



EXPERIMENT 1.3

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Subject Name: Project Based Learning in Java **Subject Code:** 22CSH-359

○ Aim:

Calculate interest based on the type of the account and the status of the account holder. The rates of interest changes according to the amount (greater than or less than 1 crore), age of account holder (General or Senior citizen) and number of days if the type of account is FD or RD

○ Objective:

Develop a system that dynamically calculates interest based on these parameters, ensuring accuracy in financial computations

○ Algorithm:

□ Input Details

- Read account type (FD/RD).
- Read deposit amount in crores.
- If account type is FD or RD, ask if the user is a senior citizen.
- Read maturity period (in days for FD, in months for RD).

□ Determine Interest Rate

- If account type is FD:
 - Check deposit amount (above or below 1 crore).
 - Determine interest rate based on maturity period and senior citizen status.
- If account type is RD:

- Determine interest rate based on maturity period and senior citizen status.
- **Display Result**
 - Print the applicable interest rate.
 - If input is invalid, show an error message.

○ Source Code:

```
import java.util.Scanner;

class Main {
    public static void
        main(String[] args)
        {
            Scanner scanner = new
                Scanner(System.in)
                ;

            System.out.println(
                "Enter account type
                (FD/RD): ");
            String accountType =
                scanner.next();

            System.out.println(
                "Enter deposit
                amount in crores
                (e.g., 0.5 for 50
                lakhs): ");
            double amount =
                scanner.nextDouble
                ();

            boolean isSenior =
                false;
            if
                (accountType.equal
                sIgnoreCase("FD"))
                ||
```

```
        accountType.equals  
        IgnoreCase("RD"))  
    {  
  
        System.out.println(  
            "Are you a senior  
            citizen? (yes/no):  
            ");  
        String seniorInput =  
            scanner.next();  
        isSenior =  
            seniorInput.equalsI  
            gnoreCase("yes");  
    }  
  
    System.out.println("Enter  
        maturity period (in  
        days for FD, in  
        months for RD): ");  
    int period =  
        scanner.nextInt();  
  
    double rate =  
        getInterestRate(acc  
        ountType, amount,  
        period, isSenior);  
  
    if (rate != -1) {  
  
        System.out.println(  
            "Your applicable  
            interest rate is: " +  
            rate + "%");  
    } else {  
  
        System.out.println(  
            "Invalid input.  
            Please check  
            details and try  
            again.");
```

```
    }

    scanner.close();
}

public static double
    getInterestRate(String accountType,
        double amount, int
        period, boolean
        isSenior) {
    if
        (accountType.equalsIgnoreCase("FD"))
        ) {
        return
            getFDInterestRate(
                amount, period,
                isSenior);
    } else if
        (accountType.equalsIgnoreCase("RD"))
        ) {
        return
            getRDInterestRate(
                period, isSenior);
    }
    return -1;
}

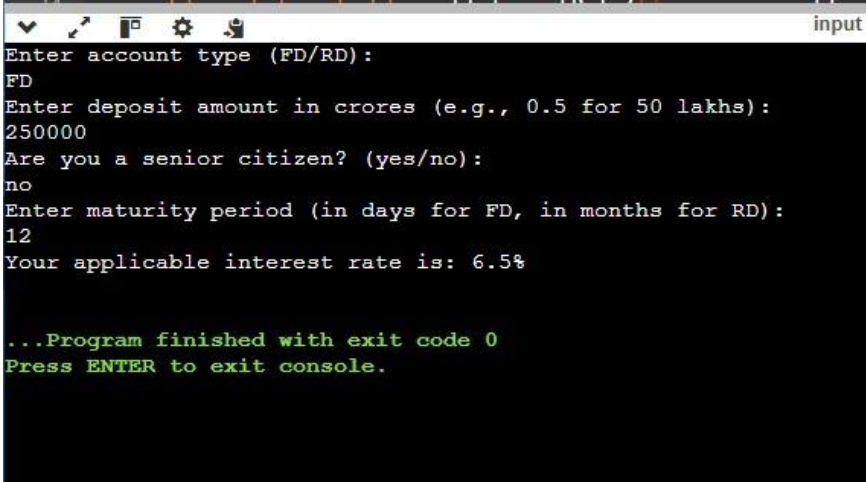
public static double
    getFDInterestRate(
        double amount, int
        period, boolean
        isSenior) {
    if (amount < 1) {
        if (period >= 7 &&
            period <= 14)
            return isSenior ?
                5.0 : 4.5;
```

```
        if (period >= 15 &&
            period <= 29)
            return isSenior ?
                5.25 : 4.75;
        if (period >= 30 &&
            period <= 45)
            return isSenior ?
                6.0 : 5.5;
        if (period >= 46 &&
            period <= 60)
            return isSenior ?
                7.5 : 7.0;
        if (period >= 61 &&
            period <= 184)
            return isSenior ?
                8.0 : 7.5;
        if (period >= 185
            && period <= 365)
            return isSenior ?
                8.5 : 8.0;
    } else {
        if (period >= 7 &&
            period <= 14)
            return 6.5;
        if (period >= 15 &&
            period <= 29)
            return 6.75;
        if (period >= 30 &&
            period <= 45)
            return 6.75;
        if (period >= 46 &&
            period <= 60)
            return 8.0;
        if (period >= 61 &&
            period <= 184)
            return 8.5;
        if (period >= 185
            && period <= 365)
            return 10.0;
    }
```

```
        return -1;
    }

    public static double
        getRDInterestRate(
            int period, boolean
            isSenior) {
        if (period == 6) return
            isSenior ? 8.0 : 7.5;
        if (period == 9) return
            isSenior ? 8.25 :
            7.75;
        if (period == 12) return
            isSenior ? 8.5 : 8.0;
        if (period == 15) return
            isSenior ? 8.75 :
            8.25;
        if (period == 18) return
            isSenior ? 9.0 : 8.5;
        if (period == 21) return
            isSenior ? 9.25 :
            8.75;
        return -1;
    }
}
```

o Screenshot of Outputs:



```
input
Enter account type (FD/RD):
FD
Enter deposit amount in crores (e.g., 0.5 for 50 lakhs):
250000
Are you a senior citizen? (yes/no):
no
Enter maturity period (in days for FD, in months for RD):
12
Your applicable interest rate is: 6.5%

...Program finished with exit code 0
Press ENTER to exit console.
```



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○ Learning Outcome:

- Conditional Logic: Apply if-else to determine interest rates based on multiple factors.
- User Input Handling: Use Scanner to take and process user inputs efficiently.
- Modular Programming: Implement functions for better code organization and reusability.
- Decision Making in Finance: Understand how interest rates vary based on amount, tenure, and account type.
- Basic Java Syntax & Execution: Strengthen Java skills by working with loops, conditions, and methods.



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