



GUJARAT TECHNICAL UNIVERSITY



**SARVAJANIK COLLEGE OF ENGINEERING &
TECHNOLOGY**

(Faculty of Computer Engineering, Computer Department)

A
Project Report
On

OBSCURE LOCK

Under the course of
B. E. III, Semester – VII
(Computer Engineering)

Submitted by:

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INDEX

Sr. No.	Topic Name	Page No.
1	Introduction	4
2	Aim and objective	4
3	Brief literature review Description Features Patent search Assumptions and Dependencies Constraints Multiple lock mechanism Working Efficient users	5
4	Materials and Methods Operating environment Software required Hardware required	7
5	Prototype Model UML Use-case model Activity diagram Class diagram Sequence diagram	8
6	Ghant chart	10
7	Methodology of design driven innovation AEIOU Summary sheet Empathy canvas Ideation canvas PDC	11
8	Outcomes	14
9	Conclusion	14
10	References	15

INTRODUCTION

- In today's world security is one of biggest aspect people look forward to whether it's their family members protection or their precious valuables protection.
- After having so many elementary solutions to the security problems,(like Intrusion Alarm, Hold-n-panic Alarm, CCTV etc.) there are lot of robbery reports been filed daily.
- To improve the situations we have come up with new idea to protect your valuables.

AIMS AND OBJECTIVE

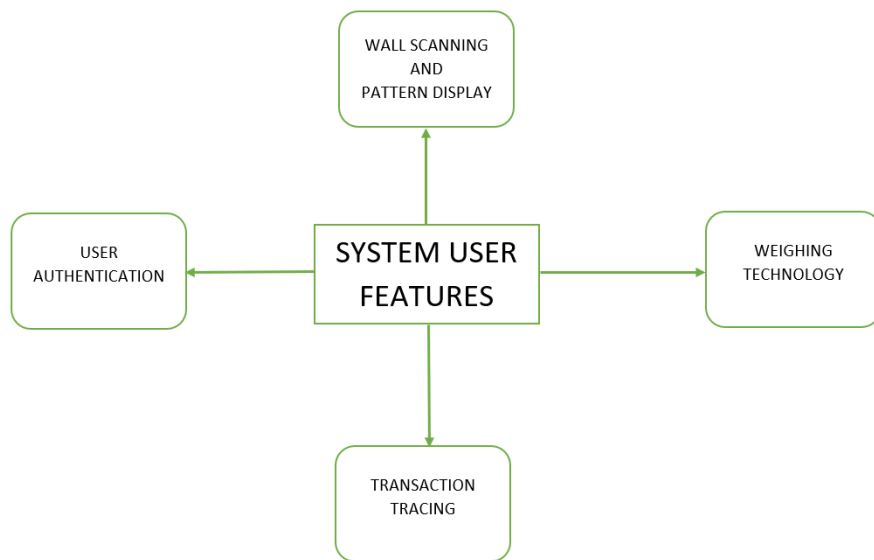
- We aim to create a system which is more safer than the existing systems. That leds the emporium to become a better and safer place that ensures complete safety of their valuables.
- We have come up with solution "OBSCURE LOCK"

BRIEF LITERATURE REVIEW

DESCRIPTION

- Today, security is a major area of concern for people with a lot of precious elements, gems, jewels etc. Whether your company is a small local shop or a major international business, you must remain cognizant of the potential security issues facing your organization. To overcome these issues many security methods are designed and developed.
- For a better approach to the issue, the system "OBSCURE LOCK " is designed and developed for the betterment of the jewellery showroom. This system will provide with virtual lock mechanism that can be used in any locker/safe/block of the showroom which will be operated using a Mobile Application with the concepts of augmented reality. The mobile application will use camera and will augment pattern dots or numeral while facing the objects. You have to draw/write the correct pattern/numeral to unlock the Locker/safe/block which is under the surveillance of the " OBSCURE LOCK App ".

