

# **Comprehensive Assignment**

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**Subject - Object Oriented Programming (OOP)**

**Subject Code - 2CS302**

## **Comprehensive Definition:**

Develop the Java program for the home loan portal as mentioned below:

- The portal has following functionalities:
  - Scan the user details from the user and store it to UserDetails.txt file.  
Refer the below table for format of file. Name of TEXT file:  
UserDetails.txt

<b>Format of File:</b>
UserID  UserCompleteName Password  HomeLoanAmount RemainingLoanAmount
<b>Sample Data</b>
ajaypatel Ajaykumar Patel Passwordpw 3000000 2000000
bandish Bandish Shah Passwordpw 1000000 550000
darshan Darshan Dave Passwordpw 750000 700000

- Scan the Loan Payment Details from the user and store it to  
LoanPaymentDetails.txt file. Name of TEXT file:  
LoanPaymentDetails.txt

<b>Format of File:</b>
UserID AmoutPaid Description DayOfMonth Month Year
<b>Sample Data</b>
ajaypatel 35000 April Payment 2 9 2020

bandish 15000 April Payment 7 9 2020
darshan 7500 April Payment 10 9 2020
ajaypatel 37000 May Payment 1 10 2020
bandish 16000 May Payment 3 10 2020
darshan 10000 May Payment 2 10 2020

- Display the summary details of loan repayment for each loan year-wise. Format of summary:

Year: <Year here>-----

Name: <userID here>

Complete Name: < UserCompleteName here>

Home Loan Amount: < HomeLoanAmount here>

Current Remaining Loan Amount: <

RemainingLoanAmount here> Loan Repayment

Amount in year <Year here>: <total of repayment> ----

-----

i.e.

Year: 2019-----

Name: darshan

Complete Name: Darshan Dave

Home Loan Amount: 750000

Current Remaining Loan Amount: 740000

Loan Repayment Amount in year 2019: 17500

-----

Year: 2020-----

Name: darshan

Complete Name: Darshan Dave

Home Loan Amount: 750000

Current Remaining Loan Amount: 700000

Loan Repayment Amount in year 2020: 17500

-----

- Display the summary details of loan repayment for each loan year-wise month wise. Format of summary:

-----

Year	Month	Total amount of loan repayment

Total amount of loan repayment: <Amount>

-----  
i.e.

Year	Month	Total amount of loan repayment
2020	4	57500
2020	5	63000

Total amount of loan repayment: 120500  
-----

- You have to use inheritance, file handling and exception handling concepts compulsory. You may use other concepts of Object Oriented Programming if required.

## Java Program Files:

**Name of the File** - HomeLoanPortal.java

**File Purpose** - It contains main method. It provides menu for doing functions like Sign Up, Sign In, and exit the program. It generates and handles Exception whenever necessary.

**Java File Code :**

```
import java.util.InputMismatchException;
import java.util.Scanner;

public class HomeLoanPortal
{
    public static void main(String [] args)
    {
        Scanner scan=new Scanner(System.in);
        int menu,i=0;
```

```

do
{
    while(true)
    {
        try
        {
            System.out.println("Menu:\nEnter 1 to Sign Up (To
create an account)\nEnter 2 to Sign In (If you already have an
account)\nEnter 0 to exit the program.");
            if(i==1)
            {
                scan.nextLine();
            }
            i=1;
            menu=scan.nextInt();    //scans value chosen from menu
            break;
        }
        catch(InputMismatchException e)    //if value chosen is non
numeric character
        {
            System.out.println("Please enter an integer. "+e);
        }
    }
    if(menu==1)    //if user wants to sign up
    {
        signup su=new signup(scan);
        su.enterdetails();
    }
    else if(menu==2)    //if user wants to sign in
    {
        signin si=new signin(scan);
        si.enterdetails();
    }
    else if(menu!=0)    //invalid request
    {
        System.out.println("Invalid request. Please try again.");
    }
    }while(menu!=0);
    scan.close();
}
}

```

**Name of the File** - signup.java

**File Purpose** - To scan details like UserID, User Complete Name, Password, Home Loan Amount and Remaining Loan Amount from the user and store it in the file "UserDetails.txt" in the given format. It also generates and handles exceptions whenever necessary.

