

# GENESIS - Learning Outcome & Mini-project Summary Report



LTTTS  
GLOBAL  
ENGINEERING  
ACADEMY



*L&T Technology Services*



## Details

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	To be Approved	Remarks/Revision Details
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## Mini project -1 [Team]

### Module: Core Java

#### Topic and Subtopics:

Whether you are a housewife or a college student, a business owner or a business house, a retired professional or Indian living abroad, not having a bank account is unimaginable. Based on the purpose, frequency of transaction, and location of the account-holder, banks offer a bouquet of bank accounts to choose from. Here is a list of some of the types of bank accounts in India.

#### Interest Calculation of Savings account

A savings bank account is a regular deposit account, where you earn a minimum rate of interest. Here, the number of transactions you can make each month is capped. Banks offer a variety of savings accounts based on the type of depositor, features of the product, age or purpose of holding the account, and so on. There are regular savings accounts, savings accounts for children, senior citizens or women, institutional savings accounts, family savings accounts, and so many more.

#### Interest Calculation of Fixed deposit account

To park your funds and earn a decent rate of interest on it, there are different types of accounts. A fixed deposit (FD) account allows you to earn a fixed rate of interest for keeping a certain sum of money locked in for a given time, that is until the FD matures. FDs range between a maturity period of seven days to 10 years. The rate of interest you earn on FDs will vary depending on the tenure of the FD. Generally, you cannot withdraw money from an FD before it matures. Some banks offer a premature withdrawal facility. But in that case, the interest rate you earn is lower.

#### Interest Calculation of Recurring deposit account

A recurring deposit (RD) has a fixed tenure. You need to invest a fixed sum of money in it regularly -- every month or once a quarter -- to earn interest. Unlike FDs, where you need to make a lump sum deposit, the sum you need to invest here is smaller and more frequent. You cannot change the tenure of the RD and the amount to be invested each month or quarter. Even in the case of RDs, you face a penalty in the form of a lower interest rate for premature withdrawal. The maturity period of an RD could range between six months to 10 years.

## Objectives & Requirements

### Objectives

Interest calculator for different types of accounts like current, savings, fixed deposit and recurring deposit accounts.

### Low level requirements

1. Amount
2. Time period
3. Age

### High level requirements

1. Fixed deposit account
2. Recurring deposit account
3. Savings account

### Low level Requirements:

ID	Description
L1	Amount deposited in the account.
L2	Time for which the amount is deposited into the account.
L3	Age of the person who is depositing the amount into the account.

Table 1: Low Level Requirements

### High Level Requirements:

ID	Description
H1	Fixed deposit is a type of account in which the amount is put and interest is obtained annually.
H2	Recurring deposit is a type of account in which the amount is cut every month and interest is obtained annually.
H3	Savings account is a widely used account in which the salary is put and interest is obtained according to the amount in the account.
L1_L2_H1	Fixed account related to amount and time
L2_L1_H2	Recurring account related to amount time and age
L2_H3	Recurring account related to AGE
L2_H2	Recurring account related to time
L1_H3	Savings account depends on the amount deposited
L2_L1_H3	Savings account depends on the amount and time