- The block will open instinctively once the password/pattern is correctly entered. This functionality is performed using an IOT sensor and analyze weight inside the block/safe.
- Another sort of functionality that is provided by the system is a chain of blocks between the user. The authentication of each user is accomplished using blockchain notion.
- The top level diagram depicts the complete user features that are on their ways for users



FEATURES

- The fundamental attribute of our system which builds the system:
 - **Obscure:** The system is invisible to the surroundings. There are some particular users been defined by the owners of the emporium to whom this is visible through there gadgets .
 - **User Authentication:** Every individual who is a part of the system is provided with a user substantiation password which is noticeable only when user keep their mobile phones facing the walls.
 - **Wall Scanning:** When a particular individual whose is a responsible handler of the system keeps there mobile facing the walls a scanning takes place to examine the wall is under the surveillance of our system.

- Weighing Technology: Once a user tries to keep something or take out anything from the safe weight of the safe is calculated and recorded each time.

PATENT SEARCH

- Relevant patents in regards of our project:
 - PATENT 1 : Augmented reality advanced security authentication methodologies
 - PATENT 2 : Intelligent door lock system
 - PATENT 3 : Wireless door lock mechanism
 - PATENT 4 : Embedded internet of things hub for integration with an appliance and association system and methods

ASSUMPTIONS AND DEPENDENCIES

- The assumption made to execute the core idea are:
 - The staff members will have a smart phone
 - The showroom/area where the locker is kept is having a Wi-Fi connection.

CONSTRAINTS

- The constraints that are required to efficiently run the system in any showrooms
 - Wi- Fi Routers
 - Data Analyst

MULTIPLE LOCKING MECHANISM

- Each safe has a separate lock mechanism system where each lock system is given a unique locker id and the system will analyse the locker id accordingly.
- The locker id respective to the locker will be consulted in the database and the pin in regards with that locker will be used to open that locker.
- Each safe is absolutely independent of the other accept the fact that they are assigned a locker id.

WORKING

- Face your mobile to the marker on the locker, the mobile camera will project to the marker and will check which locker id is corresponding to that locker and marker in the database.
- If the pin corresponding to the locker is correct then the locker will open inside the locker.
- Once the lock is open then the servo motor connected to the lock will rotate to 90 degree which will open the door of the locker.
- If you pick out or keep something from/in the locker the weight of the locker will be calculated and store in the database include the persons details who has opened the door.
- Once everything is done and you are about to close the locker with your phone the servo motor will again rotate its direction which will led to close the door of the locker.
- After door is completely closed the lock will again come out and the the door will protect with lock again.

EFICIENT USERS

- Data Analyst: These people are the one who operates the database of the system within the emporium.
- Showroom Executives: They handle the safe directly by their mobile phones which helps them open and close the safe.

MATERIALS AND METHODS

OPERATING ENVIRONMENT

Particulars	Client System	Server System
Operating System	Android IOS	Platform independent(Web based)

SOFTWARES REQUIRED

- Front end software's

Languages	Description
Vuforia	For Augmented Reality
Ethereum IDE	Blockchain
Flutter	IOS and Android Apps
Deep Learning	Wall Scanning

