Dr. D.Y. Patil School of MCA

Charoli (BK), PUNE- 412105

SAVITRIBAI PHULE PUNE UNIVERSITY

MASTER OF COMPUTER APPLICATION

Project Report on

"Multi Utility App"

Under The Guidance Of

"Prof. Rajnish Mishra"

BY

Suraj Shinde (1951)

Class: MCA-II (Sem-III)

Year: 2023-2024

DR. D.Y. Patil School of MCA Charholi (Bk), Lohegaon, Pune – 412105

Certificate

This is to certify that Mr. Suraj Shinde (1951) Student of the class MCA-II (Sem-III) has successfully completed the Mini Project entitled " **Multi Utility App** "during the academic year 2023-2024

Prof. Rajnish Mishra	**Prof. Santosh Deshmukh**	**Dr. E. B. Khedkar**
Project Guide	**HOD**	**Director**

Examiner 1 **Examiner 2**

Place : Pune

Date :

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1. Introduction

1.1 Introduction

In today's fast-paced world, managing multiple applications for basic tasks can be inconvenient. The need for a unified platform that integrates essential utilities like a calculator, note-taking, and currency conversion has never been more critical. Our project aims to address this issue by developing a Multi-Utility Android App, streamlining the user experience and enhancing efficiency. In an era where simplicity and efficiency are paramount, our project endeavors to create a Multi-Utility Android App, offering a unified platform for essential tasks. This app integrates a calculator, notes functionality, and a currency converter, eliminating the hassle of managing multiple applications.

1.2 Limitation of Existing System

The existing system, comprising separate applications for a calculator, notes, and currency conversion, is not without its limitations. One significant drawback is the lack of integration, forcing users to switch between multiple apps to perform seemingly straightforward tasks. This disjointed experience leads to inefficiency and a potential decrease in user productivity. Additionally, the separate nature of these applications may result in a fragmented user interface, making it challenging for users to maintain a consistent and coherent digital workflow. Another limitation lies in the absence of a unified platform for data storage and retrieval, particularly in the case of notes. Users may find it cumbersome to manage notes across different applications, leading to a potential loss of organization and accessibility.

1.3 Need of the Proposed system

The need for the proposed Multi-Utility Android App is rooted in the recognition of the challenges and inconveniences faced by users when managing multiple applications for basic tasks. With the current proliferation of diverse utilities like calculators, note-taking apps, and currency converters, users often find themselves navigating through a plethora of interfaces, leading to a disjointed and time-consuming experience. The proposed system

aims to fill this gap by providing a comprehensive solution that amalgamates these essential functionalities within a single, cohesive platform. The need for such a system is underscored by the desire to simplify users' digital interactions and enhance their overall efficiency. By consolidating the calculator, notes, and currency converter into one unified app, the proposed system aims to streamline tasks, reduce cognitive load, and offer users a more seamless and intuitive experience. Additionally, the system responds to the growing demand for versatile mobile applications that cater to various user needs, providing a one-stop solution for everyday tasks.

2. Proposed System

2.1 Problem Statement

The problem addressed by this project arises from the inefficiencies and inconveniences associated with managing multiple applications for fundamental tasks on mobile devices. Users currently grapple with the hassle of navigating through distinct apps for functions like calculations, note-taking, and currency conversion. This fragmented experience not only consumes valuable time but also hinders productivity as users constantly switch between different interfaces. The lack of integration results in a disjointed workflow, creating a significant user pain point. Additionally, maintaining data and information across separate applications, especially in the case of notes, poses challenges in terms of organization and accessibility. Recognizing these issues, the project aims to tackle the fundamental problem of a disjointed digital experience by proposing a Multi-Utility Android App.

2.2 Objectives of the proposed system

- Simplify users' digital interactions by providing a unified platform for essential utilities.
- Enhance user productivity by offering a single app for common tasks like calculations, note-taking, and currency conversion.
- Improve user experience through an intuitive interface and seamless integration of diverse functionalities.
- Ensure data security and privacy in the notes feature, addressing users' concerns about sensitive information.
- Foster adaptability and future expansion by designing a modular system that can accommodate additional utilities.

2.3 Functional Requirements

- Implement a calculator module supporting basic and scientific operations.
- Develop a notes functionality allowing users to create, edit, and categorize notes.

- Integrate a currency converter providing real-time exchange rates for multiple currencies.
- Include a unit converter for common measurements like length, weight, and temperature.
- Implement offline functionality for essential features, ensuring usability without an internet connection.

2.4 Non-Functional Requirements

- Ensure a responsive and user-friendly interface for seamless navigation.
- Implement robust data security measures, particularly for the notes feature.
- Optimize app performance to ensure quick and efficient execution of tasks.
- Support cross-device compatibility for various Android devices and screen sizes.
- Provide regular updates to enhance features, address issues, and ensure long-term usability.