Table 2: High Level Requirements

## Design

## Structural Diagrams

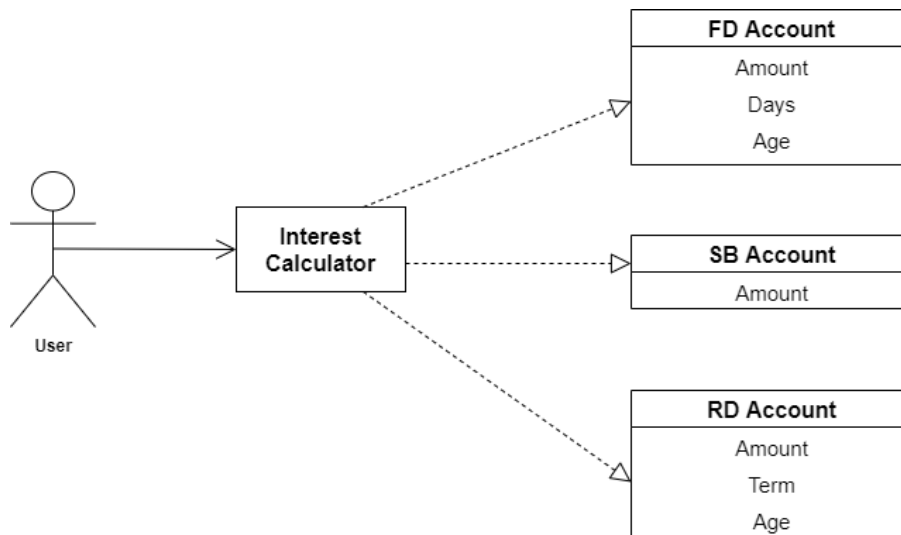


Figure 1: Use Case Diagram

## Behavioral Diagram

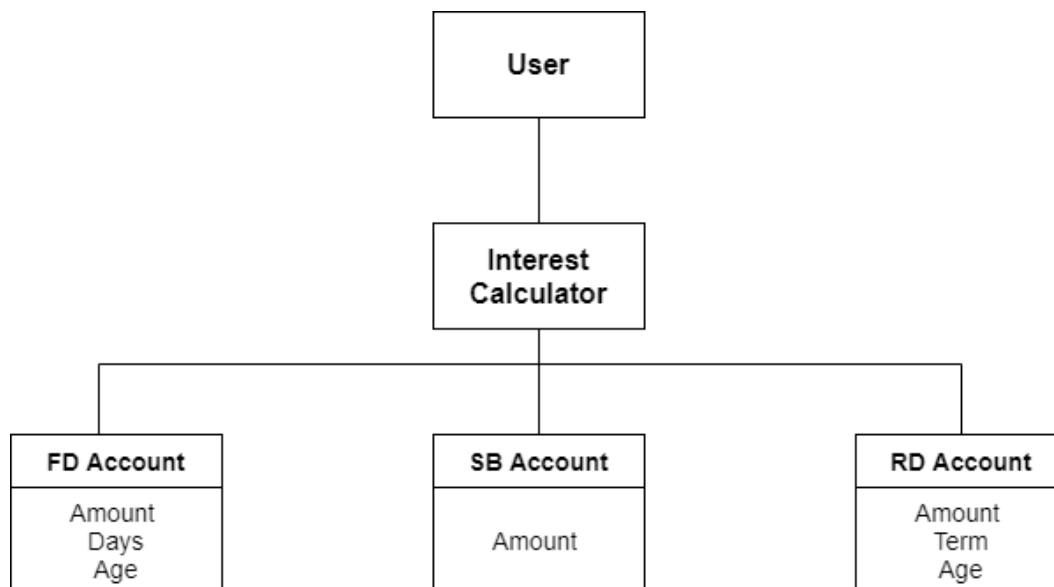


Figure 2: Object Diagram



## Test Plan

Requirement	Type	Description	Result
L1	Amount	Amount present in the account	Amount is obtained
L2	Time Period	Time for which the amount was present in the account	Time period is obtained
L3	Age	Age of the account holder	Age is obtained
L1_L2_H1	Fixed account related to amount and time	The amount present in the fixed account will give the interest according to the time period	Interest is obtained
L2_L1_H2	Recurring account related to amount time and age	The interest for recurring deposit is depending on the amount time and age	Interest is obtained according to age and time of the deposit
H1	Fixed Deposit	Fixed account is the type of account discussed above	Fixed account is explained
H2	Recurring Deposit	Recurring deposit is the type of deposit where every month some part of the amount is added and interest is obtained	Recurring deposit is made and interest is obtained
H3	Savings Deposit	This is a very commonly used account for salaries by most of the employees	Savings account is obtained
L2_H3	Recurring account related to AGE	The interest is obtained according to the age of the person	Interest is obtained according to the age
L2_H2	Recurring account related to time	The interest is obtained to the time of money deposited in the account	Interest is obtained according to the time of amount deposited
L1_H3	Savings account depends on the amount deposited	The amount deposited in the account	Interest is obtained according to the amount deposited
L2_L1_H3	Savings account depends on the amount and time	The amount deposited in the account depends on time	Interest is obtained according to time

Table 3: Test Plan

## Implementation Summary

### Fixed Deposit

FD or a fixed deposit account is another type of bank account that can be opened in any Public or Private sector bank.

