```java
BankRecords.java
/* Eric Li
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ITMD 411
Lab 2 */

import java.io.File; // Imports file class
import java.io.FileNotFoundException; // Class to handle errors
import java.util.ArrayList;
import java.util.*;
import java.io.*;

public class BankRecords extends Client {

    static BankRecords bank_records[] = new BankRecords[600];
    static ArrayList<List<String>> raw_data = new ArrayList<>();

    private String Id, region, sex, married, car, save_act, current_act, mortgage, pep;
    private Integer age, children;
    protected Double income;

    public String getId() {
        return Id;
    }
    public void setId(String Id) {
        this.Id = Id;
    }
    public Integer getAge() {
        return age;
    }
    public void setAge(Integer age) {
        this.age = age;
    }
    public String getSex() {
        return sex;
    }
    public void setSex(String sex) {
        this.sex = sex;
    }
    public String getRegion() {
        return region;
    }
    public void setRegion(String region) {
        this.region = region;
    }
    public Double getIncome() {
        return income;
    }
    public void setIncome(Double income) {
```

```java
        this.income = income;
    }
    public String getMortgage() {
        return mortgage;
    }
    public void setMortgage(String mortgage) {
        this.mortgage = mortgage;
    }
    /*
    public Integer getChildren() {
        return children;
    }
    public void setChildren(Integer children) {
        this.children = children;
    }
    public String getMarried() {
        return married;
    }
    public void setMarried(String married) {
        this.married = married;
    }
    public String getCar() {
        return car;
    }
    public void setCar(String car) {
        this.car = car;
    }
    public String getSave_act() {
        return save_act;
    }
    public void setSave_act(String save_act) {
        this.save_act = save_act;
    }
    public String getCurrent_act() {
        return current_act;
    }
    public void setCurrent_act(String current_act) {
        this.current_act = current_act;
    }
    public String getPep() {
        return pep;
    }
    public void setPep(String pep) {
        this.pep = pep;
    }
    */

    // Static bank_records for IO processing
    public void readData() {
```

```java
        BufferedReader br;
        try { // Try/catch for error catching
            String line;
            br = new BufferedReader(new FileReader("bank-Detail.csv"));
            while ((line = br.readLine()) != null) {
                // Takes a line of data from file and stores them in raw_data in a comma
separated format between each element
                raw_data.add(Arrays.asList(line.split(",")));
            }
            processData();
            br.close();
        } catch (FileNotFoundException e) {
            System.out.println("Could not resolve file name");
            e.printStackTrace(); // Exception handling
        } catch (IOException f) { // IOException needed for br.readLine
            System.out.println("Error: " + f);
        }
    }

    public void processData() { // Enhanced for Loop
        int idx = 0;

        for (List<String> rowData : raw_data) { // For each string in the
            bank_records[idx] = new BankRecords();
            bank_records[idx].setId(rowData.get(0));
            bank_records[idx].setAge(Integer.parseInt(rowData.get(1)));
            bank_records[idx].setSex(rowData.get(2));
            bank_records[idx].setRegion(rowData.get(3));
            bank_records[idx].setIncome(Double.parseDouble(rowData.get(4)));
            bank_records[idx].setMortgage(rowData.get(5));

            idx++;
            /*
            bank_records[idx].setChildren(Integer.parseInt(rowData.get(6)));
            bank_records[idx].setCar(rowData.get(7));
            bank_records[idx].setSave_act(rowData.get(8));
            bank_records[idx].setCurrent_act(rowData.get(9));
            bank_records[idx].setMarriage(rowData.get(10));
            bank_records[idx].setPep(rowData.get(11));
            */
        }
        printData();
    }

    public void printData() {
        // Column headers
        System.out.print("ID" + "\t\t" + "Age" + "\t\t" + "Sex" + "\t\t" + "Region" + "\t\t" +
"Mortgage" + "\t" + "Income" + "\n");
        // create for loop and grab each record bank_records' data onto the console
```

```java
        for (int i = 0; i < 25; i++) {
            if (bank_records[i].getRegion().length() > 5) {
            System.out.print(bank_records[i].getId() + "\t\t");
            System.out.print(bank_records[i].getAge() + "\t\t");
            System.out.print(bank_records[i].getSex() + "\t\t");
            System.out.print(bank_records[i].getRegion() + "\t");
            System.out.print(bank_records[i].getMortgage() + "\t\t");
            System.out.print(bank_records[i].getIncome() + "\t\t");
            System.out.println();
            /*
            System.out.println(bank_records[i].getChildren() + "\t\t");
            System.out.println(bank_records[i].getCar() + "\t\t");
            System.out.println(bank_records[i].getSave_act() + "\t\t");
            System.out.println(bank_records[i].getCurrent_act() + "\t\t");
            System.out.println(bank_records[i].getMarriage() + "\t\t");
            System.out.println(bank_records[i].getPep() + "\t\t");
            */
        }   else { // Creates space between the region and mortgage data entries on print out
                System.out.print(bank_records[i].getId() + "\t\t");
                System.out.print(bank_records[i].getAge() + "\t\t");
                System.out.print(bank_records[i].getSex() + "\t\t");
                System.out.print(bank_records[i].getRegion() + "\t\t");
                System.out.print(bank_records[i].getMortgage() + "\t\t");
                System.out.print(bank_records[i].getIncome() + "\t\t");
                System.out.println();

            }

        }

    }
    /*
    public String toString() {
        return Id + "\t" + age + "\t" ;//+ sex + "\t" + region + "\t" + mortgage + "\t" + income
+ married + "\t"
        + children + "\t" + car + "\t" + save_act + "\t" + current_act + "\t" + pep + "\n";

    }
    */
    public static void main(String[] args) {
        BankRecords account = new BankRecords();
        account.readData();

    }

}
```