2.5 Scope of system

- **Integrated Utilities:** The app will include a calculator, notes functionality, and a currency converter, allowing users to perform essential tasks without switching between multiple applications.
- **User Interface:** The user interface will be intuitive, ensuring ease of navigation and seamless interaction with each utility.
- **Future Expansion:** The system will be designed to accommodate future expansions, allowing the addition of more utilities or features based on user feedback and emerging technologies.
- **Calculator Features:** Basic arithmetic operations (addition, subtraction, multiplication, division).
- **Notes Functionality:** Creation, editing, and deletion of notes.
- **Currency Converter Features:** Support for multiple currencies, allowing users to convert between various international currencies.
- **Cross-Device Compatibility:** Compatibility with various Android devices, ensuring the app functions smoothly across different screen sizes and resolutions.

2.6 Module Specification

- Calculator Module
- Currency Converter Module
- Calendar Module
- To-do-List Module

2.7 Operating System

Hardware Configuration

- **Processor**: Intel core i5
- **Ram** : 8 GB
- **Hard-Disk**: 10 GB

Software Configuration :

- **Front-End**: XML (Extensible Markup Language)
- **Backend**: Java
- **Database** : SQLite
- **Operating System:** Windows 7 and above
- **Ide** : Android Studio

3. Requirement Determination & Analysis

3.1 Fact Finding Method

- **Interviews:** Conduct interviews with potential users to gather insights into their expectations, preferences, and pain points related to existing utility applications.
- **Surveys and Questionnaires:** Create and distribute surveys or questionnaires to a targeted audience to collect quantitative and qualitative data on user needs and preferences.
- **Observation:** Observe users in their natural environment, if possible, to understand their current behaviors and identify areas where a multi-utility app could streamline their tasks.
- **Prototyping and Feedback:** Develop prototypes or wireframes of the app's interface and functionalities and gather feedback from potential users to understand their reactions and preferences.
- **Focus Groups:** Organize focus group sessions to facilitate discussions among potential users, allowing you to explore their opinions, expectations, and suggestions.
- **Feedback from Beta Testing:** If applicable, release beta versions of your app to a select group of users and gather feedback on their experiences and any issues encountered.
- **Use of Analytics Tools:** Utilize analytics tools to gather data on user interactions within the app, helping you understand usage patterns and areas for improvement.

3.2 Feasibility Study

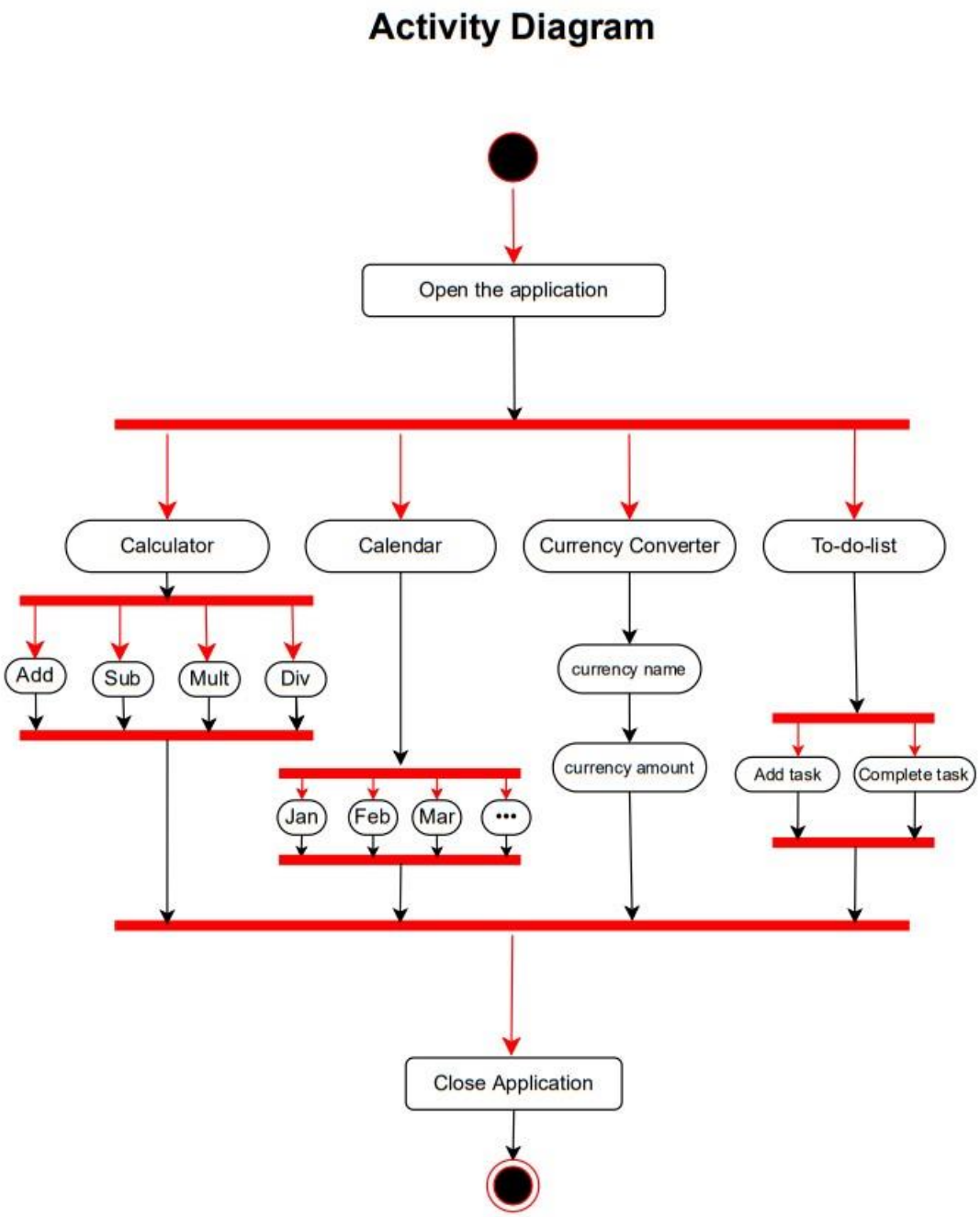
- **Technical Feasibility:** Evaluate the availability of required technologies, tools, and expertise for developing the Multi-Utility Android App.
- **Operational Feasibility:** Assess the practicality of integrating multiple utilities into a single app and its compatibility with users' daily routines.
- **Economic Feasibility:** Analyze the project's cost-effectiveness, considering development, maintenance, and potential revenue models.
- **Scalability Feasibility:** Examine the scalability of the proposed system to accommodate potential future expansions and additional functionalities.

