Name: Aldrick Gardiner

Course: Cop 4331 003

Homework: 2

Question 2.1

Use Case: Erase all messages

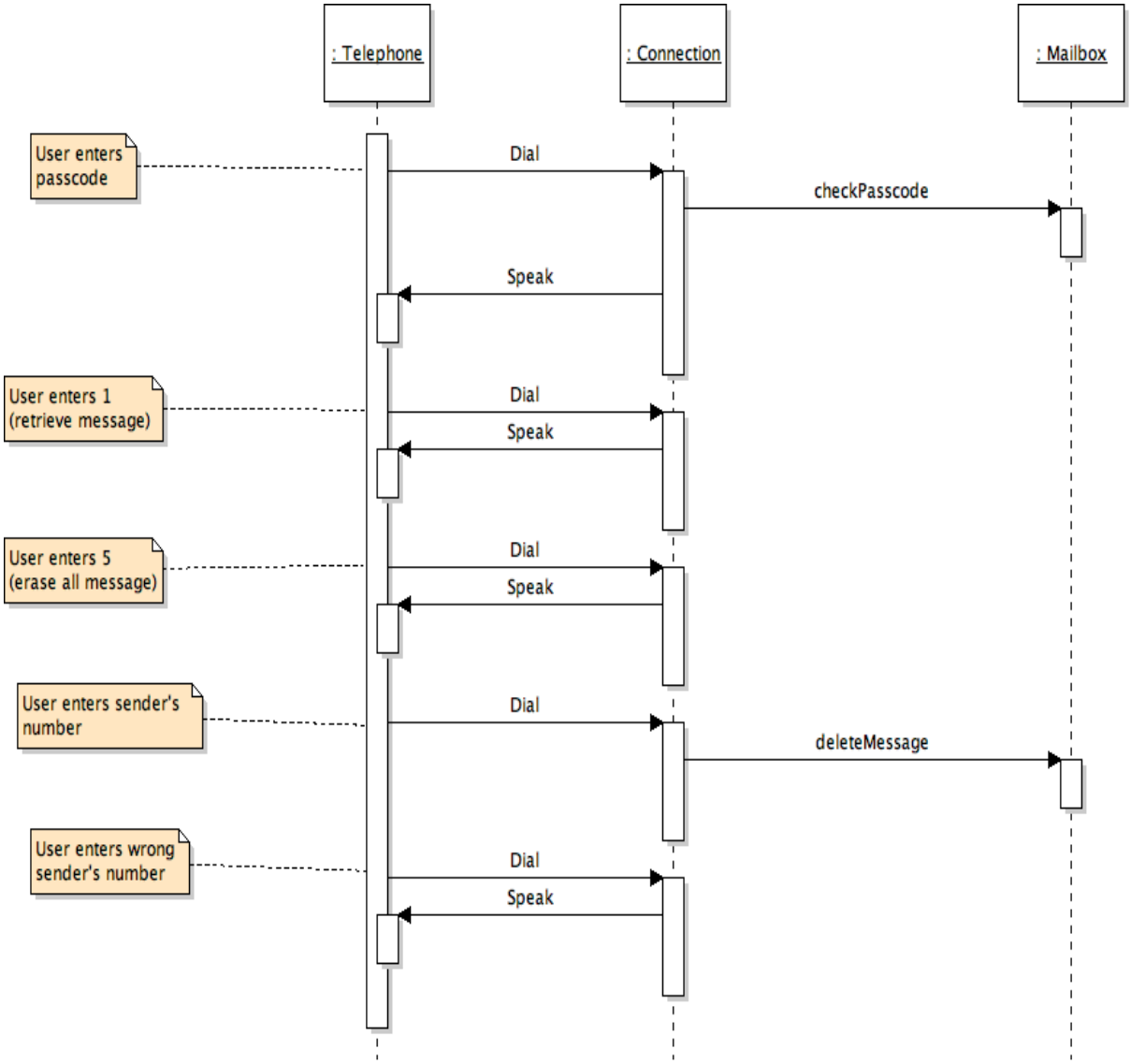
1. Mailbox owner carries out **Log in**
2. Mailbox owner selects "retrieve messages" menu option
3. System plays message menu:
4. ```
   Press 1 to listen to the current message
   Press 2 to delete the current message
   Press 3 to save the current message
   Press 4 to return to the mailbox menu
