

## Capstone\_Stage1 - PPFCompanion App

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**GitHub Username:** <https://github.com/ShreyaPrabhu>

## PPFCompanion

### Description

PPFCompanion is a simple to use online tool for Public Provident Fund(PPF) Calculations. It helps users to calculate interests earned on deposits and maturity amount. The app also provides Graphical views of calculations thereby making it easy to choose best plans for investments.

## Intended User

An individual (Resident of India) can open a PPF account on his / her own behalf and / or on behalf of a minor of whom he is the guardian. An individual can open only one PPF account on his/ her own behalf.

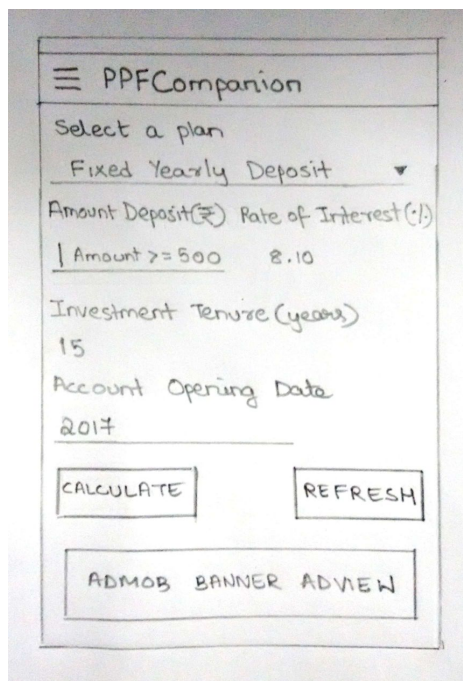
## Features

List the main features of your app. For example:

- PPFCompanion is an online tool offered for free
- Supports both “Fixed Yearly Deposit” and “Fixed Monthly Deposit” modes of PPF
- Calculates total amount deposited, total interest earned and maturity amount.
- Displays Yearly reports for plan chosen
- Displays visually intuitive graphs for Returns & Growth Trend
- Allows users to maintain their own list of PPF Plans
- Displays FAQ's related PPF Scheme
- Widget to provide fast access to plan details on user mobile Homescreen
- No internet connection is required

## User Interface Mocks

### Screen 1 : MainActivity

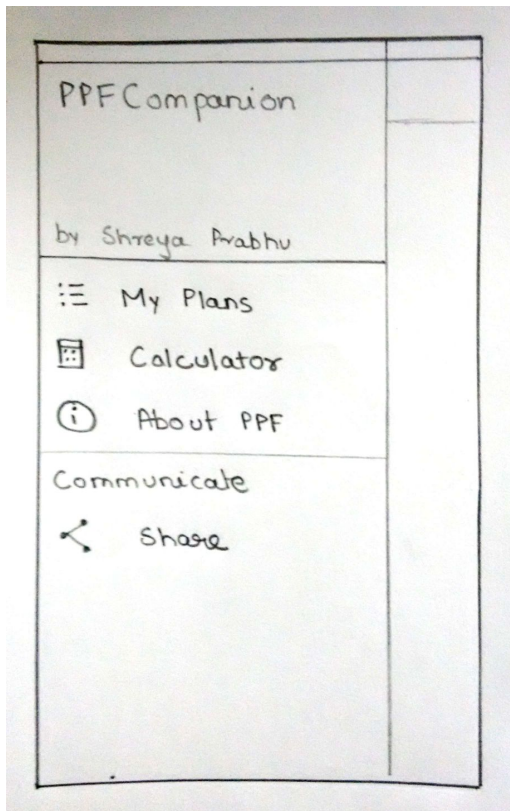


The MainActivity takes PPF mode plan , Amount Deposit and Account Opening Date as inputs from user. The PPF mode plan selection is a spinner providing Fixed Yearly and Fixed Monthly options in drop down list. It also displays the fixed PPF tenure (15 years) and the Rate of Interest(8.1%) at which interest is calculated.

