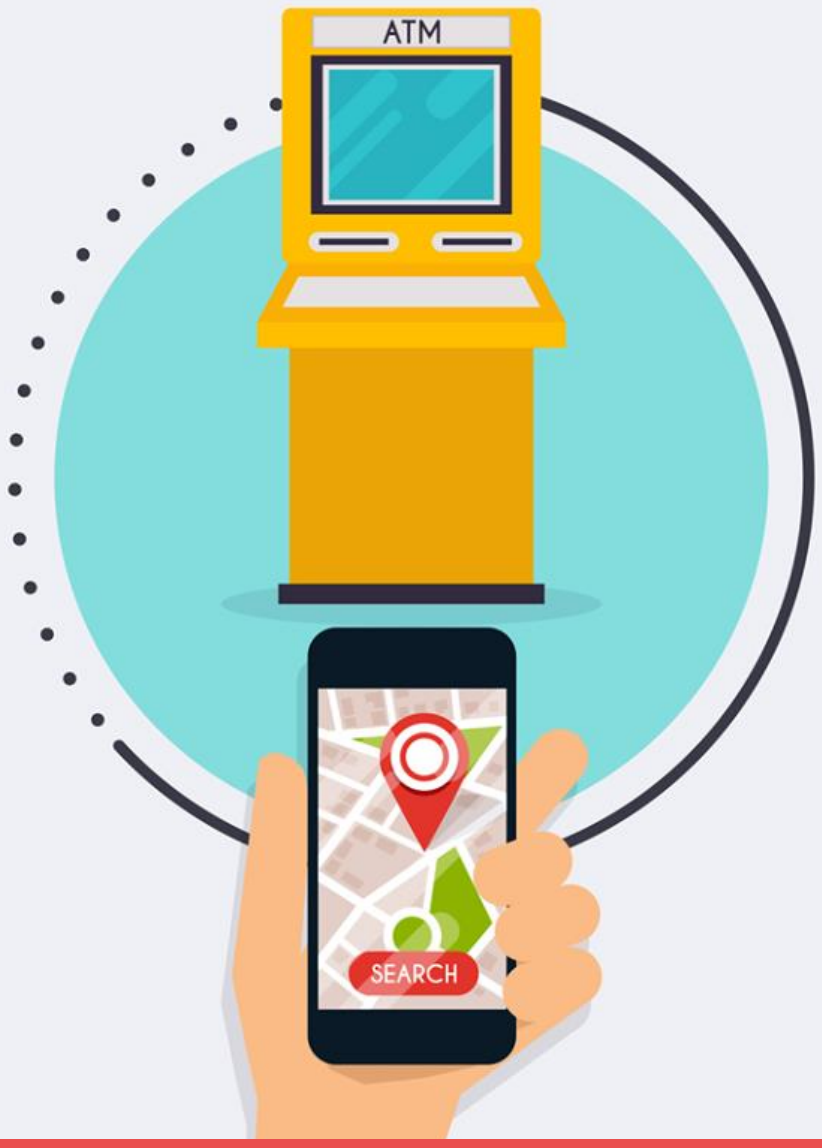

ATM ANALYZER

Faculty of Computer and
Informatics - Zagazig University

2018

ATM Analyzer

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ACKNOWLEDGMENT

Praise Allah firstly and finally for giving us the power to go on our project.

First of all, we'd like to give our sincere thanks to our supervisor and the owner of the idea, Dr. Ahmed Rafaat. He offered us so much advice, patiently supervising us and always guiding us in the right direction. We've learned a lot from him, without his help we could not have finished our project successfully. It is not sufficient to express our gratitude with only a few words.

Pursuing our ATM project is a both painful and enjoyable experience. It's just like climbing a high peak, step by step, accompanied with bitterness, hardships, frustration, encouragement and trust with so many people's help. When we found ourselves at the top enjoying our success, we realized that it was, in fact, the teamwork that got us there. Though it will not be enough to express our gratitude in words to all those people who helped us, we would still like to give our many, many thanks to all these people.

Special thanks are also given to the instructor Eng. Ahmed Elrefaiy He is the one who encourage us and help made us feel confident to fulfill our desire and to overcome every difficulty we encountered.

Last but not least, We are very grateful for our families. They form the backbone and origin of our happiness. Their understanding and their love encouraged us to work hard and to continue our dream. They educated us to be steadfast and never bend to difficulty. They always lets us know that they are proud of us, which motivates us to work harder and do our best.

Thanks for all.

ATM Analyzer

Contents

CONTENTS

Chapter 1
Introduction

ATM Analyzer

Chapter 1. Introduction

IN THIS CHAPTER

In this chapter we will talk about the idea of our project, how it comes and how we start to make it real.

We will talk about the problem we are trying to solve and basically take you in the way of our project.

And in the end of chapter we will put our goals in your mind and tell you what technologies we used and why.

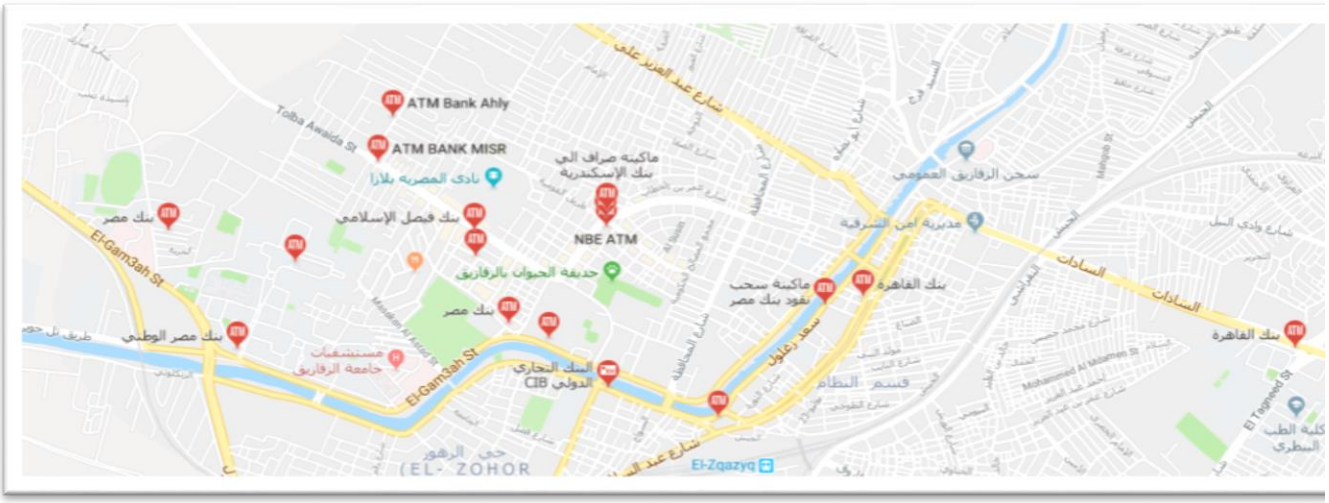
ATM Analyzer

Chapter 1. Introduction

1.1 | IDEA

Before the narration of the general idea of the project, **the owner of this idea is Dr. Ahmed Rafat and he is also the supervisor of the project**, when we met with him the first time there was a joint trend that the idea will help people in their practical life and so easy to apply on the ground, and the dealings with different banks and vision for problems to occur, he suggested this idea to help people and provide a life easier for them

The project is about mobile application that helps the user to arrive to different ATM machines, not just the nearest machine, but the closest one from the user's location, which has enough credit for the draw and also not crowded



ATM Analyzer

Chapter 1. Introduction

1.1 | IDEA

That mobile application is connected to website application through API , so that we can get information from Bank website , therefore properties can be provided in the mobile application

By Looking on statistics, Egypt have the large number of users in two platforms Social network websites and Smartphones, Ignoring Social network websites because it's not practical implementation for a graduation project we focusing on smartphones.

In 2016, Smartphone users in Egypt reach 21 million and in 2019 expect to reach 27.9 million, the most used smartphones in Egypt based on android OS. So we find the best for our graduation project implementation so we see that android is best platform for implementing the idea in Egypt

And in the next papers of that book, we will continue to more explain in detail about the idea and how we will implement it till make everyone in our city finds suitable ATM immediately just by internet connection and android device .

1.2 | PROBLEM

In this section we will focus on the problem itself which we trying to solve, let's see it.

The problem of ATM machine: Why we better than the traditional way

Because of the problem of congestion, which increased in recent times with the high number of population and with the existence of the banking system, which prevailed in all transactions between people and the phenomenon of financial transactions through smart card, which reduces the congestion within the institutions and banks where there are machines ATM through which the person to get the amount The required at the time he wants and where he wants, however, some or some problems appeared in this system (dealing through the ATM), so we thought to find solutions to these problems and before starting to describe the solutions must know the problem ,

1.2 | PROBLEM

so the problems of ATM machines are:

1. the user does not know if the machine to which he is going is crowded or not

2. The user goes to the machine and does not know whether it has enough credit to withdraw or not

1.2 | PROBLEM

3. In many times, the user goes to a specific machine to withdraw from it, while at sometimes there is a possibility that is closer and has a sufficient balance to withdraw and is not crowded.
4. In many cases, the user goes to a specific machine and has to stand in a crowded queue. Then he is surprised that the machine no longer has enough credit to pull out after standing and waiting for a long time

All of these problems bother users and disrupt their work and waste their time and do not give the user the best way to find the desired so we came with a solution to help users and to solve all these problems for the user and also the Bank.

1.2 | PROBLEM

ATM Applications today: Other similar implementations of our project

There are many Android applications in Egypt, but they only inform the user about the machines to surround their current locations and do not give the user any information about the machine cases that may result in the user and also does not guide the user to the most appropriate machine where he should go.

1.2 | PROBLEM

What features make our applications different and what's our goal?

- we build our application to our city which hard to find a service that tells the user which is best for him, We hope that this thought will be popular among decision makers then we can apply this idea and expand its spread on the ground and then we can generalize this idea and apply it to all cities in Egypt
- The user must allow the application access to its current location, then the user can access the application and determine the amount to be withdrawn from the machine
- The machine will perform a look up in the database to get the most suitable ATM (have bigger balance and less crowded and have small distance) and will filter results so machines the fits the user demand will appear on the first results

So after all that our goals in points?

- Provide the bank with information and reports on the machines where there are more withdrawals and that must be the money by a larger proportion
- Save user's time
- Give the user accurate information so that it is directed to the most suitable machine

1.3 | TECHNOLOGIES USED

In this section we will mention the technologies and the tools we used in our project
For Designing Diagrams and Relations of objects:
visual paradigm is a Data Flow Diagram Tool
Smart Draw is a diagram tool used to make flowcharts, organization charts, mind maps, project charts, and other business visuals. Smart Draw has two versions: an online edition and a downloadable edition for Windows desktop.
For Prototyping: Marvelapp
Marvelapp is a Simple design, prototyping and collaboration online application, Turns sketches and images into realistic prototypes for any device and get feedback. No coding required.
For design: Android Asset Studio
Android Asset Studio is a web-based set of tools for generating graphics and other assets that would eventually be in an Android application's res/ directory.
Currently available asset generators area available for: Launcher icons, Action bar icons, Notification icons, Device-framed screenshots, and Simple nine-patches.
For Mobile JAVA Programing: Android Studio
Eclipse is an integrated development environment (IDE) used in computer programming, and is the most widely used Java IDE. It contains a base workspace and an extensible plug-in system for customizing the environment
Android Studio is the official integrated development environment (IDE) for Android platform development.
It was announced on May 16, 2013 at the Google I/O conference. Android Studio is freely available under the Apache License 2.0. Android Studio was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014.
The first stable build was released in December 2014, starting from version 1.0. Based on JetBrains' IntelliJ IDEA software, Android Studio is designed specifically for Android development. It is available for download on Windows, Mac OS X and Linux, and re- placed Eclipse Android Development Tools (ADT) as Google's primary IDE for native Android application development.

1.3 | TECHNOLOGIES USED

For Web Programming: .NET

.NET Framework (pronounced *dot net*) is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large class library named Framework Class Library (FCL) and provides language interoperability (each language can use code written in other languages) across several programming languages. Programs written for .NET Framework execute in a software environment (in contrast to a hardware environment) named Common Language Runtime (CLR), an application virtual machine that provides services such as security, memory management, and exception handling. (As such, computer code written using .NET Framework is called "managed code".) FCL and CLR together constitute .NET Framework.
FCL provides user interface, data access, database connectivity, cryptography, web application development, numeric algorithms, and network communications. Programmers produce software by combining their source code with .NET Framework and other libraries. The framework is intended to be used by most new applications created for the Windows platform. Microsoft also produces an integrated development environment largely for .NET software called Visual Studio.
.NET Framework began as proprietary software, although the firm worked to standardize the software stack almost immediately, even before its first release. Despite the standardization efforts, developers, mainly those in the free and open-source software communities, expressed their unease with the selected terms and the prospects of any free and open-source implementation, especially regarding software patents. Since then, Microsoft has changed .NET development to more closely follow a contemporary model of a community-developed software project, including issuing an update to its patent promising to address the concerns.