   Press 5 to Delete selected sender's messages
   ```
5. Mailbox owner selects "Delete selected sender's message"
6. System ask mailbox owner to enter sender's number
7. User enters sender's number.
8. System Delete all messages from sender
9. Continue with step 3.

Use Case: Erase all messages

Variation #1

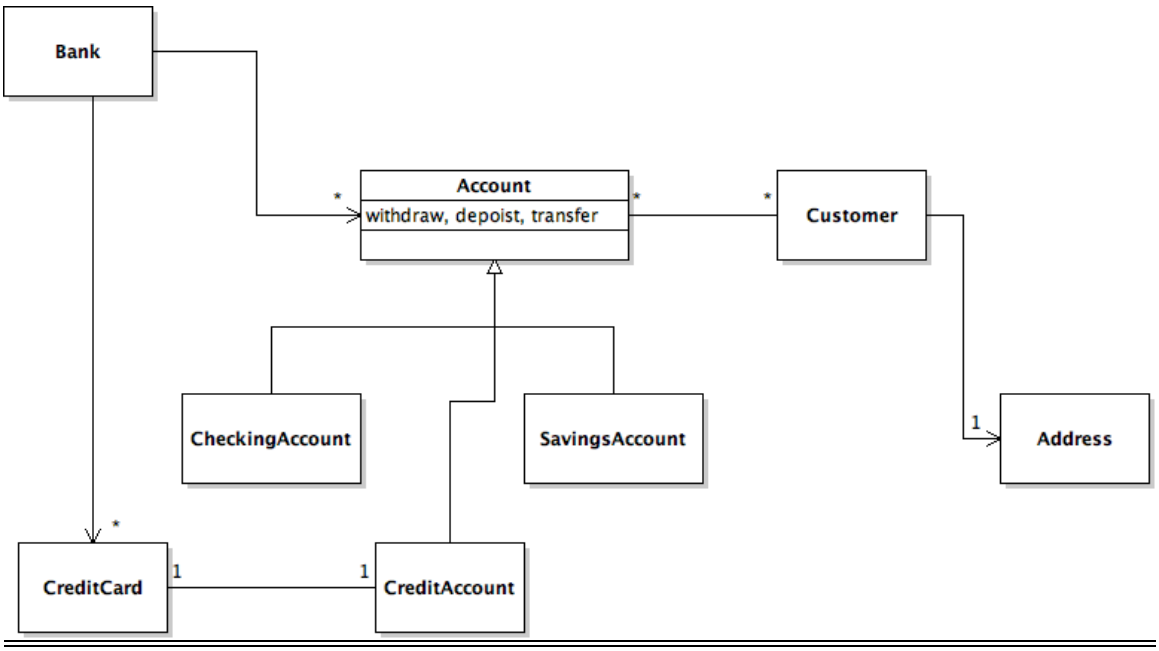
1. Start at step 6
2. User enters wrong number
3. System return "number not found in your mailbox"
4. System plays message menu
   ```

