R.M.D. ENGINEERING COLLEGE

(An Autonomous Institution)

R.S.M Nagar, Kavaraipettai, Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu- 601206

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DEPARTMENT OF INFORMATION TECHNOLOGY

21IT413

INTERNSHIP

MOBILE SHOP REPAIR CENTER

AMARA SANTHOSH - 111521203004
BALAJI P - 111521203010
DUVVURU SUBASH CHANDRA BOSE - 111521203014

21IT401 SOFTWARE ENGINEERING LABORATORY

OBJECTIVES:

- To understand the software engineering methodologies for project development.
- To gain knowledge about open source tools for Computer Aided Software Engineering.
- To develop an efficient software using case tools.

SOFTWARE REQUIRED:

Open source Tools: Star UML / UML Graph / Top cased

Prepare the following documents for each experiment and develop the software using software engineering methodology.

1. **Problem Analysis and Project Planning -**Thorough study of the problem – Identify Project scope, Objectives and Infrastructure.
2. **Software Requirement Analysis -** Describe the individual Phases/modules of the project and Identify deliverables.
3. **Data Modelling -** Use work products – data dictionary, use case diagrams and activity diagrams, build and test class diagrams, sequence diagrams and add interface to class diagrams.
4. **Software Development and Debugging** – implement the design by coding
5. **Software Testing -** Prepare test plan, perform validation testing, coverage analysis, memory leaks, develop test case hierarchy, Site check and site monitor.

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Ex. No 1(a) PROBLEM ANALYSIS

Problem Statement

Mobile Shop Repair Center

1) Raise a Customer Request for Service

2) Generate next token number

3) Update the Service Completion with Cost Involved

4) Report of Serviced Phone within a Given date range

Analysis

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information about the Point Of Sale System to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system consumers. System Analysis or study is an important phase of any system development process. The system is studied to the minutest detailed and analyzed.

The Outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solutio0n or program of action.

A detailed study of the processes must be made by various techniques like interviews questionaries, etc., The data is allocated by these sources must be scrutinized to arrive to a a conclusion. The conclusion is an understanding of how the system functions .This system is called the existing System .Now the existing system is subjected to close study and problem areas are identified .The designer now functions as a problem server and tries to get a sort out.

Feasibility study

Technical feasibility

The mobile shop repair center runs with a minimum system resources:

- CSHARK

Above said system resources are available as open source. Hence it is feasible to develop mobile shop Repair center in this environment.

Operational feasibility

As the system has based on GUI no special skill set is required for working with the system, hence it is operationally feasible.

Economic feasibility

As the Mobile shop repair center requires minimum system resources, hence it is economically feasible.

Ex.No 1(b) PROJECT PLANNING

1. Overview

A mobile shop repair center is a place where a customer wants to repair their mobile they request the mobile repair center.

A mobile repair center has to generate a token the token number is considered to repair their mobiles. After the token is generated then update the service completion with cost involved.

Mobile shop repair center has to report the serviced phone with in a given date range..

2. Goals and Scope

Goal : To automate the mobile shop repair center with the following functional goals

1) Raise a Customer Request for Service

2) Generate next token number

3) Update the Service Completion with Cost Involved

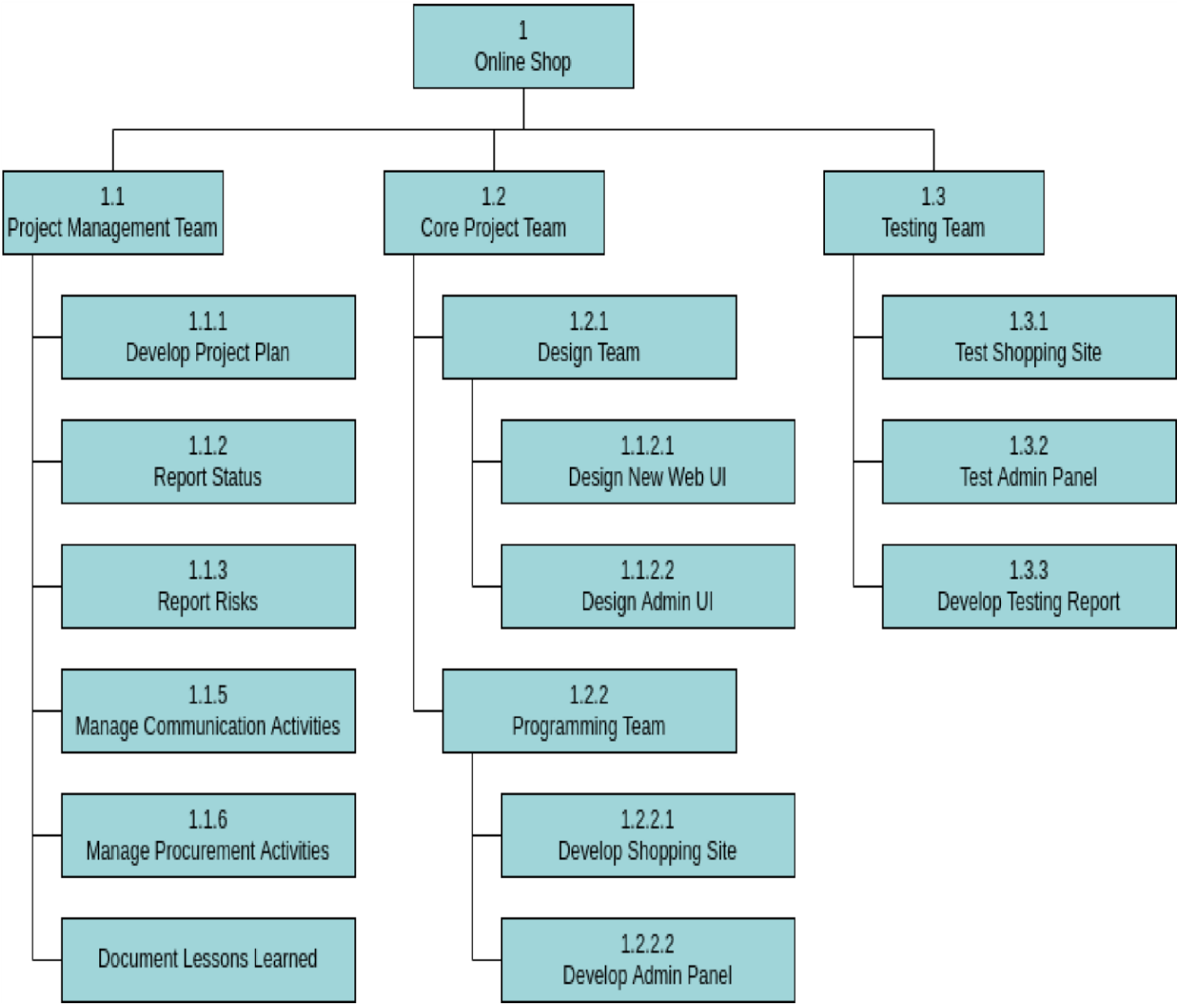
4) Report of Serviced Phone within a given date range