1.3 | TECHNOLOGIES USED

For database: Microsoft SQL Server

Microsoft SQL Server is a relational database management system, or RDBMS, that supports a wide variety of transaction processing, business intelligence and analytics applications in corporate IT environments. It's one of the three market-leading database technologies, along with Oracle Database and IBM's DB2.

Microsoft SQL Server is built on top of SQL, a standardized programming language that database administrators (DBAs) and other IT professionals use to manage databases and query the data they contain. SQL Server is tied to Transact-SQL (T-SQL), an implementation of SQL from Microsoft that adds a set of proprietary programming extensions to the standard language.

1.3 | TECHNOLOGIES USED

For documentation: Microsoft Word

Microsoft Word is a word processing program that was first developed by Microsoft in 1983. Since that time, Microsoft has released an abundance of updated versions, each offering more features and incorporating better technology than the one before it. The most current version of Microsoft Word is available in Office 365, but Microsoft Office 2019 will be here soon, and will include Word 2019.
Microsoft Word is included in all of the Microsoft Office application suites. The most basic (and least expensive) suites also include Microsoft PowerPoint and Microsoft Excel. Additional suites exist, and include other Office programs, such as Microsoft Outlook

Other Tools

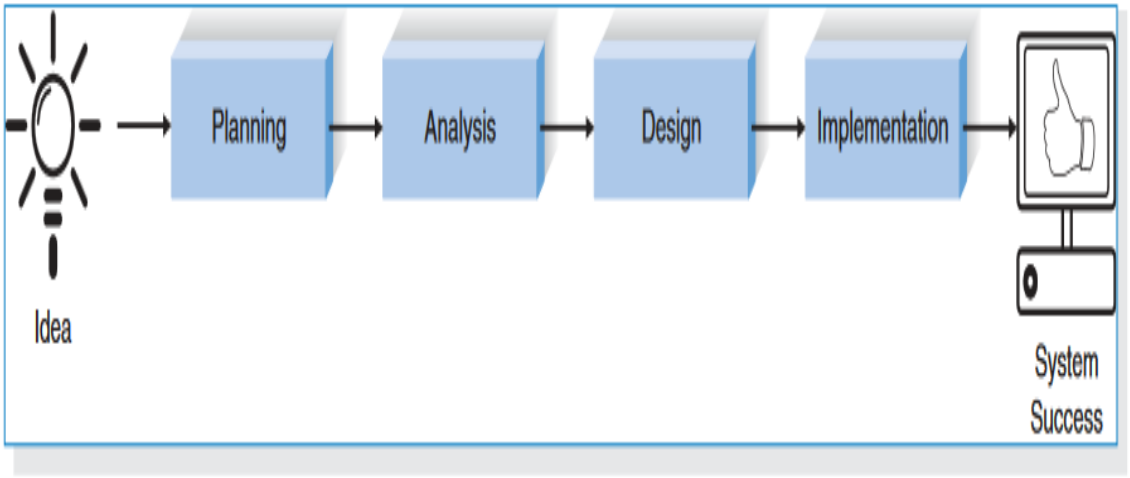
Including the websites which gives free images for downloading and using which we used in our project designs and documentation, and we Thanks for that.
freedigitalphotos.net
freepik.com
unsplash.com
pexels.com

Chapter 2
Planning

PLANNING PHASE

Systems Development Life Cycle (SDLC)

- The systems development life cycle (SDLC) is the process of determining how an information system (IS) can support business needs, designing the system, building it, and delivering it to users.



THE SDLC IS COMPOSED OF FOUR FUNDAMENTAL PHASES

- **Planning**

In this phase we will discuss why we built this system and how will this system help all users that have a credit card
to conduct a feasibility analysis. The *feasibility analysis* examines key aspects of the proposed of our project:

- The technical feasibility
- The economic feasibility
- The organizational feasibility

- **Analysis**

✓ The analysis phase will explain who will use the system, what the system will do, and where and when it will be used , and also we will explain how the data was collected

✓ Study and analyze the problems, causes, and effects. Then, identify and analyze the requirements that must be fulfilled by any successful solution.

THE SDLC IS COMPOSED OF FOUR FUNDAMENTAL PHASES

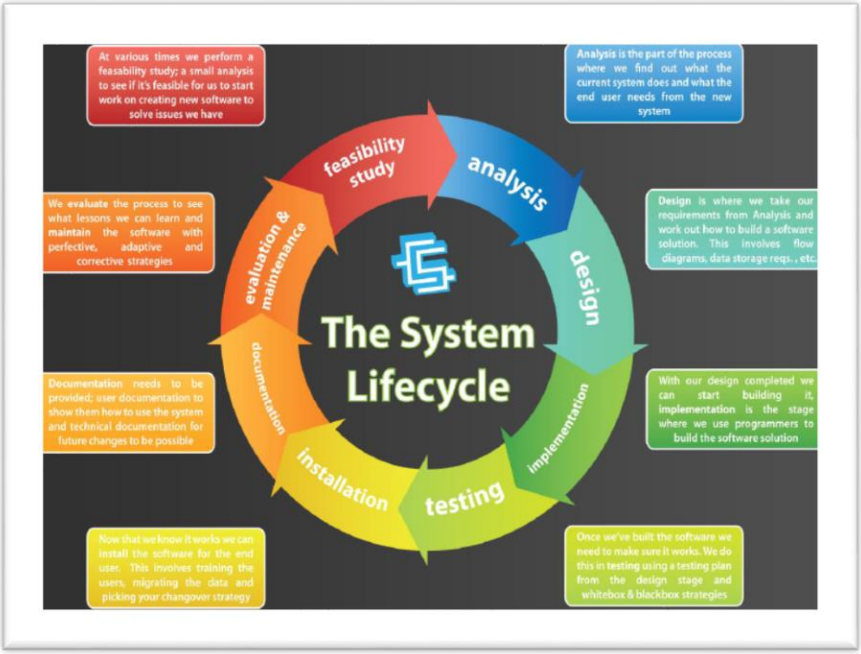
- Design

The design phase decides how the system will operate in terms of the hardware, software, and network infrastructure that will be in place; the user interface forms, and reports that will be used; and the specific programs, databases, and files that will be needed

THE SDLC IS COMPOSED OF FOUR FUNDAMENTAL PHASES

- **Implementation**

  The final phase in the SDLC is the implementation phase, during which the system
  is actually built (or purchased, in the case of a packaged software design and
  installed). This is the phase that usually gets the most attention, because for most systems it is the longest most expensive single part of the development process.



ATM Analyzer

Chapter 2. Planning

PLANNING PHASE

This phase is the fundamental process of understanding *why* an information system should be built, and determining *how* the project team will go about building it.

2.1 Background Project

- Help ATM users so that they can know which ATM machine is available or have money or the nearest phone so you can go to the right ATM machine and withdraw money from them.

2.2 Executive Summary

- Developing an Android application using Java and Database of SQL Server that could be called with an ASP MVC Web API using C# language.

2.3 Project Objectives

- help ATM user to know which the nearest ATM machine to him by using your location.
- help him to know which ATM machine have money or not without going to it.
-know the ordered of list for the best ATM machine to user In terms of proximity and quantity of money.

PLANNING PHASE

2.4 Project Scope

-This Android application to login with you card number.

- It allow user to order ATM machine by the nearest.

- It allow user to order ATM machine by the balance.

- It allow user to order ATM machine by the crowding.

2.5 Project Constraint

-Selecting best algorithm to provide the best summary to know the best ATM machines of lists.

PLANNING PHASE

2.6 Project Feasibility

Technical feasibility	using the best technologies to build the project that satisfied the teamwork programming level
Operational feasibility	Users can login with your card number and see all ATM machine that available to him to withdraw your money.
Economical feasibility	Bank can get new clients to deposit money in the bank or using its ATM machines to withdraw money from another banks the earning money from every withdrawing.

2.7 Project Deliverables

-Save time and efforts.

- Reduce the busy lines on ATM machines.

-can use maps to search ATM on any place you want.

PLANNING PHASE

2.8 Project milestones

- Ending project`s analyzing stage.
- -Completing designing stage.
- -finishing programming.
- -testing the program and fix problems.

2.9 Project assumption

- Make application online.
- -Administrator has to add information about different
- Fields and continuously update it.

PLANNING PHASE

2.10 Project success

- After finishing the project

  Testing the project then releasing the application.
- After six months

  Check the application secure users and ATM machine data.

2.11 Project benefits

- save time and efforts of the ATM user.
- Reduce the busy lines on ATM machines.
- Bank can get new clients to deposit money in the bank.
- use its ATM machines to withdraw money from another banks the earning money from every withdrawing.

Chapter 3
System Analysis

ANALYSIS PHASES

System analysis:

Is the process of studying a procedure or business in order to identify its goals and purposes and create systems and procedures that will achieve them in an efficient way.

Another view sees systems analysis as a problem-solving technique that decomposes a system into its component pieces for the purpose of the studying how well those component parts work and interact to accomplish their purpose

INTERVIEW

At the beginning of the work in this project we needed some information and data by way of know the mechanism of the work of this banking system so we resorted to work in exchange with the Director of the systems sector in the Housing and Development Bank and in this interview was the following: We started this interview presentation of the idea of the basic project and showed his admiration for the idea and then we began to ask the questions which were as follows:

1. How to transfer data from the machine to the bank system?
2. How to know the state of the machine and transfer its status to the system?
3. Is it possible to take some of these data and use them in our application?
4. Is it possible to support our application? 5. What did you think about this project and its effectiveness?

REQUIREMENTS FOR ATM PROJECT

1. Business requirement

Reasons for proposing system

1) Preventing the congestion on ATM places and this will save the time of the customer

2) Determination idle and worked ATM machine this will save the time of the user and Provides user effort

3) Showing the nearest ATM machine which has the amount selected this will make user determines his ATM machine

REQUIREMENTS FOR ATM PROJECT

2. Functional requirements for user

- **User actually need to**
  1) Know crowded or not crowded ATM machines
  2) Know idle or worked ATM machine
  3) Know if an ATM machine have his amount requirement or not
  4) Know closes ATM machine for him

- **Task that user performed**
  1) Determine which machine want to deal with it
  2) Determine his amount that he want from an ATM machine selected
  3) Search about ATM machines that achieve all his requirements (contain his amount, closing to him, not crowded)

REQUIREMENTS FOR ATM PROJECT

3. Function requirement

- **Process-oriented**
  1) The system must allow registered customer and store all information in user table to calculate average time to dedicate if ATM machine crowded or not
  2) The system must know the current balance in ATM machine
  3) The system must know the current balance and rate of withdraw to predict the time that ATM machine will finish
  4) The system must receive information from bank to know if ATM machines work or no

- **Information-oriented**
  1) The system must retain customer information
  2) The system must save all transaction that user performed
  3) The system must retain ATM machines state

4. Functional requirements for developer

- Enter his name and his email and his password

5. Nonfunctional requirements for developer

- Access source code and modify it
- Upload the new one

REQUIREMENTS FOR ATM PROJECT

6. Non function requirement

- **Operational**
  1) The system runs on handheld devices

- **Performance**
  2) Any interaction between the user and the system not exceed 2 second
  3) The system should be available for use 24 hours per day 365 days per year
  4) The system supports user that have a credit card and handle with ATM machines

- **Security**
  1) User can see symbol of crowded and not crowded place
  2) The system includes all available safeguards from virus, warms ...

- **Culture and political**
  1) Customer information is protected
  2) Bank information is private and protected

PROJECT ANALYSIS TECHNIQUES

WHAT IS PROJECT/SYSTEM ANALYSIS?

System analysis1 is the process of studying a procedure or business in order to identify its goals and purposes and create systems and procedures that will achieve them in an efficient way".
Another view sees systems analysis as a problem-solving technique that decomposes a system into its component pieces for the purpose of the studying how well those component parts work and interact to accomplish their purpose.

MAIN TECHNIQUES FOR ANALYSIS

There are four Main Techniques for Analysis:

- Interview
- Questionnaire
- Observation
- Sampling

QUESTIONNAIRE

Is a document that allows the analyst to collect information and opinions from respondents, another fact-finding technique is conducting surveys through questionnaires.

The document can be mass-produced and distributed to respondents, who can then complete the questionnaire on their own time.

Questionnaires allow the analyst to collect facts from a large number of people while maintaining uniform responses.

When dealing with a large audience, no other fact finding technique can tabulate the same facts as efficiently.

Advantages of using Questionnaires:

- Scanning can be the fastest method of data entry for paper questionnaires
- Scanning is more accurate than interview

Disadvantages of using Questionnaire

- Scanning is best-suited to “check the box” type surveys and bar codes
- Scanning programs requires additional data entry time.
- Scanning is less accurate than a person in reading a poorly marked questionnaire.

OBSERVATION

Is a fact-finding technique wherein the systems analyst either participates in or watches a person perform activities to learn about the system?
It's one of the most effective data-collection techniques for learning about a system. Observation involves the systems analyst becoming an observer of people and activities in order to learn about the system.
This technique is often used when the validity of data collected through other methods is in question or when the complexity of certain aspects of the system prevents a clear explanation by the end users

Advantages of using Observations:

- You get to know the problem well.
- It enables you to gain an insight into the uniqueness of the problem.
- It allows you to obtain a better understanding of the 'norms 'of development.
- It enables you to chart development changes over a period of time.
- It enables you to ensure help/guidance is offered earlier than otherwise have been

Disadvantages of using Observations:

- Relationships with other relations may become strained due to the continuous observation of the problem itself
- Observation not available sometimes as a choice
- Issues around confidentiality may be raised, as it may be easy for others to identify the problem.

