



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	1
Title of Experiment	To identify the Software Project, Create Business Case, Arrive at a Problem Statement
Name of the candidate	MURALI KRISHNA KR
Team Members	SHAIK IRFAN, HIMESH CHANDER
Register Number	RA2011026010086 ,RA2011026010080,RA2011026010081
Date of Experiment	

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To Frame a project team, analyze and identify a Software project. To create a business case and Arrive at a Problem Statement for the FINGERPRINT BASED ATM SYSTEM

Team Members:

S. No	Register No	Name	Role
1	RA2011026010086	MURALI KRISHNA KR	Lead/Rep
2	RA2011026010080	SHAIK IRFAN	Member
3	RA2011026010081	HIMESH CHANDER	Member

Project Title: Fingerprint based ATM system

Project Description

The main purpose of our system is to make an online transaction more secure and user-friendly. Nowadays Biometric technology is increasing rapidly. Biometric is used for personal identification. Here we are using Fingerprint scanning biometric to provide access to ATMs. Data of a fingerprint is stored in a database using the enrolment process through the Bank. If a fingerprint match is found in the database, then a transaction takes place. After verification if the fingerprint does not match transaction will be cancelled. Using a fingerprint-based ATM system users can make a secure transaction. For the traditional ATM terminal, customer recognition systems only rely on bank cards, passwords, and such identity verification methods which measures are not perfect, and functions are too single. We propose to add more security to the current ATM systems

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

1. Our main focus is to develop the better security system by using fingerprint based ATM.
2. Our main focus is to develop the better security system by using fingerprint based ATM.
3. Using biometric identifiers offers several advantages over traditional and current methods.
4. Fingerprint technology is highly accepted and matured biometric technology and is the easiest to develop and for an advanced level of security at the fingertips.
5. The security Features were enhanced largely for the stability and reliability of owner recognition. The whole system was built on the fingerprint technology, which makes the system safer, reliable and easy to use.

THE HISTORY

In bullet points, describe the current situation.

1. Tokens such as magnetic stripe cards, smart cards and physical keys, can be stolen, lost, replicated, or left behind; passwords can be shared, forgotten, hacked or accidentally observed by a third party.
2. When our ATM card is misplaced then no one use or access, it automatically blocks, no one can hack the pin code.
3. The hackers can easily guess the 4-digit pin code. Crimes which are happening in ATM become a serious issue that affects not only customers but also bank operators.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

1. There can be issues lifting a clear fingerprint.
People can alter their prints, which makes them more difficult to identify.
2. Old fingerprints dry out and it makes it harder to dust.
3. Fingerprint identification systems are not always accurate, so altered prints often go undetected.
4. There are health issues involved due to

touching of single scanning sensor device by countless number of individuals.

APPROACH

List what is needed to complete the project.

Fingerprint Based ATM is a desktop application where fingerprint of the user is used as a authentication. The finger print minutiae features are different for each human being so the user can be identified uniquely. Instead of using ATM card Fingerprint based ATM is safer and secure.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- 1.ATM because of the issues associated with it, Fingerprint technology is the most widely accepted and mature biometric method and is the easiest to deploy and for a higher level of security at your fingertips.
- 2.It is easy to implement and it takes minimum time and effort to obtain one's fingerprint registered with a fingerprint identification device.

Result:

Thus, the project team formed, the project is described, the business case was prepared and the problem statement was arrived.

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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	2
Title of Experiment	Identification of Process Methodology and Stakeholder Description
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To identify the appropriate Process Model for the project and prepare Stakeholder and User Description.

Project Title:**Selection of Methodology**

Fingerprint Based ATM is a desktop application where fingerprint of the user is used as a authentication. The finger print minutiae features are different for each human being so the user can be identified uniquely. Instead of using ATM card Fingerprint based ATM is safer and secure. There is no worry of losing ATM card and no need to carry ATM card in your wallet. You just have to use your fingerprint in order to do any banking transaction. The user has to login using his fingerprint and he has to enter the pin code in order to do further transaction. The user can withdraw money from his account. User can transfer money to various accounts by mentioning account number. In order to withdraw money user has to enter the amount he want to withdraw and has to mention from which account he want to withdraw (i.e. saving account, current account) .The user must have appropriate balance in his ATM account to do transaction. User can view the balance available in his respective account. The system will provide the user to view last 5 transactions.

2.Stakeholder and UserDescription

PROJECT NAME	FINGER PRINT BASED ATM SYSTEM			
PREPARED BY	MURALI KRISHNA KR, SHAIK IRFAN , HIMESH CHANDER			
DATE	21-03-2022			
PROJECT STAKEHOLDER NAME	SPECIFIC INFORMATION NEEDS	PROJECTINTERESTS	IMPACT ON PROJECT	ROLE
	Types& Frequency of communication	Specific Areas of Interested Participation	Positive, Negative, Influencer, Supporter, Roadblock	Decision Maker, Collaborator, Consultant, Information, Recipient
Bank managers	Oversee the bank personnel and are responsible for ensuring they adhere to policies and job role duties. Also responsible for issue resolution at branch location.	Technical& Business Project Managers	Supporter	Consultant
Counter staff	Bank tellers that assist or account specialists that assist with various banking needs.	Co-operating with colleagues	Positive	Participant
Database administrators	Develop, configure, identify and resolve issues of all features and capabilities of the database system.	Group Head &Team Leader	Supporter	Consultant
Developers	Use system specifications to develop or lead a team in the development of the system.	Skilled and Experienced Programmer	Positive	Collaborator
Maintainers	Responsible for managing the system as it evolves once operational.	Co-operating with other members	Positive	Collaborator
Production Engineers	Design, deploy, and manage the hardware and software the system	Leader &Organisation Heads	Positive	Participant
Security manager	Oversees security of the system	Collaborating with department managers to determine security needs.	Supporter	Collaborator

System administrators	Keep the system operational, administer users, and perform system configuration.	support activities associated with the IT infrastructure at a multi-user organization.	Positive	Decision Maker
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Testers	Test the system to verify it is ready for use.	Record Arrangement Review	Positive	information
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Result:

Thus the Project Methodology was identified and the stakeholders were described.



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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	3
Title of Experiment	System, Functional and Non-Functional Requirements of the Project
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To identify the system, functional and non-functional requirements for the project.

Project Title: Fingerprint based ATM system

3. SYSTEM REQUIREMENTS :

1. OS Windows-7 is used as OS as it is stable and supports more features and is more user-friendly.
2. Intel Atom (or) Intel Dual Core Processor higher by using the processor, we can keep on developing our project without any worries.
3. Atleast 512 MB RAM is required and 1.10 GB free space (or) higher.
4. QR-code scanner required.
5. Development tools and programming languages. JavaScript, HTML are used to write the WVE code and develop Web Pages with JavaScript for styling work and PHP for server-side scripting.

Functional Requirements:

1. Withdrawal menu and from the ATM. - The user selects withdraw from the ATM and withdraws cash.
2. Deposit from the menu and deposits cash or cheques into the ATM. - The user selects deposit option and deposits cash or cheques into the ATM.
3. Print transaction a transaction. - ATM prints a record after a transaction.
4. Exits ATM and retrieves card. - user completes session with ATM and retrieves card.

Non - Functional Requirements:

1. Safety Requirement - System use shall not cause any harm to human users.
2. Security Requirements - System will use secured database. Normal users can just read information but they can't edit or modify anything except their personal and some other information system will have different types of users and every user has access contrains .
3. Performance Requirement - The system shall accomidate high number of users without any fault.
4. Reliability - The application should be relaible and it should generate all updated information in correct order

5. Availability and working available in
- Application will be available properly for all the time it should be several languages

Result:

Thus the requirements were identified and accordingly described.