Scope : Considering India has a large population spread among cities, cities, and rural areas. the mobile phone industry is expanding rapidly both domestically and internationally. The huge competition in the company has resulted in a product both technologically sophisticated and at a reasonable price. Different areas where we can use these applications are:

1. Everyone using mobile these day so scope automatically appears.
2. As I said in beginning you have to be expert for any type of mobile services Software as well hardware.
3. Start along with a mobile accessories or mobile selling shop.
4. Once you client base and popularity grown just look for finanace. And look for supporting hands and open another shop in any crowded area.
5. Once you have 2 or 3 service outlet and good funding in hand try to contact for mobile companies to look for service centres. Ensure that you have all the legalized brand name and documents which may be primary requirements to applying.

1. Schedule and Budget

Work Breakdown Structure



Schedule and Milestones

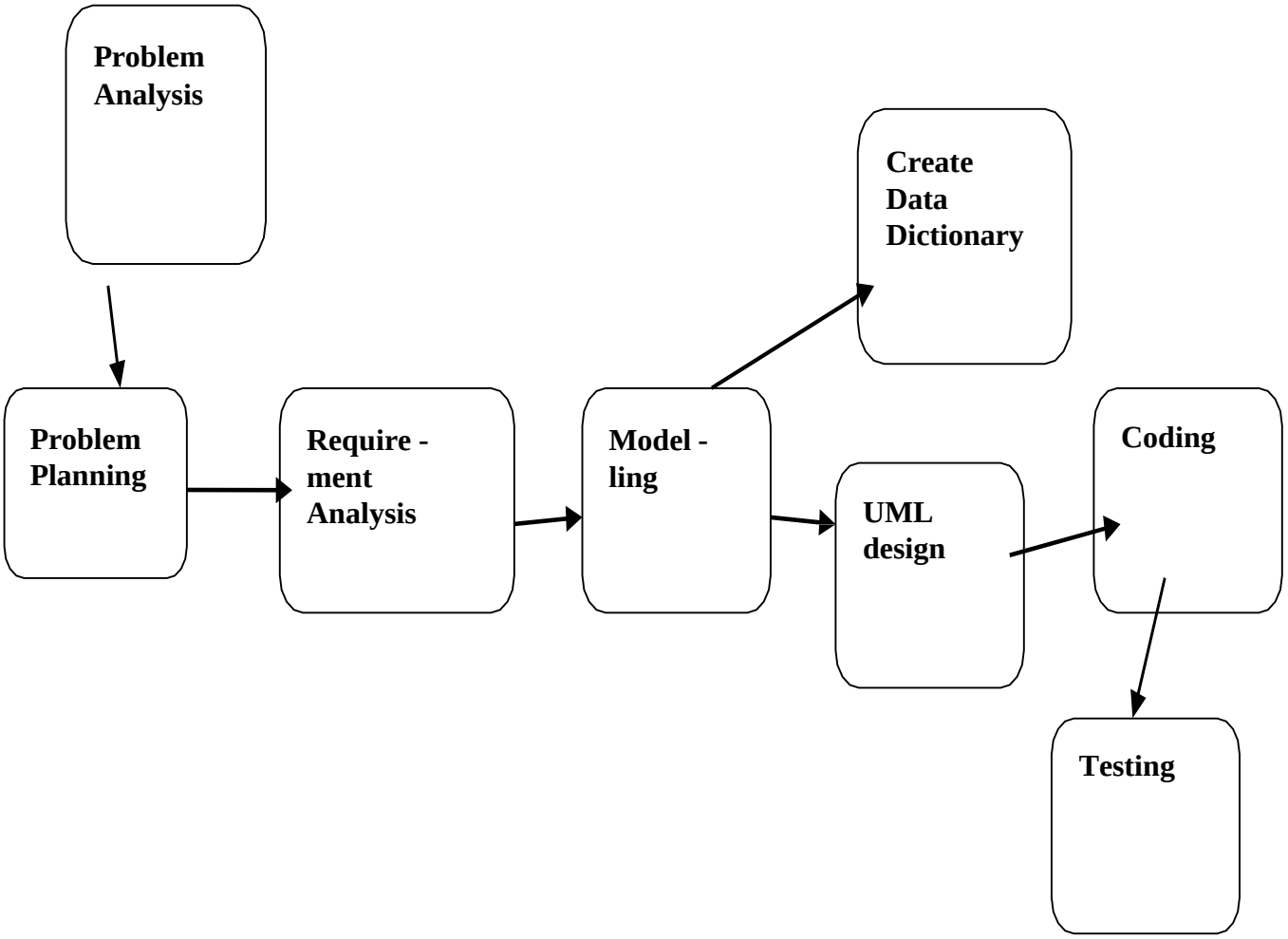
Milestones	Description	Milestone Criteria	Planned week
M0	Problem Analysis		1st week
		Problem statement, Analysis, Feasibility Study	
M1	Project Planning		2nd week
		Scope and concept described	
M2	Requirement Analysis		2nd and 3rd week
		Draft SRS, Design Specification, Test Plan, Requirement Analysis (Final)	
M3	Study of UML Notations		3rd week
		Architecture reviewed and stable	
M4	Modelling		4th week
		Software Design, Data Dictionary	

Budget

Category	Budget for Period in kUS$					
	M0-M1	M1-M2	M2-M3	M3-M4	M4-M5	M5-M6
Human Resources (internal)						
Human Resources (external)						
Purchases (COTS)						
Equipment						
Premises						
Tools						
Travel costs						
Training						
Review activities						
Other						
Total	1	1	2	5	2	1
Total cumulated	**1**	**2**	**4**	**9**	**11**	**12**

For a detailed list of costs of all resources see <document> [x].

Development Process



Risk Management

Unexpected Holidays, Non availability of computer resources, Absence of Human Resource are the identified risks for not meeting the deadlines. Additional efforts need to put in by the human resources to complete the work within the deadline by the way of working after working hours.

Delivery Plan

Ident.	Deliverable	Planned Date	Receiver
D1	Analysis and Feasibility Report	1st week	Client
D2	Project Plan	2nd week	Client
D3	SRS	3rd week	Client
D4	Design	4th week	Client
D5	Test Plan	5th week	Client
D6	Code	6th week	Client
D7	Test Report	6th week	Client

Ex.No.2 SOFTWARE REQUIREMENT ANALYSIS

Software Requirement Specification (SRS)

1. Introduction

Mobile phone repair technicians run tests to assess the mobile phones' functionality, install and update phone software, troubleshoot wiring problems, and replace damaged parts and components such as batteries, LCD screens, keypads, buttons.