- Back end software's

Software Parts	Description
Operating System	Windows/Linux
Database	Firebase

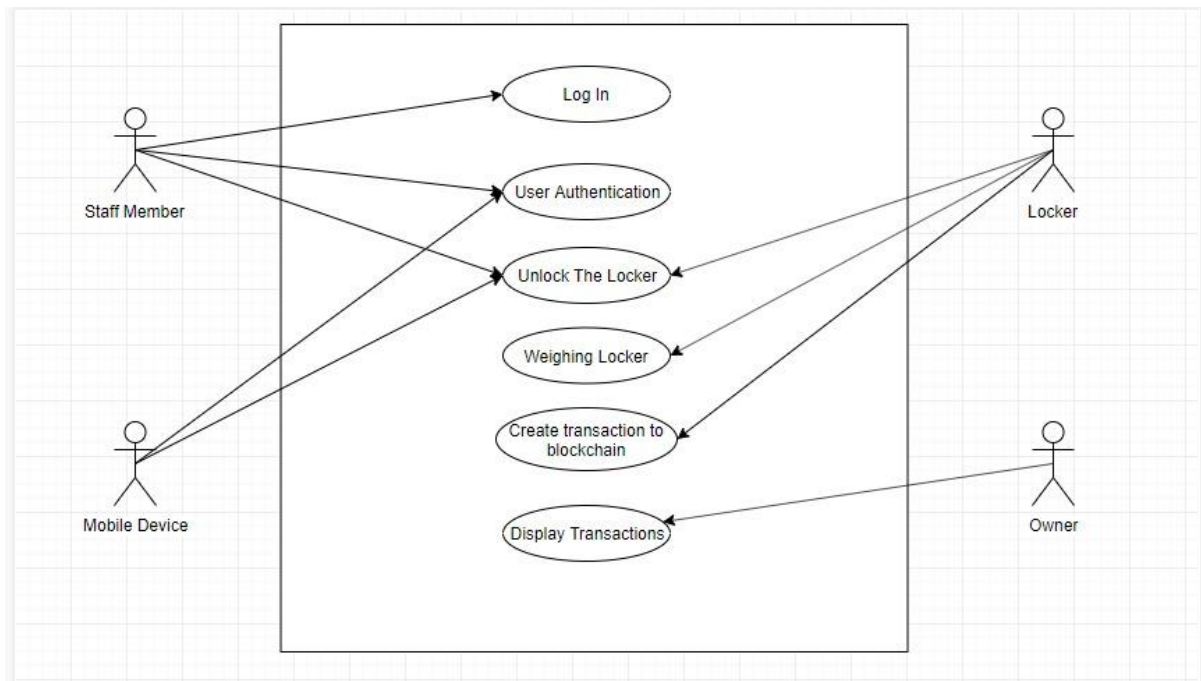
HARDWARE REQUIRED

- Servo Motor
- Weight sensor(HX711)
- Load cell(1 kg)
- LOCK
 - Electric solenoid lock
 - Fire Walt 1mpr relay
- Node MCU(ESP 8266)
- Jumper wires