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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	4
Title of Experiment	Prepare Project Plan based on scope, Calculate Project effort based on resources and Job roles and responsibilities
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To Prepare Project Plan based on scope, Calculate Project effort based on resources, Find Job roles and responsibilities

Cost and Effort Estimation:

Effort type:	Hours:	Cost/hour:	Total costs:
Development efforts	5000	80	80000
Test effort	1000	60	50000
Project management	500	40	20000
Test management	100	80	5000
Total Cost:			155000

LOC Approach:

Function (Task)	Estimated LOC
User interface and control facilities(UICF)	20000
Design analysis modules(DAM)	3500
Service integration and management(SIM)	2500
Database management(DEM)	2400
Web-development structure	4000
Peripheral control(PC)	7000
Advanced security	2000
Estimated LOC:	40000

28 KLOC

- ❖ Average productivity for systems of this type = 1000 LOC/pm.
- ❖ Burdened labor rate = \$8000 per month, the cost per line of code is approximately \$150.
- ❖ Estimated effort = $\text{LOC} / \text{avg productivity} = 40000 / 1000 = 40\text{pm}$
- ❖ Cost = $\text{LOC} / \text{productivity} * \text{labor-rate} = \text{effort} * \text{labor-rate} = (40000 * 8000) / 1000 =$
\$320,000

COCOMO MODEL:

1. Basic
2. Intermediate
3. Detailed

Software project	A	B
Organic	2.4	1.05
Semi detached	3.0	1.12
Embedded	3.6	1.20

Fingerprint Based ATM Sytem-Semi Detached

$$\begin{aligned}\text{Person-Months,E} &= a(\text{KLOC})^b \\ &= 3.0*(1500)^{1.12} \\ &= 10822.8954927.\end{aligned}$$

Result: Thus, job efforts and productivity were successfully calculated, using the COCOMO model.



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	5
Title of Experiment	Prepare Work breakdown structure, Timeline chart, Risk identification table
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

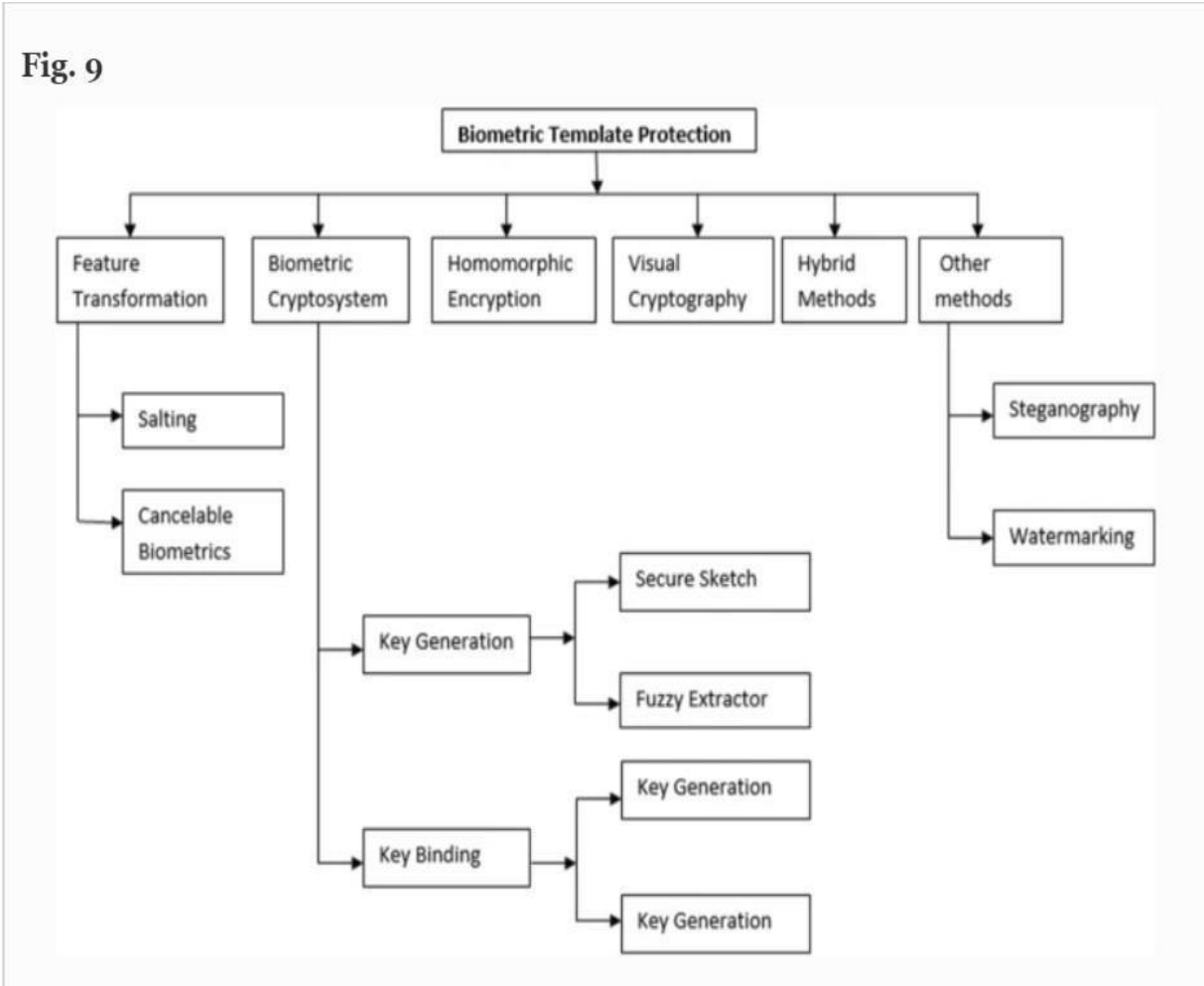
S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To Prepare Work breakdown structure, Timeline chart and Risk identification table

Work breakdown structure:



TIMELINE CHART:

TIMELINING									
Time-Period:	08.03.2022	15.03.2022	22.03.2022	29.03.2022	06.04.2022	13.04.2022	20.04.2022		
WEEK-1	08.03.2022	15.03.2022							
Project description	08.03.2022	15.03.2022							
History	08.03.2022	15.03.2022							
Useful features	08.03.2022	15.03.2022							
Drawbacks	08.03.2022	15.03.2022							
WEEK-2	15.03.2022	22.03.2022							
Stakeholder documentation	15.03.2022	22.03.2022							
Roles of stakeholders	15.03.2022	22.03.2022							
Methodologies	15.03.2022	22.03.2022							
Application of suitable methodology	15.03.2022	22.03.2022							
WEEK-3	22.03.2022	29.03.2022							
Requirements description	22.03.2022	29.03.2022							
Functional requirements	22.03.2022	29.03.2022							
Non functional requirements	22.03.2022	29.03.2022							
System and user-end requirements	22.03.2022	29.03.2022							
WEEK-4	29.03.2022	06.04.2022							
Estimation	29.03.2022	06.04.2022							
FPA analysis	29.03.2022	06.04.2022							
COCOMO estimation method	29.03.2022	06.04.2022							
Cost and effort estimations	29.03.2022	06.04.2022							
WEEK-5	06.04.2022	13.04.2022							
WBS	06.04.2022	13.04.2022							
Timelining	06.04.2022	13.04.2022							
Risk table and SWOT	06.04.2022	13.04.2022							
Risk analysis	06.04.2022	13.04.2022							
WEEK-6	13.04.2022	20.04.2022							
Model development	13.04.2022	20.04.2022							
Usecase diagram	13.04.2022	20.04.2022							
Class diagram	13.04.2022	20.04.2022							
Architecture diagram	13.04.2022	20.04.2022							
WEEK-7									
-									
-									
-									

RISK MANAGEMENT:

TABLE DESIGNED USING THE FOLLOWING TEMPLATE:

Risk Management Framework- Risks And Mitigation ...		
Response	Strategy	Examples
Avoid	Risk avoidance is a strategy where the project team takes action to remove the threat of the risk or protect from the impact	<ul style="list-style-type: none"> Extending the schedule Reducing/removing scope Change the execution strategy
Transfer	Risk transference involves shifting or transferring the risk threat and impact to a third party. Rather transfer the responsibility and ownership	<ul style="list-style-type: none"> Purchasing insurance Performance bonds Warranties Contract issuance (lump sum)
Mitigate	Risk mitigation is a strategy where by the project team takes an action to reduce the probability of the risk occurring. This does not risk or potential impact, but rather reduces the likelihood of it becoming real.	<ul style="list-style-type: none"> Increasing testing Changing suppliers to a more stable one Reducing process complexity
Accept	Risk acceptance means the team acknowledges the risk and its potential impact, but decides not to take any preemptive action to prevent it. It is dealt with only if it occurs.	<ul style="list-style-type: none"> Contingency reserve budgets Management schedule float Event contingency