It consists of Calculate button, which starts PPFReport Activity to display the reports. Refresh button is used to clear the form in MainActivity.

Admob adview is present at bottom to show various ads.

## Screen 2 : Navigation Drawer in MainActivity



Navigation Drawer helpsto navigate to MyPlan Activity, Calculator(MainActivity), AboutPPF Activity. It also allows to share about the app through the share button

## Screen 3 : PPFReport Activity

PPFReport Activity has 3 Fragments. User can navigate to fragments either by swiping or clicking on Tabs in toolbar

## Fragment 1 : Report Fragment

PPFReport

REPORT LINE GRAPH PIE CHART

Maturity Year : 2032  
 Maturity Amount : 14776  
 Total Amount Deposited : 7500  
 Total Interest Gained : 7276

REPORT FOR YEAR 2017

Opening Balance : 0  
 Amount Deposited : 500  
 Interest Earned : 40  
 Closing Balance : 540

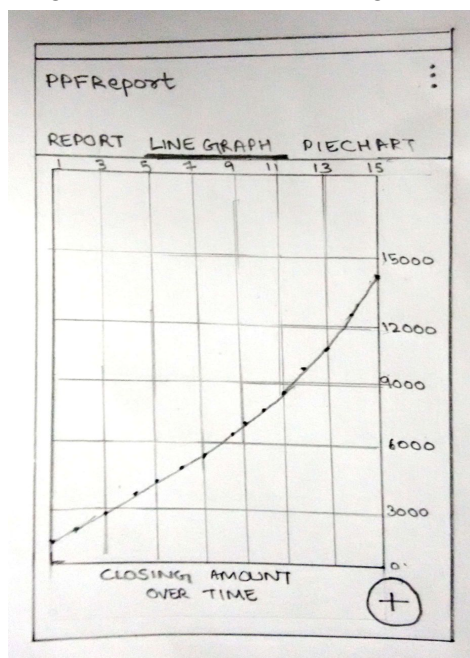
REPORT FOR YEAR 2018

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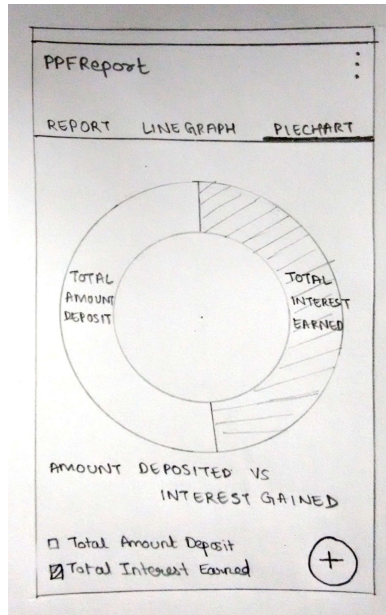
Report Fragment displays the Maturity Year, Maturity Amount, Total Amount Deposited and Total interest Earned. It has a recyclerview which displays yearly reports from start year till maturity year. Floating Action Button is used to store the PPF plan into Database and hence add to the list in MyPlan Activity. Settings Button at top right corner can be used to navigate to MyPlan Activity.

## Fragment 2 : Line Graph Fragment



Shows Line Graph(Closing Balance vs Time) for generated report using MP Chart Library. Floating Action Button is used to store the PPF plans into Database and hence add to the list in MyPlans Activity. Settings Button at top right corner can be used to navigate to MyPlan Activity.

### Fragment 3 : Pie Chart Fragment



Shows Pie Chart(Total Amount Deposited vs Total Interest Earned) for generated report using MP Chart Library. Floating Action Button is used to store the PPF plans into Database and hence add to the list in MyPlans Activity. Settings Button at top right corner can be used to navigate to MyPlan Activity.