The list of important things that need to be known with respect to the fixed deposit account have been mentioned below:

- It is a onetime deposit and one time take away account. Under this type of account, the account holder needs to deposit a fixed amount of sum (as per their wish) for a fixed time period
- The amount deposited in FD account can only be withdrawn all at once and not in instalments
- Banks pays interest on the fixed deposit account
- The rate of interest depends upon the amount you deposit and for the time duration of the FD
- Full repayment of the amount is available before the maturity date of FD
- So the parameters like time and amount are required to find out the interest to the amount deposited.

### Recurring Deposit Account

Recurring Deposit account or RD account is a form of account wherein the account holder needs to deposit a fixed amount every month until it reaches the fixed maturity date.

The features of the Recurring deposit account have been discussed below:

- Any individual or an Institution can open a recurring deposit account either separately or jointly
- Periodic or monthly installments that need to be added can be as low as Rs.50/- or may vary from bank to bank
- The range of months for which an RD account can be opened varies from 6 months to 120 months
- The interest rate varies depending upon the bank you choose to open an account with
- Nomination facility is also available for RC accounts
- Passbook is issued for this type of bank account
- Premature withdrawal of the amount is permitted, provided a sum of amount is deducted as penalty
- So the age amount and time, these 3 factors are used to calculate the interest of the deposit and interest is calculated

### Savings Account

As the name suggests, the savings accounts can be opened by an individual or jointly by two people with an aim to save money. The main benefit of opening a savings bank account is that the bank pays you interest for opening this type of account with them.

Given below are a few features of the Savings account:

- There is no limit to the number of times the account holder can deposit money in this account but there is a restriction on the number of times money can be withdrawn from this account.
- The rate of interest that an account holder get varies from 4% to 6% per annum
- There is no minimum balance that needs to be maintained for this type of an account so any amount is accepted
- The interest is obtained according to the amount and time for which the amount is deposited into the account.
- In this type of account, the age is not considered.