Sequence Diagram for Use Case: Erase All Messages



Question 2.2

Class Diagram



Question 2.3

Customers	
Keeps customers information	RentalSystem
Holds customers reservation information	

RentalSystem	
Allow customers to log in	Customers
Communicate with different classes to complete task	CarList
Handles user input	RentalCompany
	Reservation
	LocationNDates

Cars	
keeps list of available/unavailable cars	RentalCompany

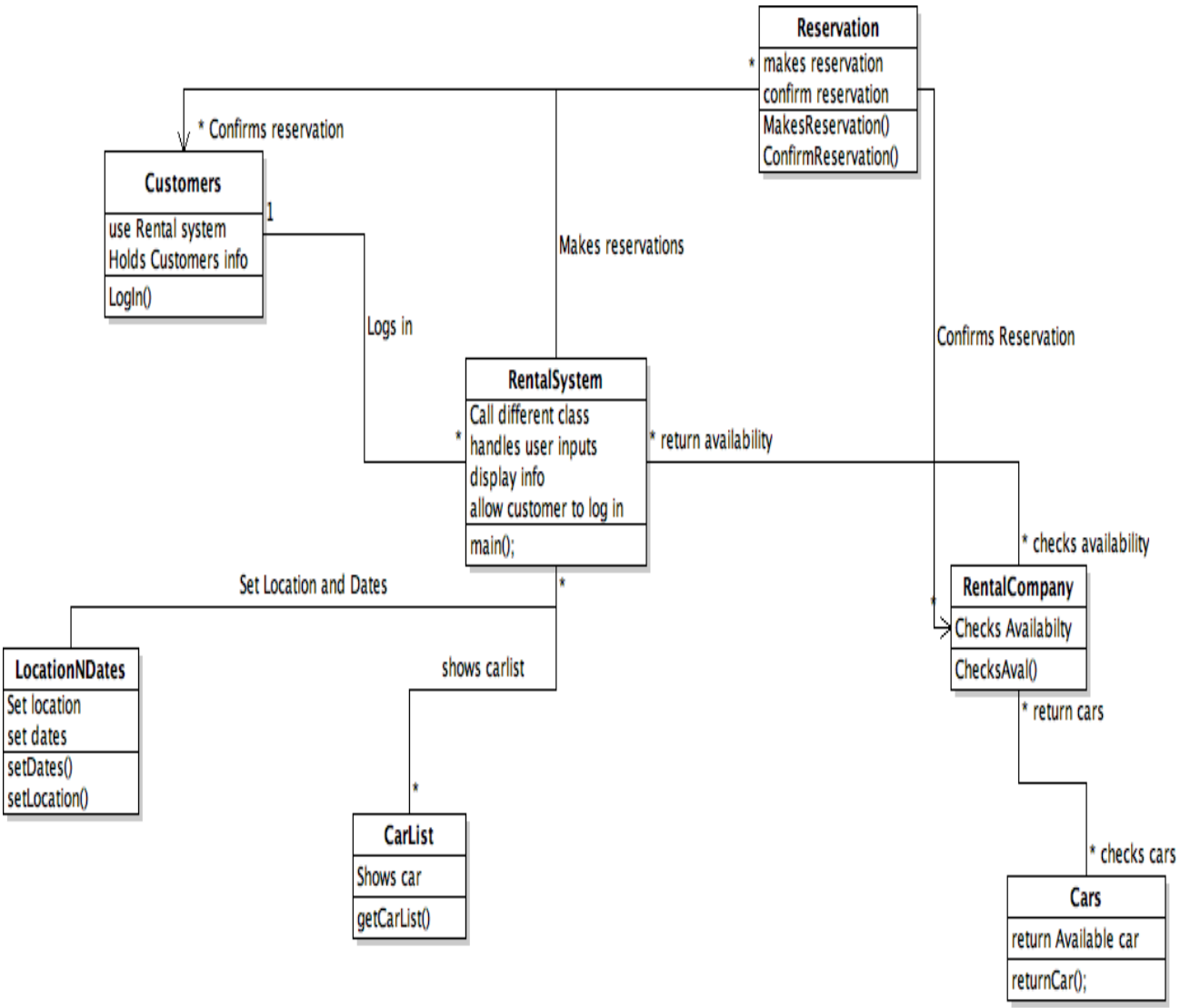
CarList	
Print Carlist	RentalSystem

Reservation	
Make Reservation	RentalSystem
Confirm Reservation and send it Rental Company & Customer	RentalCompany
	Customers