**Java File Code :**

```

import java.io.Console;
import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
import java.util.InputMismatchException;
import java.util.Scanner;

public class signup
{
    String UserID,UserCompleteName,Password;

```

```

int HomeLoanAmount, RemainingLoanAmount;
Scanner scan;
Console console=System.console();
signup(Scanner scan)
{
    this.scan=scan;
}
void enterdetails()
{
    int i;
    try
    {
        FileWriter fw=new FileWriter("UserDetails.txt",true);
        i=0;
        while(true)
        {
            try (Scanner scl = new Scanner(new
File("UserDetails.txt")))
            {
                System.out.print("UserID : ");
                if(i!=1)
                {
                    scan.nextLine();
                }
                i=1;
                UserID=scan.nextLine(); //scans UserID
                while (scl.hasNextLine())
                {
                    String checkuserid=scl.next();
                    String [] splitting=checkuserid.split("\\|");
                    String checkuserids=splitting[0];
                    if(checkuserids.equals(UserID)) //checks
whether UserId is already taken
                    {
                        throw new Exception("UserID already taken. Try
another.");
                    }
                    scl.nextLine();
                }
                break;
            }
            catch (IOException e)
            {
                e.printStackTrace();
            }
            catch (Exception e)
            {
                System.out.println(e.getMessage());
            }
        }
        System.out.print("Complete Name : ");
        UserCompleteName=scan.nextLine(); //scans name
        String confirmPassword;
        i=0;
        do
        {
            if(i!=0)
            {
                System.out.println("Password and Re-entered Password is
not matching. Please try again.");
            }
        }
    }
}

```

```

        i=1;
        System.out.print("Password (Hidden): ");
        char[] pass=console.readPassword(""); //scans
password in a hidden way
        Password=String.valueOf(pass);
        System.out.print("Confirm Password (Re-enter
Password) (Hidden): ");
        char[] conpass=console.readPassword("");
        confirmPassword=String.valueOf(conpass); //scans
confirmpassword in hidden way
        }while (Password.equals(confirmPassword)!=true); //checks if
password and confirm password are same else repeat
        i=0;
        while(true)
        {
            try
            {
                System.out.print("Home Loan Amount : ");
                if (i==1)
                {
                    scan.nextLine();
                }
                i=1;
                HomeLoanAmount=scan.nextInt(); //scans
HomeLoanAmount
                if (HomeLoanAmount<=0) //exception
thrown if its value is less than 1
                {
                    throw new Exception("Enter valid value greater than
0.");
                }
            }
            catch(InputMismatchException e) //if value
chosen is non numeric character
            {
                System.out.println("Please enter an integer. "+e);
                continue;
            }
            catch(Exception e)
            {
                System.out.println(e.getMessage());
                continue;
            }
            break;
        }
        i=0;
        while(true)
        {
            try
            {
                System.out.print("Remaining Loan Amount : ");
                if (i==1)
                {
                    scan.nextLine();
                }
                i=1;
                RemainingLoanAmount=scan.nextInt(); //scans
RemainingLoanAmount
                if (RemainingLoanAmount<0 ||
RemainingLoanAmount>HomeLoanAmount) //Exception thrown if
RemainingLoanAmount is less than 0 or RemainingLoanAmount is greater than

```

```

HomeLoanAmount
        {
            throw new Exception("Enter valid value greater than
or equal to 0 or Remaining Loan amount cannot be greater than Home loan
Amount.");
        }
    }
    catch(InputMismatchException e) //if value
chosen is non numeric character
    {
        System.out.println("Please enter an integer. "+e);
        continue;
    }
    catch(Exception e)
    {
        System.out.println(e.getMessage());
        continue;
    }
    break;
}

fw.write (UserID+"|"+UserCompleteName+"|"+Password+"|"+HomeLoanAmount+"|"+Re
mainingLoanAmount+"\n"); //stores details into the file "UserDetails.txt"
as per given format
    fw.close();
}
catch(Exception e)
{
    System.out.println(e);
}
}
}

```

**Name of the File** - signin.java

**File Purpose** - It inherits signup.java. This file allows user to sign in into their account by entering their UserID and Password. After user signs in, he/she is given options to Pay Loan Installment (whose details needed to be stored into file "LoanPaymentDetails.txt"), to have a look on Yearly Summary, to have a look on Yearwise-Monthwise Summary and to Sign Out. It also generates and handles exceptions whenever necessary.