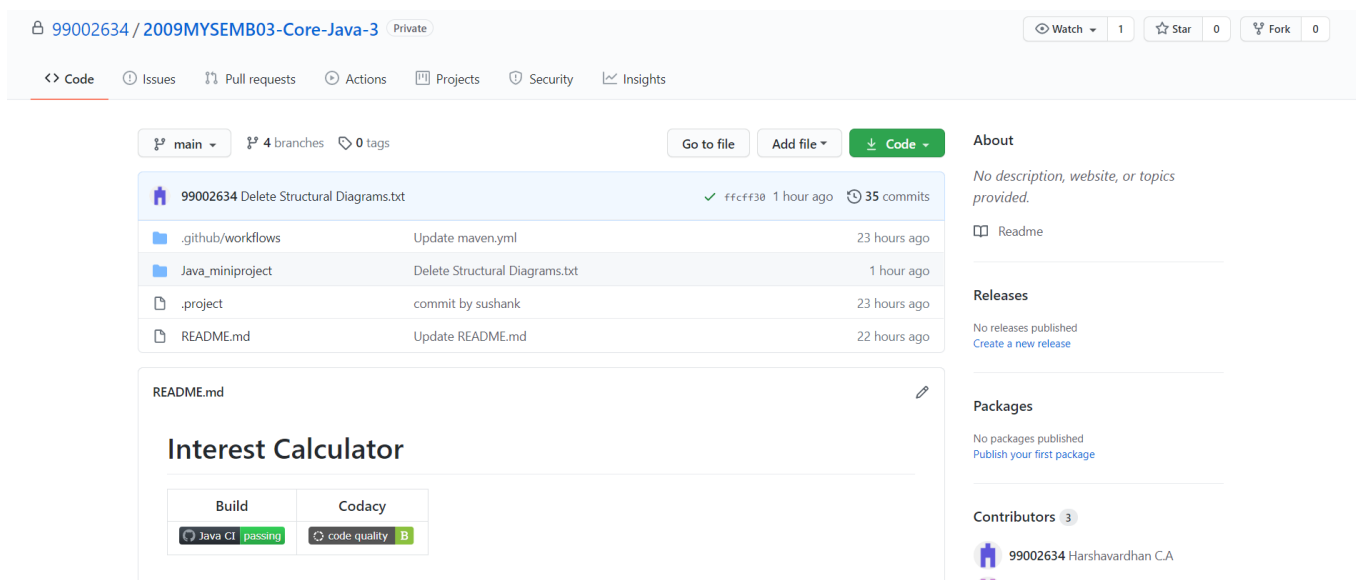
## Video Summary

[https://github.com/99002634/2009MYSEMB03-Core-Java-3/blob/main/Java\\_miniproject/6\\_ImagesandVideos/Media2.zip](https://github.com/99002634/2009MYSEMB03-Core-Java-3/blob/main/Java_miniproject/6_ImagesandVideos/Media2.zip)

## GitHub Link

<https://github.com/99002634/2009MYSEMB03-Core-Java-3>

## GitHub Dashboard



99002634 / 2009MYSEMB03-Core-Java-3 Private

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main 4 branches 0 tags

Go to file Add file Code

File	Commit	Time	Commits
99002634 Delete Structural Diagrams.txt	ffcff38	1 hour ago	35
.github/workflows	Update maven.yml	23 hours ago	
Java_miniproject	Delete Structural Diagrams.txt	1 hour ago	
.project	commit by sushank	23 hours ago	
README.md	Update README.md	22 hours ago	

README.md

### Interest Calculator

Build	Codacy
Java CI <span>passing</span>	code quality <span>B</span>

About: No description, website, or topics provided. Readme

Releases: No releases published. Create a new release

Packages: No packages published. Publish your first package

Contributors: 3

- 99002634 Harshavardhan C.A
- 99002649
- 99002471

Figure 3 :GitHub Dashboard

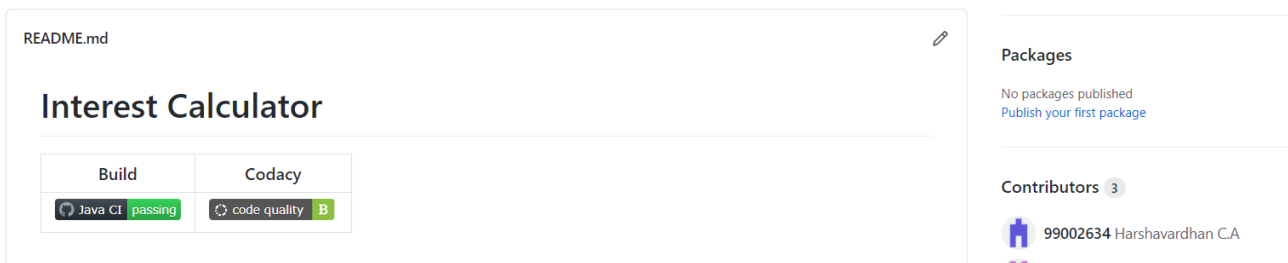
## Summary

The GitHub repository has the following files and each file has a README.md file which explains documentation of the project:

1. Requirements: This contains the high level and low level requirements of the project
2. Architecture: This contains the necessary UML diagrams present in the project
3. Implementation: This contains the source code of the following project
4. Test Plan and output: This contains the test plan and the obtained outputs of the project
5. Report: This contains the report of the project
6. Images and videos: This contains the images and the working of project