### Screen 4 : MyPlan Activity

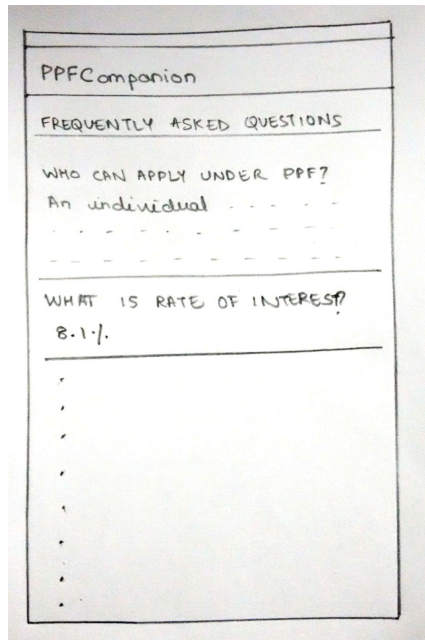
The image shows a hand-drawn UI mockup for the 'MY PLAN' screen. The title bar says 'MY PLAN'. Below it, there's a list of plans. The first plan is titled 'MY PLAN' and contains the following details: 'START YEAR : 2017', 'PPF MODE : FIXED YEARLY DEPOSIT', 'AMOUNT DEPOSITED : 500', 'MATURITY YEAR : 2032', 'MATURITY AMOUNT : 14776', 'TOTAL AMOUNT : 7500 DEPOSITED', and 'TOTAL INTEREST : 7276 GAINED'. At the bottom of this plan's details is a 'DELETE' button. Below this, another plan entry is partially visible, titled 'MY PLAN' with 'START YEAR : 2019' and 'PPF MODE : FIXED MONTHLY'.



MyPlan Activity contains List of plans in recyclerview. Each CardView displays Start Year, PPF mode, Amount deposited, Maturity year, Maturity amount, Total amount deposited, Total interest Earned and a Delete TextView with on click function.

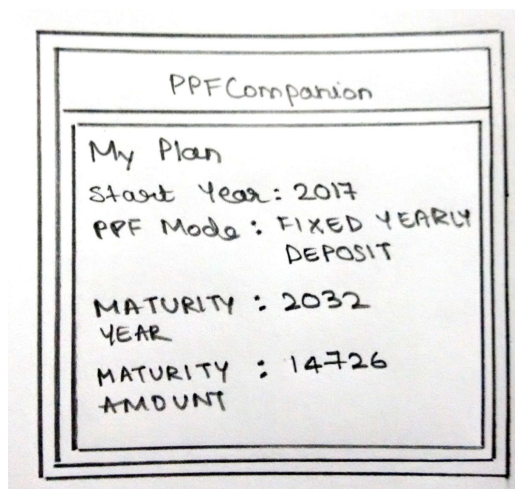
Delete can be used to delete a plan. On clicking Delete, an Alert dialog box appears to confirm. On confirmation, the plan is deleted from the database as well as from view.

### Screen 5: About PPF Activity



About PPF Activity consists of general FAQs related to Public Provident Fund. It consists of questions and answers in a scrollview

### Screen 6: Widget



PPFCompanion has a widget which shows list of plans saved by user. Each list item displays start year, PPF mode, maturity year and maturity amount.

## Key Considerations

### How will your app handle data persistence?

The PPFCompanion has a Sqlite Database to store details about user created plans. It has its own content provider to interact with the database. Loaders are used to query database.

### Describe any corner cases in the UX.

- The MainActivity consists of Navigation Drawer to navigate to MyPlan Activity, About PPF Activity and also provides share button to share information about the app
- On clicking back button in MainActivity, the app closes
- The Report Activity has a Floating Action Button to store plan in Database and add to MyPlan Activity.
- User can navigate from PPFReport Activity to MyPlan Activity through Settings Option in App bar
- PPFReport Activity has tabs to navigate between fragments. User can either swipe left/right or click on tabs
- On clicking back button in PPFReport Activity, MyPlan Activity and AboutPPF Activity opens MainActivity.