SAMPLING

Sampling Is the process of collecting a representative sample of documents, forms, and records Because it would be impractical to study every occurrence of every form or record in a file or database, system analysts normally use sampling techniques to get a large enough cross section to determine what can happen in the system.

The systems analyst should seek to sample enough forms to represent the full nature and complexity of the data. Experienced analysts avoid the pit falls of sampling blank forms tell little about how the form is actually used, when it is not used, or how it is often misused.

When studying documents or records from a database table, analysts should study enough samples to identify all the possible processing conditions and exceptions. Statistical sampling techniques can be used to determine if the sample size is large enough to be representative of the total population of records or documents.

Advantages of using Sampling:

- A collection of precise data/when completed data is readily accessible.
- It is quick and easy to use.
- It is more closely focused.
- It can reveal unsuspected patterns of behavior.
-

Disadvantages of using Sampling:

- Allocating time to complete the task
- It needs to be carefully prepared.

FIND BY OBSERVATION

Observation first at all gives us the idea itself, we collect our feelings with clinics experiences from our memory and asking ourself which thing can change this experience to be better.

Which thing we miss? And which we will go to solve? But we not only depend on memory, we saw old bank manager's description which we retain to keep manager's information when we need it to visit him again (Traditional way), and we use our observations to find in example what information every manager keens to display in his Prescription and what information of users he asked about.

We also observe manager's Banners and other advertises, to ensure about data each manager keens on to display about himself.

We observe the ATM machine doesn't display data to users but in the other side it's have a verification system for employees by name which helps our admins to verify registered user.

FIND BY SAMPLING

We collect a sample of users of similar projects comments to see their needs and on the ATM machine systems we do the same.

In Egypt, because there are small numbers of implementations of the idea and the one had small numbers of services that gives us the ability to see lots of needs waiting for solving.

In the process for collecting data for sampling we asked some of banks in sharqiya for data and their reply it's available but we shouldn't take this data for security reasons.

FIND BY INTERVIEW

Find by an interview the first person we met is a Egyptian person lives in Cairo, which makes us make a meeting with him he says he had experience with applications like our application, we asking him for talking about his experience and he welcome

After talking we find the needs of users in Egypt were solved in others applications but he said there were some of problems he found that the first problem that the manager of the bank dosen't control and view the ATMs and the second problem that the user dosen't know that this ATM contains enough money or no, Finally we thanks for talking.

USER INTERVIEW GUIDE

Objective open the interview:

- Introduce ourselves.
- Thank interviewee for his valuable time.
- State the purpose of the interview

Question 1
What is your opinion on ATM Analyzer application you used?

Question 2
What the problems you face in those applications?

Question 3
What you hope to find in those applications?

Objective conclude the interview:

- Thank interviewee for his cooperation

General Comments and Notes.

MANAGER INTERVIEW GUIDE

Objective open the interview:

- Introduce ourselves.
- Thank interviewee for his valuable time
- State the purpose of the interview

Question 1
What is your opinion on ATM location Analyzer for doctors and users?

Question 2
What the problems you face in those applications as a doctor?

Question 3
What you hope to find in those applications?

Objective conclude the interview:

- Thank interviewee for his cooperation

General Comments and Notes.

Now after needs analysis we decided matching the same needs and isolating every manager and every user in his opinion which. In this time we said we will use web too not just android.

On android

- Every user must sign up an Account to prevent fake data attacks.
- We give the user ability to search for an ATM by its name.
- We give the user ability to direct contact with us.
- We give the user ability to know the nearest ATM for him
- We give the user ability to get directions of ATM machine.
- We give the user an easy group of ATMs list with suitable status

On web

- We give the manager ability to create and update his profile
- We give the manager ability to read machines status
- We give the admin ability to reserve ATMs data and verify it.
- We give the admin and manager ability to delete disabled machines

AFTER COMPLETION OF PROJECT ANALYSIS

After completion of Project analysis and define project needs and scope we analysis the collected data about the project to ensure that data is accurate and complete

User's Data

- Username
- Password
- Phone

Manager's data

- Username
- Password
- Phone
- Email

ATM's data

- ATM location
- ATM address

ANALYSIS REPORT

After completing the work of analysis, the requirements collected for the system are documented in a presentable form.

It means that the analysis report is prepared. It is done for review and approval of the project. After reviewing the report, now we ready for going to the next step, Project Design.

Chapter 4
Project Design

ATM Analyzer

Chapter 4. Project Design

BACKGROUND

In this chapter

We will design our project and it's data which we analysis in the previous chapter.

We drawing our design's diagrams to connect project and data objects and show how they work and interact together.

In the end of our design work we put the all needs and get the whole vision of our project to be real and to be ready for prototyping.

ATM Analyzer

Chapter 4. Project Design

3.1 | PROJECT DESIGN

In the previous chapter,

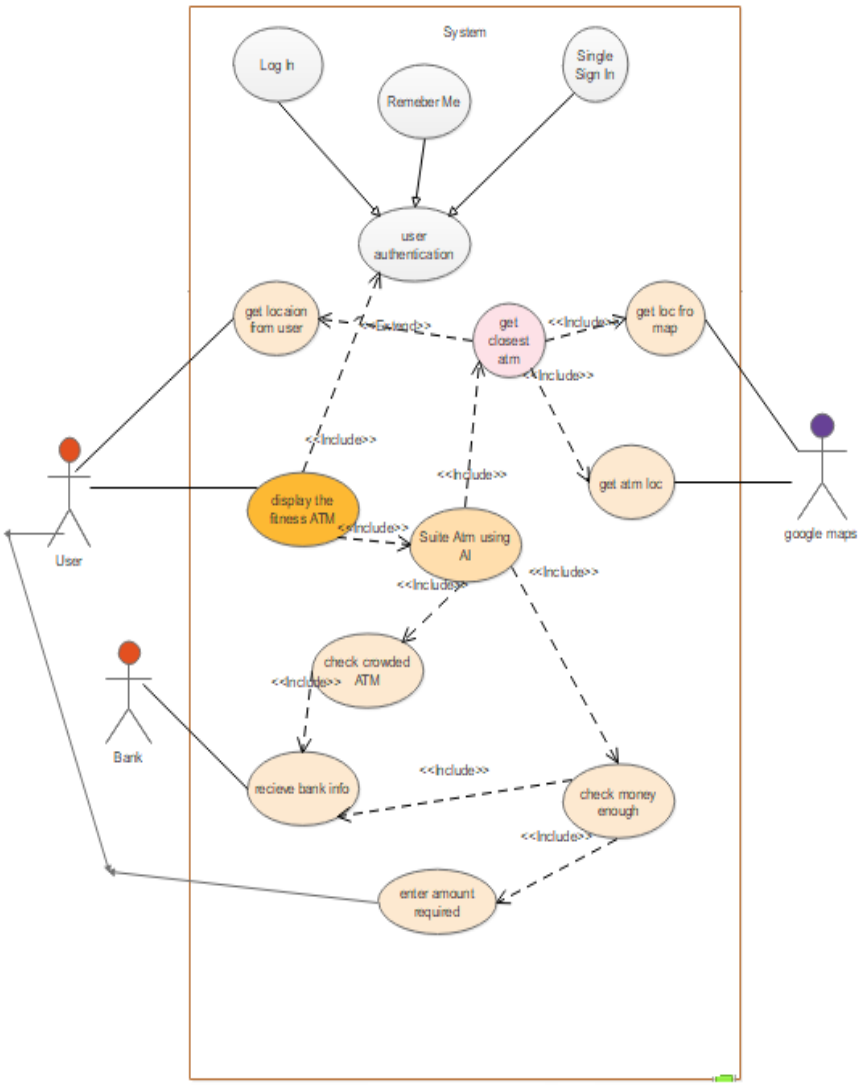
we are talking about the analysis process of the problem which we trying to solve , defining the problem and it's solution, studying analysis techniques and choose the appropriate from these techniques for applying and then gathering our project data and extract our project vision.

Now in this chapter

We put the analysis approach in the design process to define our project tasks in a form that focus on the specification of a detailed computer-based solution, It is also called physical design. Thus, whereas systems analysis emphasized the business problem, systems design focuses on the technical or implementation concerns of the system.

INTERFACE DESIGN

Use Case Diagram



INTERFACE DESIGN

We implement high level view for our project by this Diagrams:

- Context Diagram
- Data Flow Diagram

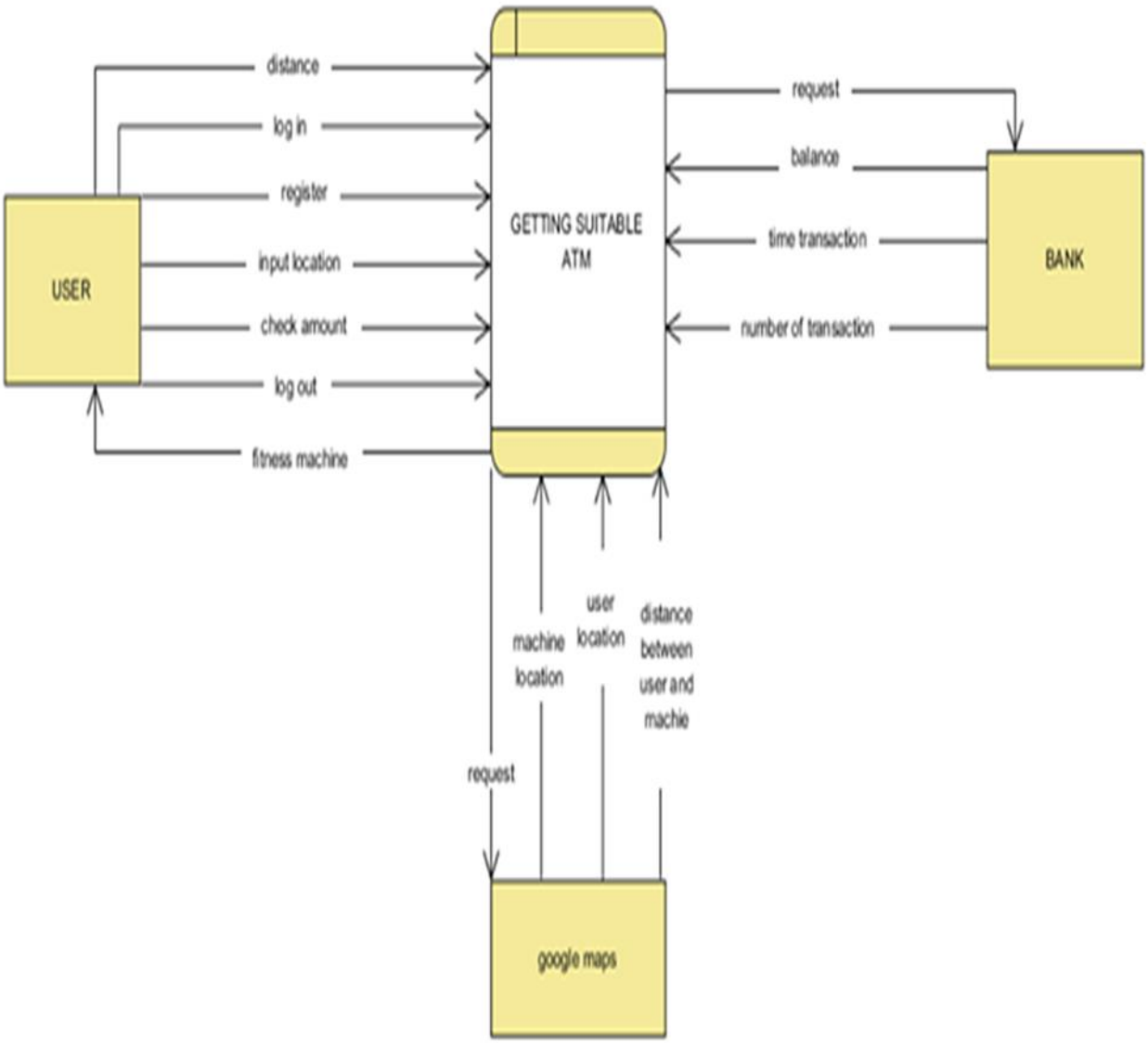
Context Diagram

Context Diagram (in software engineering and systems engineering) is a diagram that defines the boundary between the system, or part of a system, and its environment, showing the entities that interact with it. This diagram is a high level view of a system.

Context diagrams show a system, often software-based, as a whole and its inputs and outputs from/to external factors.

It's representing all external entities that may interact with a system such our project diagram which pictures the ATM-Analyser system at the center, with no details of its interior structure, surrounded by all its interacting systems, environments and activities.

CONTEXT DIAGRAM



CONTEXT DIAGRAM

In our case

In our case which representing by Bank and Users.
The objective of the Project context diagram is to focus attention on external factors and events that should be considered in developing a complete set of systems requirements and constraints.
System context diagrams are used early in a project to get agreement on the scope under investigation.