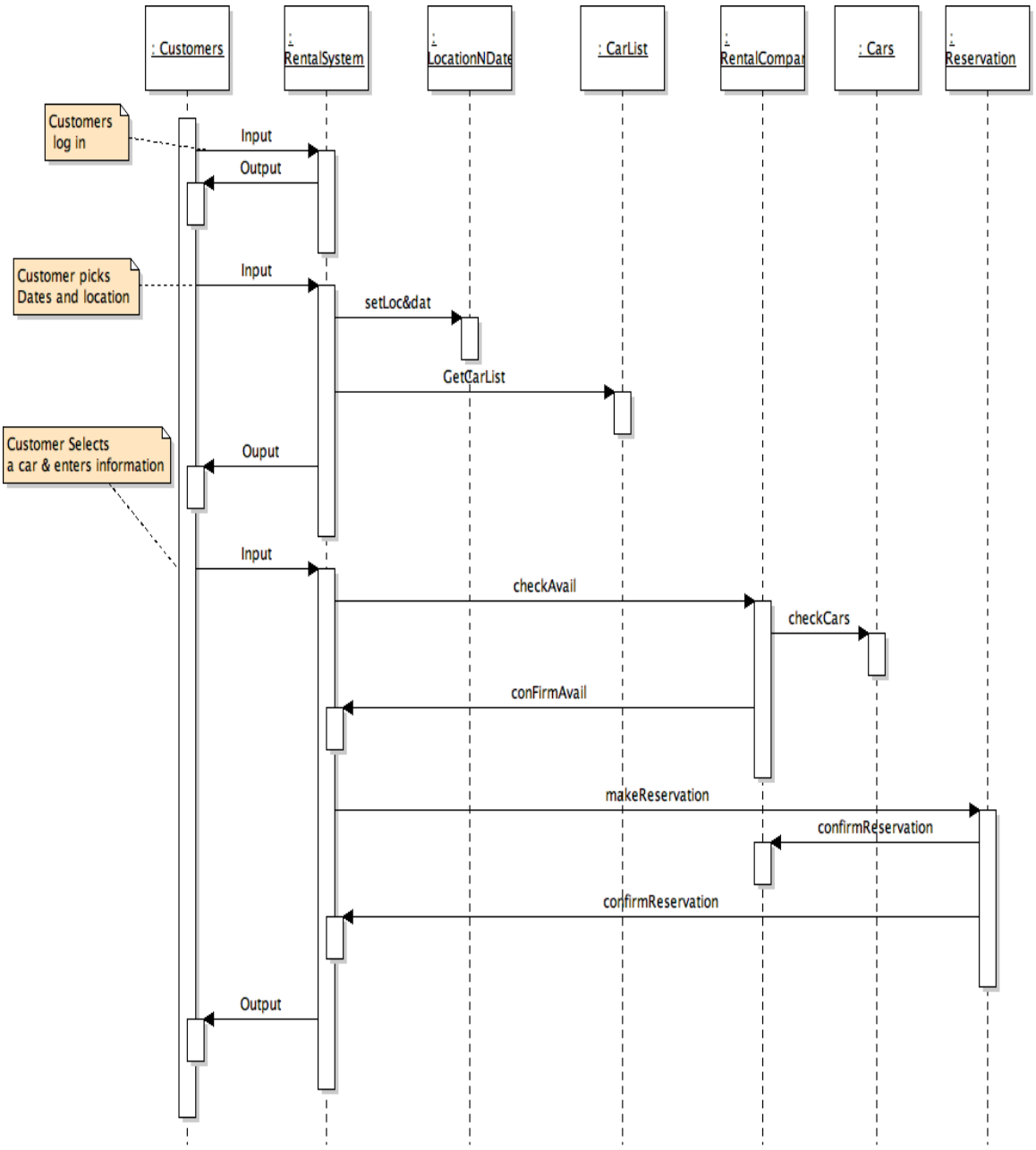
LocationNDates	
Set Dates and Location	RentalSystem