Slide 1 of 5

RISK TABLE				
RISK SUMMARY	RISK CATEGORY	PROBABILITY	IMPACT(1-4)	RMMM
RISK OF ABRUPT NUMBER OF USERS USING THE CHATBOT SERVICE WILL HAVE THE RISK OF CAUSING A CRASH ON THE HOSTING SERVER OF THE SAME	PRODUCT SIZE	HIGH	4	-MITIGATION: CONDUCT RESEARCH ON NUMBER OF AVERAGE DISPORA IN VARIOUS COUNTRIES TO KNOW THE SCALE OF THE USERS.BASED ON THAT, GENERATE FAKE USERS TO SEE IF THE SYSTEM IS ROBUST ENOUGH OR NOT. -MONITORING: CREATE A LOAD BALANCER TO MANAGE THE LARGE AMOUNT OF SERVICES. -MANAGEMENT: IN CASE OF ANY FURTHER PROBLEMS A AGENT WILL MONITOR THE OVERALL PERFORMANCE OF THE SYSTEM AND PROVIDE A DASHBOARD FOR A NUMBER OF POSSIBLE ACTIONS TO TAKE
RISK OF REJECTION OF GOVERNMENT TO ALLOW ACCESS TO THE AADHAR DATABASE AND REJECT THE PROPOSED PROJECT	BUISNESS IMPACT	LOW	4	-MITIGATION: USE SECURITY MEASURES TO SHOW THE GOVERNMENT THAT THE DATA OF THE NATIONALS WILL NOT BE BREACHED AND PROJECT THE IMPACT OF THE SYSTEM ON THE LIVES OF PEOPLE -MONITORING: CREATE AN ALERT SYSTEM IN CASE OF APPLICATION BREACH -MANAGEMENT: ASK THE GOVERNMENT TO COLLABORATE WITH THE DEVELOPMENT TEAM TO PROVIDE A TRANSPARENT VIEW
RISK OF LATE ACCEPTANCE OF PROJECT BY GOVERNMENT BODY DUE TO SLOW DECISION MAKING OF THEM	CUSTOMER CHARACTERISTICS	AVERAGE	2	-MITIGATION: DOCUMENT THE OUTLINE OF THE APPLICATION AND DEDICATE A FEW PEOPLE IN THE TEAM THAT WILL ACT AS THE MEDIUM OF COMMUNICATION TO AND FROM THE GOVERNMENT -MONITORING: MAKE SURE THAT THE OUTLINE IS RECEIVED BY THE GOVT. -MANAGEMENT: CANNOT MANAGE AS NOT A SYSTEM UNDER OUR CONTROL

Result: Thus, the Work-Breakdown structure, Timeline diagram and the Risk Table were designed successfully.



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	6
Title of Experiment	Design a System Architecture, Use Case and Class Diagram
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

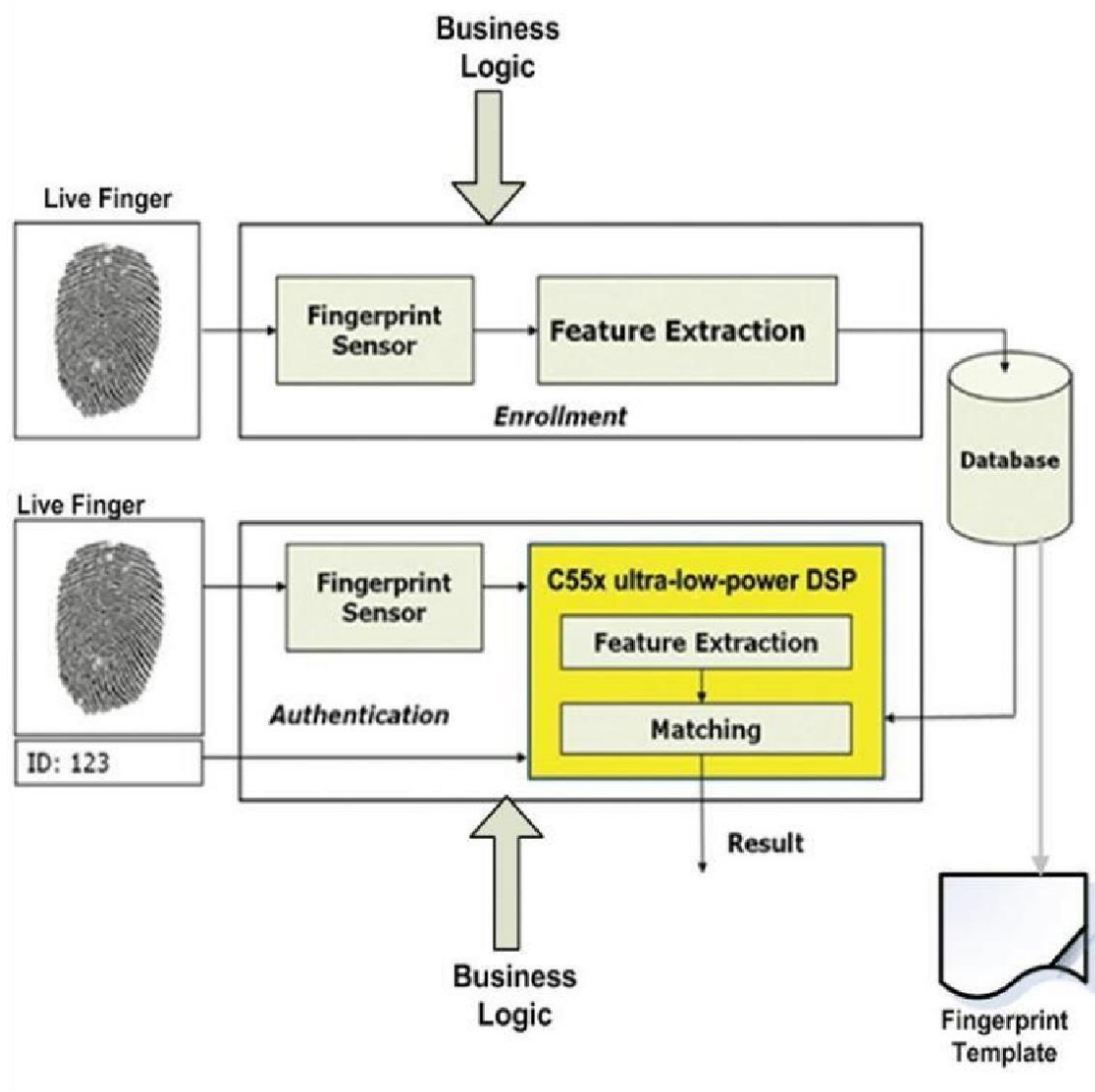
S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