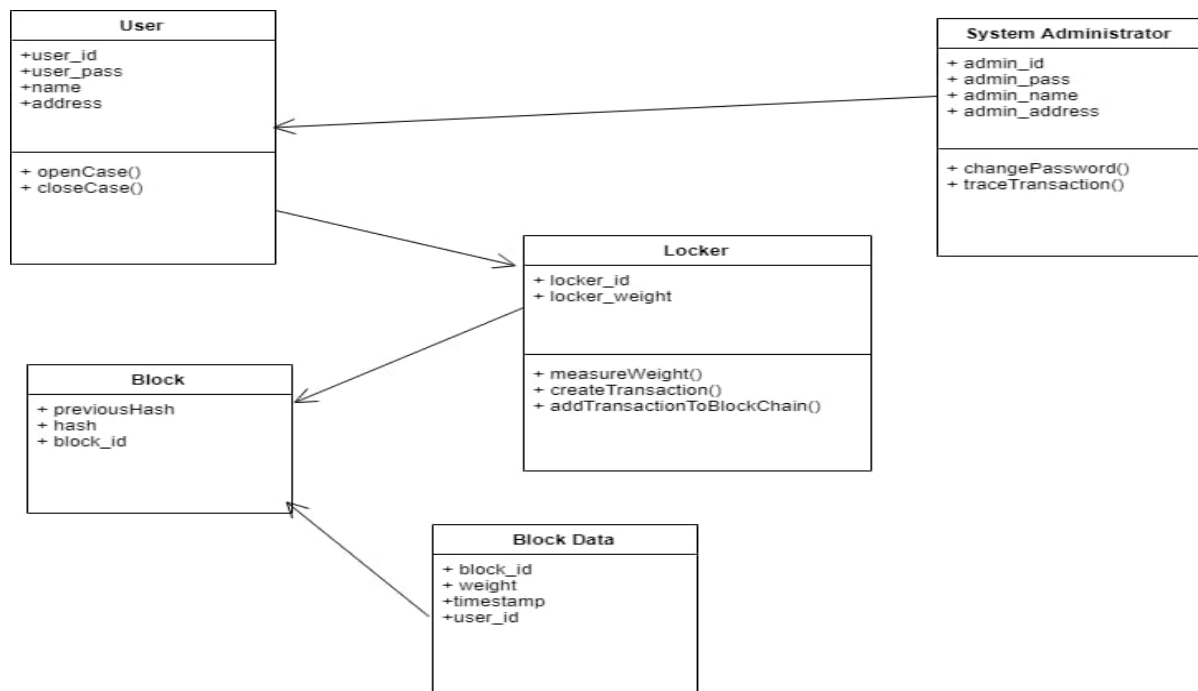
UNIFIED MODELLING LANGUAGE

The **Unified Modeling Language (UML)** is a general-purpose, developmental, modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