- **User Acceptance Feasibility:** Gauge potential user acceptance through surveys and feedback to ensure the proposed system meets user expectations.
- **Risk Analysis:** Identify potential risks and challenges related to development, implementation, and user adoption.
- **Time Feasibility:** Assess the project timeline and deadlines to ensure the timely delivery of the Multi-Utility Android App.

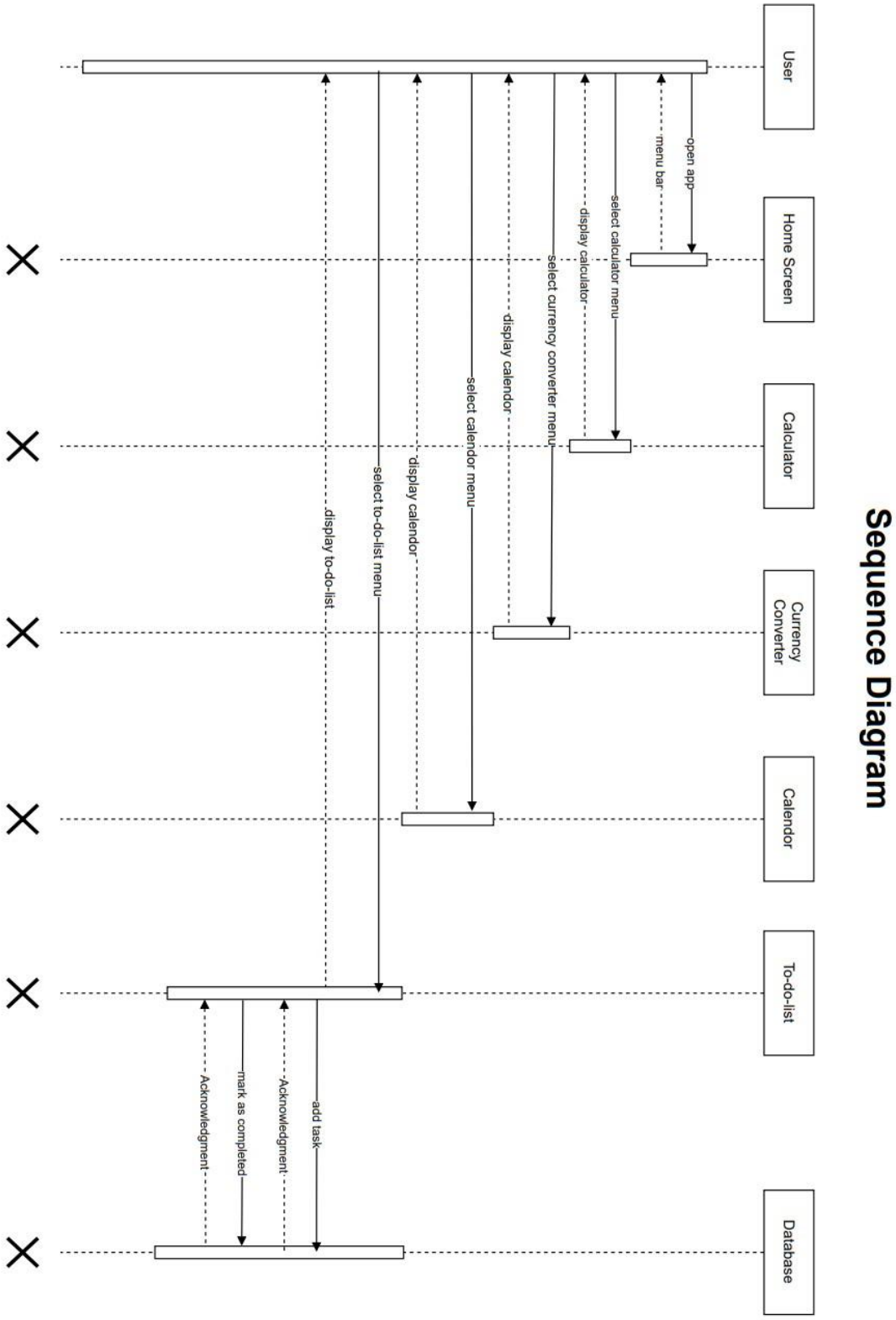
4. System Analysis & Design

4.1 Use Case Diagram

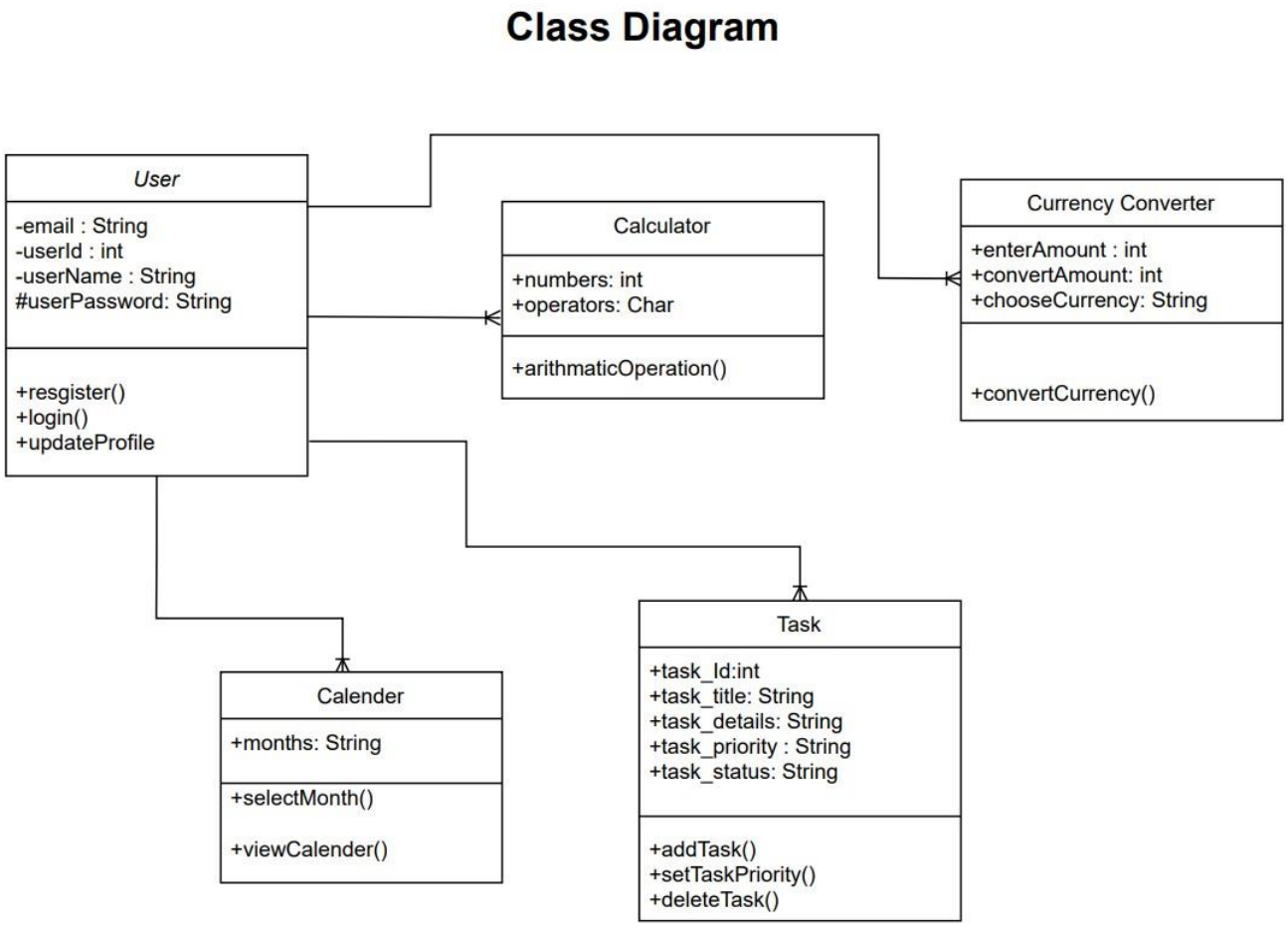
4.2 Activity Diagram



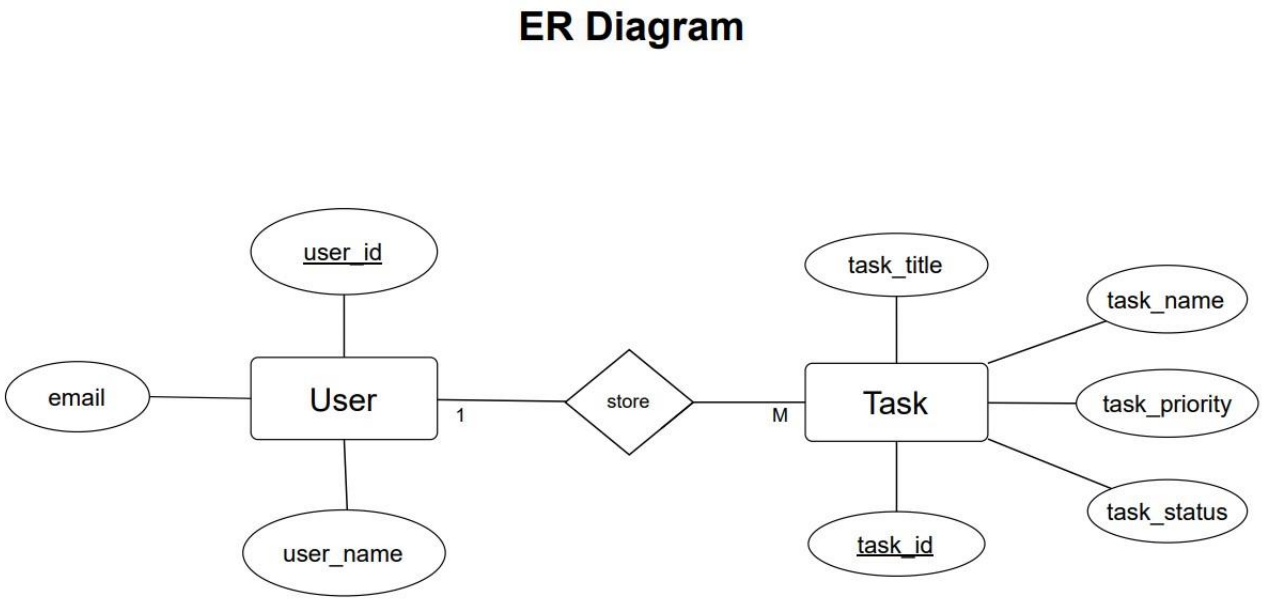
4.3 Sequence Diagram



4.4 Class Diagram



4.5 Entity Relationship Diagram



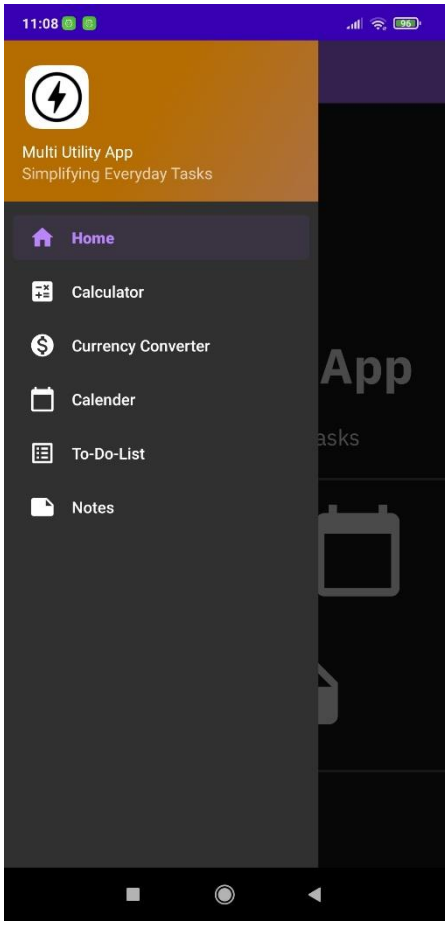