Purpose of the requirements document

They are the immediate go-to place for people whose phone suddenly crashes down or when it's not functioning well. If you need the screen protector, glass replacement or other types of spare parts, these repair shops are the best place to find spare parts for your mobile phone.

Scope of the product

The Software Requirements Specification captures all the requirements in a single document. The mobile shop repair center will be designed in the way that is going to provide a computerized management and control over business taking place within a shop located in certain locations.

Definitions, acronyms and abbreviations

SRS-Software Requirement Specification
OUCD-Overall Use Case Diagram
MSRC – mobile shop repair center
UCS-Use Case Specification
XML - extensible markup language

References

(i) ANSI/IEEE std 830-1998, IEEE Recommended Practice for Software Requirements Specifications. (ii) ANSI/IEEE std 1233-1996, IEEE Guide for Developing System Requirements Specification. (iii) http://www.softwareengineering-9.com/

1.5. Overview of the remainder of the document

The SRS will provide a detailed description of the Mobile shop repair center. This document will provide the outline of the requirements, overview of the characteristics and constraints of the system.

Section 2 of this document provides the General description such as generate tokens, Update the Service Completion with Cost Involved. Section 3 describes the Specific requirements which cover the functional, non-functional and interface requirements. This is obviously the most substantial part of the document but

because of the wide variability in organizational practice, it is not appropriate to define a standard structure for this section. The requirements may document external interfaces, describe system functionality and performance, specify logical database requirements, design constraints, emergent system properties and quality characteristics.

2. General description

Product perspective

Mobile shop repair center will have two main parts which are:
1) Token Sytem which will generate token for customers those who are requesting for service and Service system which will allow the admin to service damaged mobiles based on the generated token number.
2)End Users are customers who are willing to service their mobile.

Product functions

The Functional Requirements are those business functions which will be included in this software under development. Functional requirements describe the features of the product and what the system must do so as to fulfil the intended user requirements.

The following are functional requirements which will be provided by the Mobile shop repair center:

1) Mobile shop repair center will enable users to request to service their mobile.
2) Mobile shop repair center will generate token for service in the order of their request.
3) Mobile shop repair center will allow the admin (Employee) to service mobile based on the token number.

User characteristics

Administrator:

The Administrator is one of the two users of the system. In this case the Administrator is the Employee of the mobile shop .However there can be more than one Administrator.

Administrators can access the view request module and the report module. The administrators of the system to have more knowledge of the internals of the system and is able to rectify the small problems that may arise due to disk crashes, power failures and other catastrophes to maintain the system.

Customers:

The customers are the second users of the Mobile shop repair center. They can send request and view their token and even they can view their status and their final report.

General constraints

- The service should be made according to the generated token.
  .
- MSRC is connected to the server computer and is running all 24 hours a day.

Assumptions and dependencies

- The users have sufficient knowledge of computers.
- The users know the English language, as the user interface will be provided in English
- The users know the basic details about their mobile.

3. Specific requirements

Functional Requirements

Functionality:

Selection between cash and management system area:

The token is generated using an automated system. So there is no third person's influence.

Management System:

Admin Management, customer Management, Token Management, Service Management.

.

Non- Functional Requirements

Usability

The system is user friendly and self-explanatory.

Reliability

The system has to be very reliable due to the importance of data and the damages incorrect or incomplete data can do.

Availability

The system is available 100% for the user and is used 24 hours a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

Mean Time Between Failures (MTBF)

The system will be developed in such a way that it ***may*** fail once in a year.

Mean Time to Repair (MTTR)

Even if the system fails, the system will be recovered back up within an hour or less.

Accuracy

The accuracy of the system is limited by the accuracy of the speed at which the employees of the and users of the use the system.

Maximum Bugs or Defect Rate

Not specified.

Access Reliability

The system shall provide 100% access reliability.

Performance

Response Time

The system shall respond to the member in not less than two seconds from the time of the request submittal. The system shall be allowed to take more time when doing large processing jobs.

The requirements may document external interfaces, describe system functionality and performance, specify logical database requirements, design constraints, emergent system properties and quality characteristics.

Hardware and software requirements

Hardware Interfaces

- Processor: Anyone
- RAM: 2GB or Higher

3. 3..2. Software Interfaces

- Visual Studio
- Base: Local Root.

3.4 External Interfaces

User Interfaces

The user-interface of the system shall be designed as shown in the user-interface prototypes.

4. Appendices

5. Index

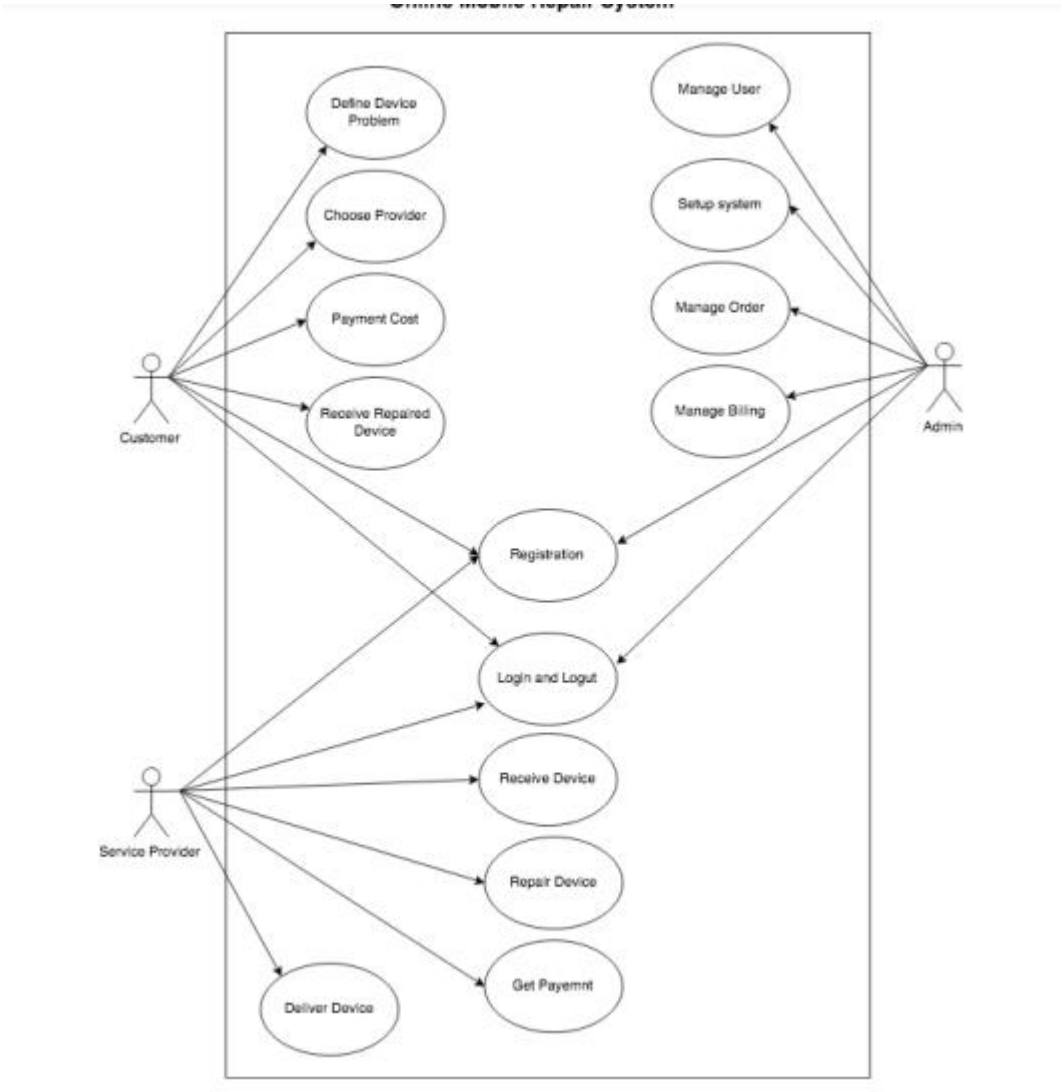
Result: Thus the Software Requirement Specification Document for Mobile shop repair center System has been completed.