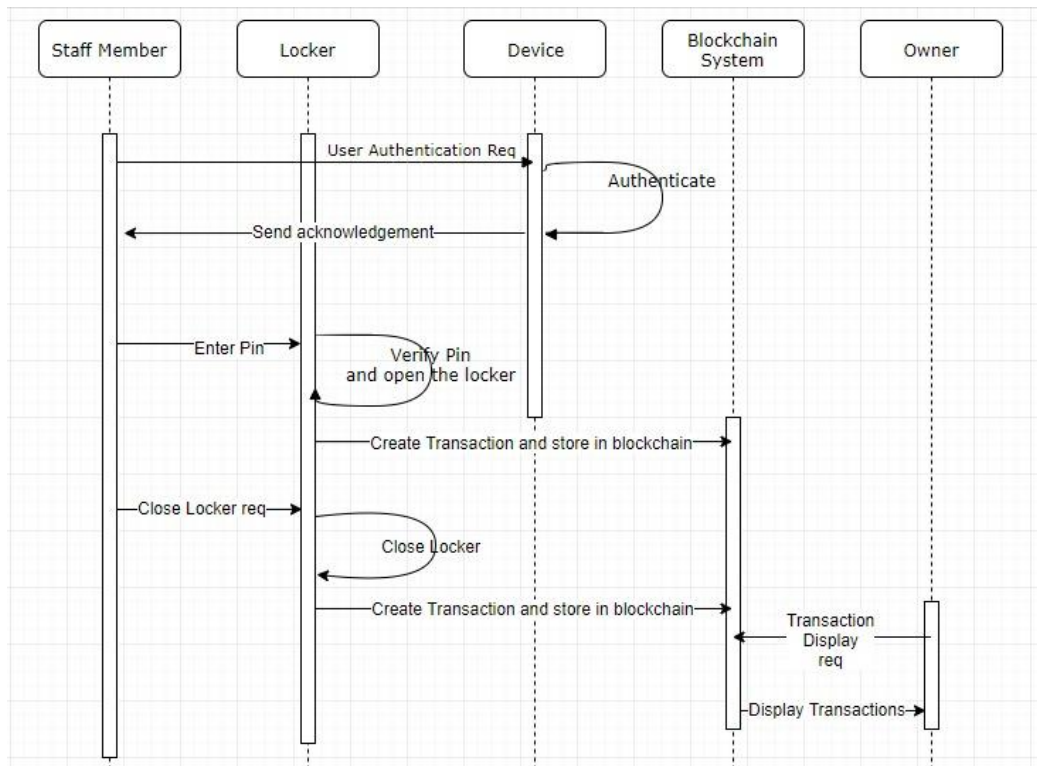
USE-CASE



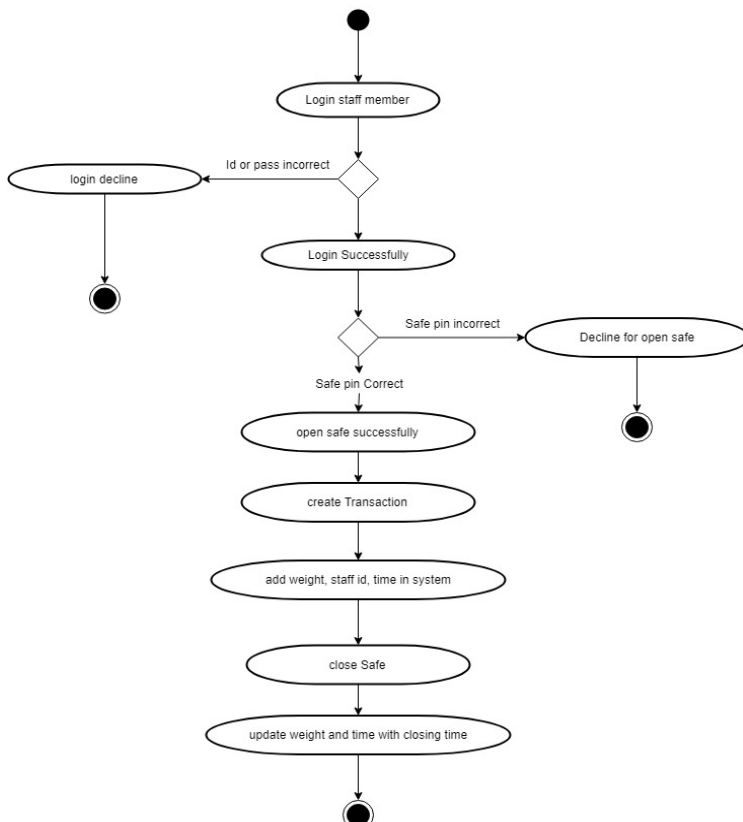
CLASS DIAGRAM



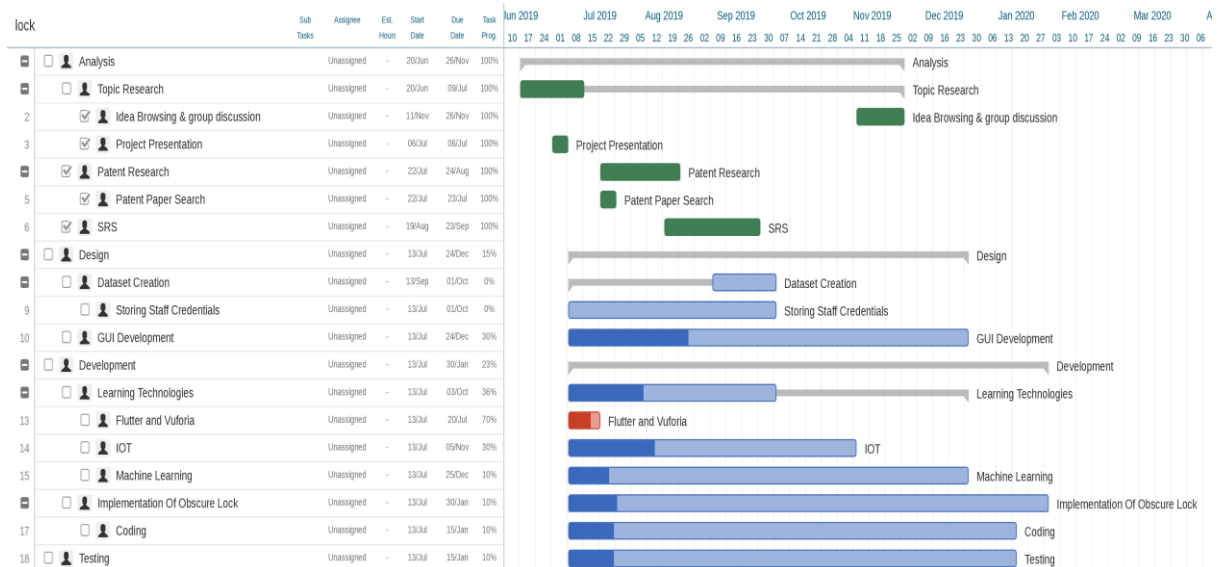
SEQUENCE DIAGRAM



ACTIVITY DIAGRAM



GANTT CHART



METHODOLOGY OF DESIGN DRIVEN INNOVATION

1. AEIOU Summary Sheet

AEIOU Summary		Group Id: 72544 Date: 30/9/2019		Project On: OBSCURE LOCK	
ACTIVITY		ENVIRONMENT			
					