4.6 Table Specification

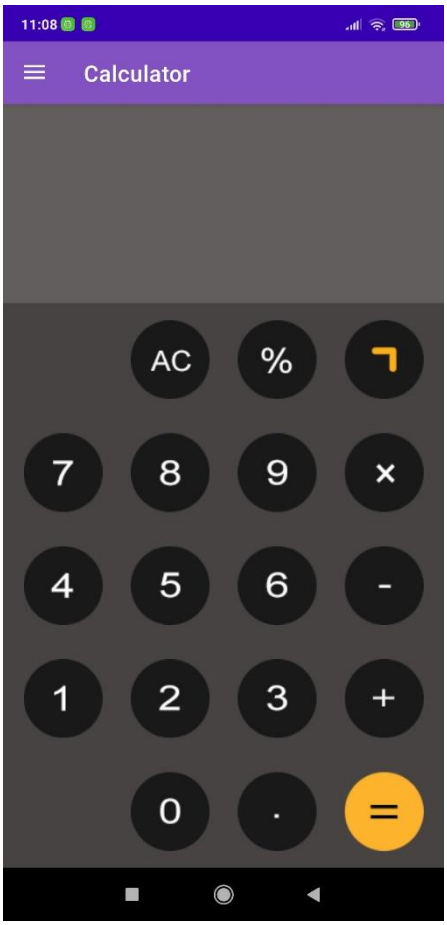
- **Table Name: task_table**

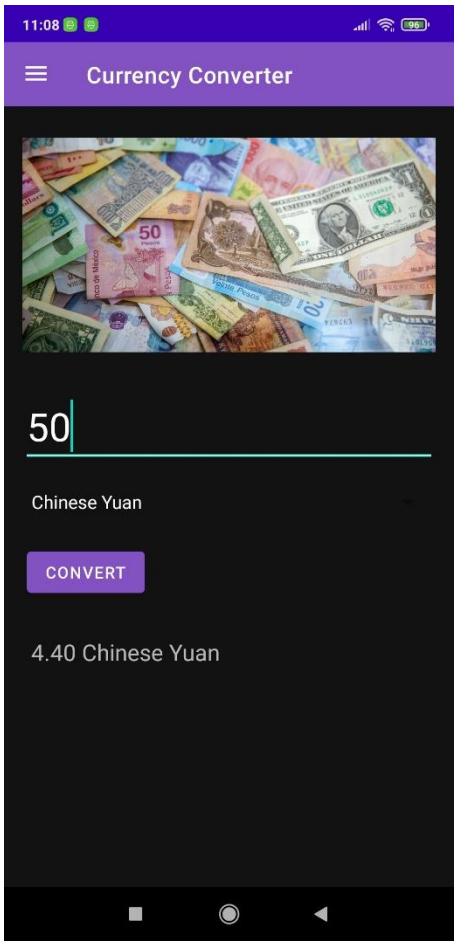
This table is used to store details about the task details

Sr. No	Field	Data Type	Size	Constraint	Description
1.	task_id	int	11	PRIMARY KEY	Task Id
2.	task_title	text	20	NOT NULL	Task Title
3.	due_date	date	50		Due date of task