**Java File Code :**

```

import java.io.Console;
import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
import java.util.InputMismatchException;
import java.util.Scanner;
import java.lang.*;

public class signin extends signup //subclass of class signup
{
    signin(Scanner scan)
    {
        super(scan);
    }
}

```

```

void enterdetails()
{
    int i = 0;
outer:
    while (true)
    {
        try (Scanner scl = new Scanner(new File("UserDetails.txt")))
        {
            System.out.print("UserID : ");
            if (i != 1)
            {
                scan.nextLine();
            }
            i = 1;
            UserID = scan.nextLine();          //scans userid
            while (scl.hasNextLine())
            {
                String checkuserid = scl.nextLine();
                String[] splitting = checkuserid.split("\\|");
//splits string

                String checkuserids = splitting[0];
                if (checkuserids.equals(UserID))
                {
                    UserCompleteName=splitting[1];
                    Password=splitting[2];
                    HomeLoanAmount=Integer.parseInt(splitting[3]);
                    RemainingLoanAmount=Integer.parseInt(splitting[4]);
                    break outer;
                }
                scl.nextLine();
            }
            System.out.println("No UserID found. Try again.");
        }
        catch (IOException e)
        {
            e.printStackTrace();
        }
        catch (Exception e)
        {
            System.out.println(e.getMessage());
        }
    }
    while(true)
    {
        System.out.print("Password (Hidden): ");
        Console console=System.console();
        char[] pass=console.readPassword("");
        String Passwordcheck=String.valueOf(pass);          //scans
password

        if (Passwordcheck.equals(Password))          //checks password
        {
            System.out.println("Sign In successful.");
            break;
        }
        else          //if password incorrect
        {
            System.out.println("Wrong Password. Please try again.");
        }
    }
    int menu;
    do

```



```

    {
        i=0;
        while (true)
        {
            try
            {
                System.out.println("Menu:\nEnter 1 to Pay Loan
Installment\nEnter 2 to have a look on Yearly Summary\nEnter 3 to have a
look on Yearwise-Monthwise Summary\nEnter 0 to Sign Out.");
                if (i == 1)
                {
                    scan.nextLine();
                }
                i = 1;
                menu = scan.nextInt();          //scans option of menu to
perform
                break;
            }
            catch (InputMismatchException e)      //if not an integer
entered
            {
                System.out.println("Please enter an integer. " + e);
            }
        }
        if (menu == 1)
        {
            LoanPayment();
        }
        else if (menu == 2)
        {
            YearlySummmmary();
        }
        else if (menu == 3)
        {
            yearlymonthwiseSummary();
        }
        else if (menu != 0)
        {
            System.out.println("Invalid request. Please try again.");
        }
    }while (menu != 0);
}
void LoanPayment()
{
    System.out.print("Enter the Amount Paid : ");
    int AmountPaid=scan.nextInt(); //scans amount
    System.out.print("Enter description : ");
    scan.nextLine();
    String description=scan.nextLine(); //scans description
    System.out.print("Enter day of month : ");
    int day=scan.nextInt(); //scans day
    System.out.print("Enter month : ");
    int month=scan.nextInt(); //scans month
    System.out.print("Enter year : ");
    int year=scan.nextInt(); //scans year
    try
    {
        FileWriter fw1=new FileWriter("LoanPaymentDetails.txt",true);
        fw1.write(UserID+"|"+AmountPaid+"|"+description+"|"+day+"|"+month+"|"+year+
"\n"); //information printed into the text file
    }
}