Ex. No. 3 MODELING

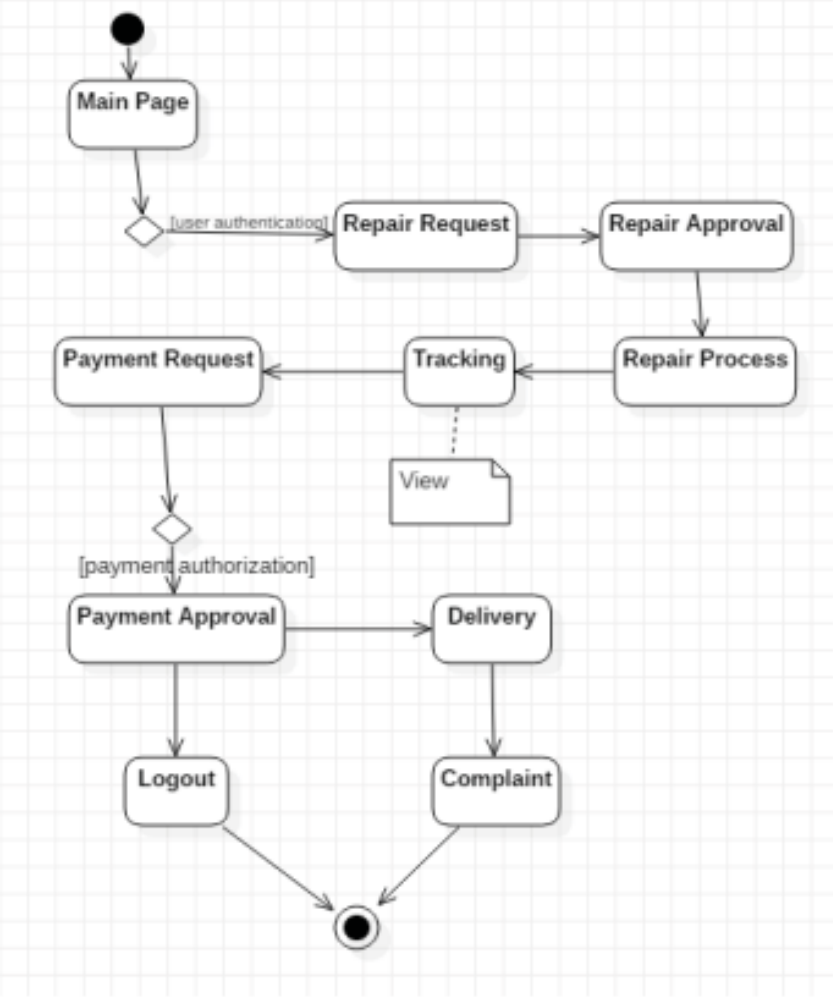
(i) Design model –UML diagrams

Use case diagram

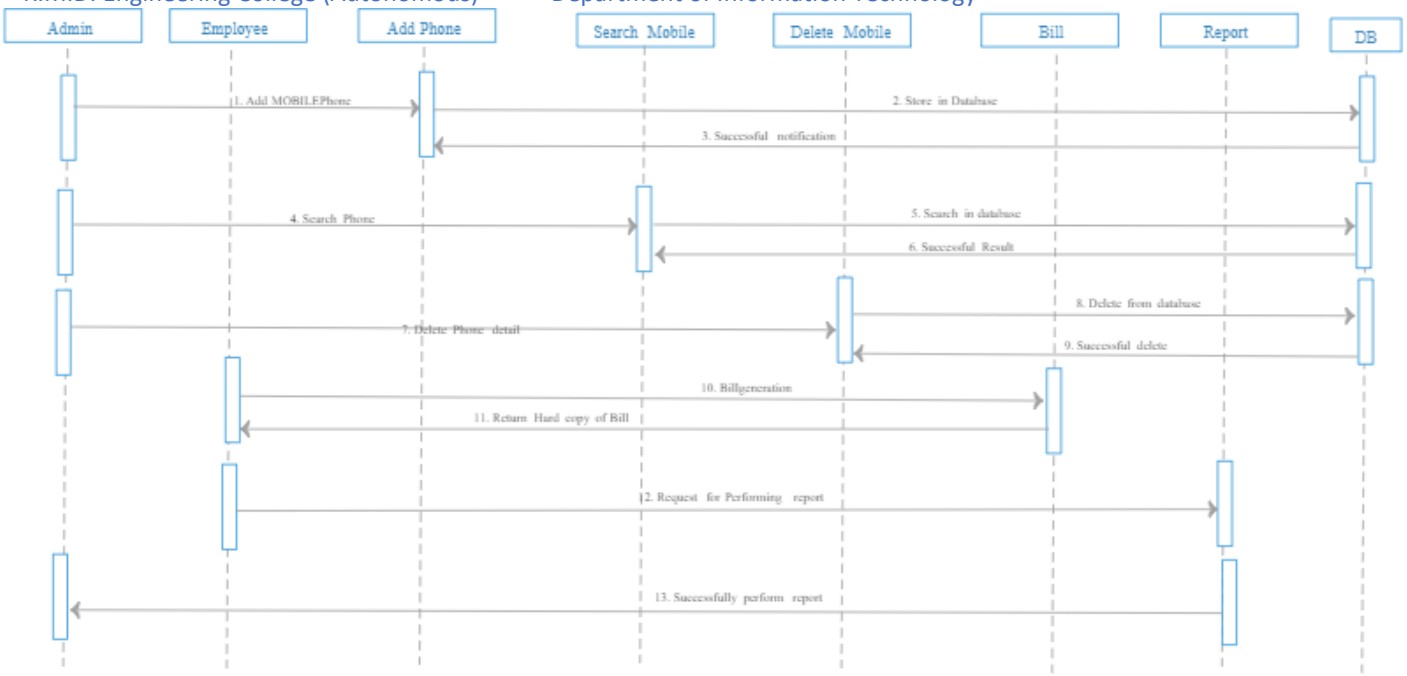
Step 1:start LUCID CHART->Create-> Use Case Diagram