4.	task_details	text	100	NOT NULL	Details about Task
5.	task_priority	text	10		Priority of Task
6.	completion_status	text	20		Completion status of Task

4.7 User Interface Design



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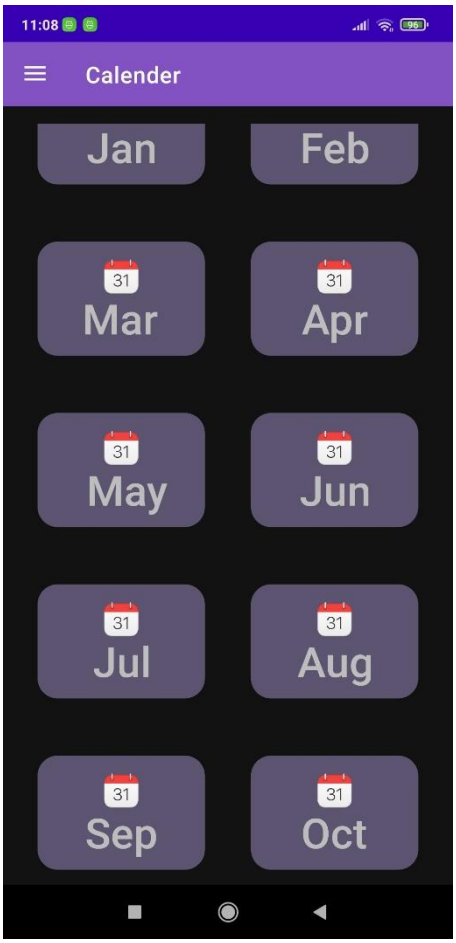
Currency Converter
50
Chinese Yuan
CONVERT
4.40 Chinese Yuan