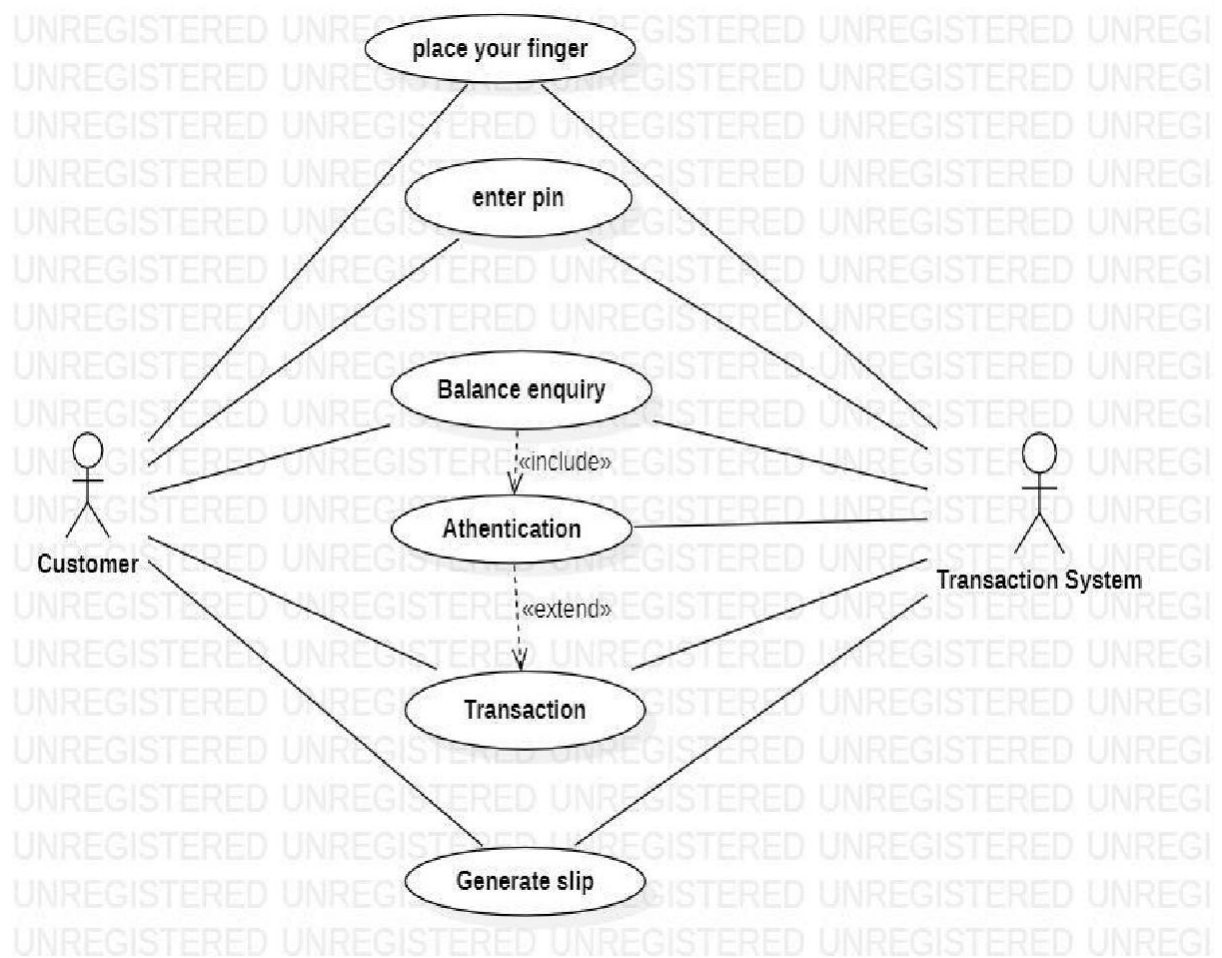
Aim

To Design a System Architecture, Use case and Class Diagram

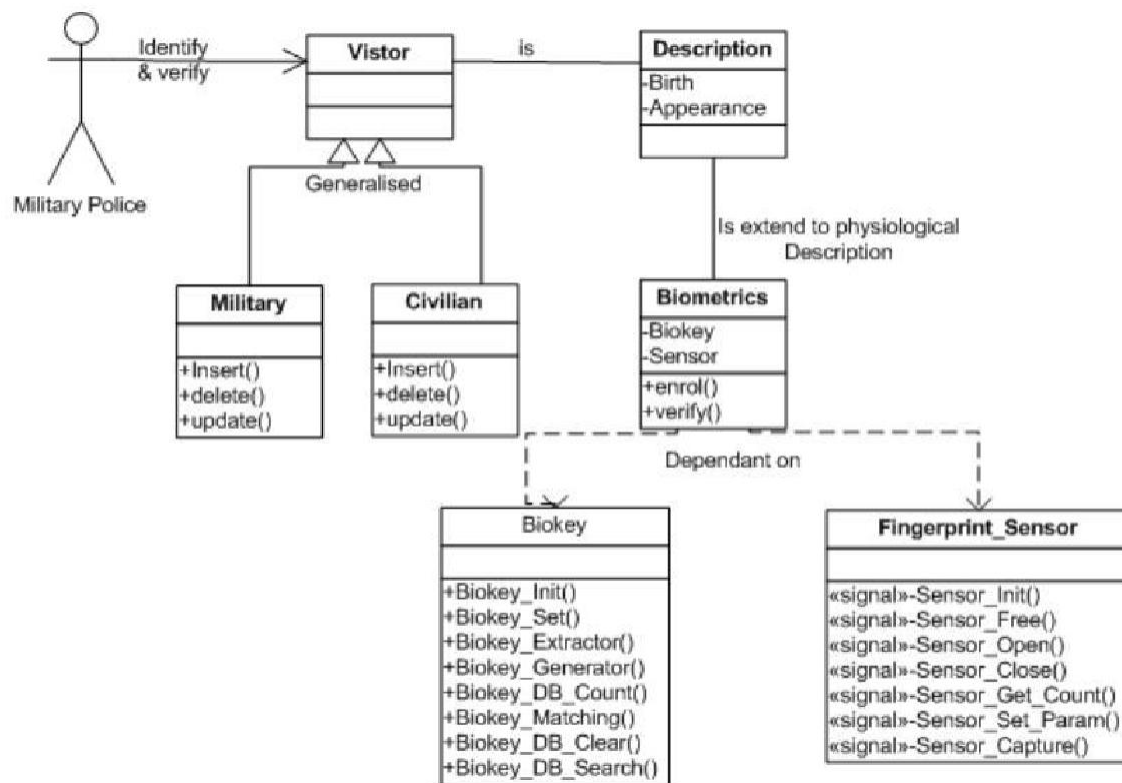
SYSTEM ARCHITECTURE



USE CASE DIAGRAM



CLASS DIAGRAM



Result:

Thus, the system architecture, use case and class diagram created successfully.



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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design a Entity relationship diagram
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To create the Entity Relationship Diagram

***/ ER Diagram, Notation and Example**

What is ER Diagram?

- ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.
- ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.
- At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.

What is ER Model?

- ER Model stands for Entity Relationship Model is a high-level conceptual data model diagram. ER model helps to systematically analyze data requirements to produce a well-designed database.
- ER Model represents real-world entities and the relationships between them. Creating an ER Model in DBMS is considered as a best practice before implementing your database.
- ER Modeling helps you to analyze data requirements systematically to produce a well-designed database. So, it is considered a best practice to complete ER modeling before implementing your database.

Why use ER Diagrams?

Here, are prime reasons for using the ER Diagram

- Helps you to define terms related to entity relationship modeling
- Provide a preview of how all your tables should connect, what fields are going to be on each table
- Helps to describe entities, attributes, relationships
- ER diagrams are translatable into relational tables which allows you to build databases quickly
- ER diagrams can be used by database designers as a blueprint for implementing data in specific software applications

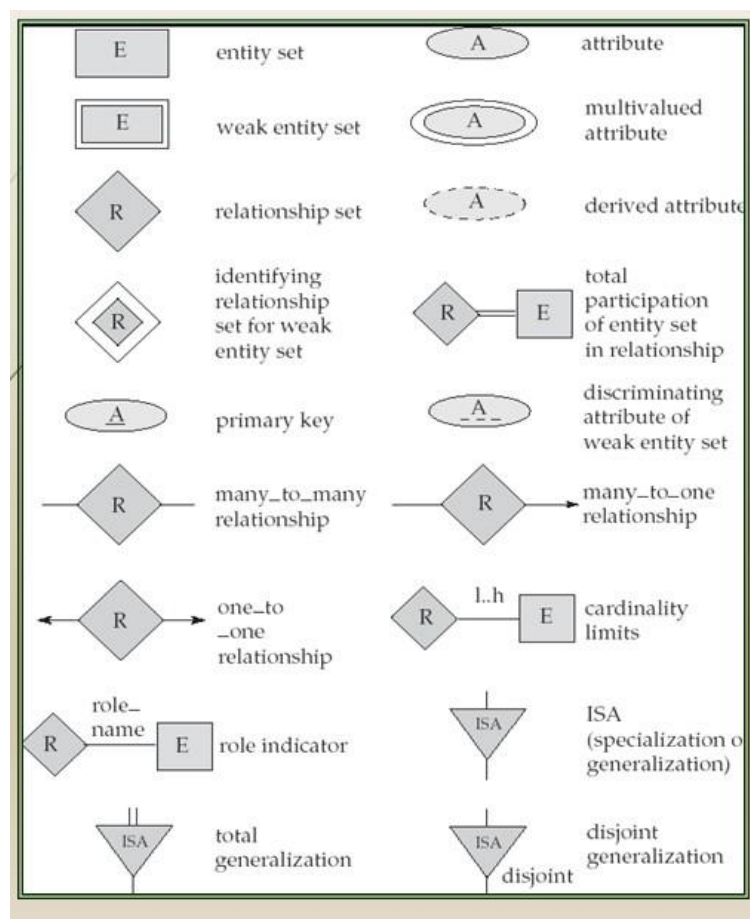
- The database designer gains a better understanding of the information to be contained in the database with the help of ERP diagram
- ERD Diagram allows you to communicate with the logical structure of the database to users