### Describe any libraries you'll be using and share your reasoning for including them.

MP Android Chart Library - A powerful Android chart view / graph view library, supporting line-bar- pie- radar- bubble- and candlestick charts as well as scaling, dragging and animations. This chart Library is included to provide visually intuitive graphs for various calculations and report generated.

### Describe how you will implement Google Play Services.

Google Admob - The app has Admob Banner Ad implemented on the launching activity to show various ads

Google Analytics - The app implements Google Analytics which helps to track and report application traffic

## Next Steps: Required Tasks

This section consists of tangible technical tasks into which the main features of the app (declared above) are decomposed into. These tasks can be completed in incremental steps to finish the app

### Task 1: Project Setup

Steps to setup and/or configure the project

- Formula to calculate interest for Fixed Yearly Deposit -  
 $(\text{Opening Balance} + \text{Fixed Year Deposit Amount}) * (8.1/100)$
- Formula to calculate interest for Fixed Monthly Deposit -  
 $(\text{Balance} + \text{Fixed Monthly Deposit Amount}) * (8.1/(12*100))$   
 Balance is Opening Balance at the starting of every month  
 Calculate for every month and add the interest earned every month to get total interest earned for a year  
 (Interest is calculated for 8.1%)
- Configure libraries
- Configure implementation of Google Play Services
- Configure short duration tasks such as PPF calculation to use AsyncTask

### Task 2: Implement UI for Each Activity and Fragment

List of Subtasks to perform in implementation of UI

- Build UI for MainActivity along with Navigation drawer
- Build UI for PPFReport Activity. It should contain 3 fragments - Yearly Report fragment, Line Graph fragment and Pie Chart fragment
- Build UI for Plans List Activity
- Build UI for About PPF Activity

### Task 3: Implement MainActivity

List of Subtasks

- Create a Layout to take PPF mode, Amount Deposited and Start Year as inputs.
- Implement Validation of Data entered and suitable display of Alert Dialog box to inform user about the cause of error.
- Display the Rate of Interest(8.1%) and PPF tenure(15 years) in the layout
- Implement a button to calculate and navigate to ReportActivity
- Implement a button to refresh layout
- Implement Navigation Drawer



## **Task 4: Implement Calculators to generate PPF Reports for different PPF modes in Report Fragment**

List the subtasks

- Add functions to calculate PPF and generate report for Fixed Yearly and Fixed Monthly PPF modes in Report fragment
- Implement AsyncTask to perform calculations on separate thread every time a user requests for reports
- Display the Maturity Year, Maturity Amount, Total Amount Deposited, Total Interest Earned
- Display the generated year reports in Report Fragment using RecyclerView and Custom Adapters

## **Task 5: Implement MP Android Library to display Line Graph and Pie Chart**

List the subtasks

- Implement MP Android Library Line Graph to show the growth in investment over the PPF period (Closing Balance across 15 years) in Line Graph fragment
- Implement MP Android Library Pie Chart to show Amount Deposited versus Interest Earned at the maturity time in Pie Chart Fragment

## **Task 6: Create Sqlite Database, Content Provider**

List the subtasks

- Create Sqlite Database to store plan details.
- Create Content Provider to access and query the database
- Implement Floating Action Button in PPFReport Activity to add plans to database and populate MyPlan Activity
- Implement Loaders in MyPlan Activity to query the database and populate the views

## **Task 7: Implement Google Play Services**

Implement Google Play Services - Admob and Analytics

List the subtasks

- Implement Admob Banner Ads in MainActivity
- Implement Google Analytics to log details and track user interaction upon click on Calculate button in MainActivity

## Task 8: Add content to About PPF Activity

List the subtasks

- Create a Listview to display FAQs related to Public Provident Fund
- The activity must contain answers to basic PPF related queries

## Task 9: Create a Widget

List the subtasks

- Build UI for widget to show list of plans created by users.
  - Implement Widget functionality
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