```

```

        fw1.close();
    }
    catch(Exception e)
    {
        System.out.println(e);
    }
}
void YearlySummmmary()
{
    int totalpaid=0;
    System.out.print("Enter year: ");
    int year=scan.nextInt(); //scans year
    try (Scanner sc = new Scanner(new File("LoanPaymentDetails.txt")))
    {
        while (sc.hasNextLine())
        {
            String checkuserinfo=sc.next(); // write first word from
line
            String [] spliting=checkuserinfo.split("\\|"); //splits on
"|"
            String checkuserid=spliting[0];
            if(checkuserid.equals(UserID)) //if information of
current user
            {
                int yearinfo=Integer.parseInt(spliting[5]);
                if(yearinfo==year) //if information of correct year
                {
                    int amount=Integer.parseInt(spliting[1]);
                    totalpaid=totalpaid+amount;
                }
            }
            sc.nextLine();
        }
    }
    catch (IOException e)
    {
        e.printStackTrace();
    }
    System.out.println("Year - "+year+"-----");
    System.out.println("UserID - "+UserID);
    System.out.println("Complete Name - "+UserCompleteName);
    System.out.println("Home Loan Amount - "+HomeLoanAmount);
    System.out.println("Current Remaining Loan Amount -
"+RemainingLoanAmount);
    System.out.println("Loan Repayment in the year"+year+" -
"+totalpaid);
    System.out.println("-----");
}
void yearlymonthwiseSummary()
{
    int totalpaid=0;
    System.out.print("Enter year: ");
    int year=scan.nextInt(); //scans year
    System.out.println("-----");
}
System.out.println("Year\t\t\tMonth\t\t\tAmount Paid");
try (Scanner sc = new Scanner(new File("LoanPaymentDetails.txt")))
{
    while (sc.hasNextLine())

```

```

        {
            String checkuserinfo=sc.next(); // write first word from
line
            String [] splitting=checkuserinfo.split("\\|");
            String checkuserid=splitting[0];
            if(checkuserid.equals(UserID)) //if information of correct
userid
            {
                int yearinfo=Integer.parseInt(splitting[5]);
                if(yearinfo==year) //if information of correct
year
                {
                    int amount=Integer.parseInt(splitting[1]);
                    int monthinfo=Integer.parseInt(splitting[4]);

                    System.out.println(year+"\t\t\t"+monthinfo+"\t\t\t"+amount);
                    totalpaid=totalpaid+amount;
                }
            }
            sc.nextLine();
        }
        System.out.println("Total Repayment in the year "+year+" is
Rupees "+totalpaid); //information printed
        System.out.println("-----");
    }
    catch (IOException e)
    {
        e.printStackTrace();
    }
}
}

```

## Other Related Files Which Are Obtained As A Part Of Output:

**Name of File** - UserDetails.txt

**File Content (As per input given in the assignment definition):**

ajaypatel|Ajaykumar Patel|Passwordpw|3000000|2000000

bandish|Bandish Shah|Passwordpw|1000000|550000

darshan|Darshan Dave|Passwordpw|750000|700000

**Name of File** - LoanPaymentDetails.txt

**File Content (As per input given in the assignment definition):**

ajaypatel|35000|April Payment|2|9|2020

ajaypatel|37000|May Payment|1|10|2020

darshan|7500|April Payment|10|9|2020

darshan|10000|May Payment|2|10|2020

bandish|15000|April Payment|7|9|2020

bandish|16000|May Payment|3|10|2020

## Screenshots:

```
Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
-5
Invalid request. Please try again.
Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
qrs
Please enter an integer. java.util.InputMismatchException
Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
1

UserID : ajaypatel

Complete Name : Ajaykumar Patel

Password (Hidden):
Confirm Password (Re-enter Password) (Hidden):
Password and Re-entered Password is not matching. Please try again.
Password (Hidden):
Confirm Password (Re-enter Password) (Hidden):

Home Loan Amount : abc
Please enter an integer. java.util.InputMismatchException
Home Loan Amount : -500
Enter valid value greater than 0.
Home Loan Amount : 0
Enter valid value greater than 0.
Home Loan Amount : 3000000

Remaining Loan Amount : a
Please enter an integer. java.util.InputMismatchException
Remaining Loan Amount : 20000000
Enter valid value greater than or equal to 0 or Remaining Loan amount cannot be greater than Home loan Amount.
Remaining Loan Amount : 2000000

Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
1

UserID : ajaypatel
UserID already taken. Try another.
UserID : bandish

Complete Name : Bandish Shah
```

```
Password (Hidden):
Confirm Password (Re-enter Password) (Hidden):

Home Loan Amount : 1000000

Remaining Loan Amount : 550000

Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
1

UserID : darshan

Complete Name : Darshan Dave

Password (Hidden):
Confirm Password (Re-enter Password) (Hidden):

Home Loan Amount : 750000

Remaining Loan Amount : 700000

Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
2

UserID : mahek
No line found
UserID : ajaypatel

Password (Hidden):
Wrong Password. Please try again.
Password (Hidden):
Sign In successful.

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
7
Invalid request. Please try again.
Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1
```

```
Enter the Amount Paid : 35000
Enter description : April Payment
Enter day of month : 2
Enter month : 9
Enter year : 2020
```