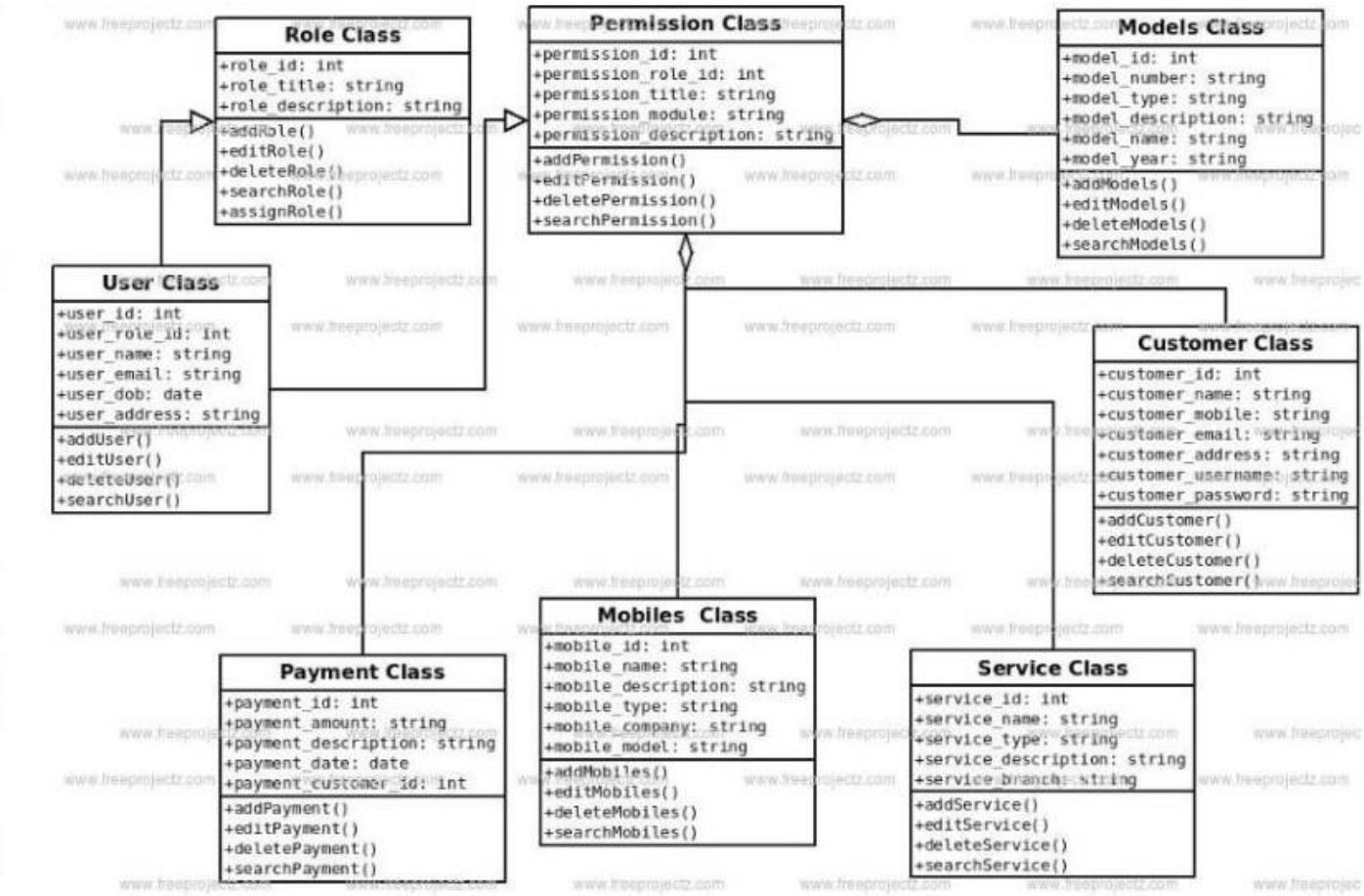
Activity Diagram for Mobile MSRC



Sequence diagram for Mobile shop repair center


Admin
Employee
Add Phone
Search Mobile
Delete Mobile
Bill
Report
DB
1. Add MOBILEPhone
2. Store in Database
3. Successful notification
4. Search Phone
5. Search in database
6. Successful Result
7. Delete Phone detail
8. Delete from database
9. Successful delete
10. Billgeneration
11. Return Hard copy of Bill
12. Request for Performing report
13. Successfully perform report

Class Diagram



Ex.No.3 (b)
DATADICTIONARY

Details

S.No	Name	Alias Name	How Used	Supplementary Data	
				Data Type	Limitations
1	Customer name	Price	Buy	string	Up to 20 char
2	Product Name	Price	Pay	integer	Up to 16 digit

User Details

S.No	Name	Alias Name	How Used	Supplementary Data	
				Data Type	Limitations
1	User name	Name	For Printing Purpose	string	Up to 20 char
2	Phone Number	Number	For Printing Purpose	string	Up to 10 char

Ex.No.4 IMPLEMENTATION

App.config

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
   <startup>
      <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.7.2" />
   </startup>
</configuration>
```

Login.cs

```
using System;
using System.Collections.Generic;
```

```
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace bal
{
   public partial class Login : Form
   {
      public Login()
      {
         InitializeComponent();
      }

      private void pictureBox3_Click(object sender, EventArgs e)
      {
         Application.Exit();

