

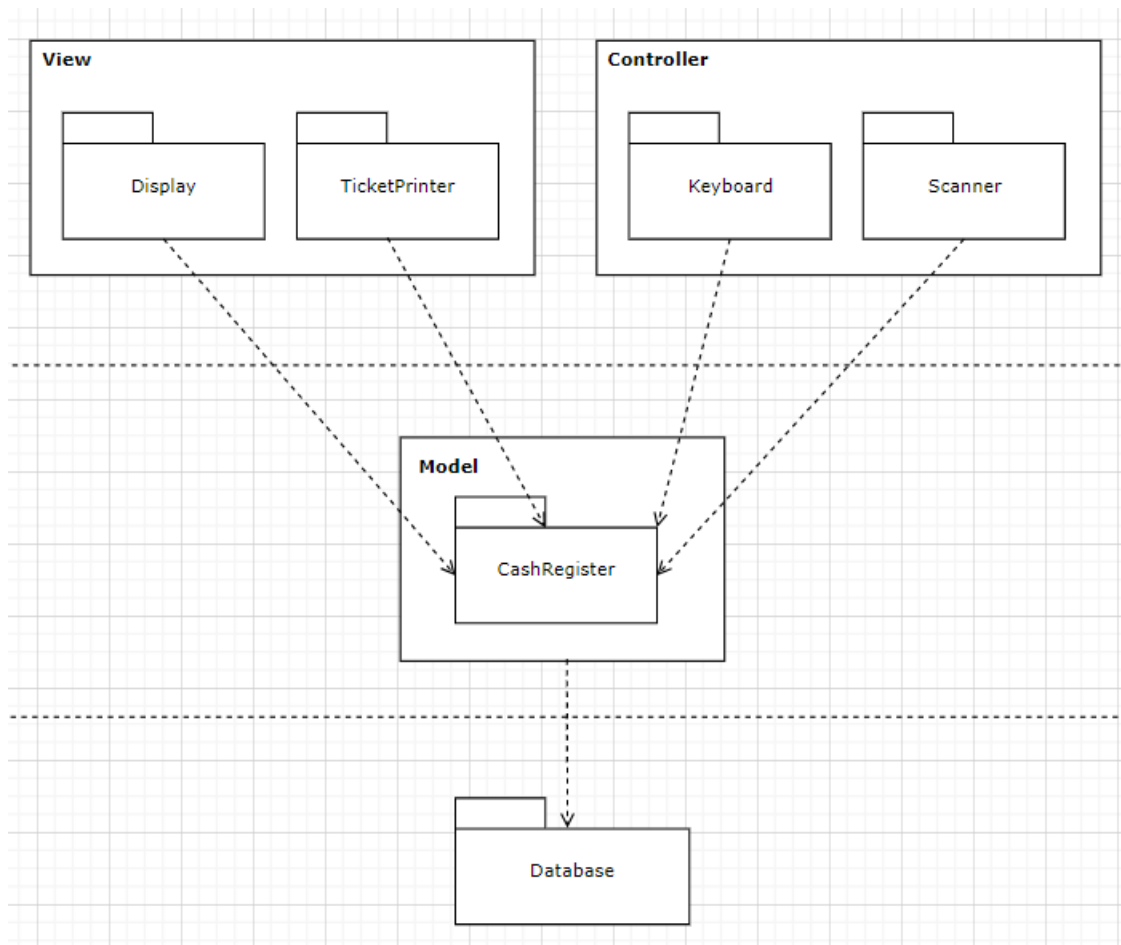
SOFTWARE DESIGN AND ARCHITECTURE
TUTORIAL EXERCISE – 3
GROUP 15

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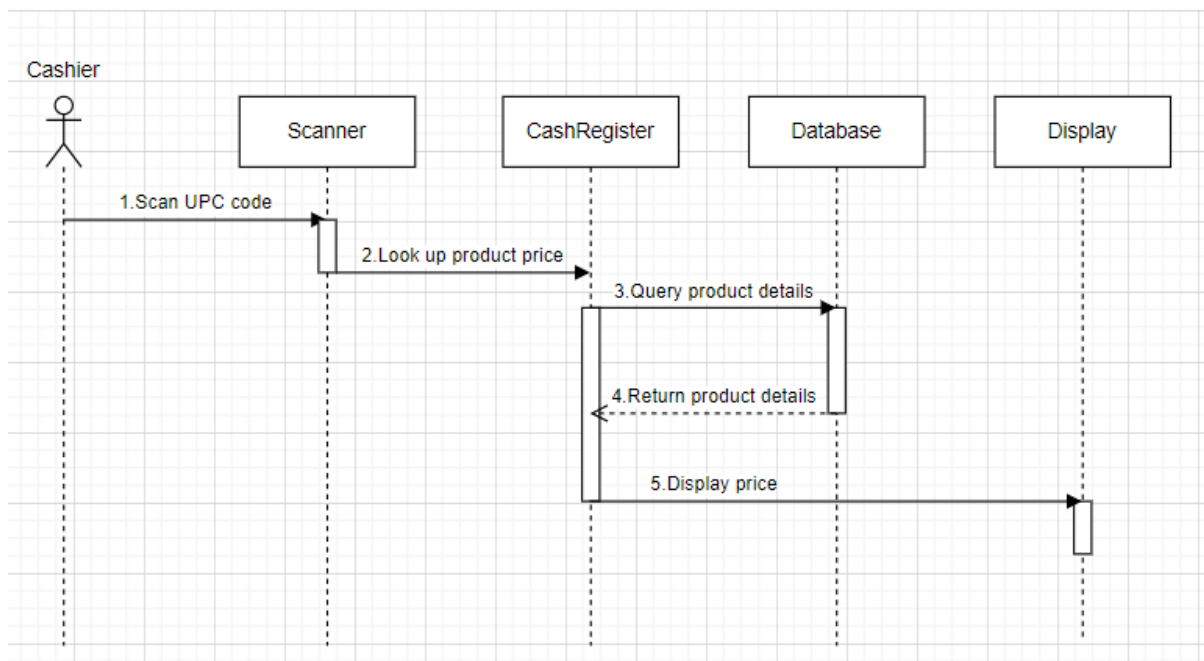
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- A. Leveraging these components create a UML diagram of an architecture that adopts the MVC design pattern and the layered pattern.



- B. Create a sequence diagram that captures the use case of an item's UPC code being scanned through the Scanner, resulting in the operation of looking up the price of the item from a product Database and displaying that price on the Display. Note: this scenario depicts what is referred to as "Business Logic". In the MVC pattern keep in mind where this logic resides.



- C. Code this design using Java. For the code you can simply create a Keyboard, CashRegister, and Display Class and show that when a product ID is entered into the keyboard as a number that the product name and price are displayed. Note: You will need to create a file with the products and prices. Submit the code and test case example demonstrating that the code works.

OUTPUT:

```
cashRegister x
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaagent:C:\Program F
Enter a product ID: 2
The product name is: Bread
The price for Bread is: $3.49
Process finished with exit code 0
```

```
cashRegister x
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaag
Enter a product ID: 22
Could not find the productID in the Database
Process finished with exit code 0
```

Data.txt

```
display.java x keyboard.java x cashRegister.java x data.txt x
1 1 Apples 2.99
2 2 Bread 3.49
3 3 Milk 4.59
```

Keyboard.java

```
display.java × keyboard.java × cashRegister.java × data.txt ×
1      import java.util.Scanner;
2
3      public class keyboard {
4      public int getInput() {
5          // get input from keyboard
6          Scanner input = new Scanner(System.in);