11:08
Calender
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct


11:08
Calender
March
रविवार
सोमवार
मंगळवार
बुधवार
गुरुवार
शुक्रवार
शनिवार

5. Test Cases

Test Id	Description	Test Case Input	Expected Result	Actual Result	Test Case Status
TC01	Open the application	Click on application	Home Screen should be open	Home screen is not open	Fail
TC02	Open the application	Click on application	Home Screen should be open	Home screen is open	Pass
TC03	Side bar show in home screen	-	Side bar should be show in home screen	Side bar is not show in home screen	Fail
TC04	Side bar show in home screen	-	Side bar should be show in home screen	Side bar is show in home screen	Pass
TC05	List of modules show in side bar	Click on side bar	List of modules should be show in side bar	List of modules not show in side bar	Fail
TC06	List of modules show in side bar	Click on side bar	List of modules should be show in side bar	List of modules show in side bar	Pass
TC07	Open calculator module	Click on calculator module	Calculator should be open	Calculator is not open	Fail
TC08	Open calculator module	Click on calculator module	Calculator should be open	Calculator is open	Pass
TC09	Open Currency converter module	Click on currency converter module	Currency converter should be open	Currency converter is not open	Fail
TC10	Open Currency converter module	Click on currency converter module	Currency converter should be open	Currency converter is open	Pass
TC11	Open Calendar module	Click on calendar module	calendar should be open	calendar is not open	Fail
TC12	Open Calendar module	Click on calendar module	calendar should be open	calendar is open	Pass
TC13	Open To-do-list module	Click on to-do-list module	To-do-list should be open	To-do-list is not open	Fail
TC14	Open To-do-list module	Click on to-do-list module	To-do-list should be open	To-do-list is open	Pass
TC15	Enter Amount	Amount = -120	Amount should be entered	Amount is not less than 1	Fail
TC16	Enter Amount	Amount = 0	Amount should be entered	Amount is not equal to 0	Fail
TC17	Enter Amount	Amount = 60	Amount should be entered	Amount is entered	Pass

TC18	Select currency name	Null	Currency name should be selected	Currency name is not selected	Fail
TC19	Select currency name	Currency name = USD	Currency name should be selected	Currency name is selected	Pass
TC20	Select January month	Click on January month	January Month calendar should be open	Calendar is not open of January	Fail
TC21	Select January month	Click on January month	January Month calendar should be open	Calendar is open of January	Pass
TC22	Select February month	Click on February month	February Month calendar should be open	Calendar is not open of February	Fail
TC23	Select February month	Click on February month	February Month calendar should be open	Calendar is open of February	Pass
TC24	Select March month	Click on March month	March Month calendar should be open	Calendar is not open of March	Fail
TC25	Select March month	Click on March month	March Month calendar should be open	Calendar is open of March	Pass

6. Drawbacks and Limitation

- **Limited Initial Features:**

  The initial release may lack certain advanced features due to time constraints, potentially limiting its functionality.

- **Dependency on External APIs:**

  The reliance on external APIs for real-time data, such as currency exchange rates, may introduce potential issues if the external services experience downtime or changes.

- **Device Compatibility Challenges:**

  Ensuring seamless performance across a wide range of Android devices may pose challenges due to variations in screen sizes, resolutions, and hardware capabilities.

- **Offline Functionality Constraints:**

  The offline functionality, while essential, may have limitations in terms of the range of features available without an internet connection.

- **Security Considerations:**

  Implementing robust security measures for the notes feature is crucial, and any lapses may compromise user data.

- **User Learning Curve:**

  Introducing a unified app for multiple utilities might require users to adapt to a new interface, potentially leading to a learning curve.

- **Continuous Maintenance Requirements:**

  Ongoing maintenance will be necessary to address emerging issues, update external APIs, and ensure compatibility with evolving Android versions.

- **Resource Intensiveness:**

  Depending on the features and functionalities implemented, the app may consume significant device resources, affecting performance on lower-end devices.

7. Proposed Enhancement

- **Multi-Language Support:**
  Integrate language options for a broader user base, allowing users to interact with the app in their preferred language.
- **Additional Utility Modules:**
  Explore the addition of new utility modules, such as a unit converter or a task scheduler, to further expand the app's functionality.
- **Cloud Integration for Notes:**
  Implement cloud integration for notes, enabling users to sync and access their notes across multiple devices securely.
- **Advanced Calculator Functions:**
  Introduce advanced calculator functions like graphing capabilities or a customizable formula library for users with more complex mathematical needs.
- **Collaborative Notes:**
  Enable collaborative note-taking, allowing multiple users to edit and contribute to shared notes in real-time.
- **Intuitive Voice Commands:**
  Incorporate voice command functionality for hands-free operation, particularly useful for users on the go.
- **Smart Notifications:**
  Implement intelligent notifications, providing timely reminders based on users' notes or scheduled tasks.

8. Conclusion

In conclusion, the development of the Multi-Utility Android App represents a significant stride towards addressing the challenges associated with fragmented digital experiences. By amalgamating essential utilities such as a calculator, notes, and currency converter into a single, cohesive platform, this project aims to simplify and enrich users' daily interactions with their mobile devices. The user-centric design prioritizes efficiency and convenience, offering a seamless and intuitive interface. As the app unfolds, it not only provides a solution to the current inconveniences users face but also anticipates future needs. The project's modular architecture and commitment to user feedback position it as a dynamic and adaptable tool, ready to evolve with emerging technologies and user expectations. Through the integration of diverse functionalities and a continuous focus on user experience, the Multi-Utility Android App aspires to be a versatile and indispensable companion, streamlining tasks and enhancing productivity in the ever-evolving digital landscape.