Components of the ER Diagram

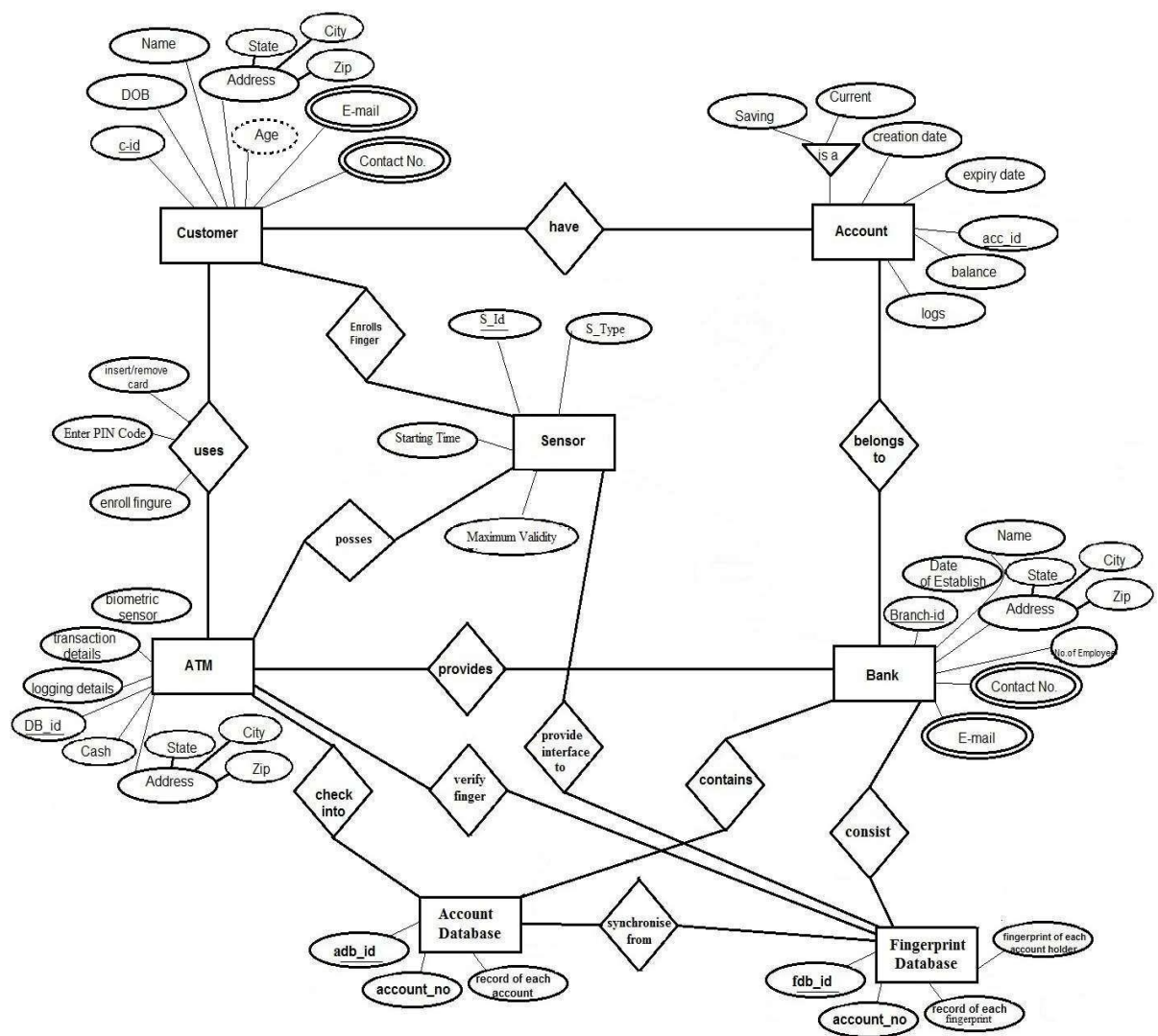
This model is based on three basic concepts: Entities, Attributes, Relationships

ER Diagram – Notations

- Rectangles represent entity sets.
- Diamonds represent relationship sets.
- Lines link attributes to entity sets and entity sets to relationship sets.
- Ellipses represent attributes
- Double ellipses represent multivalued attributes.
- Dashed ellipses denote derived attributes.
- Underline indicates primary key attributes



Entity Relationship Diagram



Result:

Thus, the entity relationship diagram was created successfully.



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	8
Title of Experiment	Develop a Data Flow Diagram (Process-Up to Level 1)
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To develop the data flow diagram up to level 1 for the Fingerprint based ATM system.

Data Flow Diagram

The DFD takes an input-process-output view of a system. That is, data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software. Data objects are represented by labeled arrows, and transformations are represented by circles (also called bubbles). The DFD is presented in a hierarchical fashion. That is, the first data flow model (sometimes called a level 0 DFD or context diagram) represents the system as a whole. Subsequent data flow diagrams refine the context diagram, providing increasing detail with each subsequent level.

The data flow diagram enables you to develop models of the information domain and functional domain. As the DFD is refined into greater levels of detail, you perform an implicit functional decomposition of the system. At the same time, the DFD refinement results in a corresponding refinement of data as it moves through the processes that embody the application.

A few simple guidelines can aid immeasurably during the derivation of a data flow diagram:

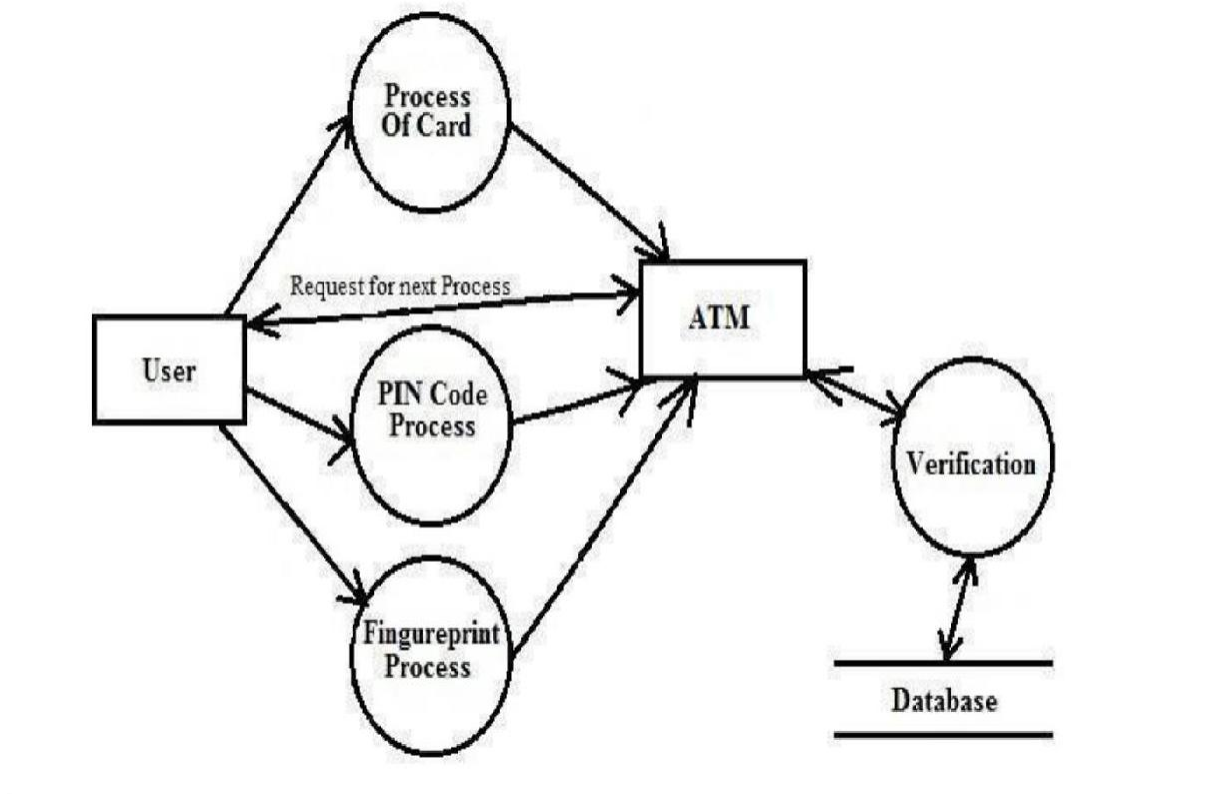
- (1) Level 0 data flow diagram should depict the software/system as a single bubble;
- (2) Primary input and output should be carefully noted;
- (3) Refinement should begin by isolating candidate processes, data objects, and data stores to be represented at the next level;
- (4) All arrows and bubbles should be labeled with meaningful names;
- (5) Information flow continuity must be maintained from level to level and
- (6) One bubble at a time should be refined. There is a natural tendency to overcomplicate the data flow diagram. This occurs when you attempt to show too much detail too early or represent procedural aspects of the software in lieu of information flow.

