GIT
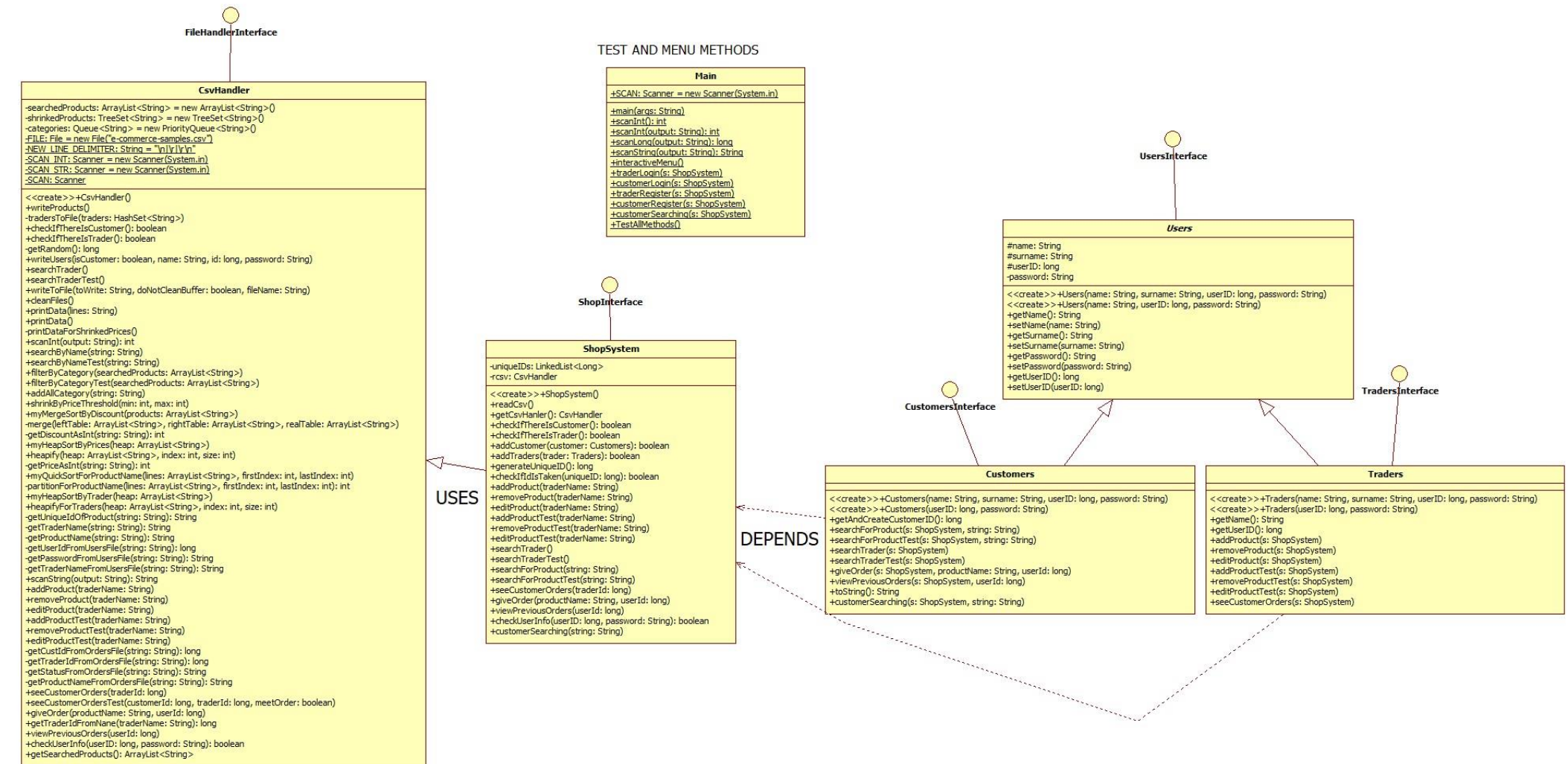
DEPARTMENT OF
COMPUTER ENGINEERING

CSE 222/505 – Spring 2021

REPORT FOR

HOMEWORK 4

SÜLEYMAN GÖLBOL

1801042656

1. CLASS DIAGRAMS

FileHandlerInterface

CsvHandler
- -searchedProducts: ArrayList<String> = new ArrayList<String>()
- -shrinkedProducts: TreeSet<String> = new TreeSet<String>()
- -categories: Queue<String> = new PriorityQueue<String>()
- -FILE: File = new File("e-commerce-samples.csv")
- -NEW_LINE_DELIMITER: String = "\n|\r|\r\n"
- -SCAN_INT: Scanner = new Scanner(System.in)
- -SCAN_STR: Scanner = new Scanner(System.in)
- -SCAN: Scanner