RentalComapny	
Checks Availability of cars	RentalSystem
	Cars

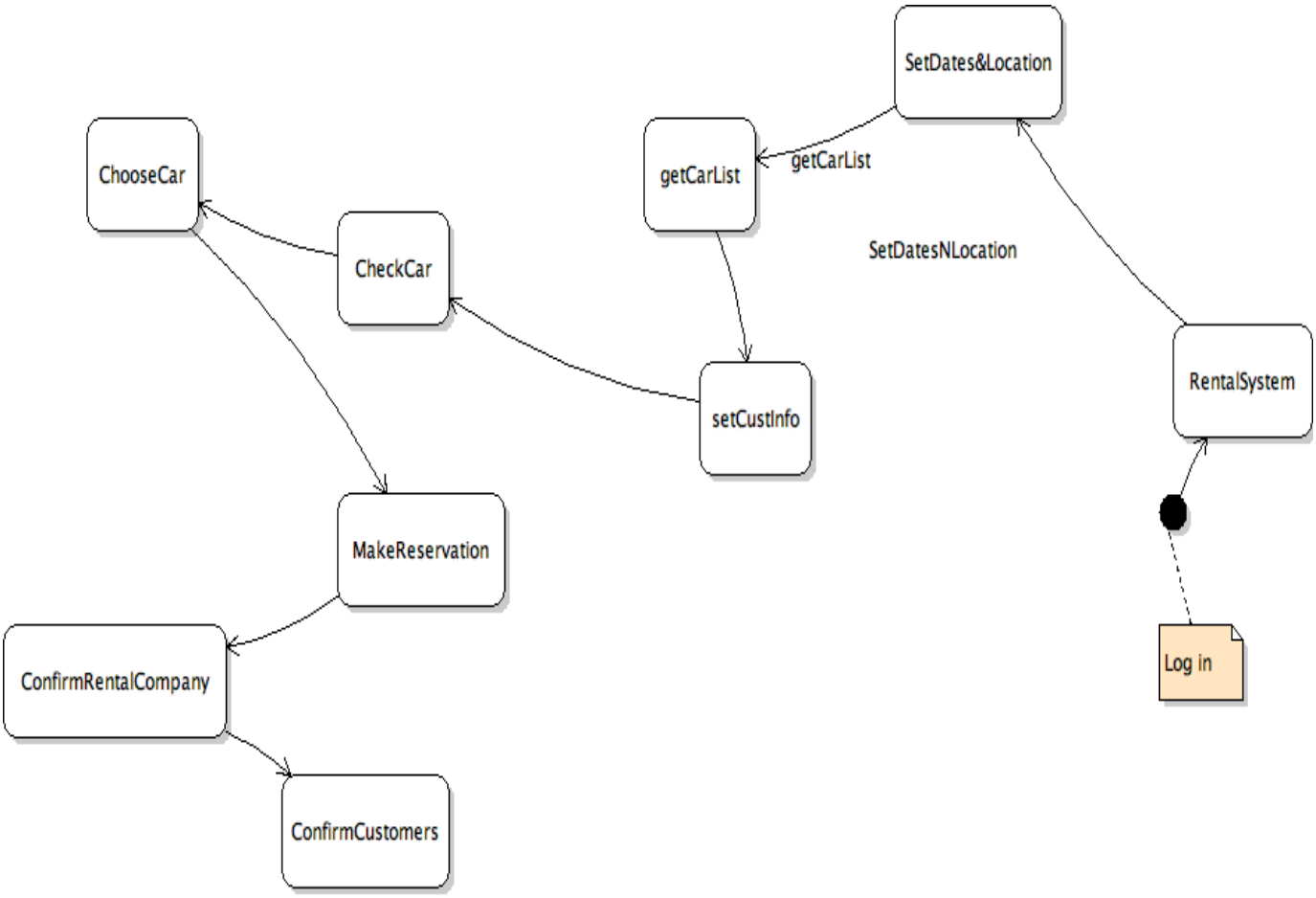
Class Diagram



Sequence Diagram:



State Diagram:



Question 2.4

CRC Diagram

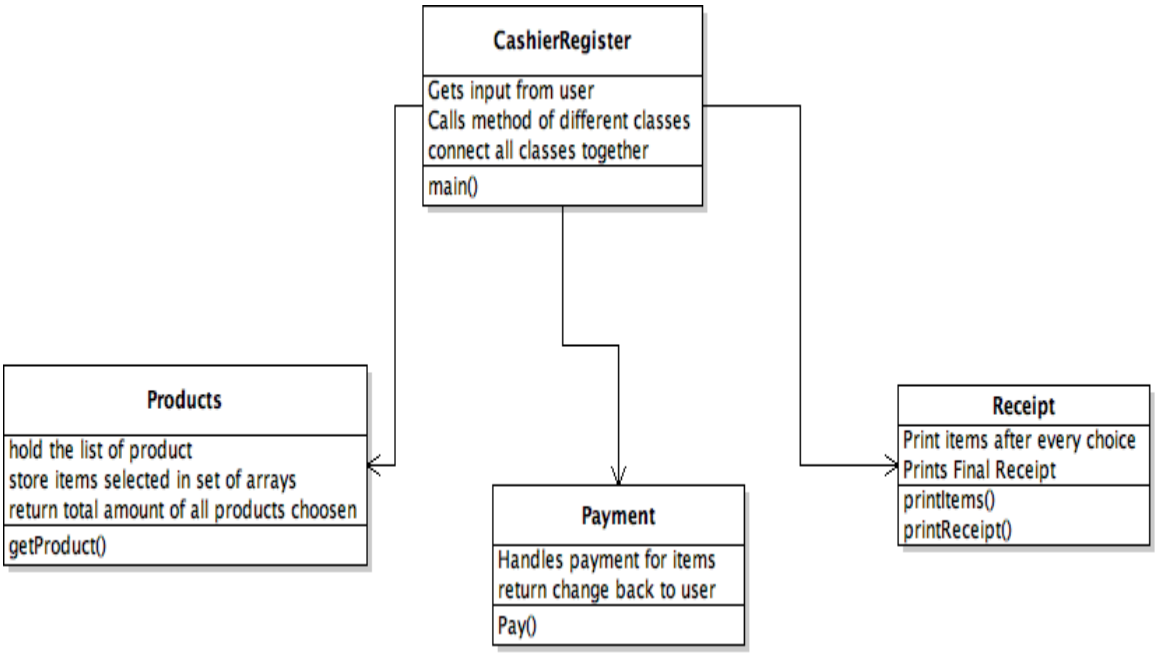
Products	
Keeps a list of product information	CashierRegister
Holds selected items	
Return total price	

CashierRegister	
Scan products	Receipt
Calls for methods from classes	Products
	Payment