DATA FLOW DIAGRAM

A data flow diagram (DFD) illustrates how data is processed by a system in terms of inputs and outputs. As its name indicates its focus is on the flow of information, where data comes from, where it goes and how it gets stored.

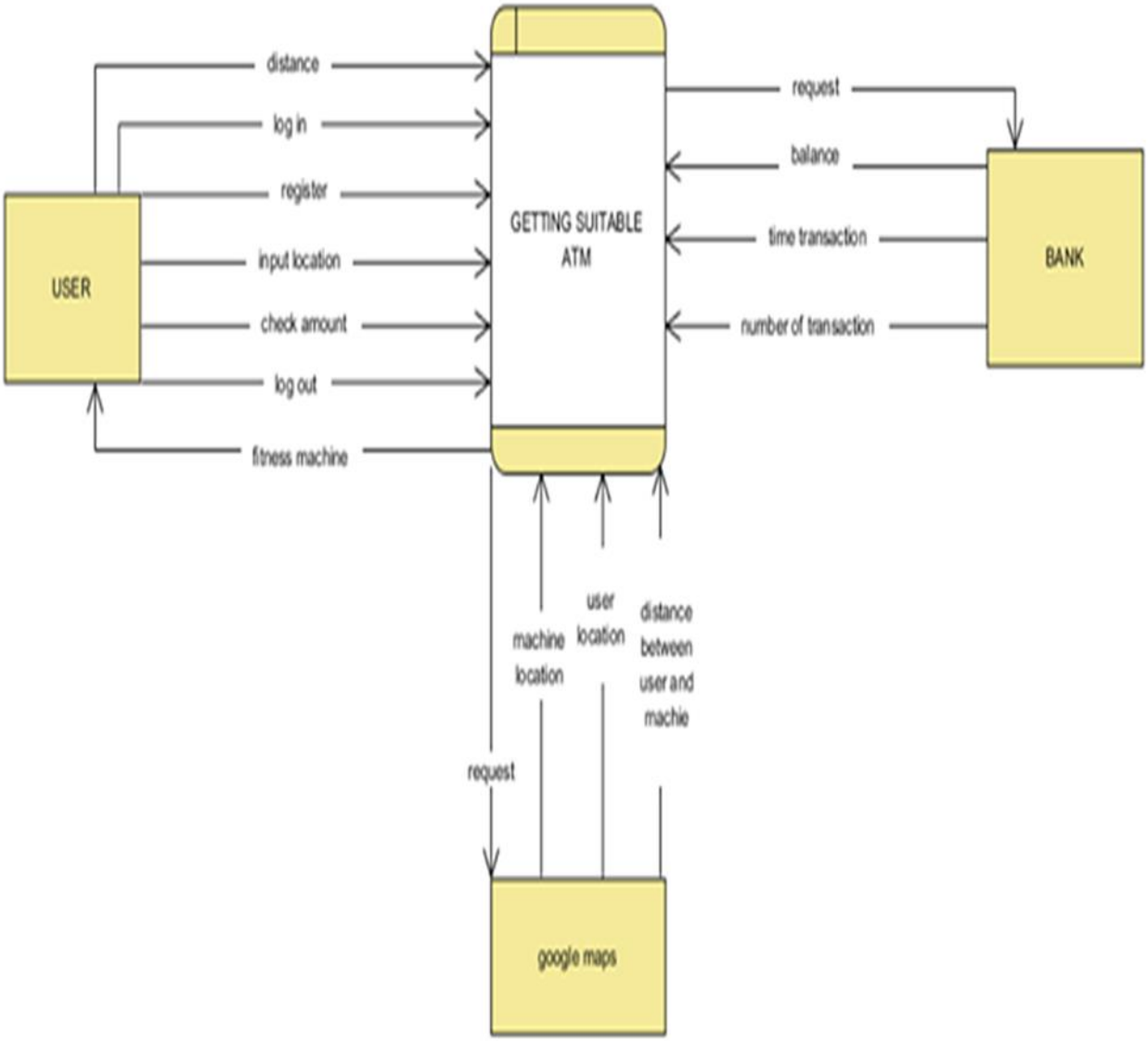
Data Flow Diagram Levels:

Context Diagram. A context diagram is a top level (also known as "Level 0") data flow diagram.
It only contains one process node ("Process 0") that generalizes the function of the entire system in relationship to external entities.

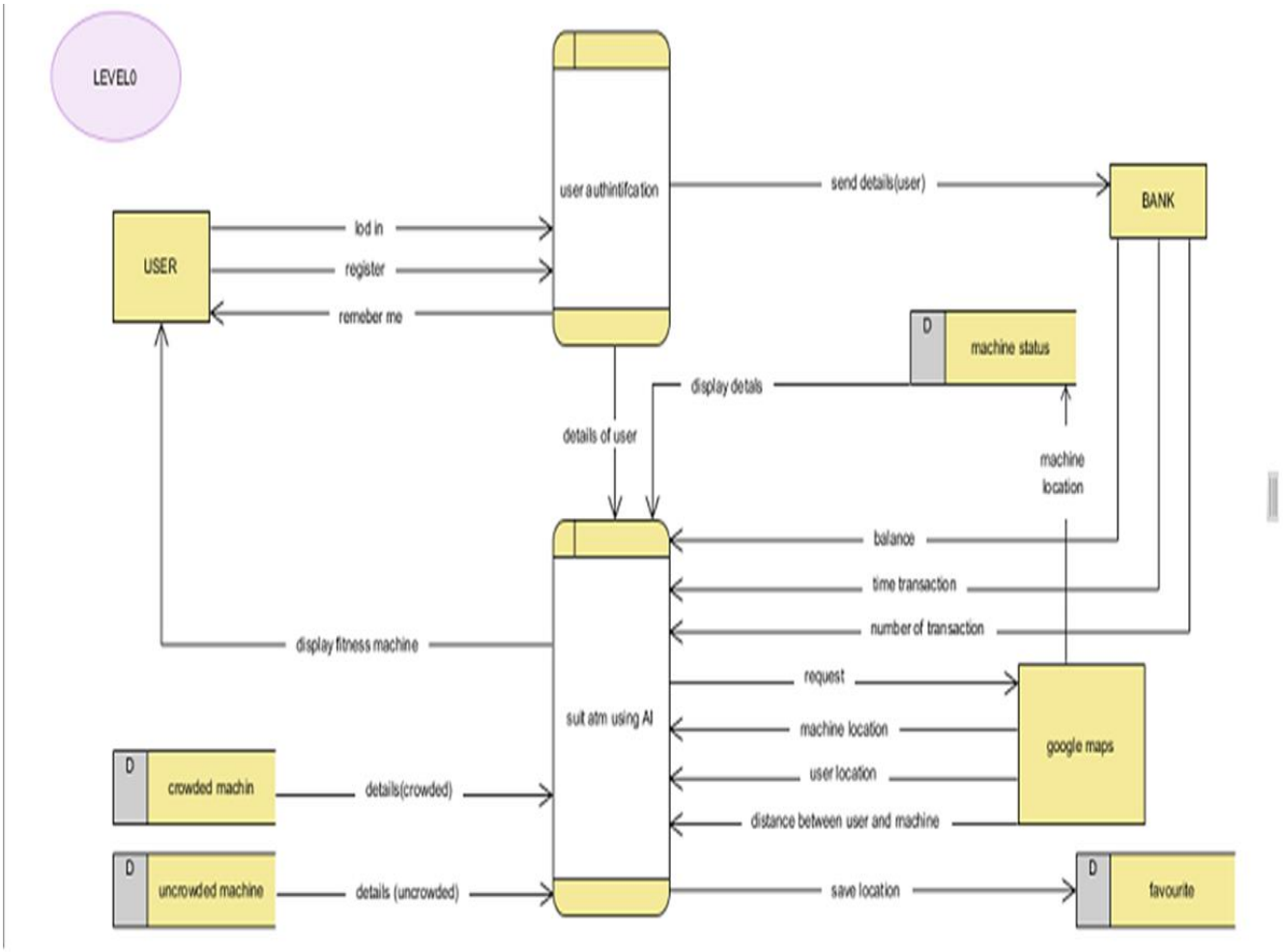
DFD Levels:

The first level DFD shows the main processes within the system.
Each of these processes can be broken into further processes until you reach pseudo code.

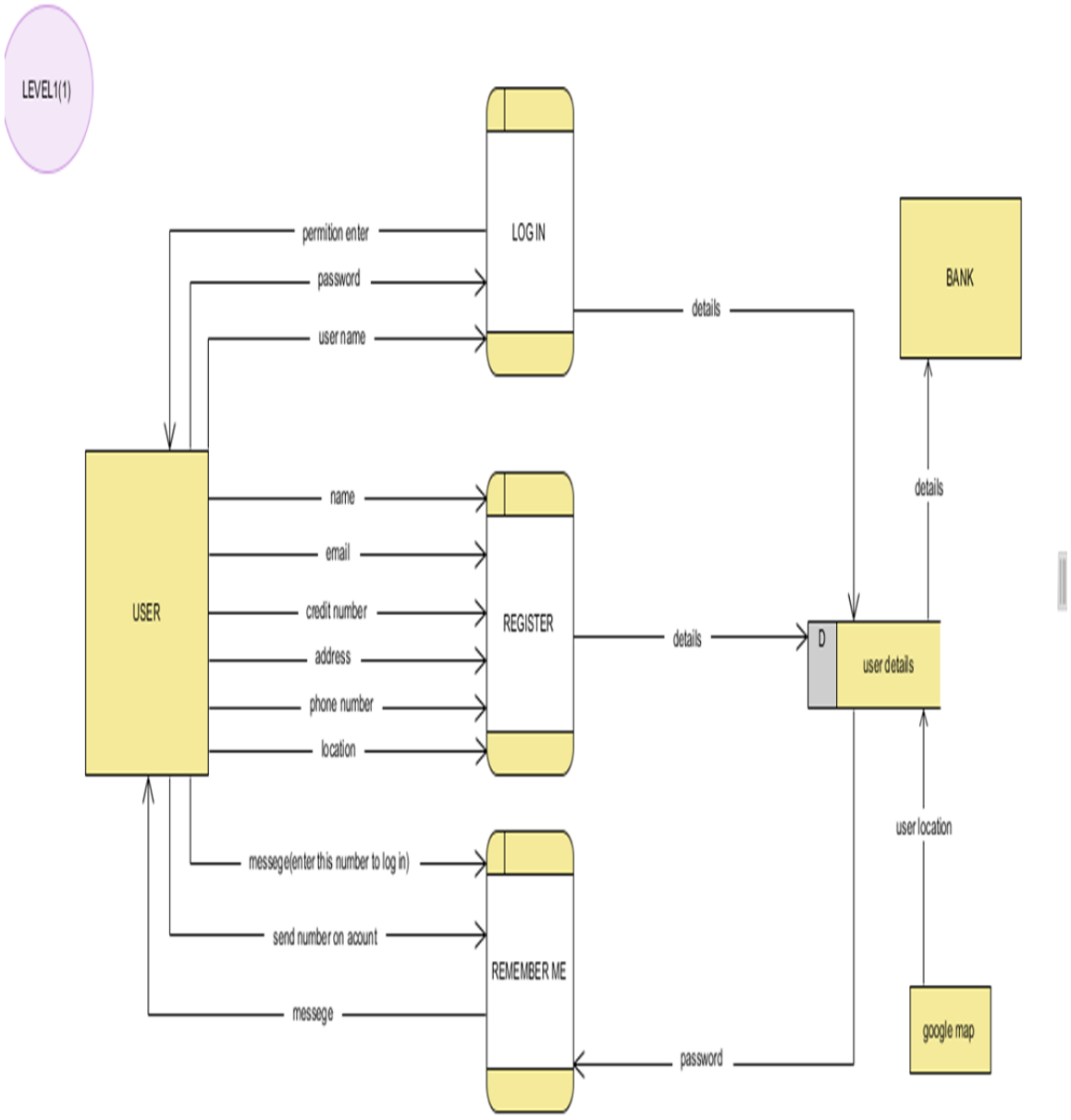
DATA FLOW DIAGRAM (LEVEL 0)