## Build

The below screenshot below shows the Build and code quality of the project

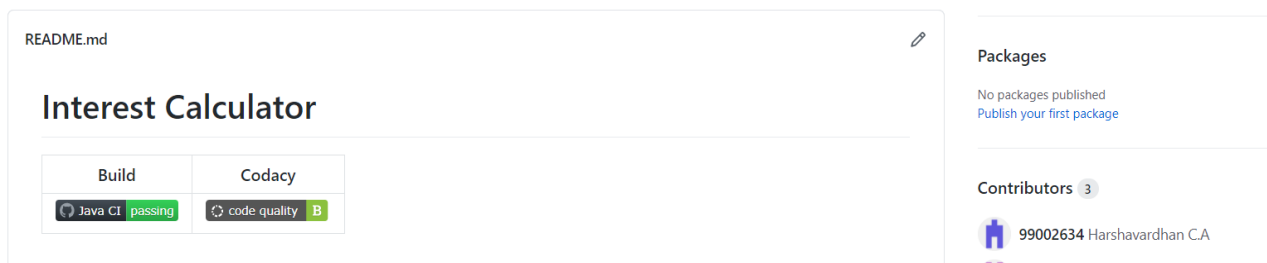


The screenshot shows a GitHub repository README for a project titled "Interest Calculator". The README includes two badges: a "Build" badge showing "Java CI" with a green "passing" status, and a "Codacy" badge showing "code quality" with a green "B" grade. To the right of the README, there are sections for "Packages" (No packages published) and "Contributors" (3 contributors: 99002634 Harshavardhan C.A, 99002649, and 99002471).

Figure 4: Build Badge

## Code quality and Issues or Bug Tracking

The below screenshot below shows the Build and code quality of the project



This screenshot is identical to Figure 4, showing the same GitHub repository README for "Interest Calculator" with the same build and code quality badges and contributor information.

Figure 5: Code Quality Badge

## Bug Tracking:

1. Initially the build got failed because of the error in creation of the account object.
2. Correcting the error, we got an another error JUnit as the test cases were failing.
3. RD Account interest rate was given wrong
4. In FD forgot to add the dependency of number of days

## Unit Testing

The test cases were done according to the type of accounts shown above:

1. **Fixed Deposit:** It is dependent on the amount deposited and the number of days which the amount is deposited.
2. **Recurring deposit:** It is dependent on the amount deposited per month, number of days and the age of the person who is depositing the amount.
3. **Savings deposit:** It is dependent on the amount deposited in the account its interest is obtained annually and is directly credited into the account.

The summary of the test cases is attached below:

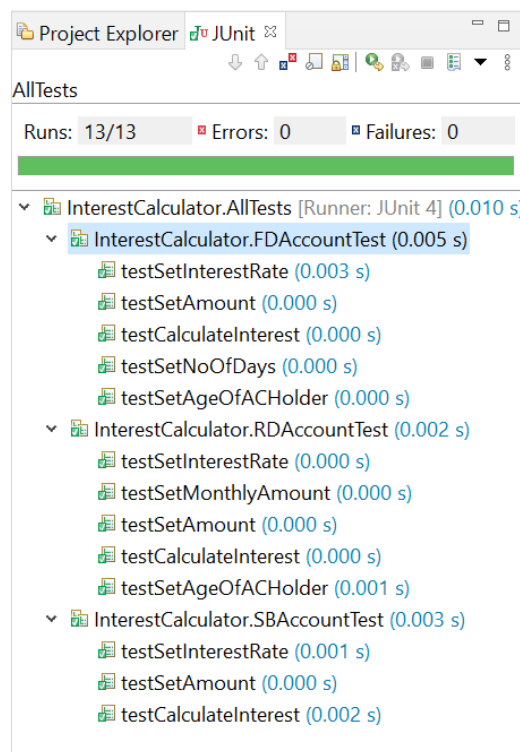


Figure 6: Unit Test Cases

## Individual Contribution & Highlights

### **99002471(M V N S K Aditya):**

1. Created the Java code and the test file for savings account
2. Created the main file and the test file for the main file

### **99002649(Y Sushank):**

1. Created the Java code and the test file for fixed deposit account.
2. Created the maven build configuration for entire project

### **99002634(Harshavardhan CA):**

1. Created the Java code and the test file for recurring deposit account
2. Code quality check using codacy platform was done.

## Summary

We implemented Interest calculator on three different types of accounts namely, FD Account, SB Account, and RD Account. FD Account Interest is calculated based on Amount, Days and Age, SB Account Interest is calculated based on Amount, and RD Account Interest is calculated based on Amount, term and Age of Account Holder.

Unit testing was performed using the Junit framework to verify the functionalities of all three types of accounts.

## Challenges faced and how were they overcome

1. Creating the test file for different accounts and configuring the Junit
2. Folder structure was lost while upload the maven project into the git
3. Creation of Maven build workflow was difficult