      }

      private void LoginBtn_Click(object sender, EventArgs e)
      {
         if(UNameTb.Text==""|| PasswordTb.Text=="")
         {
            MessageBox.Show("Missing Data!!!");
         }
         else if(UNameTb.Text=="Admin"&& PasswordTb.Text=="Admin")
         {
            Repairs Obj = new Repairs();
            Obj.Show();
            this.Hide();
         }
         else
         {
            MessageBox.Show("Wrong UserName Or Password!!!");
         }
      }
   }
}
```

Functions.cs

```
using Microsoft.SqlServer.Server;
using System;
using System.Collections.Generic;
using System.Data;
using System.Data.SqlClient;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace bal
{
  class Functions
```

```
  {
    private SqlConnection Con;
    private SqlCommand Cmd;
    private DataTable dt;
    private SqlDataAdapter sda;
    private string ConStr;

    public Functions()
    {
      ConStr = "Data Source=(LocalDB)\\MSSQLLocalDB;AttachDbFilename=\"C:\\Users\\Iniya
Vishal\\Documents\\MobileRepairDb.mdf\";Integrated Security=True;Connect Timeout=30";
      Con = new SqlConnection(ConStr);
      Cmd = new SqlCommand();
      Cmd.Connection = Con;
    }

    public DataTable GetData(string Query)
    {
      dt=new DataTable();
      sda = new SqlDataAdapter(Query,ConStr);
      sda.Fill(dt);
      return dt;
    }
    public int setData(string Query)
    {
      int Cnt = 0;
      if(Con.State== ConnectionState.Closed)
      {
        Con.Open();
      }
      Cmd.CommandText = Query;
      Cnt = Cmd.ExecuteNonQuery();
      return Cnt;

