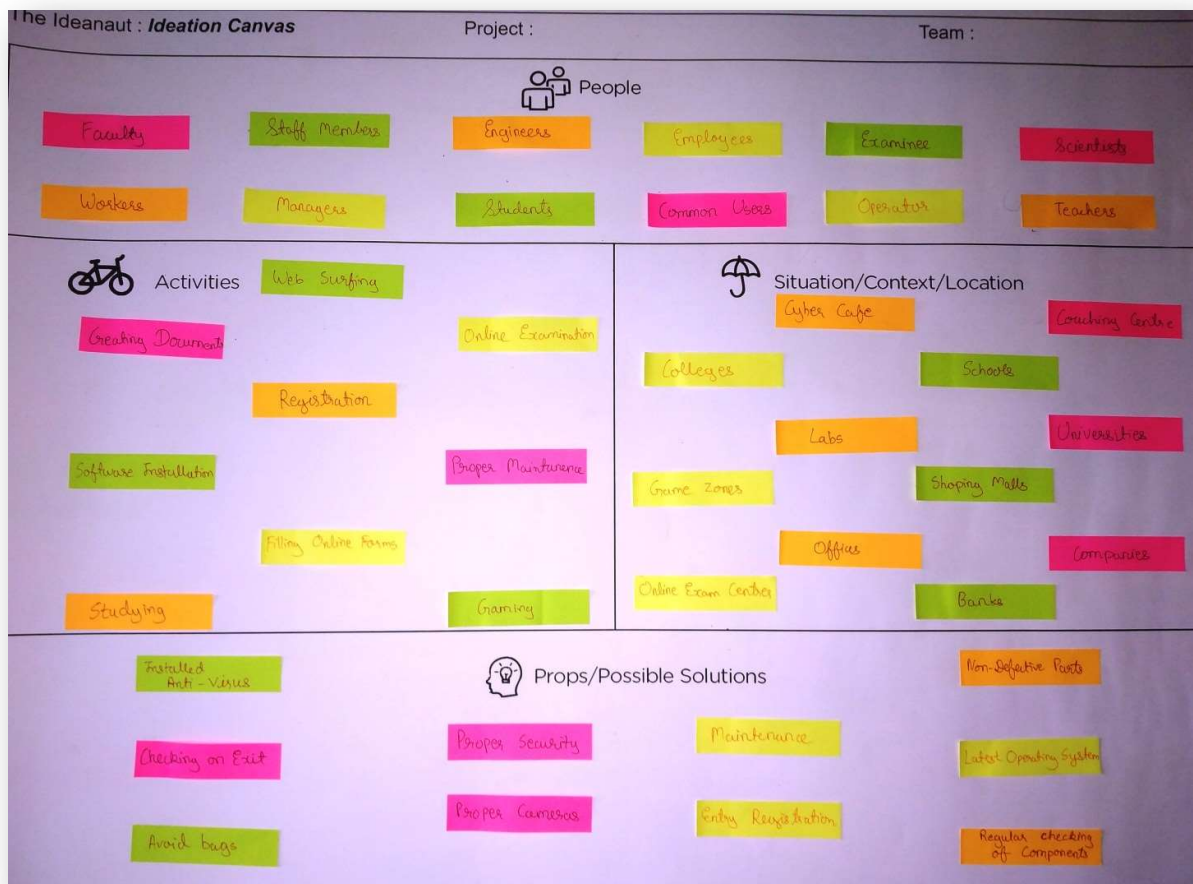


Fig 6 Ideation canvas

## **Chapter 7**

### **Product Development**

#### **7.1 Product Functions**

The product functions are: -

- Protection against robbery
- Safety of components
- Easy to manage parts

#### **7.2 Product Experience**

The product experience is: -

- Satisfaction
- Entry and exit registration
- Security cameras

#### **7.3 Product Features**

The features of the product are: -

- Notification on eject
- Data about components
- Warning message
- Wireless network

#### **7.4 Purpose**

The purpose was to: -

- Damage prevention
- Informed about parts
- Protection of components
- Safety



## **7.5 People**

The people who will use this product/service are: -

- Administrator
- Faculty
- Manage
- Lab Assistant
- Supervisor
- Foreman

## **7.6 Components**

The following is the list of Components: -

- Mouse
- CPU/Processor
- Software
- Codes
- Router
- RAM/Memory
- CD/DVD Rom
- Printer

## **7.7 Customer Revalidation**

- More than one server
- Include Software
- Implementation in other machinery
- Virus Detection