9. Bibliography

- **www.Google.com**
- **www.youtube.com**
- **www.javatpoint.com**
- **www.stackoverflow.com**
- **www.w3schools.com**
- **https://developer.android.com/**
- **https://chat.openai.com/**

10. Annexures

- **User Interface Design Mockups:**

  Detailed visual representations of the app's user interface, including design mockups for each utility module (calculator, notes, currency converter).

- **Technical Architecture Diagrams:**

  Visual representations of the technical architecture, illustrating the system's components, interactions, and data flow.

- **Survey Questionnaire:**

  The detailed questionnaire used for user surveys, containing questions related to user preferences, expectations, and feedback.

- **Source Code Snippets:**

  Selected snippets of source code highlighting key functionalities or innovative features implemented in the app.

- **Test Cases and Results:**

  A comprehensive set of test cases used during the development process, along with the corresponding results and any adjustments made based on testing outcomes.

- **User Feedback and Iterations:**

  A log of user feedback received during various stages of development, along with documented iterations made to address user concerns or enhance features.

11. Sample Code

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```

```
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        </LinearLayout>


    </LinearLayout>


</RelativeLayout>
```

```
package com.example.multiutilityapp.ui.calculator;


import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;

import com.example.multiutilityapp.R;

import org.mozilla.javascript.Context;
import org.mozilla.javascript.Script;
import org.mozilla.javascript.Scriptable;

public class CalculatorFragment extends Fragment{
    ImageView btn_1, btn_2, btn_3, btn_4, btn_5, btn_6, btn_7, btn_8, btn_9, btn_0;
    ImageView btn_dot, btn_equal, btn_ac, btn_module, btn_plus, btn_minus,
btn_multiplication;

    TextView inputTxt, outPuttxt;

    String data;

    @SuppressLint("MissingInflatedId")
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup
container,
                             @Nullable Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_calculator, container, false);
```

```
    outPuttxt = view.findViewById(R.id.outPuttxt);
    inputTxt = view.findViewById(R.id.inputTxt);

    btn_0 = view.findViewById(R.id.btn_0);
    btn_1 = view.findViewById(R.id.btn_1);
    btn_2 = view.findViewById(R.id.btn_2);
    btn_3 = view.findViewById(R.id.btn_3);
    btn_4 = view.findViewById(R.id.btn_4);
    btn_5 = view.findViewById(R.id.btn_5);
    btn_6 = view.findViewById(R.id.btn_6);
    btn_7 = view.findViewById(R.id.btn_7);
    btn_8 = view.findViewById(R.id.btn_8);
    btn_9 = view.findViewById(R.id.btn_9);

    btn_dot = view.findViewById(R.id.btn_dot);
    btn_equal = view.findViewById(R.id.btn_equal);
    btn_ac = view.findViewById(R.id.btn_ac);
    btn_module = view.findViewById(R.id.btn_module);
    btn_plus = view.findViewById(R.id.btn_plus);
    btn_minus = view.findViewById(R.id.btn_minus);
    btn_multiplication = view.findViewById(R.id.btn_multiplication);

    suraj();
    return view;
    //inflater.inflate(R.layout.fragment_calculator, container, false)
}


public void suraj() {

    btn_0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            data = inputTxt.getText().toString();
            inputTxt.setText(data + "0");
        }
    });

    btn_1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            data = inputTxt.getText().toString();
            inputTxt.setText(data + "1");
        }
    });

    btn_2.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            data = inputTxt.getText().toString();
            inputTxt.setText(data + "2");
```

```
    }
});


btn_3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "3");
    }
});

btn_4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "4");
    }
});

btn_5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "5");
    }
});

btn_6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "6");
    }
});

btn_7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "7");
    }
});

btn_8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "8");
    }
});
```

```
btn_9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "9");
    }
});

btn_ac.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        inputTxt.setText("");
        outPuttxt.setText("");
    }
});

btn_dot.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + ".");
    }
});

btn_plus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "+");
    }
});

btn_minus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "-");
    }
});

btn_module.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        data = inputTxt.getText().toString();
        inputTxt.setText(data + "%");
    }
});

btn_multiplication.setOnClickListener(new View.OnClickListener() {
    @Override
```

```
            public void onClick(View v) {
                data = inputTxt.getText().toString();
                inputTxt.setText(data + "×");
            }
        });

        btn_equal.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                data = inputTxt.getText().toString();

                data=data.replaceAll("×","*");
                data=data.replaceAll("%","/100");
                data=data.replaceAll("÷","/");

                Context rhino = Context.enter();
                rhino.setOptimizationLevel(-1);

                String finalResult="";

                Scriptable scriptable=rhino.initStandardObjects();
                finalResult=rhino.evaluateString(scriptable,data,"Javsscript",1,null).toString();

                outPuttxt.setText(finalResult);

            }
        });

    }
}
```