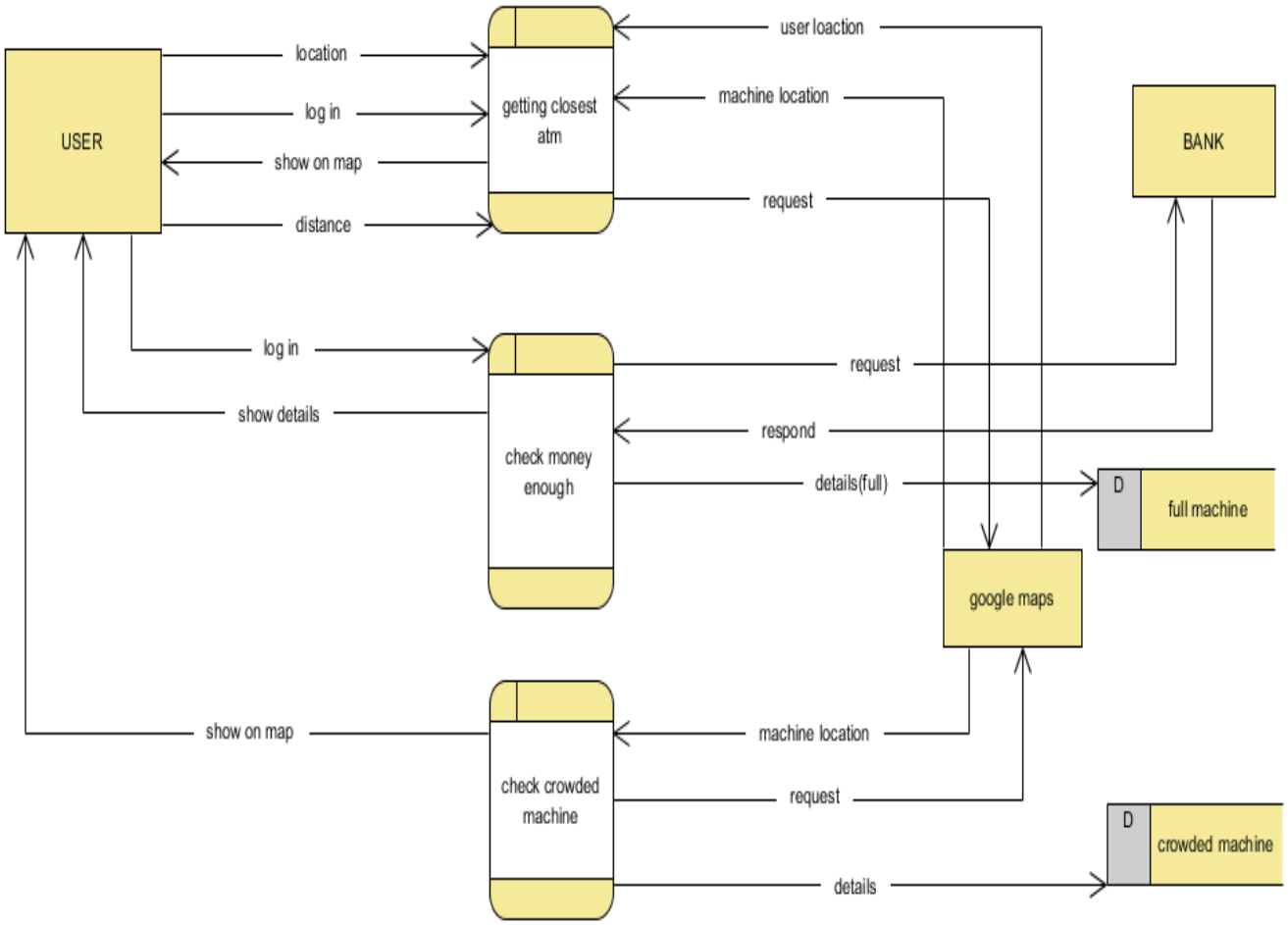
DATA FLOW DIAGRAM (LEVEL 1.0)



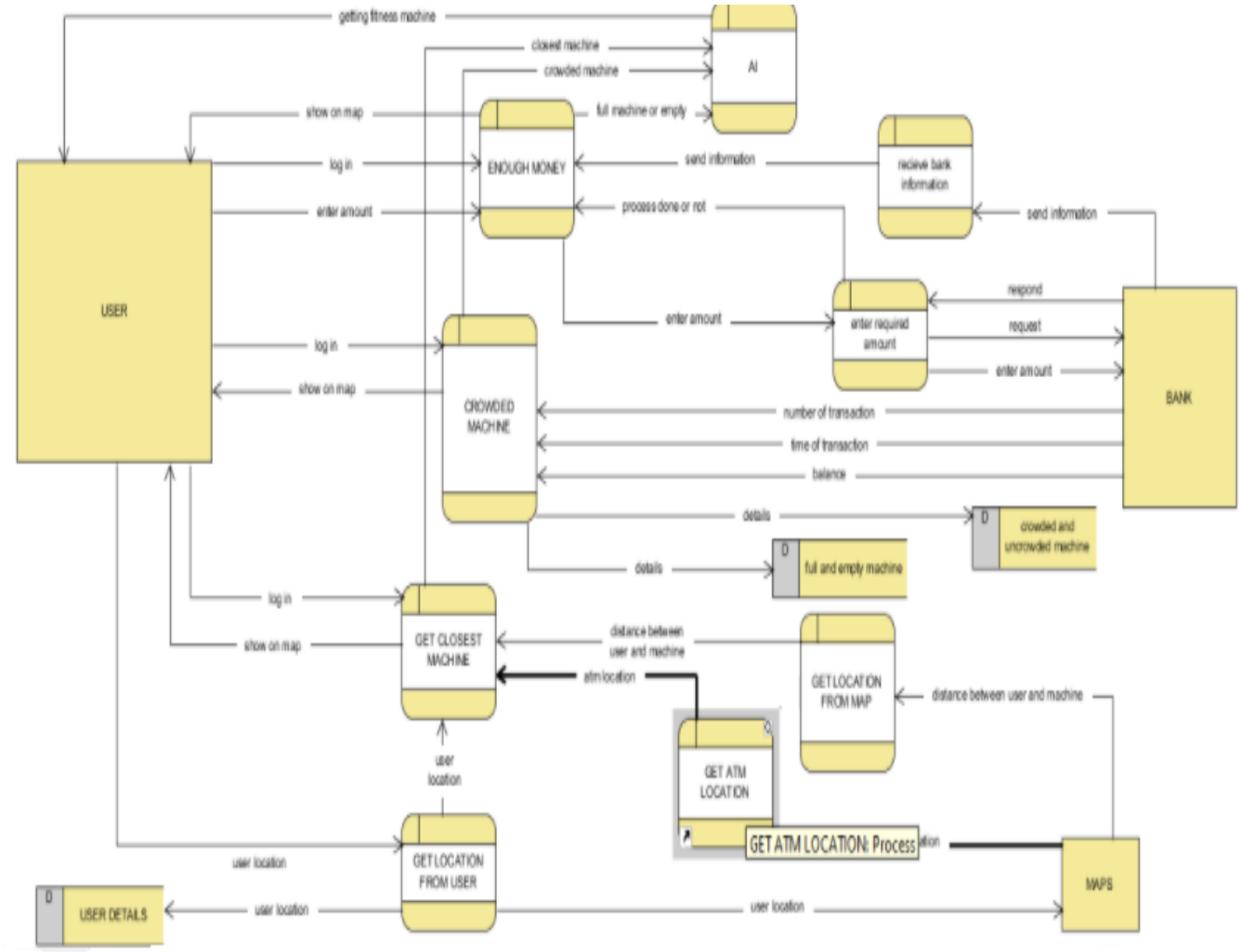
DATA FLOW DIAGRAM (LEVEL 1.1)



DATA FLOW DIAGRAM (LEVEL 1.2)



DATA FLOW DIAGRAM (LEVEL 2)



DATA DESIGN

An entity–relationship model (ER model) describes inter-related things of interest in a specified domain of knowledge, An ER model is composed of entity types and specifies relationships that can exist between instances of those entity types.

In software engineering an ER model is commonly formed to represent things that a business needs to remember in order to perform business processes.
Consequently,
The ER model becomes an abstract data model that defies a data or information structure that can be implemented in a database, typically a relational database.

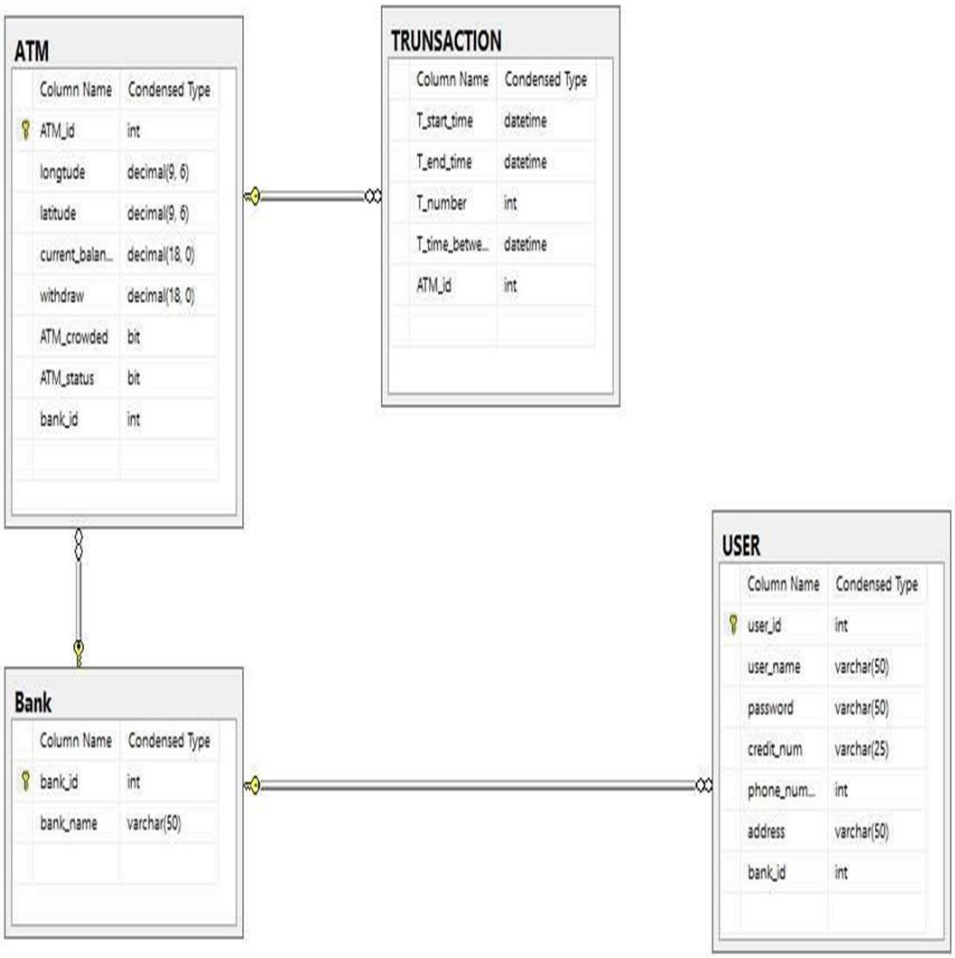
How we implement our Data Design?

We implement high level view for our data design by this Diagram.

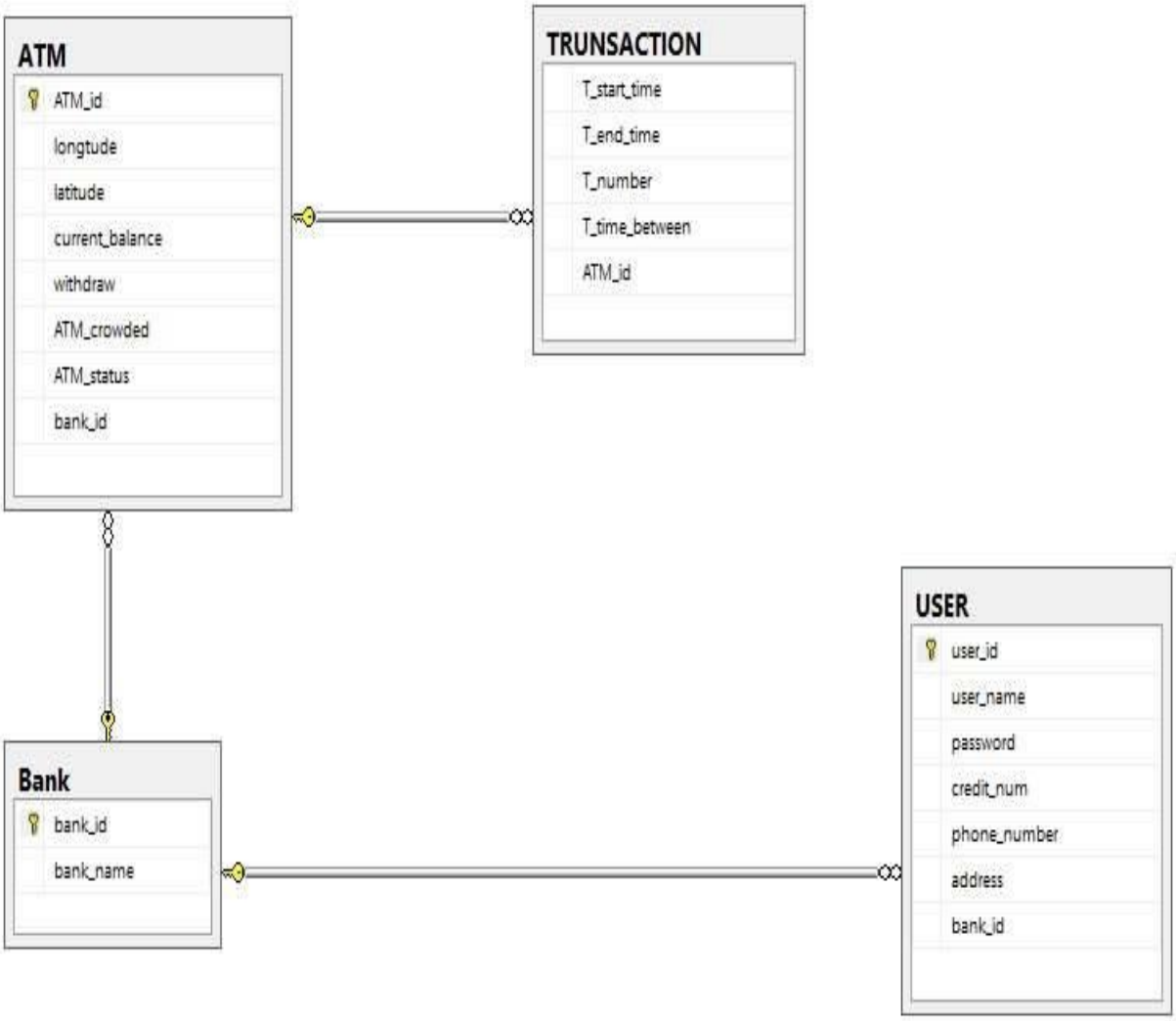
ER DIAGRAM

How object related to others objects?