***/ For Example**

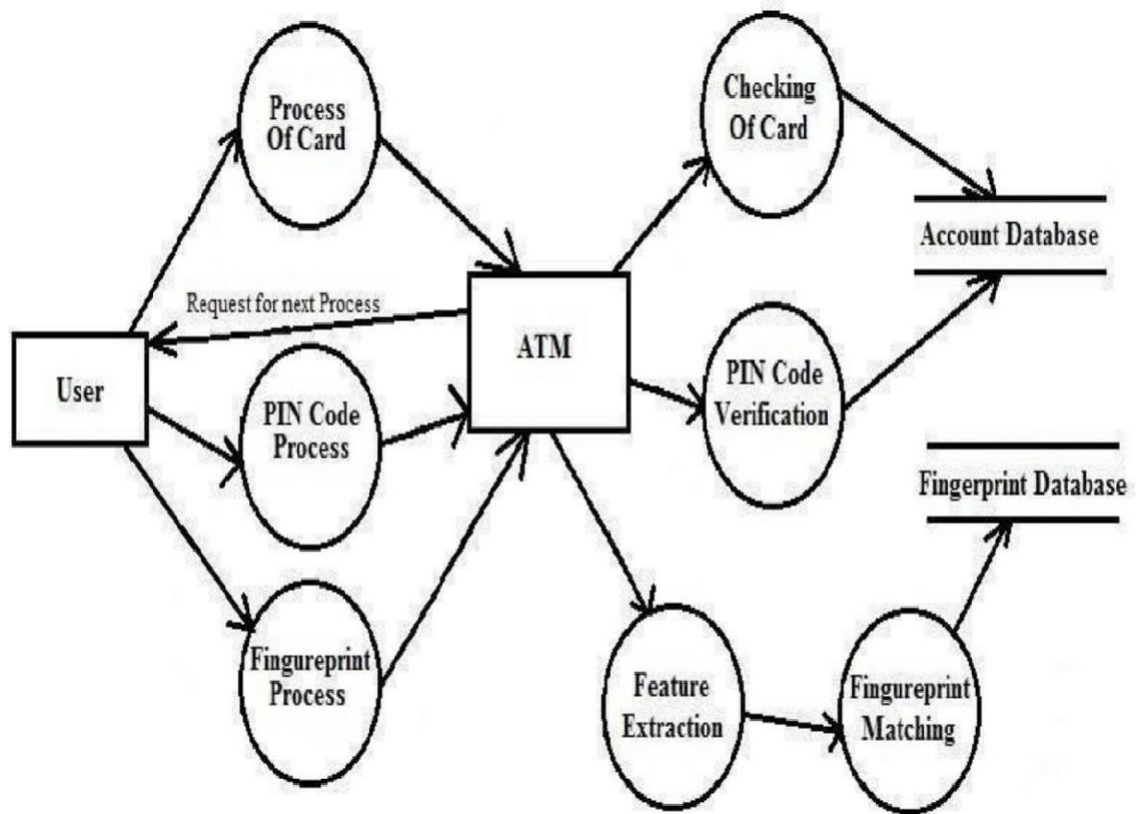
DFD Level 0



DFD Level 1



DFD Level 2



Result:

Thus, the data flow diagrams have been created for the Fingerprint based atm system



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	9
Title of Experiment	Design a Sequence and Collaboration Diagram
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

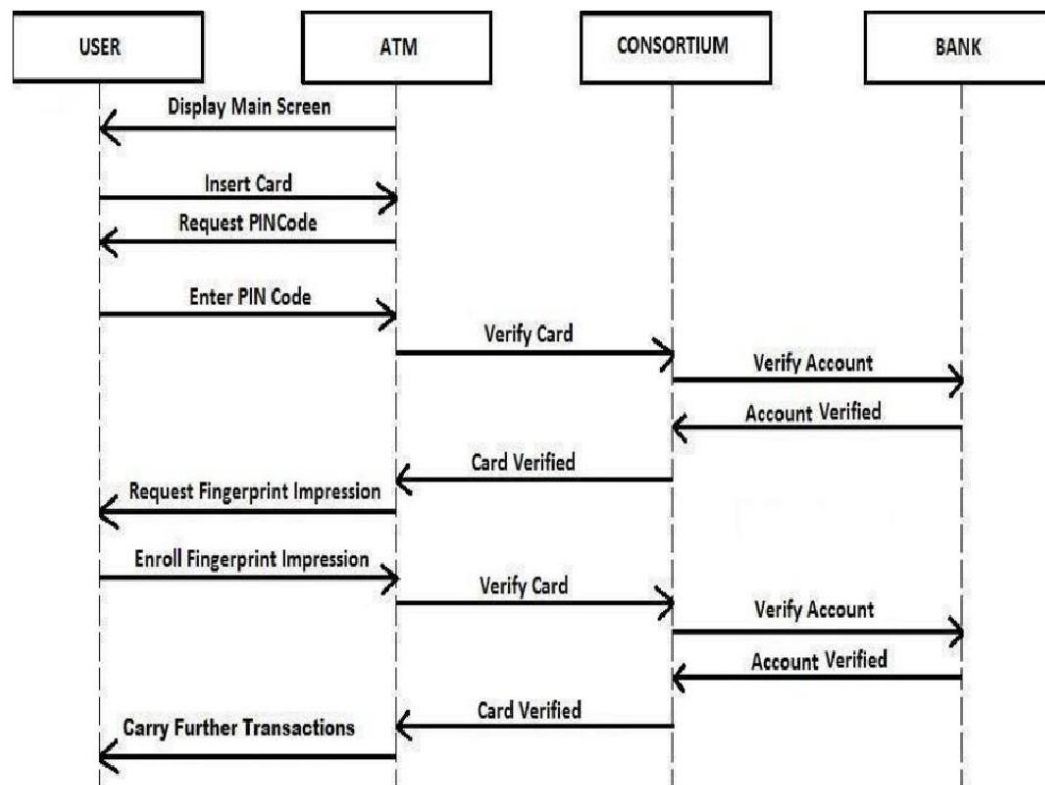
S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