OPEN AND CLOSE LOCKER BUYING GOLD STORING GOLD IN SAFE		COOL NOISY CROWDY			
INRRERACTION		OBJECT		USER	
					
STAFF TO STAFF CUSTOMER TO STAFF STAFF TO LOCKER		LOCKER ORNAMENTS CCTV		CUSTOMER STAFF MEMBER SECURTIY GAURD	

2. EMPATHY CANVAS

Design For OBSCURE LOCK

Design By

Date 30/09/2019

Version

USER

- STAFF
- DATA ANALYST

STAKEHOLDERS

- SHOWROOM OWNER
- MANAGER
- SECURITY GAURD

ACTIVITIES

- OPEN LOCKER
- CLOSE LOCKER
- BUY GOLD
- KEEP/TAKE OUT ORNAMENTS IN SAFE

STORY BOARDING

HAPPY

RAHUL A EXECUTIVE WORKING IN THE KALYAN JEWELLERS SHOWROOM WAS VERY HAPPY REGARDING THE SECURITY OF THE SHOWROOM AS THE GOLD WAS MAINTAIN PROPERLY AND WAS QUIET SECURE AS EVERY DAY THE KEEP ALL THE GOLD IN LOCKER

HAPPY

RONIT WAS A CUSTOMER AT A GOLD STORE LOCATED NEAR HIS HOUSE WAS KEEN IN BUYING JEWELLERY FROM THE STORE AS IT HAS SUFFICIENT FACILITY TO CHECK THE PURITY OF THE GOLD AND BUY ACCORDINGLY