ER Diagram describes relations between objects like many to many, many to one relationships in the next point we explain this relation between our project objects.



LOGICAL DATA MODELING



Chapter 5
Implementation

ATM Analyzer

Chapter 5. Implementation

MOVING TO IMPLEMENTATION

First, MANAGING THE Application

- The programming process is quite well understood and generally flows smoothly. When system development projects fail, it is usually not because we were unable to write the programs. Flaws in analysis, design, or project management are the leading contributors to project failure. In order to ensure that the process of programming is conducted successfully, we discuss several tasks that the project manager has did to manage the programming effort

    1. assigning programming tasks
    2. coordinating the activities
    3. managing the programming schedule

1-assigning programming tasks on team members

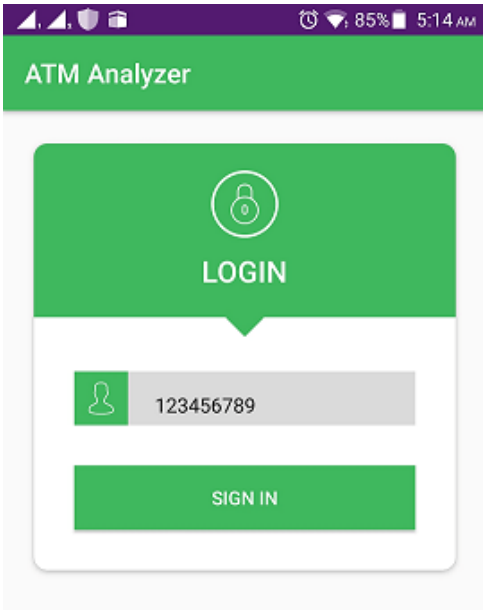
- During project planning , the project manager identified the programming support required for constructing the system in terms of the numbers and skill levels of programmers. Now the project manager must assign program modules to the programming staff. each programming module should be as separate and distinct as possible from the other modules.
- manager first groups together modules that are related. These groups of modules are then assigned to programmers on the basis of their experience and skill level. Experienced, skilled programmers will be assigned the most complex modules, while novice programmers will be given less complex ones.

IMPLEMENTATION

2-coordinating the activities

- we have had a weekly project meeting to discuss any changes to the system that have arisen during the past week—and Regular meetings, even if they are brief, encourage the widespread communication and discussion of issues before they become problems.

Second, Our project implementation

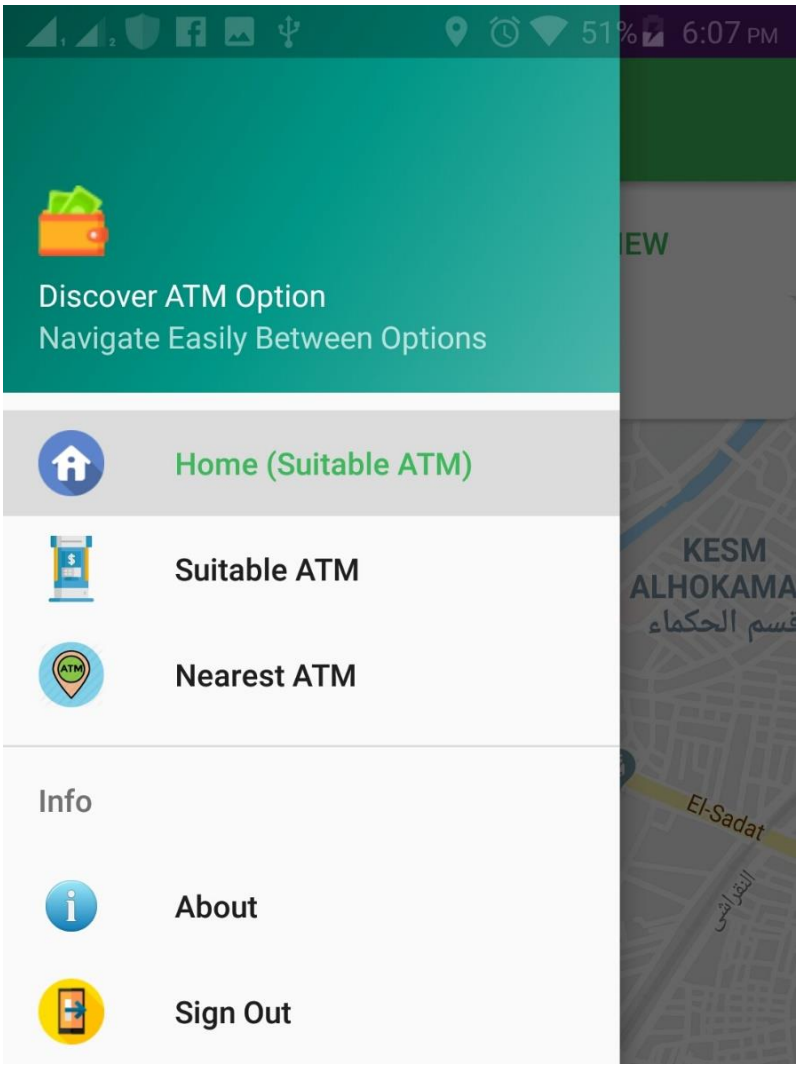


- First, login screen. Only users that have credit card can log in our application without registration because our application belongs to bank user that have credit card and handles with ATMs machines

IMPLEMENTATION

Card Number is not sensitive data it is public data like this

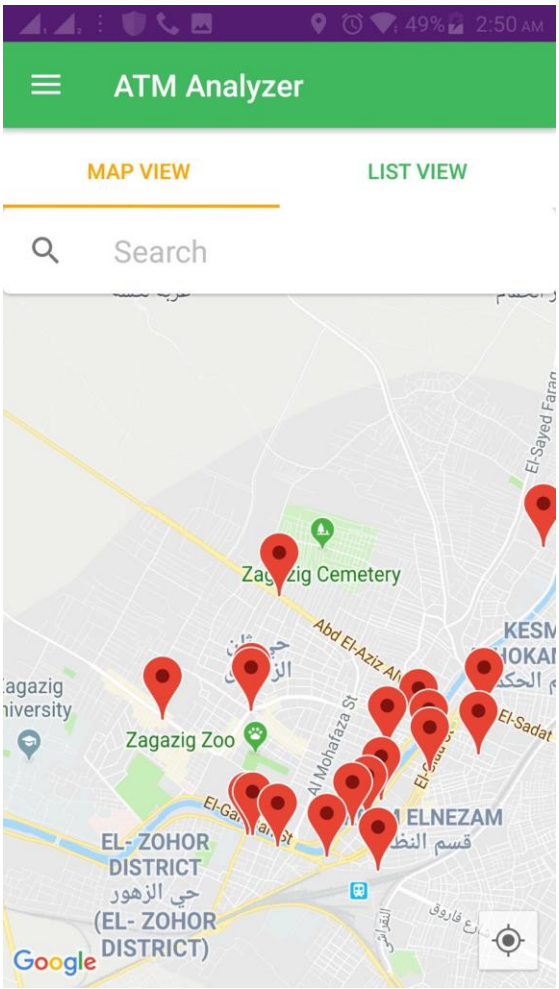
IMPLEMENTATION



- User can choose any option from this at this layout
- User can choose that sign out from the application at this layout
- User can choose the default nearest ATM and the suitable ATM at this layout

IMPLEMENTATION

- After user login he will be directed to home screen

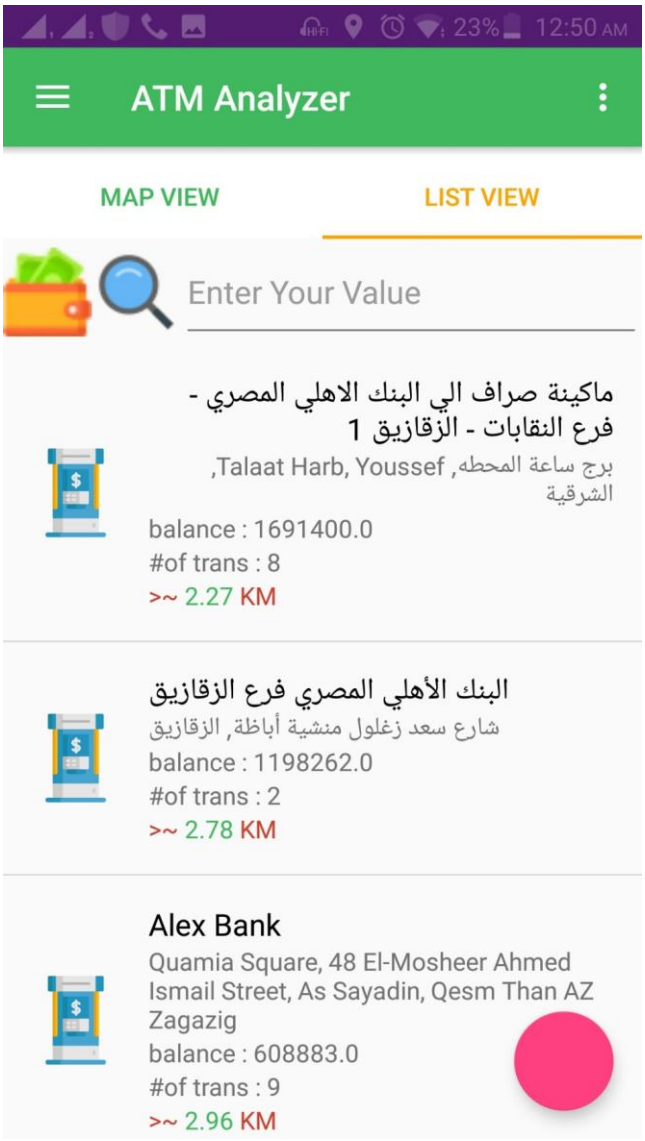


- In home screen application show atms machins that is close to user location
- and theire are search that make user search atms anywhere in the world and distance between user and any atm machine

IMPLEMENTATION

On moving into List View we will see all Atms in a list orderd by default by distance between user and atm

IMPLEMENTATION



And There are 3 type of order

IMPLEMENTATION

Types of order

1. Orderd by distance : distance between user and ATM machines

2. Ordered by uncrowding : Determination number of transaction every hour which we will get it from bank and the time between every (transaction and Previous transaction) then calculate sum of time between every transaction divided by the number of transaction to calculate average time.
   Average time = sum of duration between transaction1h / #of transaction1h

3. Ordered by suitable : orderd All Atm by considration 3 craiteria – distance,balance and number of transaction in last an hour

IMPLEMENTATION

Main function of our project is to present to user the suuitable atms we have an algorithm that dedicate this suitable atm depending on

(a) Balance
(b) Number of transaction
(c) Distance between user and atm

```
393
394         }
395         public void suitableAtm(){
396         //value that user want to withdraw
397             ArrayList<ATM> Values = new ArrayList<ATM>();
398             for(int w = 0 ;w <atms.size();w++){
399                 if(atms.get(w).getbalance()>checkValueAvailableInAtm()+10000){
400                     Values.add(atms.get(w));
401                 }
402             }
403
404         double maxdistance = 0.0;
405         double maxbalance = 0.0;
406         int maxtransactionbyhour = 0;
407         for(int i =0;i<Values.size();i++){
408             if(Values.get(i).getDistance()>maxdistance)
409                 maxdistance = Values.get(i).getDistance();
410
411             if(Values.get(i).getbalance()>maxbalance)
412                 maxbalance = Values.get(i).getbalance();
413
414             if(Values.get(i).getT_N_last_hour()>maxtransactionbyhour)
415                 maxtransactionbyhour = Values.get(i).getT_N_last_hour();
416
417
418         }
419         for (int i =0;i<Values.size();i++){
420             Values.get(i).setPrecentagofdistance(20-((Values.get(i).getDistance()/(maxdistance+7))*20));
421             Values.get(i).setPrecentagofbalance((Values.get(i).getbalance()/(maxbalance))*100);
422             Values.get(i).setPrecentagofcrowding(120-((Values.get(i).getT_N_last_hour()/(maxtransactionbyhour+15))
```