    }


  }
}
```

Packages.config

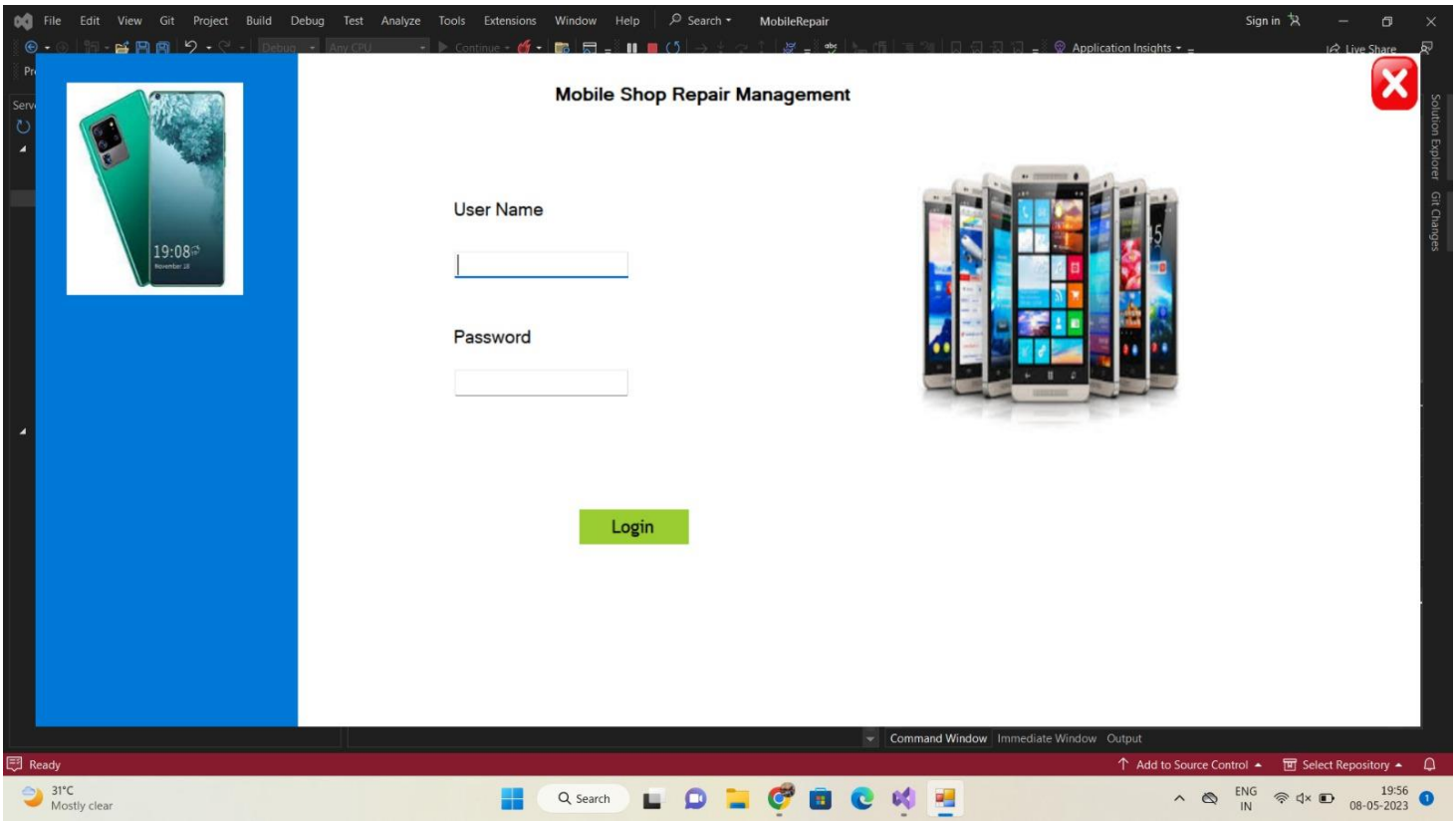
```
<?xml version="1.0" encoding="utf-8"?>
<packages>
  <package id="Guna.UI2.WinForms" version="2.0.4.4" targetFramework="net472" />
</packages>
```

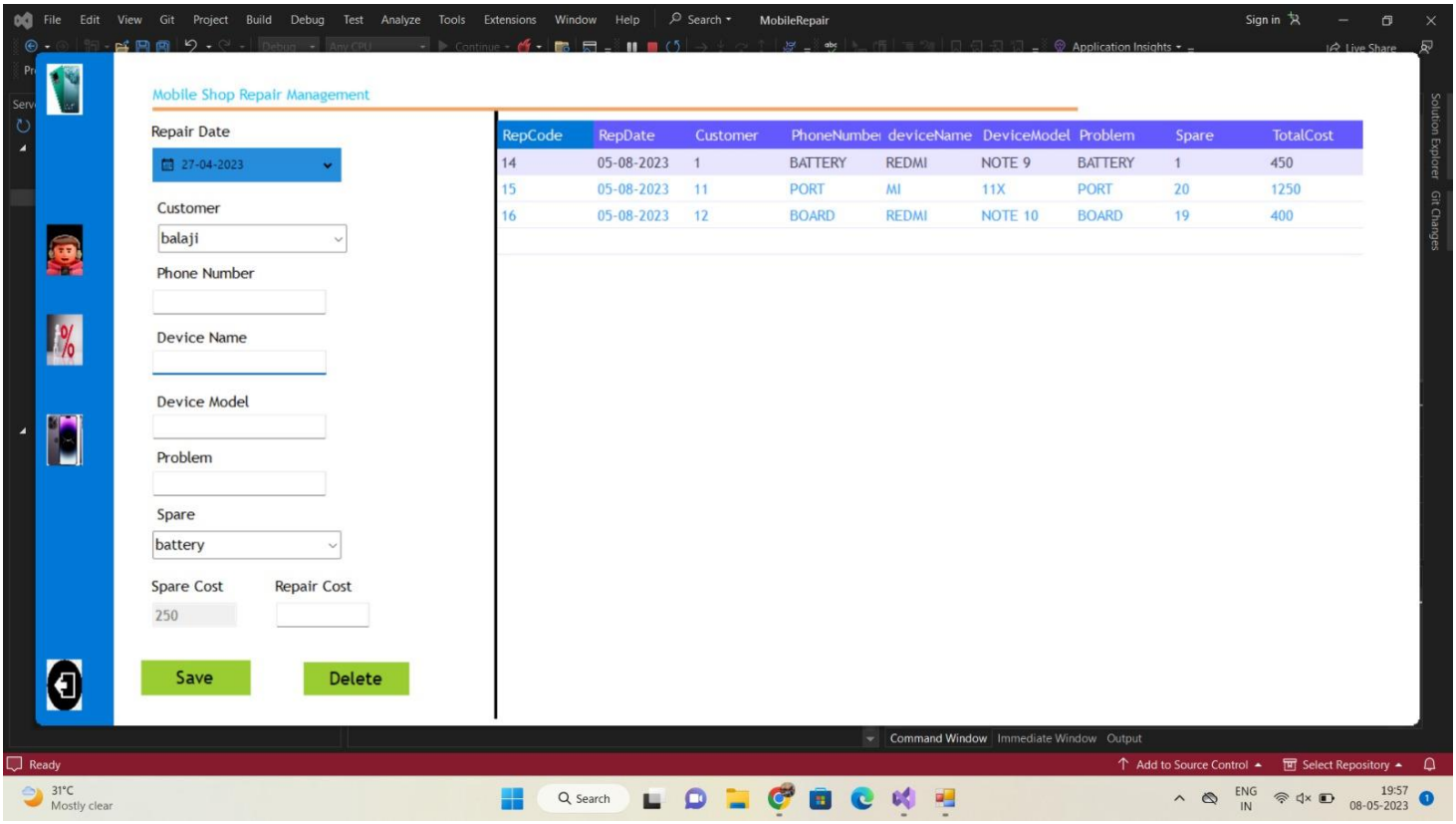
Program.cs

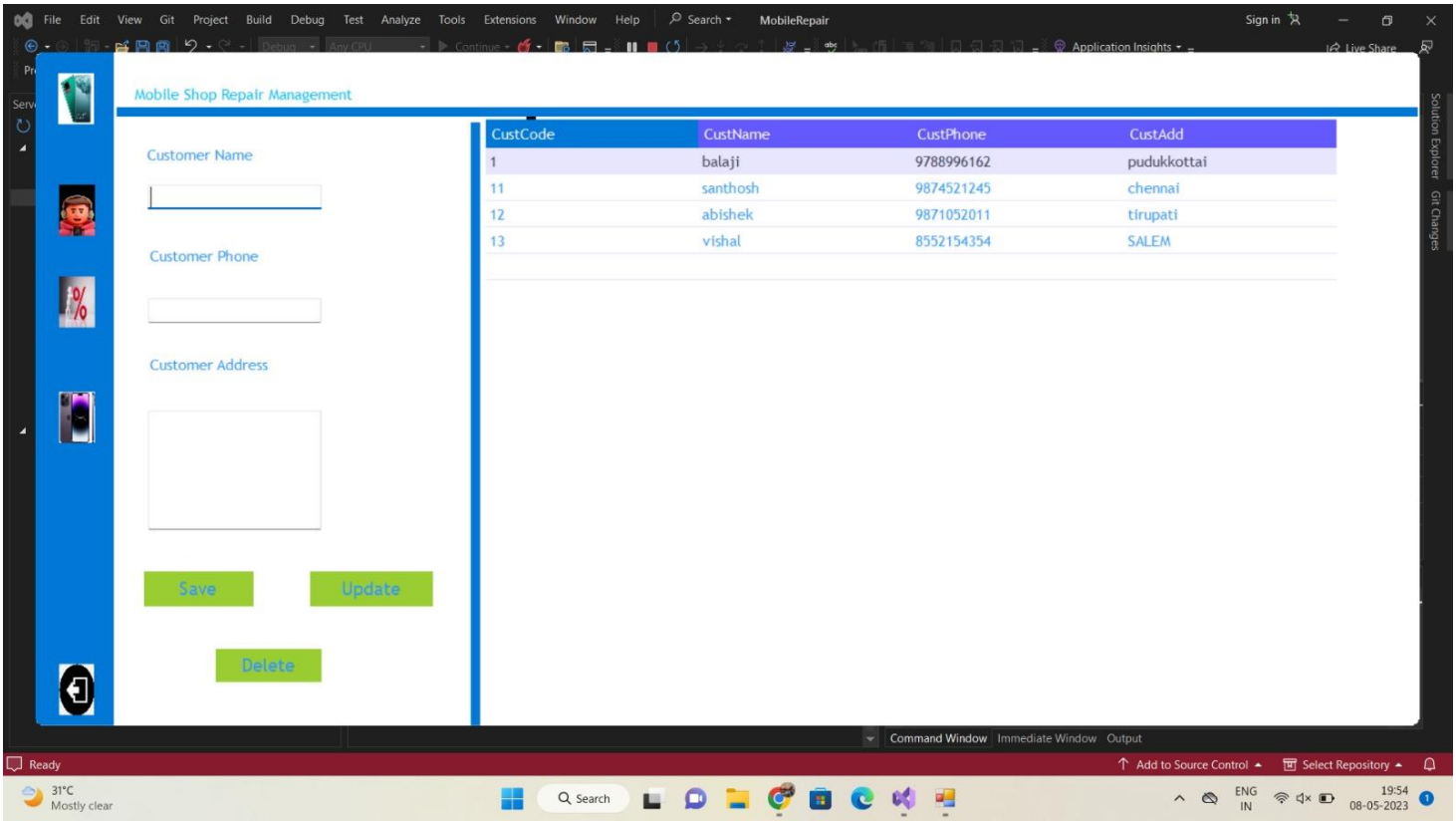
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace bal
```