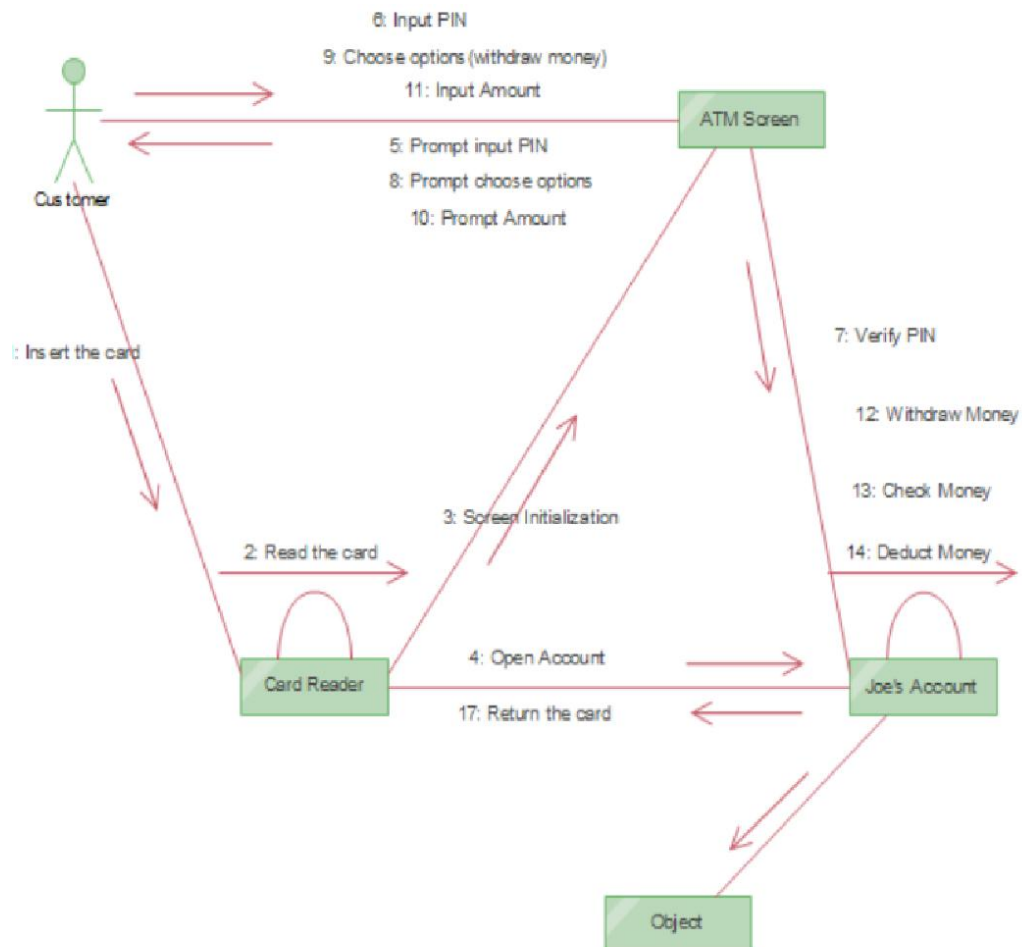
Aim

To create the sequence and collaboration diagram for the Fingerprint based ATM system.

Sequence Diagram:



Collaboration Diagram:



Result:

Thus, the sequence and collaboration diagrams were created for the fingerprint based atm system.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	10
Title of Experiment	Develop a Testing Framework/User Interface
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To develop the testing framework and/or user interface framework for the FINGERPRINT BASED ATM SYSTEM.

Executive Summary

To make this circuit more reliable and convenient, the design of PCB has been done as an Arduino Shield. Based on the requirements from the customer, further changes in the project can be done. To check if the PCB will work fine, a cable connector is used to perform test actions when connected with the Arduino. It is to be ensured that the baud rate value listed in the program must be accurate. Its value does not affect the serial monitor but for sensitive device like R305 sensor, it must be precisely the value listed in the datasheet. However, this value may depend on the type of sensor used in the project. In the main code, these values are fed in the system as `Serial.begin(38400)` which represents the baud rate for serial monitor and `finger.begin(57600)` which represents the baud rate for sensor. The Arduino board must be reset beforehand to avoid any possible errors during validation of fingerprint.

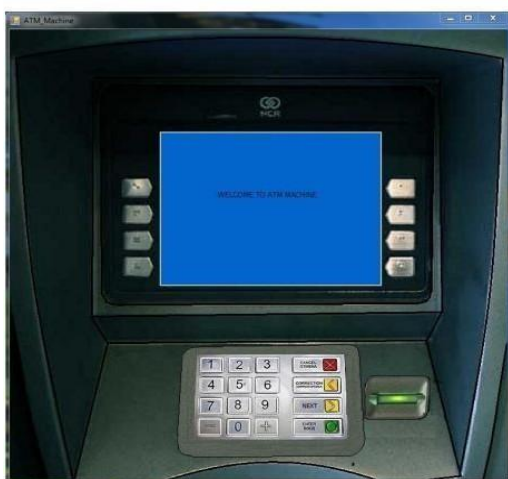
Functional Test Scenarios for ATM Machine

The functional test cases are the test cases that involve testing the different functional aspects of the application under test. Following are some functional test cases for an ATM machine-

1. Verify the type of ATM machine, if it is completely touch-enabled, with both keypad buttons only or both.
2. Verify that the user is presented with options when the fingerprint is matched correctly.
3. Check that no option to continue and enter credentials is displayed to the user when the card is inserted incorrectly.
4. Verify that the touch of the ATM screen is smooth and operational.
5. Verify that the user is presented with the option to choose a language for further operations.
6. Check that the user is asked to place fingerprint before displaying any card/bank account detail.
7. Verify that there is a limited number of attempts up to which the user is allowed to place the fingerprint.

USER INTERFACE:

A graphical user interface (GUI) is a type of user interface through which users interact with electronic devices via visual indicator representations.



STEP 1

Snapshot is showing the welcome page



STEP 2

Snapshot is showing the card request page



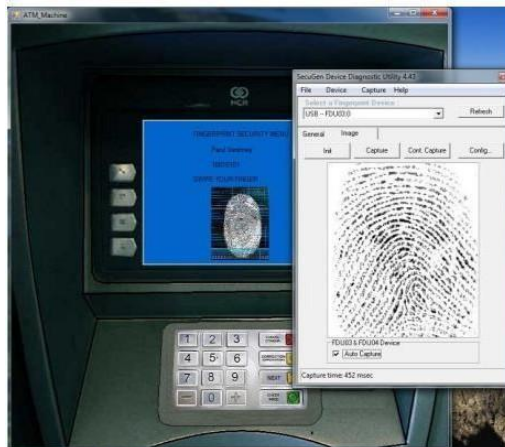
STEP 3

Snapshot is showing the pin request page



STEP 4

Snapshot is of request for enrol finger



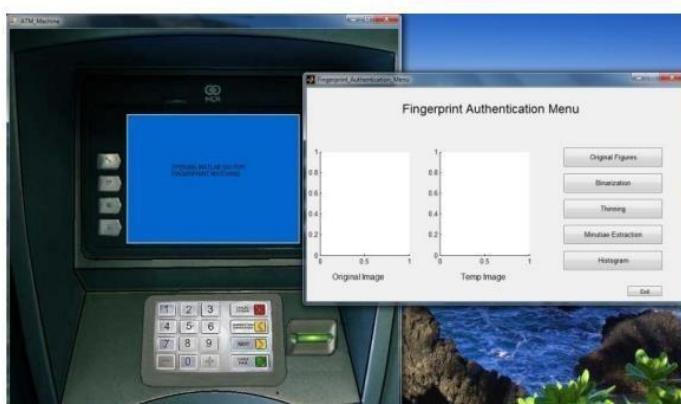
STEP 5

Snapshot is of request for fingerprint



STEP 6

Snapshot is of updating current entries in db



STEP 7

Snapshot is of request for matlab gui



STEP 8

Snapshot is showing the end of process

Result:

Thus, the testing framework/user interface framework has been created for the FINGERPRINT BASED ATM SYSTEM.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	11
Title of Experiment	Test Cases
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To develop the test cases manual for the FINGERPRINT BASED ATM SYSTEM.