## **7.8 Reject/Redesign/Retain**

- Retain

**Product Development Canvas** Team/Date/Version : GIT\_CE\_DESIGN / /

<p><b>Purpose</b></p> <p>What is the purpose of this concept you're developing? Does it solve a problem, or it enhances a certain experience?</p> <p>Is it serving a need or it is trying to create a new need or tap an untapped need?</p> <p>Damage Prevention</p> <p>Informed about Parts</p> <p>Protection of Components</p> <p>Safety</p>	<p><b>Product Experience</b></p> <p>Define what your customer should feel like when he uses your product/service? What emotions, feelings would define his experience? Feeling of comfort, convenience, or feeling of buying more with less (cost conscious) or feeling of greater security, safety etc.</p> <p>Satisfaction</p> <p>Entry &amp; Exit Registration</p> <p>Security Cameras</p> <p><b>Product Functions</b></p> <p>Functions are a products answer to user problems/need. They do something that user wants. They are often verbs in nature. Every function is powered by many features. Multitasking is a function. Browser tabs is a feature that powers the multitasking feature. A function can have one or more features powering it. Functions are very generic in nature, features are often more specific. Functions can be similar to product experience. Safety (product function) provides a feeling of safety (product experience).</p> <p>Protection against Robbery</p> <p>Safety of Components</p> <p>Easy to Manage Parts</p> <p><b>Product Features</b></p> <p>Product feature are specific. One or more features will power a function. Antilock Brakes, Airbags are features that power the safety function. Browser tabs, Apple's home button to multitask between apps are features powering the multitasking function. Each feature will have many components/sub components powering it. Sometimes a very popular component becomes a feature in itself. Like car stereo is a major components and a feature at the same time powering the in car entertainment function powering entertainment as a product experience.</p> <p>Notification on Exit</p> <p>Warning Message</p> <p>Drive about Components</p> <p>Wireless Network</p>	<p><b>Customer Revalidation</b></p> <p>Once you're finished with your feature set, test with the customer / user if the features, functions are useful. Speak to the customer / user.</p> <p>More than One Sensor</p> <p>Include Software</p> <p>Implementation in Other Machinery</p> <p>Usage Detection</p>
<p><b>People</b></p> <p>Who is the key customer segment who will use this product /service or the end product of the concept you're pursuing?</p> <p>Write here about them, describe them a little.</p> <p>Administrator</p> <p>Faulty</p> <p>Manager</p> <p>Lab Assistant</p> <p>Supervisor</p> <p>Foreman</p>	<p><b>Components</b></p> <p>Components build up the features. For a airbag it will comprise a list of component like bags, triggers etc. that go into making it. For a tabbed browser it will comprise of various chunks of code that will make the tabs work. In cases where the feature is a major component, you could list here the auxiliary components that are required to make the major component work. You can also list new adjustments and innovations you're planning here at the component level.</p> <p>Mouse</p> <p>Software</p> <p>CPU/Processor</p> <p>Codes</p> <p>Router</p> <p>Graphics Card</p> <p>RAM/Memory</p> <p>CD/DVD ROM</p> <p>Hard drive</p>	<p><b>Reject, Redesign, Retain</b></p> <p>Post customer validation, reject, those functions or features that the customers didn't find useful. Redesign those that were partially useful and retain those that met the bar. Iterate with this until all functions/features are accepted.</p> <p>Retain</p>

Fig 7 Product Development Canvas

## Chapter 8

### Prototype

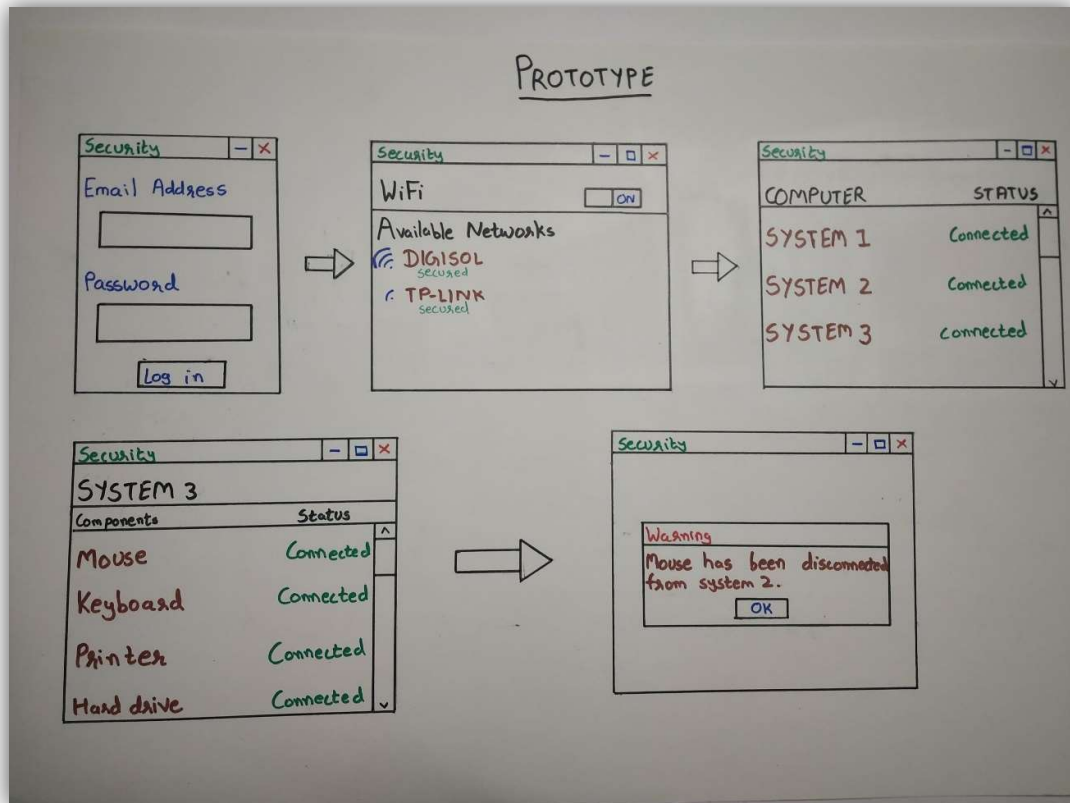


Fig 8 Prototype

- Here is the basic interface of Computer Components Security Management. First user has to login in the software.
- After the login process Wi-Fi networks will be shown and he/she has to connect his Wi-Fi with which every computer is connected.
- After choosing appropriate network user will be shown the number of computer connected.
- Selecting any computer which will show the status of the components whether connected or disconnected. And if someone will remove or damaged any part such that the part no longer be detected in that computer then the user will get notified through the software.

## **Conclusion**

Initially we got this idea when we see computers parts missing at cyber cafes and labs and sometimes also watched people roughly using them. We observe and research about it and we learned that we need to do something for prevention of this problem. So by this software problem related to it can be minimised and parts will be protected.

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