Ex 1

Group #9

Kunal Pandya – 100792272

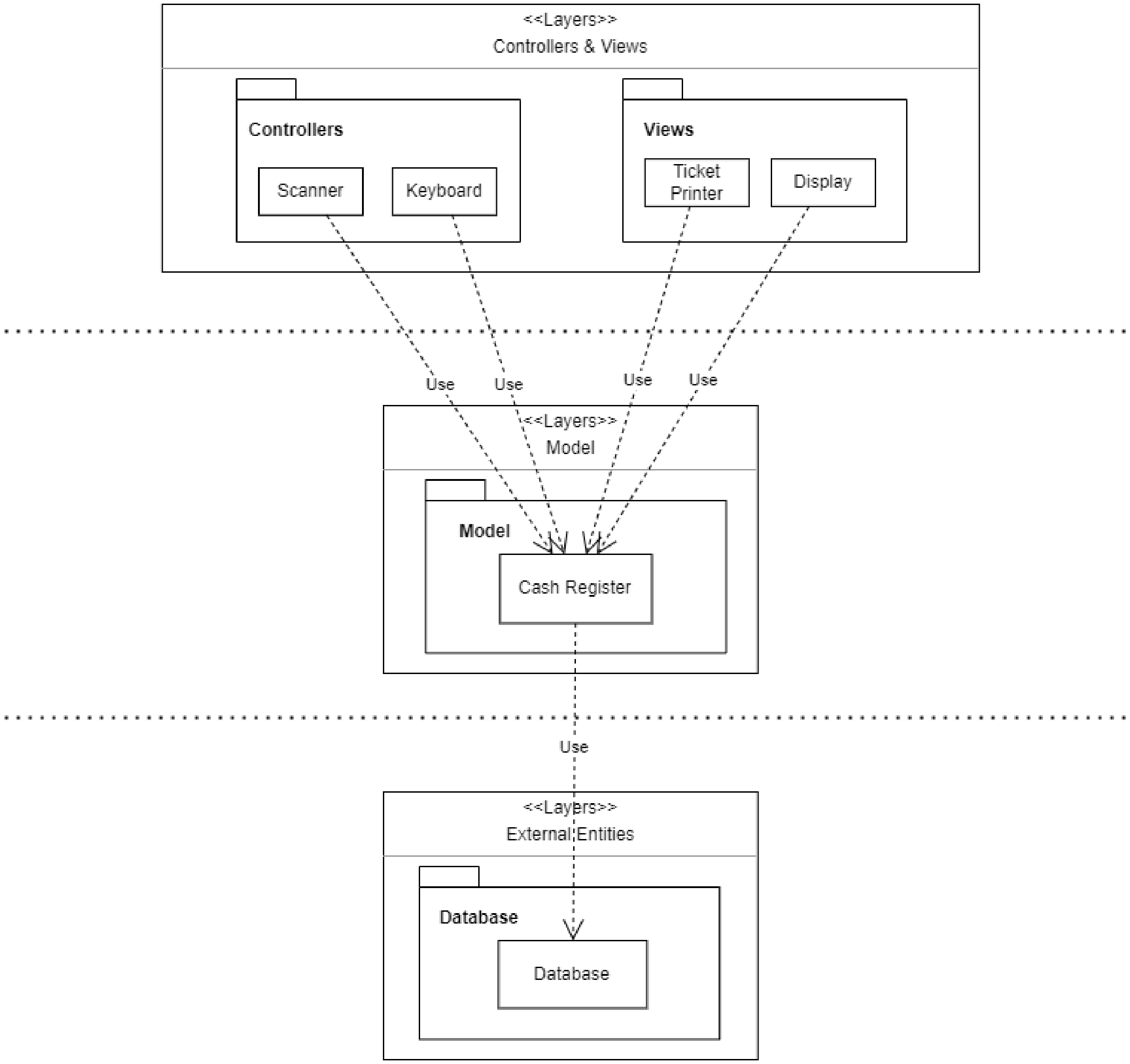
Kramptj KC – 100787909

Syed Nasir Hussain Naqvi - 100809447

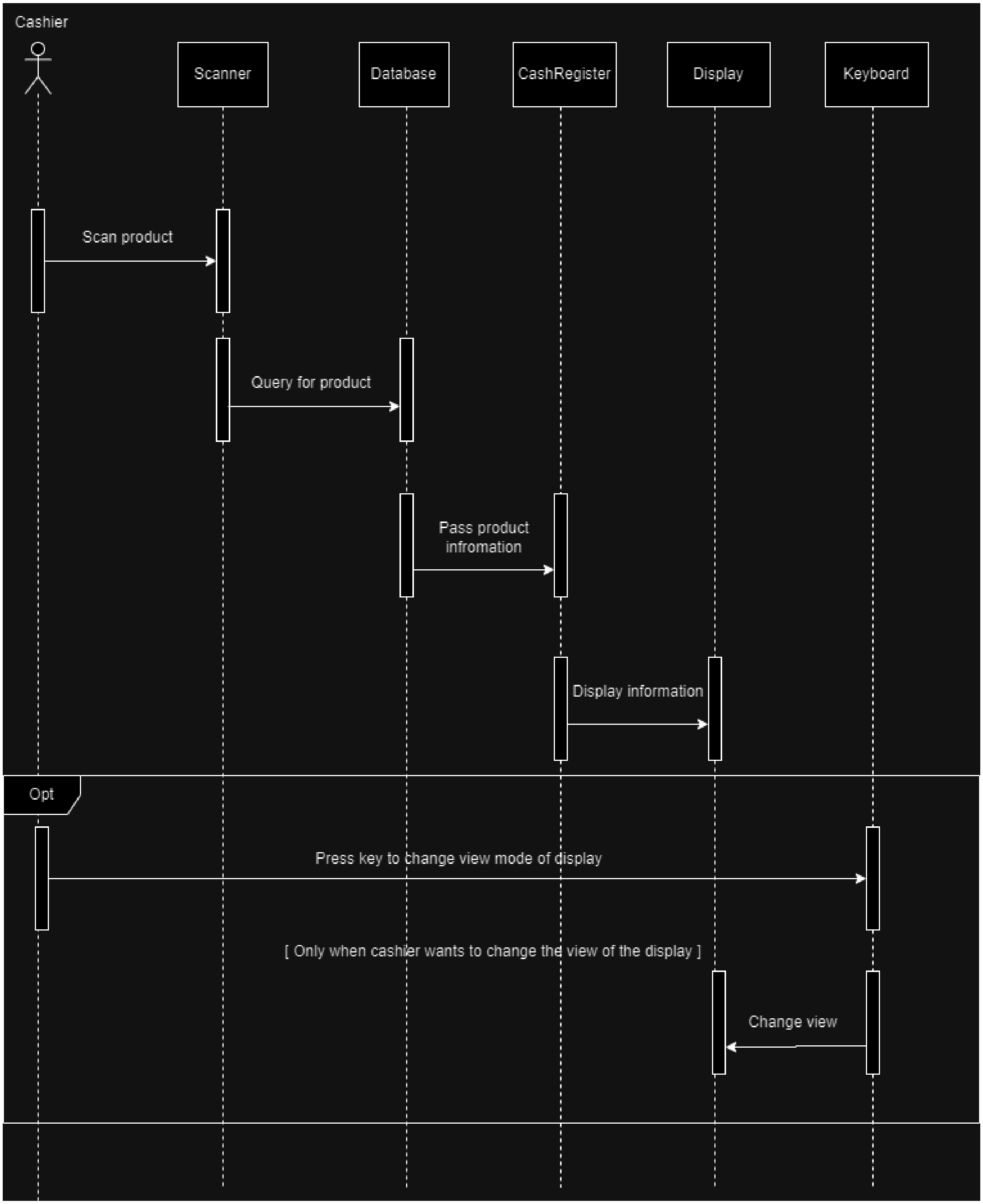
Exercise

1) Significant Components: *CashRegister, Display, Keyboard, TicketPrinter, Scanner, and Database.*

   a) **MVC & Layered Pattern UML**



b) Sequence Diagram



c) Program Implementation

Keyboard

Takes user input and prompts them to enter Product ID.

```
import java.util.Scanner;

public class keyboard{
    public int input(){
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter product id: ");
        int id = scanner.nextInt();
        return id;
    }
}
```