First, we get the max distance, max balnce and max numer of transaction from set of atms around the user

IMPLEMENTATION

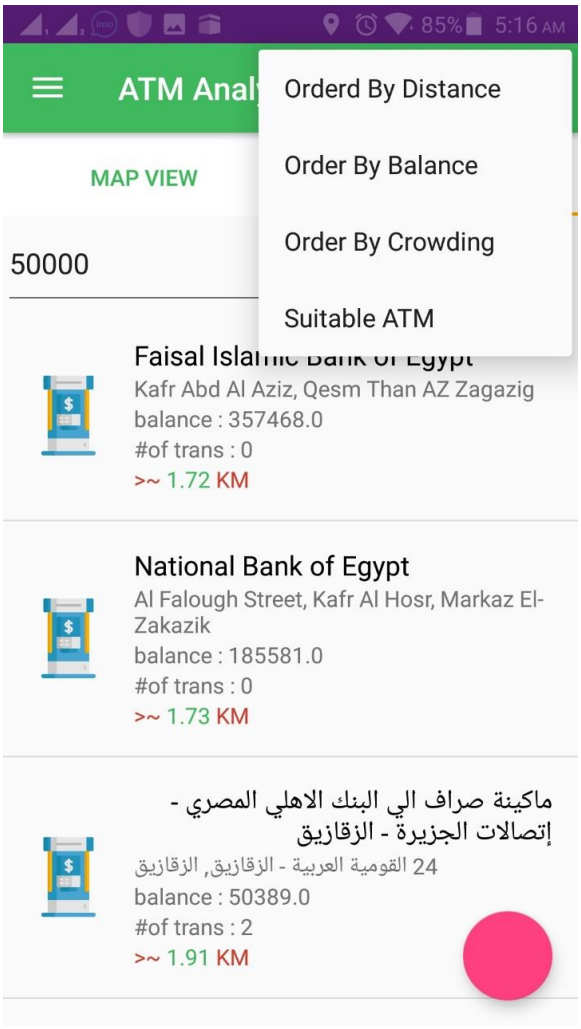
Second, we put prcentage for each atm dependig on 3 criteria

```
418         }
419         for (int i =0;i<Values.size();i++){
420             Values.get(i).setPrecentagofdistance(20-((Values.get(i).getDistance()/(maxdistance+7))*20));
421             Values.get(i).setPrecentagofbalance((Values.get(i).getbalance()/(maxbalance))*100);
422             Values.get(i).setPrecentagofcrowding(120-((Values.get(i).getT_N_last_hour()/(maxtransactionbyhour+15))*120));
423             if(Values.get(i).getbalance()==0.0){
424                 Values.get(i).setPrecentagofcrowding(0.0);
425             }
426         }
427             for (int i = 0; i < Values.size(); i++) {
428
429                 for (int k = i + 1; k < Values.size(); k++) {
430                     double x = (Values.get(i).getPrecentagofbalance()+Values.get(i).getPrecentagofcrowding()+Values.get(i).getPrecen
431                     double y = (Values.get(k).getPrecentagofbalance()+Values.get(k).getPrecentagofcrowding()+Values.get(k).getPrecen
432
433
434                     if (x <= y) {
435                         Collections.swap(Values, i, k);
436                     }
437
438                 }
439             }
440
441             AtmAdapter adapter = new AtmAdapter(getActivity(), Values);
442             ListAtm.setAdapter(adapter);
443             ListAtm.setEmptyView(empty);
444             //
445             MapView_Fragment mMapViewFragment = new MapView_Fragment();
446             C_location.map.clear();
447
448             for(int i = 0 ; i<Values.size()/2;i++){
```

Third, we compare all atms by this precentage and take best atms and this is the suitable atm

4. Ordered by balance : ordered atms machine by it's balance

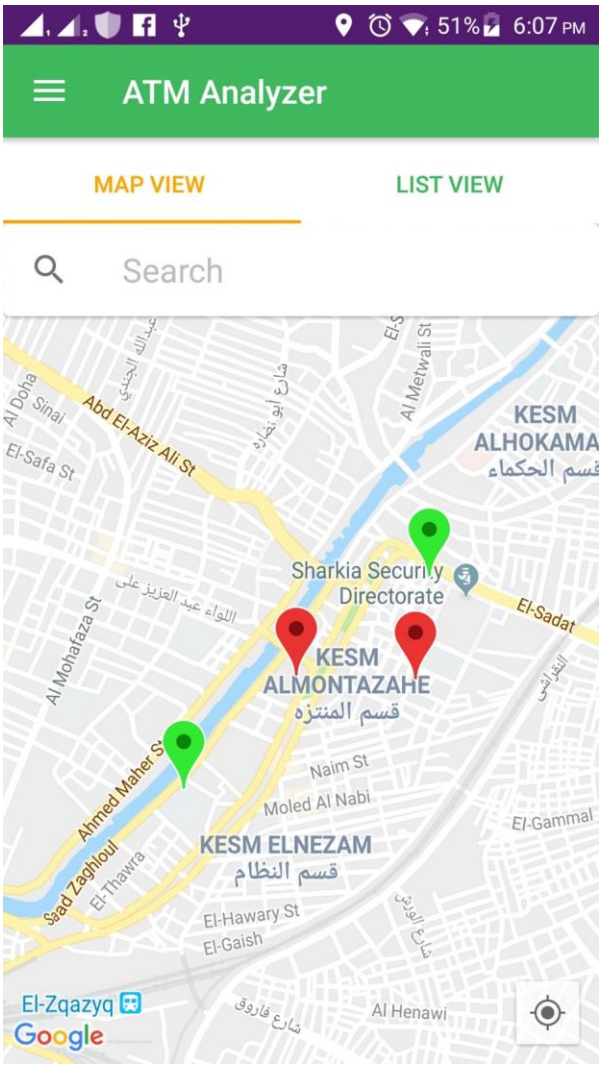
IMPLEMENTATION



After Ordering if you come back to home screen you will see atms marker colores changed

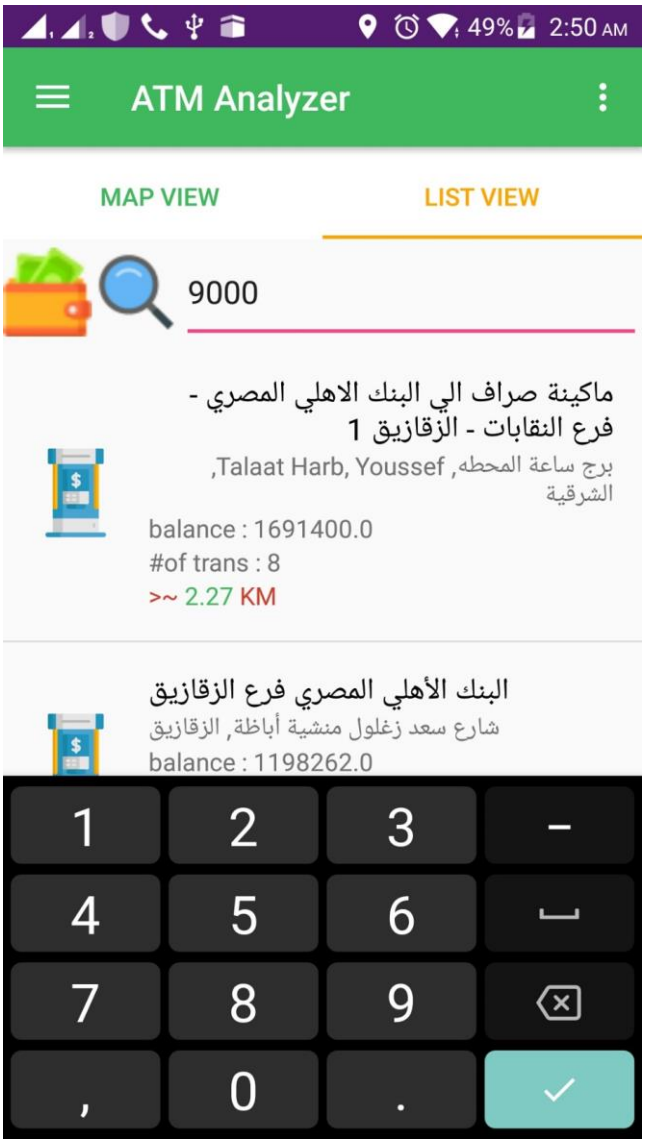
- **Green color : for avilable atm**
- **Red color : for atms that have less availability**

IMPLEMENTATION

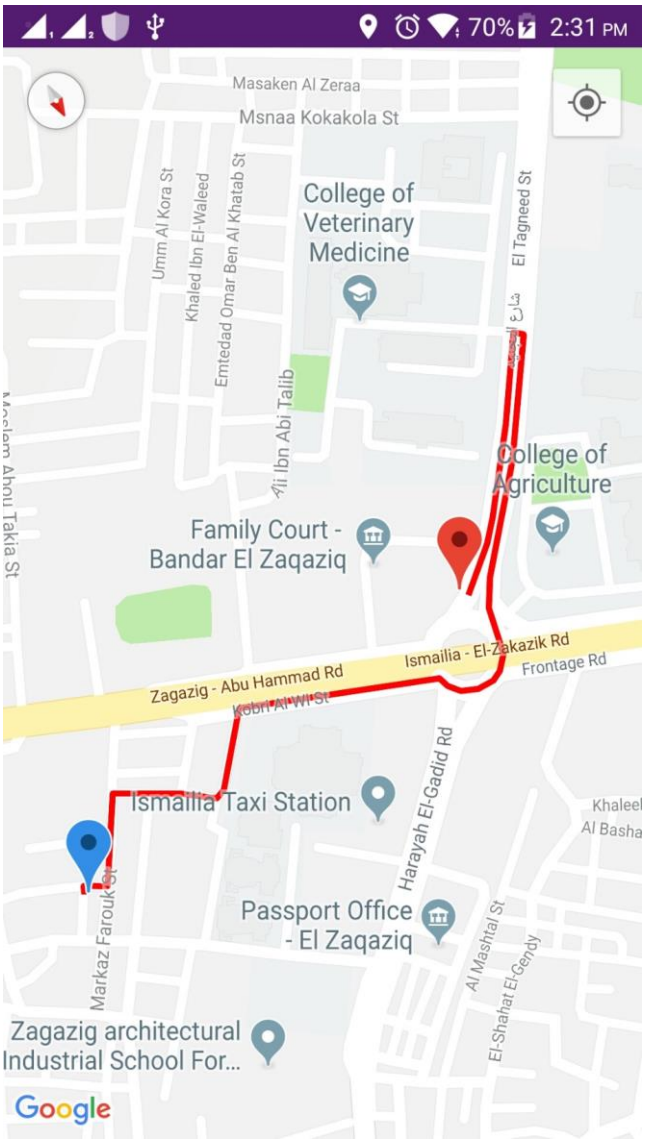


Here user can enter the amount of mony that he want to withdrow
Our application will display only atms that have balance at least user withdrow + 10000