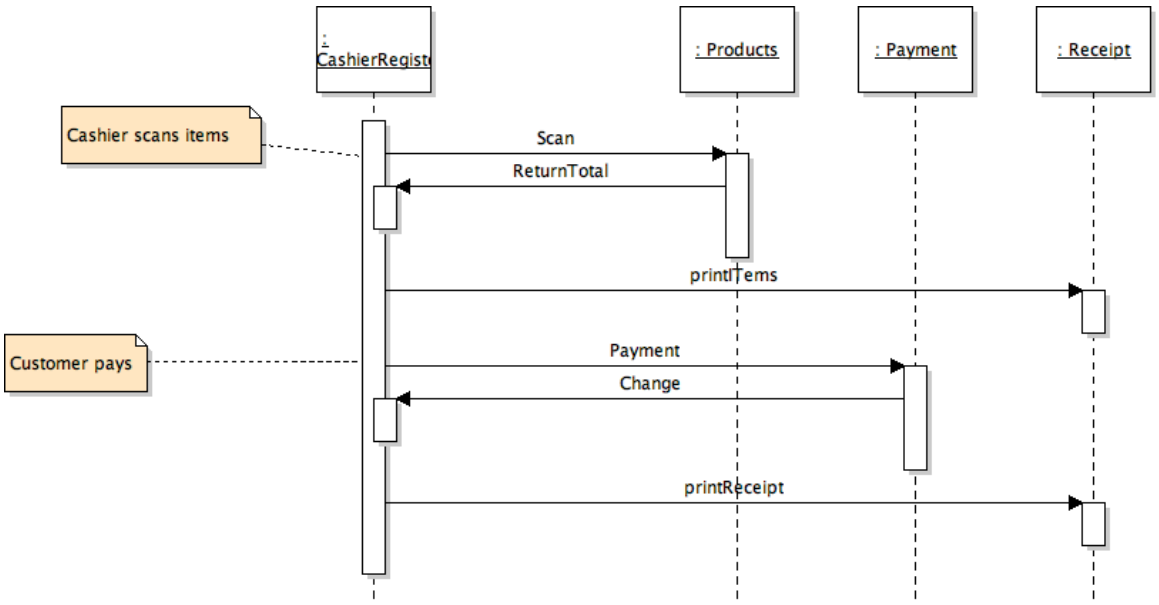
Receipt	
Print printItem	CashierRegister
Print Receipt	