Cash Register

- Creates an instance of keyboard class; `userInput`. **Variable `id` is used to store user input** using the `input()` method from keyboard class.
- Creates an instance of Database class; `productDatabase`. Creates a String array `productDetails` to store product name, and price queried by database class. **`id` input by user is queried in database**
- If array `productDetails` is not null (i.e. if product exists and details are returned by query), then an instance of display class; `screen` is created which then **prints productDetails using `printScreen` method from display class.**

```
public class cashRegister {
    public static void main(String[] args) {
        keyboard userInput = new keyboard();
        int id = userInput.input();
        database producDatabase = new database();
        String[] productDetails = producDatabase.queryID(id);
        if(productDetails != null) {
            display screen = new display();
            screen.printScreen(productDetails[0],
Double.parseDouble(productDetails[1]));
        } else {
            System.out.println("Product does not exist");
        }
    }
}
```

Database

- Database class takes `id` (user input) as an argument. It reads `database.txt` file line by line using a `while` loop and splits each line in 3 columns(product id, product name and product price).
- In each line, `productId` is defined as `column[0]`, and is checked with `id` (user input) and stores product name and price in the `productDetails` array.

```
import java.io.File;
import java.io.FileNotFoundException;
import java.util.Scanner;

public class database {
    public String[] queryID(int id){
        String[] productDetails = new String[2];
        try {
            File dataFile = new File("./database.txt");
            Scanner read = new Scanner(dataFile);

            while (read.hasNextLine()) {
                String line = read.nextLine();
                String[] columns = line.split(" ");
                int productID = Integer.parseInt(columns[0]);
                if(productID == id) {
                    productDetails[0] = columns[1];
                    productDetails[1] = columns[2];
                    return productDetails;
                }
            }
            read.close();
        } catch (FileNotFoundException e) {
            System.out.println("Something went wrong in reading file");
            e.printStackTrace();
        }
        return null;
    }
}
```

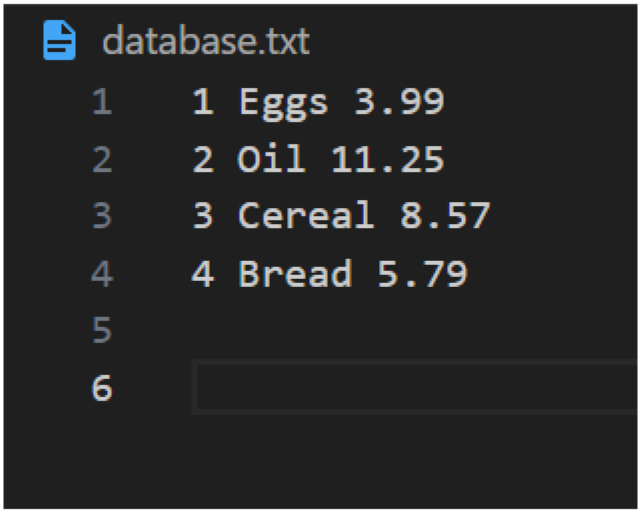
Display

Consists of `printScreen` method which prints product name and price when called.

```
public class display {
    public void printScreen(String product, Double price){
        System.out.println("Product: " + product);
        System.out.println("Price: " + price);
    }
}
```

Database.txt

File to store product data.



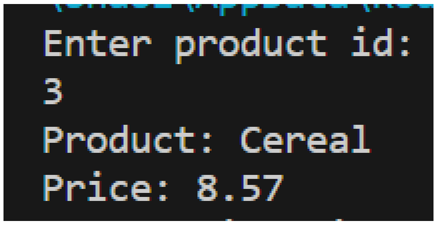
database.txt

```
1 Eggs 3.99
2 Oil 11.25
3 Cereal 8.57
4 Bread 5.79

```

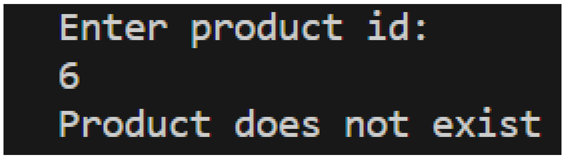
Test Results

Success case:



```
Enter product id:
3
Product: Cereal
Price: 8.57
```

Error Case:



```
Enter product id:
6
Product does not exist
```