IMPLEMENTATION

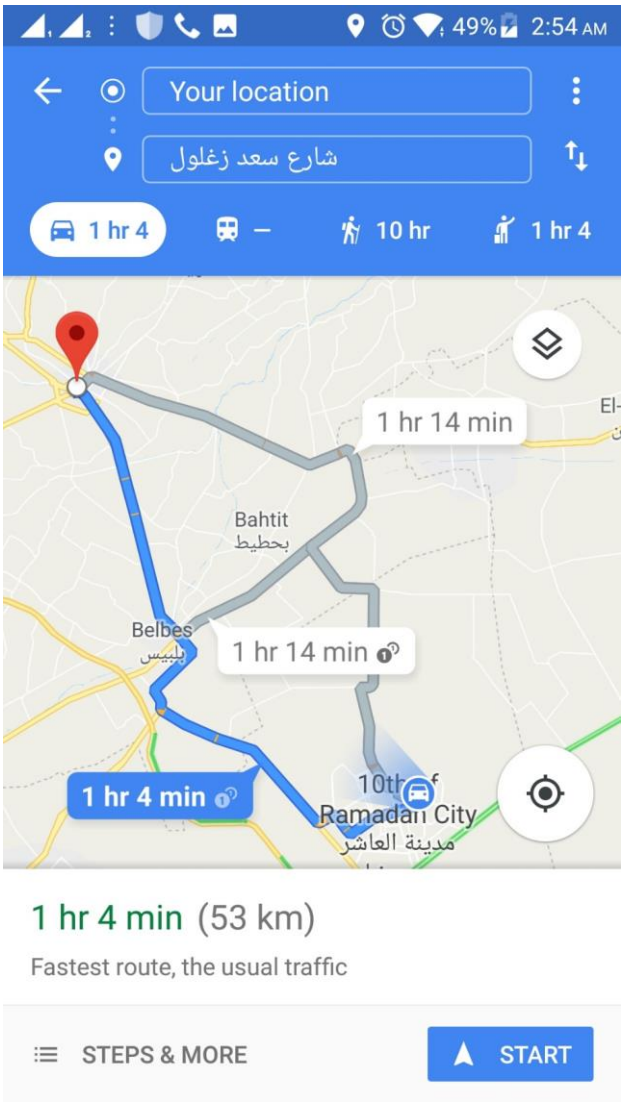


IMPLEMENTATION



User can see the root between him and the suitable atm by routin it on map

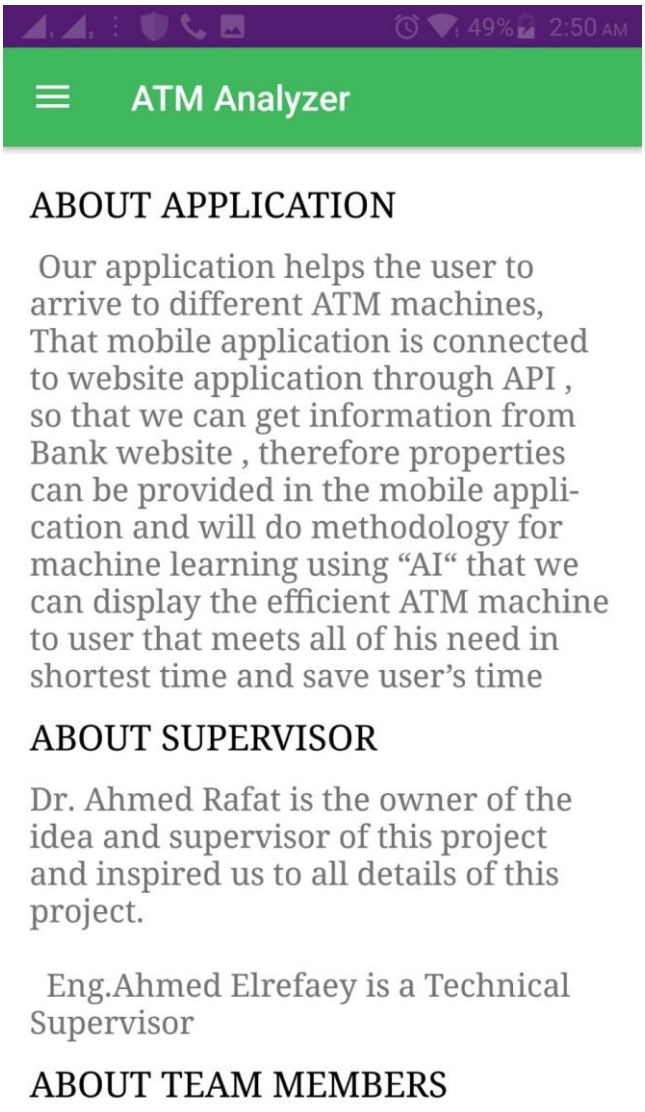
IMPLEMENTATION



User can go to suitable atm and get the instructions by pressing on google map button

Our app send longitude and latitude of atm that user select to google map.

IMPLEMENTATION



This screen is about our app, how it work, supervisors and team mambers

IMPLEMENTATION

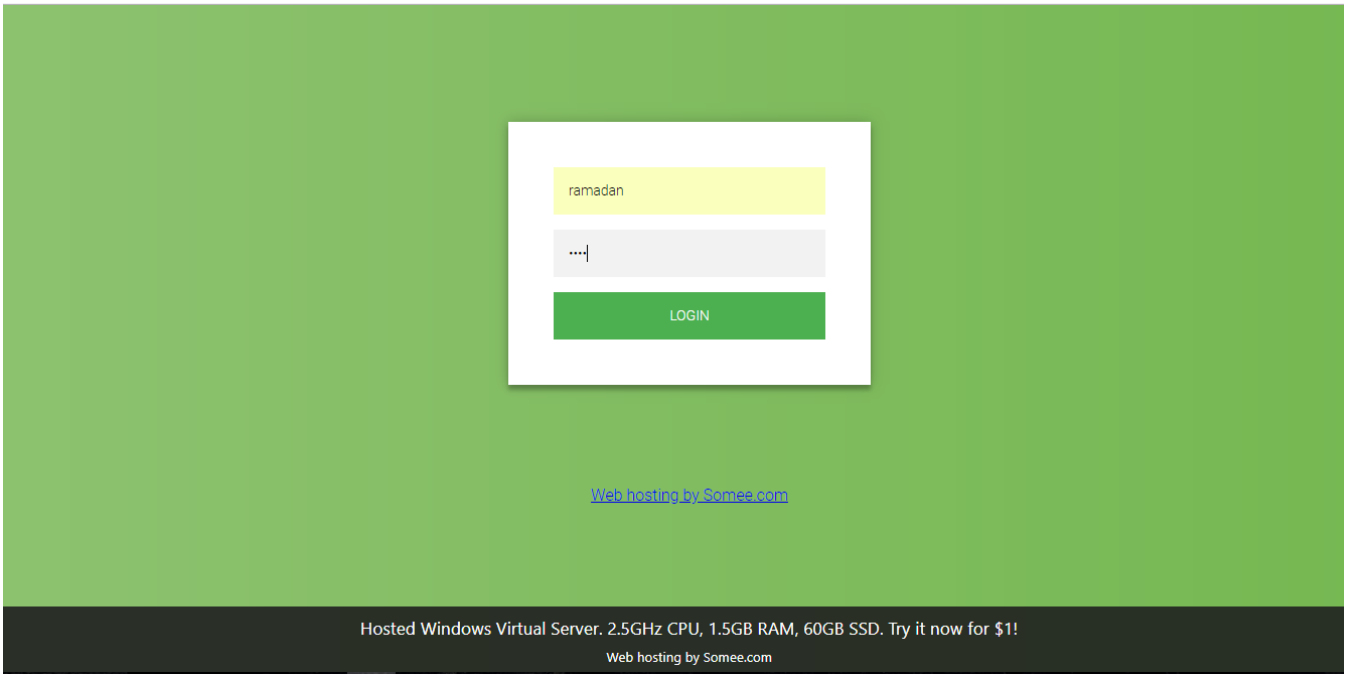
our website

our application can not be applied without data from the bank about the status of ATMs machine.
Data we need from the bank is

- The current balance of ATM
- Number of transaction at last hour

And no bank has authority to deal with us .
So we decide to make a demo that simulate bank system and atms transaction to show our work and our project we make a website that admins and bank employ to set the atm balance and we make simulation functions that make automatic random transactions and add daily or monthly balance on atms machines.
And we can this information by API , json data formate and deal with this information in our android app

IMPLEMENTATION

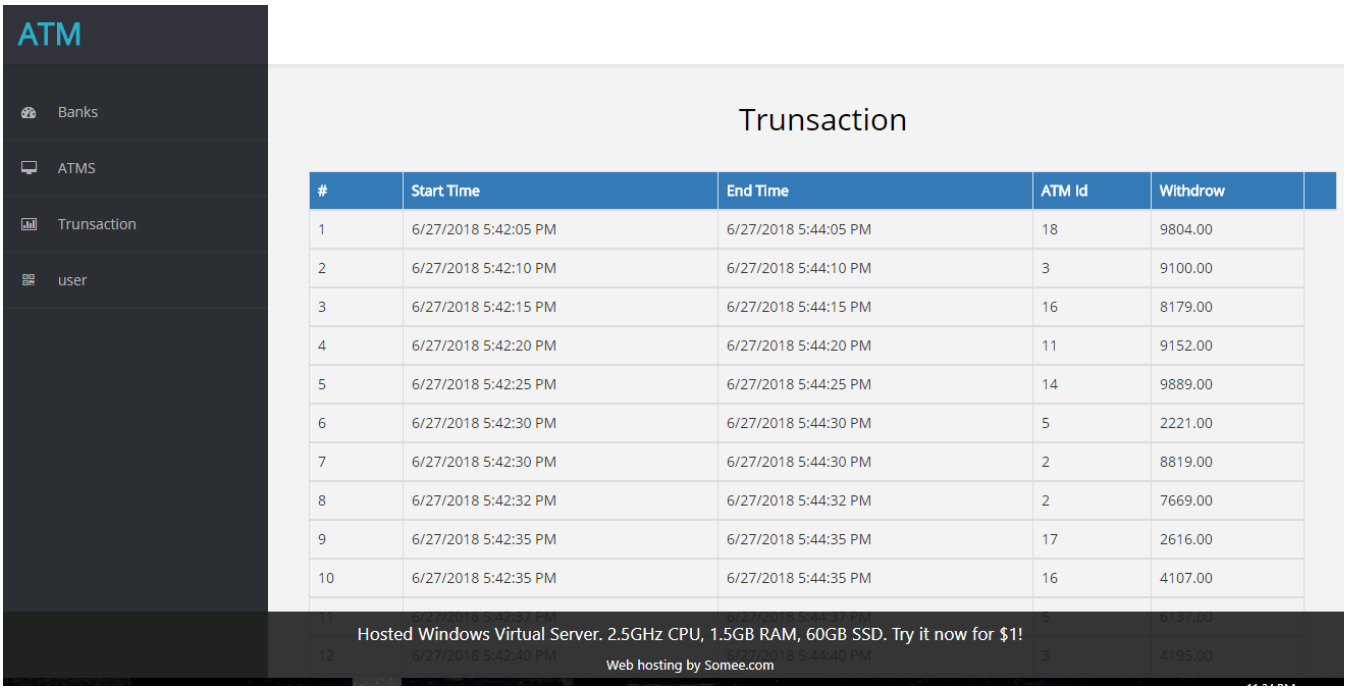


- First page is login page for admin of bank employees

IMPLEMENTATION

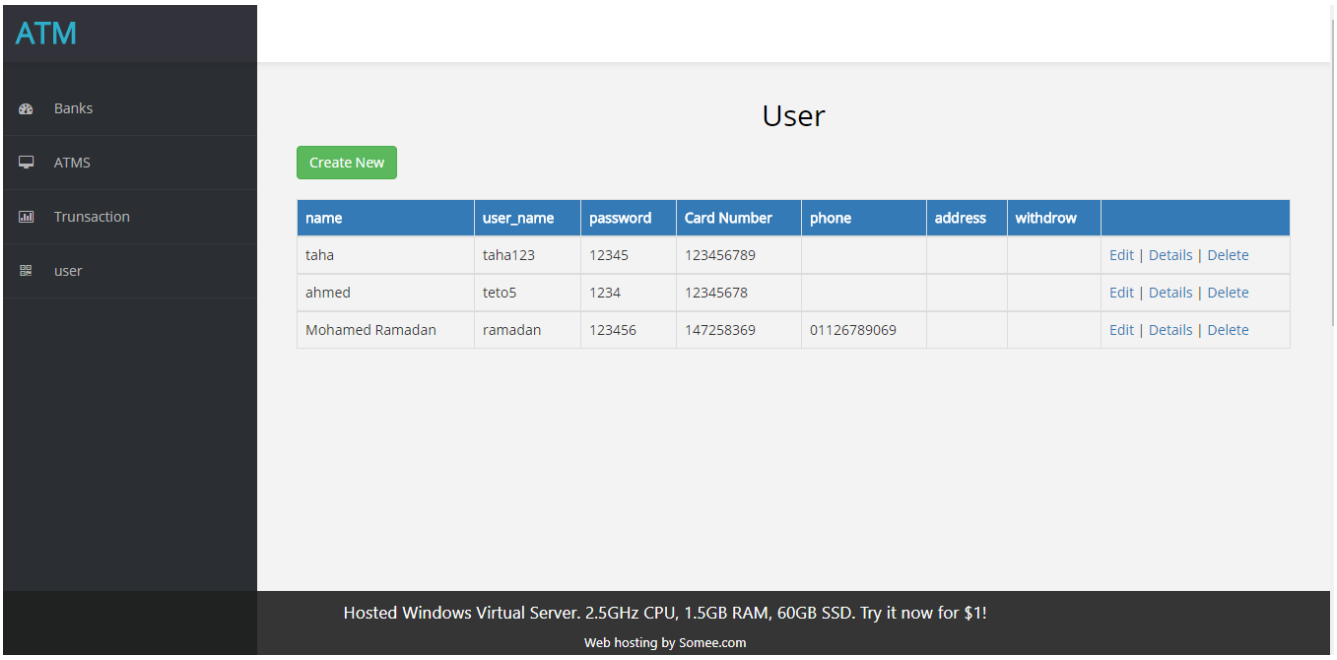
- This page present Atms statues balance and number of transaction that admin can change any value can put balance for atms and add or remove atms from database

IMPLEMENTATION



- This page is show all random transaction that occure on atms machines by simulation function

IMPLEMENTATION



- This page represent admins that is be stored in database

Chapter 6
Conclusion

ATM Analyzer

Chapter 6. Conclusion

BACKGROUND

In this chapter

We reach to the end of our document.
We talk about testing process for our project. In the end we talk about our future work after all that.

ATM Analyzer

Chapter 6. Conclusion

OUR FINAL WORK

Now everything is done and ready for production but we testing it at first so we are using many use cases to check our project and It's implementation of our objectives which we planned.

And check in using guide message covered well which we handle to helping our users on using our project and make it simple we using toast in android to do that.

We choose sample of people from different backgrounds and asking them for using our program and giving us their impression.
Based on the testing work and users impression we changed our project more and more to do that very well for achieving better experience.

Thanks for All...