TEST CASES:

<u>Use Case</u>	<u>Function Being Tested</u>	<u>Initial System State</u>	<u>Input</u>	<u>Expected Output</u>
System Startup	System is started when the switch is turned "on"	System is off	Activate the "on" switch	System requests initial cash amount
System Startup	System accepts initial cash amount	System is requesting cash amount	Enter a legitimate amount	System is on
System Startup	Connection to the bank is established	System has just been turned on	Perform a legitimate inquiry transaction	System output should demonstrate that a connection has been established to the Bank
System Shutdown	System is shut down when the switch is turned "off"	System is on and not servicing a customer	Activate the "off" switch	System is off
System Shutdown	Connection to the Bank is terminated when the system is shut	System has just been shut down		Verify from the bank side that a connection to the ATM no longer exists

<u>Use Case</u>	<u>Function Being Tested</u>	<u>Initial System State</u>	<u>Input</u>	<u>Expected Output</u>
System Startup	System is started when the switch is turned "on"	System is off	Activate the "on" switch	System requests initial cash amount
	down			
Session	System reads a customer's fingerprint	System is on and not servicing a customer	Insert the fingerprint	Fingerprint is matched, System asks for entry of PIN
Session	System rejects an fingerprint mismatch	System is on and not servicing a customer	Insert an matched fingerprint	Fingerprint is not matched, System displays an error screen; System is ready to start a new session
Session	System accepts customer's PIN	System is asking for entry of PIN	Enter a PIN	System displays a menu of transaction types
Withdrawal	System verifies that customer's balance is sufficient to fulfill the request	System is requesting a withdrawal amount	Choose an amount that the system currently has but which is greater than the account balance	System displays an appropriate message and offers customer the option of choosing to do another transaction or not.

Result:

Thus, the test case manual has been created for the FINGERPRINT BASED ATM SYSTEM.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	12
Title of Experiment	Manual Test Case Reporting
Name of the candidate	
Team Members	
Register Number	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim

To prepare the manual test case report for the FINGERPRINT BASED ATM SYSTEM.

Category	Test ID (#)	Progress Against Plan	Status	Comments
Functional Testing	1	Green	Completed	Nil
	2	Amber	In-Progress	To develop the module for functionality of synchronously re-involking the chatbot link generation API
Non-Functional Testing	1	Red	Not-started	Redesign of cloud architecture required for allowing load balancing server capability (scalability purposes) Obstacles: The number of users/second are unknown and by developing a larger architecture will require more development time and more cost, which the shareholders are not agreeing to.
	2	Red	In-progress	To integrate Amazon's security API into the cloud subnet for further security

Functional	Test Case Coverage (%)	Status
Module 1 -Government Application Module	70%	In-progress
Module 2- Diaspora chatbot application	50%	In-progress

Result:

Thus, the test case report has been created for the FINGERPRINT BASED ATM SYSTEM.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	
Team Members	
Register Numbers	
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		10	

Staff Signature with date

Aim/

To provide the details of architectural design/framework/implementation

Code:

```
1  /* main.c:      application program for overloaded vehicle detection */
2  #include "main.h"
3
4  #ifndef TESTING
5      code const INT8U UPHNum[] = "9980237552";
6      code const INT8U MPHNum[] = "9980237552";
7  #else
8      code const INT8U UPHNum[] = "8105631379";
9      code const INT8U MPHNum[] = "8861519511";
10 #endif
11
12 code const INT8U MSG1[] =      "Your high security password for the transaction is:";
13 code const INT8U MSG2[] = "Your Transaction is completed. To know balance Dial CC";
14 code const INT8U MSG3[] = "Person is in trouble at canara bank  ATM, Ponnampet";
15 code const INT8U MSG4[] = "Theft at canara bank  ATM, Ponnampet";
16
17 extern INT8U idata DeletingPageID;
18 extern INT8U idata fingerstat;
19
20 bit fireflag = 0;
21 bit theftflag = 0;
22
23 INT8U idata randpass[7];
24
25 void main(void)
26 {
27     INT8U i, InvldCnt, pass[6], userID[10];
28     init();
29
30     for (i = 0; i < 10; i++)
31         userID[i] = 1;
32     InvldCnt = 0;
33     randpass[6] = '\0';
34
35
36     while (TRUE) {
37         if (FingerMatch()) {
38             if ( userID[DeletingPageID]) {
39                 lcdclr();
40                 beep(1,100);
41                 genpass(randpass);
42                 sendSMS(1);
43
44             CHK_PASS:
45                 lcdclr();
46                 lcdw5(" ENTER PASSWORD");
```

```

        lcds( "ENTER PASSWORD ");
        lcdr2();
        read_pass(pass);
        switch(verpass(pass)) {
            case 1:
                beep(1,100);
                lcdws(" Verified");
                dlyms(1000);
                motion();
                lcdclr();
                lcdws("Collect ur Cash");
                dlyms(5000);
                motioff();
                sendSMS(2);
                InvldCnt = 0;
                break;

            case 2:
                sendSMS (3);
                break;

            default:
                buzon();
                lcdclr();
                lcdws("Wrong Password");
                dlyms(500);
                buzoff();
                if ( ++InvldCnt >= MAX_CNT ) {
                    displock();
                    userID[DeletingPageID] = 0; /* Block the ID */
                } else goto CHK_PASS;
                break;
        }
        EnFP();
        disptitle();
    } else {
        displock();
        EnFP();
        disptitle();
    }
} else {
    if (fingerstat) {
        lcdclr();
        lcdws("!!Unauthorised!!");
        beep(3,100);
        fingerstat = 0;
        dlyms(3000);
        disptitle();
    }
}
}

```

```

    }
    if (fireflag) {
        fireflag = 0;
        buzzer();
        lcdclr();
        lcdw(" Fire occurred");
        lcdr2();
        lcdw(" System Locked!");
        rlyon();
        dlyms(5000);
        rlyoff();
        EA = 0; /* disable interrupt */
        ledon();
        PCON |= 0x02;
    }
    if (theftflag) {
        theftflag = 0;
        mot2on();
        sendSMS(4);
        lcdclr();
        lcdw(" Theft occurred");
        lcdr2();
        lcdw(" System Locked!");
        dlyms(2000);
        mot2off();
        EA = 0; /* disable interrupt */
        ledon();
        buzzer();
        PCON |= 0x02;
    }
    dlyms(500);
}
static void displock(void)
{
    lcdclr();
    lcdw("Your Transaction");
    lcdr2();
    lcdw(" is Blocked!");
    dlyms(3000);
}
static void sendSMS (INT8U situ) {
    INT8U idata i, GSMmsg[80];
    ENGSM();
    dlyms(100);

    for(i = 0; i < 80; i++)

```

```

    GSMmsg[i] = '\0';

    switch (situ) {
        case 1:
            strcat(GSMmsg, MSG1);
            strcat(GSMmsg, randpass);
            GSMsndmsg(UPHNum, GSMmsg);
            break;

        case 2:
            strcat(GSMmsg, MSG2);
            GSMsndmsg(UPHNum, GSMmsg);
            break;

        case 3:
            strcat(GSMmsg, MSG3);
            GSMsndmsg(MPHNum, GSMmsg);
            break;

        case 4:
            strcat(GSMmsg, MSG4);
            GSMsndmsg(MPHNum, GSMmsg);
            break;
    }
}
static INT8U verpass (INT8U pmag[1])
{
    INT8U i, msg;

    msg = 1;
    for (i = 0; randpass[i] != '\0'; i++)
        if (randpass[i] != pmag[i])
            msg = 0;

    if (!msg) {
        for (i = 0; randpass[i] != '\0'; i++)
            if (randpass[i] != pmag[i-1])
                return MSG;
        return 2;
    } else return 1;
}
static void dispitle(void)
{
    lcdclr();
    lcdw("ATM Security SYS");
}
static void init(void)
{
    motioff();
    mot2off();
}

```

```

}

/* timer overflows for every 50ms */
static void tmr0ISR() interrupt 1 using 2
{
    static INT8U i,j;
    TH0 = 0x40;
    TL0 = 0xF0;
    if (++i >= 2) {
        i = 0;
        if (++j >= 50) j = 0;
        switch(j) {
            case 0: case 2: ledon(); break;
            case 1: case 3: ledoff(); break;
        }
    }
}

static bit read_pass(INT8U pass_temp[])
{
    INT8U i;

    lcdr2();
    lcdwc(0xc5);
    for (i = 0; i < 6; i++) {
        pass_temp[i] = getkey();
        lcdwd('*');
        beep(1,50);
    }
    return 1;
}

static void EXTint_int(void)
{
    EX0 = EX1 = 1; /* Enable external Interrupt 0&1 */
    IT0 = IT1 = 1; /* EDGE triggers */
}

void EXTint0ISR() interrupt 0 using 3
{
    fireflag = 1;
}

void EXTint1ISR() interrupt 2 using 3
{
    theftflag = 1;
}

```

Output-Implementation:

Screenshots:





Result:

Thus, the details of architectural design/framework/implementation along with the screenshots were provided.