Payment	
Calculate Payment	CashierRegister
Return change	

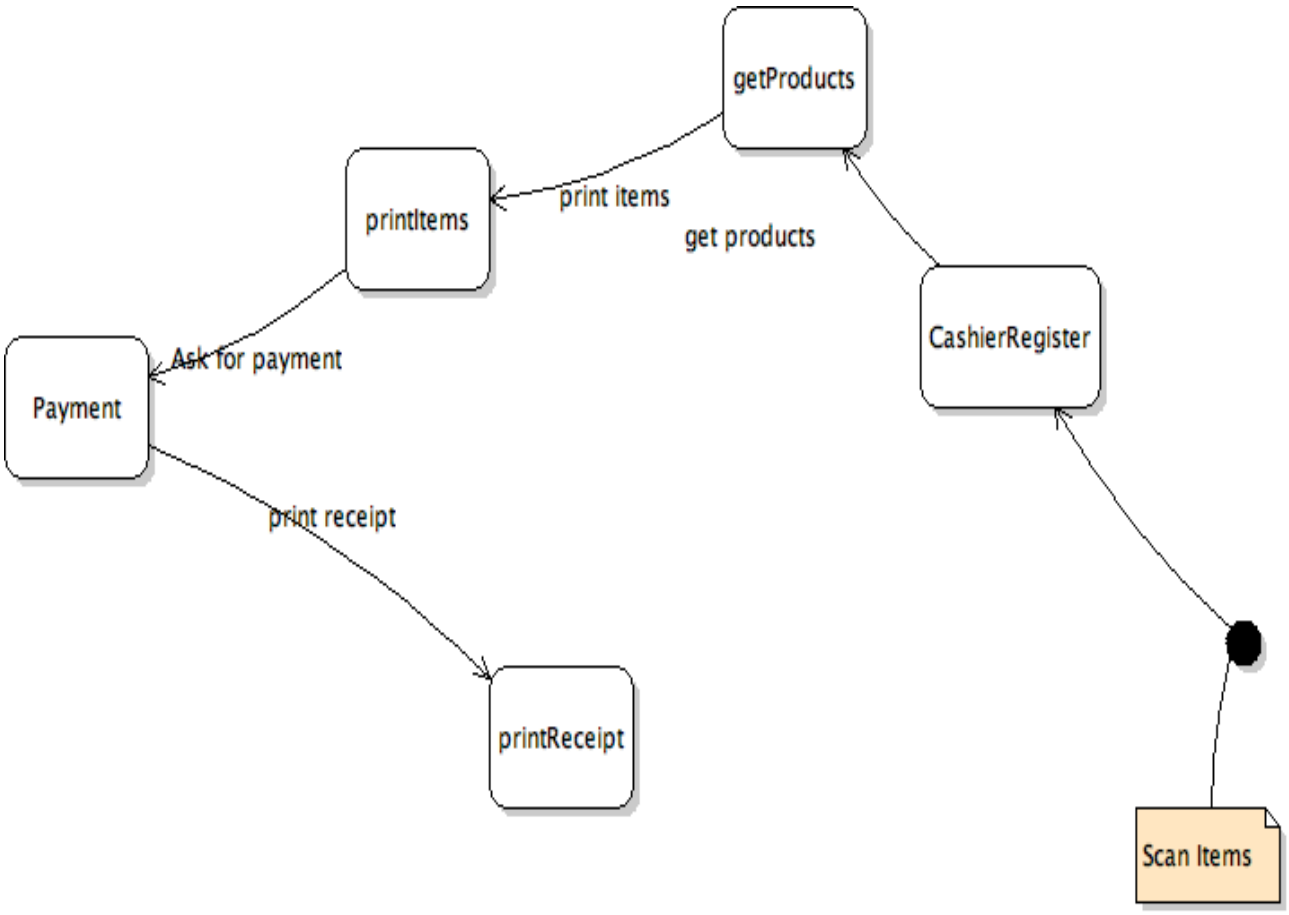
Sequence Diagram



Sequence Diagram



State Diagram:



Java Code:

Filename: CashierRegister.java

```
package Q4;


import java.util.Scanner;
import Q4.Products;
import java.util.Arrays;
import static java.util.Collections.list;


/**
 *
 * @author Ace
 */
public class CashierRegister {



    public static void main(String[] args){


        // creating variables of the different classes
        Products sList = new Products();
        Payment p = new Payment();
        Receipt r = new Receipt();

        //Variables use in the code
        int UpcCode = 0;
        double change = 0.0;
        double payment = 0.0;
        double ftotal = 0.0;
        String nextItem = "yes";



        //while loop allow the user to enter multiple items.
        while("yes".equals(nextItem))
```

```
        {
                //Prints a quick display
            System.out.print("\n");
                System.out.print("Welcome to Cashier App!!\n");

System.out.print("============================\n");
                System.out.print("Items UPC code are from 100 to
105\n");
                System.out.print("Shop!!! Enjoy\n");

System.out.print("============================\n");
                System.out.print("\n");



                //Try and Catch checks for errors as system gets
input from user
                try{
                    // Ask user for UPC code
                    System.out.print("\n");
                    System.out.print("Enter the UPC code for your
item: ");
                    UpcCode = new Scanner(System.in).nextInt();
                    System.out.print("\n");
                } catch (Exception eim) {

                    System.out.println(eim.getMessage());
                }

                //Call function from Products class and store
return value in ftotal
                ftotal = sList.getProduct(UpcCode);


                //Try and Catch checks for errors as system gets
input from user
                try{
                    // Ask user If another UPC code
                    System.out.print("\n");
                    System.out.print("Do you want to add another
item(yes/no): ");
                    nextItem = new Scanner(System.in).next();
                    System.out.print("\n");
                } catch (Exception eim) {

                    System.out.println(eim.getMessage());
                }
        }

        //Call function from Receipt class to print all items
```

```
selected
        r.printItems(ftotal);


        //Try and Catch checks for errors as system gets input
from user
        try{
            // Ask user If another UPC code
            System.out.print("\n");
            System.out.print("Enter your payment: $");
            payment = new Scanner(System.in).nextDouble();
            System.out.print("\n");
        } catch (Exception eim) {

            System.out.println(eim.getMessage());
        }

        //Call function from Payment class to process payment
        //and store return value in change variable
        change = p.Pay(ftotal, payment);

        //Call Function from Receipt class to print receipt.
        r.PrintReceipt(ftotal,change,payment);




    }
}
```