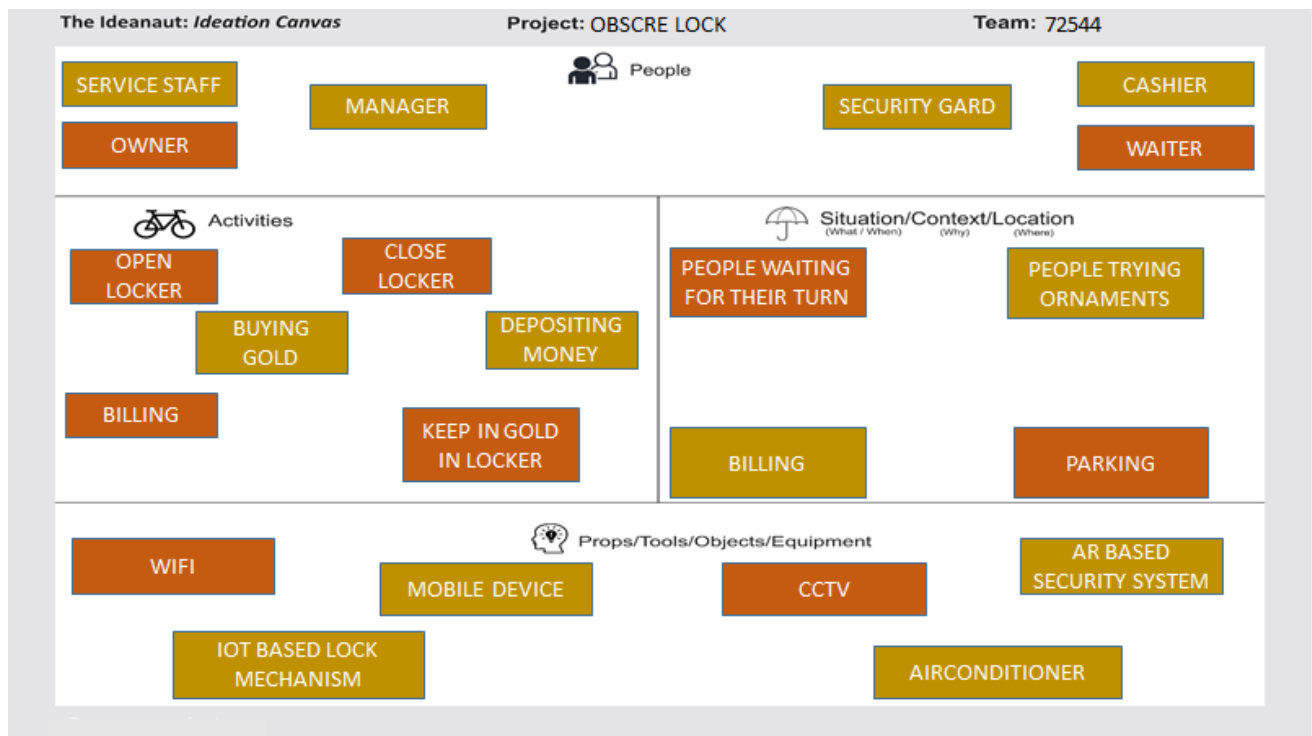
SAD

ROHIT A WORKER AT THE KALAMANDIR JEWELS WAS VERY UNHAPPY WITH THE IDEA OF SHIFTING THE GOLD DAILY IN AND OUT FROM THE LOCKER AS PER SAFETY NORMS OF THE SHOWROOM. IT TAKE A VERY LONG TIME TO SET UP THE STORE DAILY.

SAD

RONIL A CUSTOMER WAS VERY UNHAPPY WITH JEWELLERY STORE OWNER AS HE GOT A LOT OF OTHER ELEMENTS MIXED WITH THE GOLD AND THE PURITY WAS MISSING AND WEIGHT WAS ALSO LESS THEN SHOWN THOUGH BEEN ASSURED FOR THE QUALITY/ AND WEIGHT OF THE ORNAMENTS.

3. IDEATION CANVAS



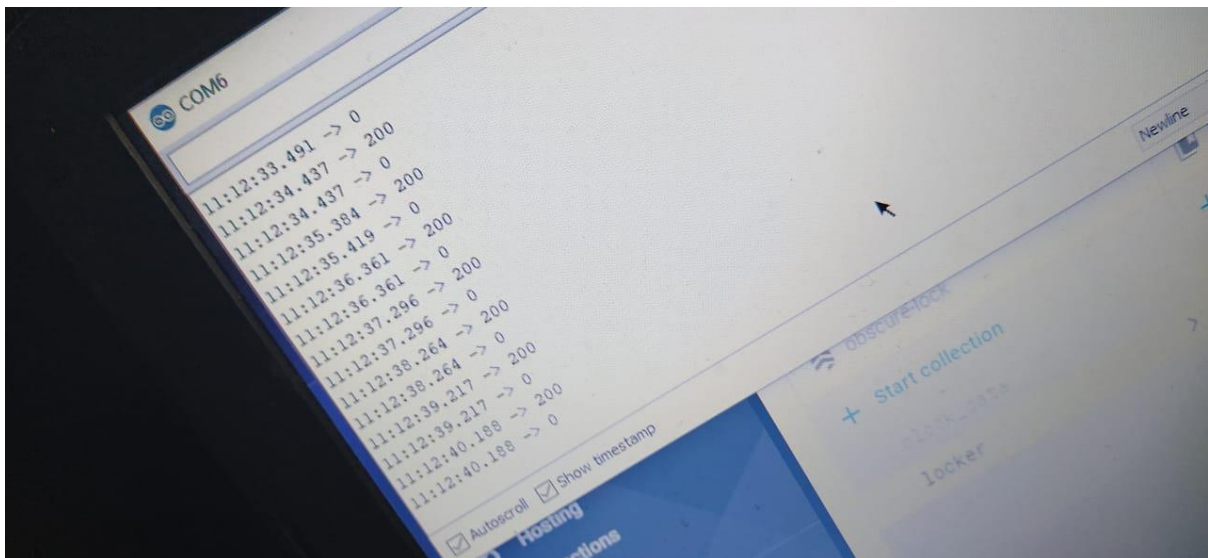
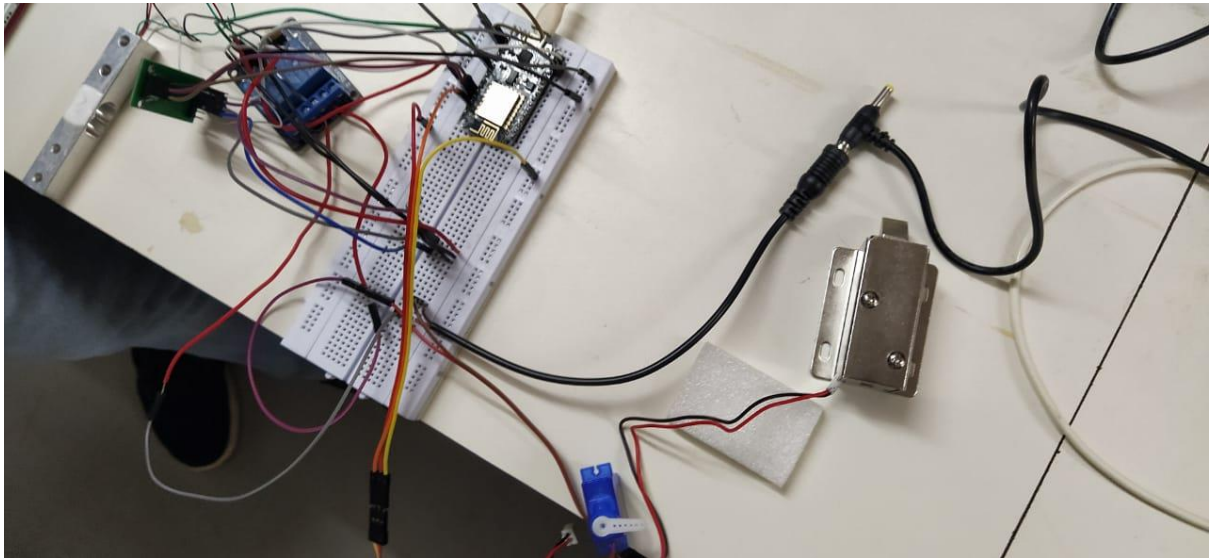
4. PDC CANVAS