7          System.out.print("Enter a product ID: ");
8          int productID = input.nextInt();
9          input.close();
10         return productID;
11     }
12 }
```

Display.java

```
display.java × keyboard.java × cashRegister.java × data.txt ×
1      public class display {
2      public void displayText(String text, String text2) {
3          System.out.println("The product name is: " + text);
4          System.out.println("The price for " + text + " is: $" + text2);
5      }
6  }
7  |
```

cashRegister.java

```
display.java × keyboard.java × cashRegister.java × data.txt ×
1  import java.io.File;
2  import java.util.Objects;
3  import java.util.Scanner;
4
5  public class cashRegister {
6  public static void main(String[] args) {
7      String productName = " ";
8      String productPrice = " ";
9      int flag=0;
10     keyboard keyboardInput = new keyboard();
11     int productID = keyboardInput.getInput();
12     try {
13         File file = new File( pathname: "data.txt");
14         Scanner input = new Scanner(file);
15         while (input.hasNextLine()) {
16             String line = input.nextLine();
17             String[] split = line.split( regex: " ");
18             String productReadId = split[0];
19             if (Objects.equals(productReadId, Integer.toString(productID))) {
20                 flag = 1;
21                 productName = split[1];
22                 productPrice = split[2];
23             }
24         }
25         input.close();
26     } catch (Exception e) {
27         System.out.println("An error occurred.");
28         e.printStackTrace();
29     }
30
31     if(flag==0){
32         System.out.println("Could not find the productID in the Database");
33     }
34     else {
35         // create a new display object
36         display d = new display();
37         // display the input
38         d.displayText(productName, productPrice);
39     }
40 }
41 }
```