Menu:

```
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1
```

```
Enter the Amount Paid : 37000
Enter description : May Payment
Enter day of month : 1
Enter month : 10
Enter year : 2020
```

```
Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
```

2

Enter year: 2020

Year - 2020-----

UserID - ajaypatel

Complete Name - Ajaykumar Patel

Home Loan Amount - 3000000

Current Remaining Loan Amount - 2000000

Loan Repayment in the year 2020 - 72000

Menu:

```
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
```

3

Enter year: 2020

-----

Year	Month	Amount Paid
2020	9	35000
2020	10	37000
Total Repayment in the year 2020 is Rupees 72000		

-----

```
Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
2

UserID : darshan

Password (Hidden):
Sign In successful.

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1

Enter the Amount Paid : 7500
Enter description : April Payment
Enter day of month : 10
Enter month : 9
Enter year : 2020

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1

Enter the Amount Paid : 10000
Enter description : May Payment
Enter day of month : 2
Enter month : 10
Enter year : 2020

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
2

Enter year: 2020
```



Year - 2020-----

UserID - darshan

Complete Name - Darshan Dave

Home Loan Amount - 750000

Current Remaining Loan Amount - 700000

Loan Repayment in the year 2020 - 17500

-----

Menu:

Enter 1 to Pay Loan Installment

Enter 2 to have a look on Yearly Summary

Enter 3 to have a look on Yearwise-Monthwise Summary

Enter 0 to Sign Out.

3

Enter year: 2020

-----

Year	Month	Amount Paid
2020	9	7500
2020	10	10000

Total Repayment in the year 2020 is Rupees 17500

-----

Menu:

Enter 1 to Pay Loan Installment

Enter 2 to have a look on Yearly Summary

Enter 3 to have a look on Yearwise-Monthwise Summary

Enter 0 to Sign Out.

0

```
Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
2

UserID : bandish

Password (Hidden):
Sign In successful.

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1

Enter the Amount Paid : 15000
Enter description : April Payment
Enter day of month : 7
Enter month : 9
Enter year : 2020

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
1

Enter the Amount Paid : 16000
Enter description : May Payment
Enter day of month : 3
Enter month : 10
Enter year : 2020

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
2

Enter year: 2020
```

```

Year - 2020-----
UserID - bandish
Complete Name - Bandish Shah
Home Loan Amount - 1000000
Current Remaining Loan Amount - 550000
Loan Repayment in the year 2020 - 31000
-----

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
3

Enter year: 2020
-----

Year                Month                Amount Paid
2020                 9                 15000
2020                 10                16000
Total Repayment in the year 2020 is Rupees 31000
-----

Menu:
Enter 1 to Pay Loan Installment
Enter 2 to have a look on Yearly Summary
Enter 3 to have a look on Yearwise-Monthwise Summary
Enter 0 to Sign Out.
0

Menu:
Enter 1 to Sign Up (To create an account)
Enter 2 to Sign In (If you already have an account)
Enter 0 to exit the program.
0

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

```

ava	signup.java	signin.java	LoanPaymentDetai...	UserDetails.txt
ajaypatel	Ajaykumar Patel	Passwordpw	3000000	2000000
bandish	Bandish Shah	Passwordpw	1000000	550000
darshan	Darshan Dave	Passwordpw	750000	700000

ava	signup.java	signin.java	LoanPaymentDetai...	UserDetails.txt	
ajaypatel	35000	April Payment	2	9	2020
ajaypatel	37000	May Payment	1	10	2020
darshan	7500	April Payment	10	9	2020
darshan	10000	May Payment	2	10	2020
bandish	15000	April Payment	7	9	2020
bandish	16000	May Payment	3	10	2020