Filename: Product.java

```
package Q4;

import java.util.ArrayList;

/**
 *
 * @author Ace
 */
public final class Products
{
    //Create arrays to store items price,name and upc code.
    public ArrayList<Double> priceArray = new ArrayList<>();
    public ArrayList<String> nameArray = new ArrayList<>();
    public ArrayList<Integer> UPCArray = new ArrayList<>();
```

```
    //Create arrays to store items selected by user
    public static ArrayList<Integer> UpcPrint = new
ArrayList<>();
    public static ArrayList<String> namePrint = new
ArrayList<>();
    public static ArrayList<Double> pricePrint = new
ArrayList<>();

    //variable that store the total price.
    private static double total = 0;

  public Products()
  {
    // add elements to the price array
    priceArray.add(1.0);
    priceArray.add(2.0);
    priceArray.add(0.50);
    priceArray.add(1.50);
    priceArray.add(1.0);
    priceArray.add(3.0);

    // add elements to the name array
    nameArray.add("Snickers");
    nameArray.add("Water");
    nameArray.add("Candy");
    nameArray.add("Soda");
    nameArray.add("Juice");
    nameArray.add("Can Food");

    // add elements to the upc array
    UPCArray.add(100);
    UPCArray.add(101);
    UPCArray.add(102);
    UPCArray.add(103);
    UPCArray.add(104);
    UPCArray.add(105);


  }


  // a function that gets the user products from the items array
  // and store the items in an array for display.
  public double getProduct(int UpcCode)
  {
    //create a variable of Product class
    Products sList = new Products();

    //create a int variable to store the index of the array
```

```
    int index = 0;

    //if statement check if the upccode is in the array
    //if statement is array it prints it and store it to
    //another that acts as a shopping cart.
    if (sList.UPCArray.contains(UpcCode))
    {
        //Variables to store upc,price and name
        int upc = 0;
        double price = 0.0;
        String name = null;

        //gets the index of the UpcCode
        index = sList.UPCArray.indexOf(UpcCode);

        //Uses the Index gather to print the price, name and upc
code
        System.out.println(sList.UPCArray.get(index)+"
"+sList.nameArray.get(index)+"
"+"$"+sList.priceArray.get(index));

        //Store the values at the index into variables
        upc = sList.UPCArray.get(index);
        name = sList.nameArray.get(index);
        price = sList.priceArray.get(index);

        //Add those values that was stored into
        //the shopping cart arrays.
        UpcPrint.add(upc);
        namePrint.add(name);
        pricePrint.add(price);

        //Calculate the total of the items.
        total += sList.priceArray.get(index);
    }
    else{
        System.out.println("Code Not Found!");
    }

    // retun total price
    return(total);

  }

}
```

Filename: Payment.java

```
package Q4;

import java.util.ArrayList;
import java.util.Scanner;

/**
 *
 * @author Ace
 */
public class Payment {

    // Constructor
    public Payment()
    {

    }
    // Function Calculates payment
    public double Pay(double ftotal,double payment)
    {
        //Variable to store the change after payment
        double change = 0.0;

        //while loop to make sure user enters sufficient funds.
        while(payment < ftotal)
        {
            System.out.print("Payment InSufficent!!!"+"\n");
            System.out.print("Enter your payment: ");
            payment = new Scanner(System.in).nextDouble();
        }

        //Statement calculate change
        change = payment - ftotal;

        return change;

    }
}
```

Filename: Receipt.java

```
package Q4;

/**
 *
 * @author Ace
 */
public class Receipt {


    public Receipt()
    {

    }

    //Function prints items after user finish selecting.
    public static void printItems(double ftotal)
    {
        // create variable of Product class
        Products sList = new Products();

        //for loops prints all the items in shopping cart arrays.
        for(int i=0;i<sList.UpcPrint.size();i++){

            System.out.print(sList.UpcPrint.get(i) + " " +
sList.namePrint.get(i)
                    + " "+"$"+ sList.pricePrint.get(i)+"\n");
        }
        System.out.print("Total: "+"$"+ftotal+"\n");

    }

    //Function prints the final receipt after payment
    public static void PrintReceipt(double ftotal,double
change,double payment)
    {
        // create variable of Product class
        Products sList = new Products();
        System.out.print("Thank you for Shopping with us!!\n");
        System.out.print("-----------------------------------
");
```

```
        System.out.println("");
        System.out.println("Your Receipt");

        //Prints a formatted header
        System.out.printf("%1s %11s %11s", "UPC", "Product",
"Price($)\n");

        //for loops print all the items in shopping cart arrays.
        for(int i=0;i<sList.UpcPrint.size();i++){

            System.out.print(sList.UpcPrint.get(i) + " " +
sList.namePrint.get(i)
                    + "       "+"$"+
sList.pricePrint.get(i)+"\n");
        }
        System.out.print("Total: "+"$"+ftotal+"\n");
        System.out.print("Your Payment: "+"$"+payment+"\n");
        System.out.print("Your Change: "+"$"+change+"\n");

    }

}
```