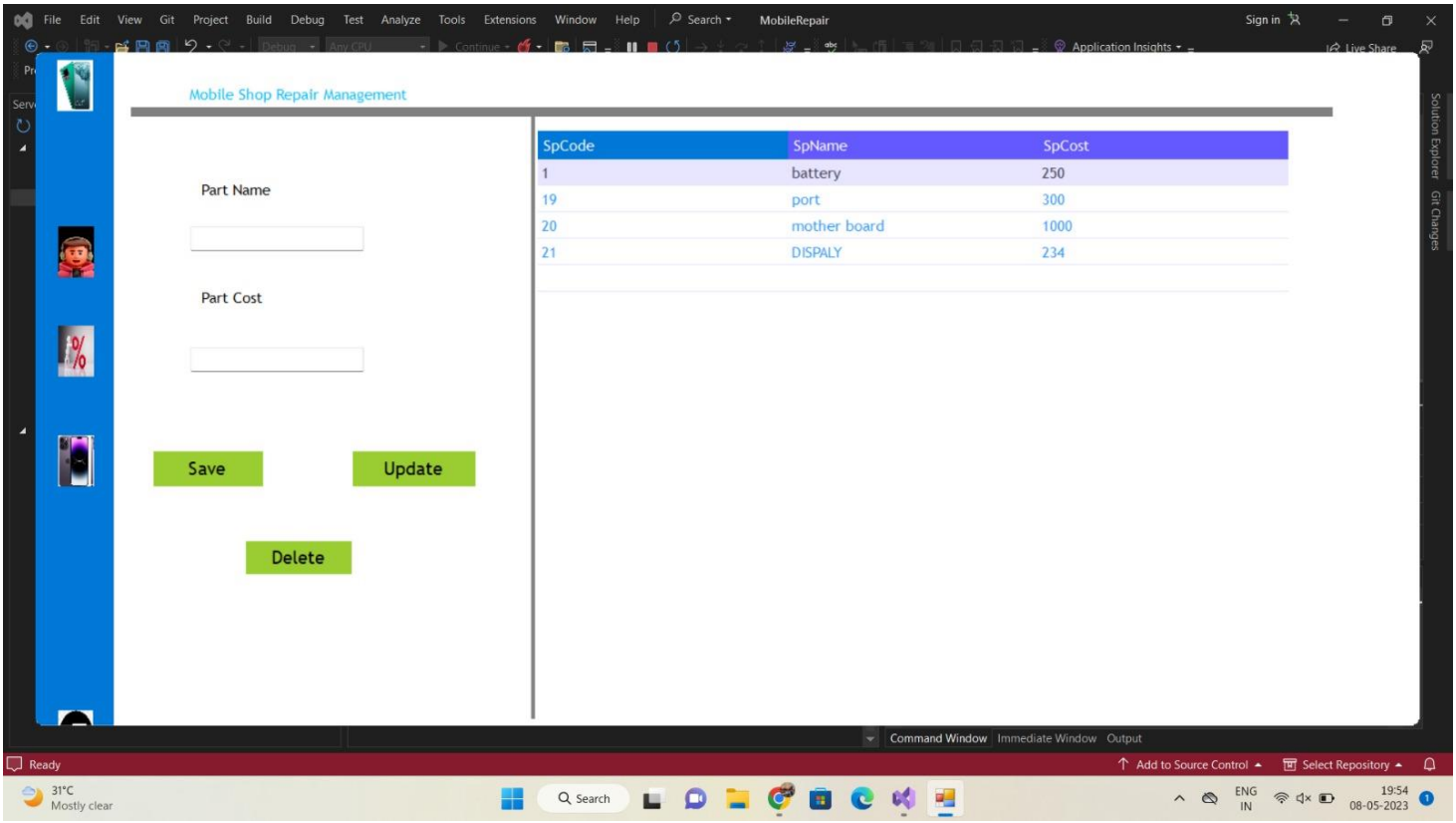
```
{
   internal static class Program
   {
      /// <summary>
      /// The main entry point for the application.
      /// </summary>
      [STAThread]
      static void Main()
      {
         Application.EnableVisualStyles();
         Application.SetCompatibleTextRenderingDefault(false);
         Application.Run(new Login());
      }
   }
}
```

OUTPUT:




Mobile Shop Repair Management
Repair Date
27-04-2023
Customer
balaji
Phone Number
Device Name
Device Model
Problem
Spare
battery
Spare Cost
250
Repair Cost
Save
Delete
RepCode RepDate Customer PhoneNumber deviceName DeviceModel Problem Spare TotalCost
14 05-08-2023 1 BATTERY REDMI NOTE 9 BATTERY 1 450
15 05-08-2023 11 PORT MI 11X PORT 20 1250
16 05-08-2023 12 BOARD REDMI NOTE 10 BOARD 19 400


Mobile Shop Repair Management
Customer Name
Customer Phone
Customer Address
Save
Update
Delete
CustCode CustName CustPhone CustAdd
1 balaji 9788996162 pudukkottai
11 santhosh 9874521245 chennai
12 abishek 9871052011 tirupati
13 vishal 8552154354 SALEM


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
MobileRepair
Sign in
Mobile Shop Repair Management
Part Name
Part Cost
Save
Update
Delete
SpCode SpName SpCost
1 battery 250
19 port 300
20 mother board 1000
21 DISPALY 234
Command Window Immediate Window Output
Ready
Add to Source Control
Select Repository
31°C Mostly clear
Search
ENG IN
19:54 08-05-2023

Ex.No 5 TESTING

Test cases:

Name	Requirement	Description	Input	Expected O/P	Actual O/P
Pay	Cash should be selected & Amount entered should be greater than or equal to the bill Amount.	Used to Pay the bill Amount.	Amount, Name, Contact Number.	Valid input	Valid input
Pay	Cash should be selected & Amount entered should be lesser than the bill Amount.	Used to Pay the bill Amount.	Amount, Name, Contact Number.	Invalid input	Invalid input
Print	User Name and Contact Number has to be entered	To print the receipt with User Name and Contact Number	User Name and Contact Number	Valid input	Valid input
Print	User Name must be entered	To print the receipt with User Name and Contact Number	User Name	Invalid input	Invalid input
Print	Contact Number should be 10 digits	To print the receipt with User Name and Contact Number	Contact Number	Valid input	Valid input
Print	Contact Number should not be 10 digits	To print the receipt with User Name and Contact Number	Contact Number	Invalid input	Invalid Input