Client.java

```java
/* Eric Li
ITMD 411
Lab 2 */

public abstract class Client {
    public abstract void readData();
    public abstract void processData();
    public abstract void printData();
}
```

OUTPUT SNAPSHOT

TERMINAL   DEBUG CONSOLE   PROBLEMS 3   OUTPUT

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS Z:\ALL Java Projects\ITMD 411\Lab 2> cd "z:\ALL Java Projects\ITMD 411\Lab 2\" ; if ($?) { javac BankRecords.java } ; if ($?) { java BankRecords }
ID              Age         Sex           Region          Mortgage      Income
id12101         48          FEMALE        INNER_CITY      YES           22467.0
id12102         40          MALE          TOWN            NO            32825.0
id12103         51          FEMALE        INNER_CITY      NO            16575.4
id12104         23          FEMALE        TOWN            NO            20375.4
id12105         57          FEMALE        RURAL           NO            50576.3
id12106         57          FEMALE        TOWN            YES           37869.6
id12107         22          MALE          RURAL           YES           8877.07
id12108         58          MALE          TOWN            NO            24946.6
id12109         37          FEMALE        SUBURBAN        YES           25304.3
id12110         54          MALE          TOWN            YES           24212.1
id12111         66          FEMALE        TOWN            YES           59803.9
id12112         52          FEMALE        INNER_CITY      NO            266222.8
id12113         44          FEMALE        TOWN            YES           15735.8
id12114         66          FEMALE        TOWN            YES           55204.7
id12115         36          MALE          RURAL           YES           19474.6
id12116         38          FEMALE        INNER_CITY      YES           22342.1
id12117         37          FEMALE        TOWN            YES           17729.8
id12118         46          FEMALE        SUBURBAN        YES           41016.0
id12119         62          FEMALE        INNER_CITY      YES           26909.2
id12120         31          MALE          TOWN            YES           22522.8
id12121         61          MALE          INNER_CITY      YES           57880.7
id12122         50          MALE          TOWN            YES           16497.3
id12123         54          MALE          INNER_CITY      YES           38446.6
id12124         27          FEMALE        TOWN            NO            15538.8
id12125         22          MALE          INNER_CITY      NO            12640.3
PS Z:\ALL Java Projects\ITMD 411\Lab 2> cd "z:\ALL Java Projects\ITMD 411\Lab 2\" ; if ($?) { javac BankRecords.java } ; if ($?) { java BankRecords }
ID              Age         Sex           Region          Mortgage      Income
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id12104         23          FEMALE        TOWN            NO            20375.4
id12105         57          FEMALE        RURAL           NO            50576.3
id12106         57          FEMALE        TOWN            YES           37869.6
id12107         22          MALE          RURAL           YES           8877.07
id12108         58          MALE          TOWN            NO            24946.6
id12109         37          FEMALE        SUBURBAN        YES           25304.3
id12110         54          MALE          TOWN            YES           24212.1
id12111         66          FEMALE        TOWN            YES           59803.9
id12112         52          FEMALE        INNER_CITY      NO            266222.8
id12113         44          FEMALE        TOWN            YES           15735.8
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id12117         37          FEMALE        TOWN            YES           17729.8
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id12125         22          MALE          INNER_CITY      NO            12640.3
PS Z:\ALL Java Projects\ITMD 411\Lab 2>
```

OUTPUT WITH ERROR CATCHING

BankRecords.java ×   Client.java

BankRecords.java > ...

1   /* Eric Li

TERMINAL   DEBUG CONSOLE   PROBLEMS 3   OUTPUT

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS Z:\ALL Java Projects\ITMD 411\Lab 2> cd "z:\ALL Java Projects\ITMD 411\Lab 2\" ; if ($?) { javac BankRecords.java } ; if ($?) { java BankRecords }
Could not resolve file name
java.io.FileNotFoundException: bank-Detail.csv (The system cannot find the file specified)
        at java.base/java.io.FileInputStream.open0(Native Method)
        at java.base/java.io.FileInputStream.open(FileInputStream.java:212)
        at java.base/java.io.FileInputStream.<init>(FileInputStream.java:154)
        at java.base/java.io.FileInputStream.<init>(FileInputStream.java:109)
        at java.base/java.io.FileReader.<init>(FileReader.java:60)
        at BankRecords.readData(BankRecords.java:101)
        at BankRecords.main(BankRecords.java:181)
PS Z:\ALL Java Projects\ITMD 411\Lab 2>
```