Product Development Canvas Team/Date/Version: 27544 /30/09/2019/

<p>Purpose</p> <p>What is the purpose of this concept you're developing? Does it solve a problem, or it enhances a certain experience? Is it solving a need or it is trying to create a new need or tap an unmet need?</p> <ul style="list-style-type: none"> ➤ HIGH SECURITY ➤ INVISIBILITY ➤ TRANSACTION TRACING ➤ WEIGHING TECHNOLOGY 	<p>Product Experience</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>➤ QUICK RESPONSIVE ➤ BETTER PERFORMANCE ➤ PRODUCTIVE</p> <hr/> <p>Product Functions</p> <p>Functions are a products answer to user problems/needs. 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/secure function provides a feeling of safety (security experience).</p> <p>➤ OBCURE ➤ TRANSACTION TRACING</p> <p>➤ WEIGHING TECHNOLOGY</p> <hr/> <p>Product Features</p> <p>Product features 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 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>➤ MANAGE STAFF INFORMATION ➤ DATA CONFIDENTIALITY</p> <p>➤ SECURE TRANSACTION</p> <hr/> <p>Components</p> <p>Components build up the features. For a laptop it will comprise a lot 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>➤ SERVER ➤ SCANNER</p> <p>➤ WIFI ➤ MARKER</p> <p>➤ MOBILE DEVICE</p>	<p>Customer Revalidation</p> <p>Once you're finished with your feature set, test with the customer. Just as the features, functions are useful, useful to the customer/user.</p> <hr/> <p>Reject, Redesign, Retain</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. Retain with the unit all functions/features or accepted.</p>
<p>People</p> <p>Who is the key customer segment who will use this product /service or the end product of the concept you're pursuing? Write here about them, describe them a little.</p> <ul style="list-style-type: none"> ➤ STAFF ➤ MANAGER ➤ OWNER ➤ SECURITY GUARD 		

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OUTCOMES



CONCLUSION

The main objective behind this innovations was to take care of the your valuables and provide your with even safer environment.

In today's world, there is nobody trustworthy so keep your self away form any awful incident we have brought a much safer and healthier environment for your valuables this will help you keep an eye on the staff members of your emporium keeping a track of their activities regarding the safes and the gold they have taken out.

REFERENCES

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- <https://www.hackster.io/projects/tags/internet+of+things>
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