- <<create>>+CsvHandler()
- +writeProducts()
- -tradersToFile(traders: HashSet<String>)
- +checkIfThereIsCustomer(): boolean
- +checkIfThereIsTrader(): boolean
- -getRandom(): long
- +writeUsers(isCustomer: boolean, name: String, id: long, password: String)
- +searchTrader()
- +searchTraderTest()
- +writeToFile(toWrite: String, doNotCleanBuffer: boolean, fileName: String)
- +cleanFiles()
- +printData(lines: String)
- +printData()
- -printDataForShrinkedPrices()
- +scanInt(output: String): int
- +searchByName(string: String)
- +searchByNameTest(string: String)
- +filterByCategory(searchedProducts: ArrayList<String>)
- +filterByCategoryTest(searchedProducts: ArrayList<String>)
- +addAllCategory(string: String)
- +shrinkByPriceThreshold(min: int, max: int)
- +myMergeSortByDiscount(products: ArrayList<String>)
- -merge(leftTable: ArrayList<String>, rightTable: ArrayList<String>, realTable: ArrayList<String>)
- -getDiscountAsInt(string: String): int
- +myHeapSortByPrices(heap: ArrayList<String>)
- +heapify(heap: ArrayList<String>, index: int, size: int)
- -getPriceAsInt(string: String): int
- +myQuickSortForProductName(lines: ArrayList<String>, firstIndex: int, lastIndex: int)
- -partitionForProductName(lines: ArrayList<String>, firstIndex: int, lastIndex: int): int
- +myHeapSortByTrader(heap: ArrayList<String>)
- +heapifyForTraders(heap: ArrayList<String>, index: int, size: int)
- -getUniqueIdOfProduct(string: String): String
- -getTraderName(string: String): String
- -getProductName(string: String): String
- -getUserIdFromUsersFile(string: String): long
- -getPasswordFromUsersFile(string: String): String
- -getTraderNameFromUsersFile(string: String): String
- +scanString(output: String): String
- +addProduct(traderName: String)
- +removeProduct(traderName: String)
- +editProduct(traderName: String)
- +addProductTest(traderName: String)
- +removeProductTest(traderName: String)
- +editProductTest(traderName: String)
- -getCustIdFromOrdersFile(string: String): long
- -getTraderIdFromOrdersFile(string: String): long
- -getStatusFromOrdersFile(string: String): String
- -getProductNameFromOrdersFile(string: String): String
- +seeCustomerOrders(traderId: long)
- +seeCustomerOrdersTest(customerId: long, traderId: long, meetOrder: boolean)
- +giveOrder(productName: String, userId: long)
- +getTraderIdFromName(traderName: String): long
- +viewPreviousOrders(userId: long)
- +checkUserInfo(userID: long, password: String): boolean
- +getSearchedProducts(): ArrayList<String>

TEST AND MENU METHODS

Main
- +SCAN: Scanner = new Scanner(System.in)

- +main(args: String)
- +scanInt(): int
- +scanInt(output: String): int
- +scanLong(output: String): long
- +scanString(output: String): String
- +interactiveMenu()
- +traderLogin(s: ShopSystem)
- +customerLogin(s: ShopSystem)
- +traderRegister(s: ShopSystem)
- +customerRegister(s: ShopSystem)
- +customerSearching(s: ShopSystem)
- +TestAllMethods()

ShopInterface

ShopSystem
- -uniqueIDs: LinkedList<Long>
- -rcsv: CsvHandler

- <<create>>+ShopSystem()
- +readCsv()
- +getCsvHanler(): CsvHandler
- +checkIfThereIsCustomer(): boolean
- +checkIfThereIsTrader(): boolean
- +addCustomer(customer: Customers): boolean
- +addTraders(trader: Traders): boolean
- +generateUniqueID(): long
- +checkIfIdIsTaken(uniqueID: long): boolean
- +addProduct(traderName: String)
- +removeProduct(traderName: String)
- +editProduct(traderName: String)
- +addProductTest(traderName: String)
- +removeProductTest(traderName: String)
- +editProductTest(traderName: String)
- +searchTrader()
- +searchTraderTest()
- +searchForProduct(string: String)
- +searchForProductTest(string: String)
- +seeCustomerOrders(traderId: long)
- +giveOrder(productName: String, userId: long)
- +viewPreviousOrders(userId: long)
- +checkUserInfo(userID: long, password: String): boolean
- +customerSearching(string: String)

USES

DEPENDS

UsersInterface

Users
- #name: String
- #surname: String
- #userID: long
- -password: String

- <<create>>+Users(name: String, surname: String, userID: long, password: String)
- <<create>>+Users(name: String, userID: long, password: String)
- +getName(): String
- +setName(name: String)
- +getSurname(): String
- +setSurname(surname: String)
- +getPassword(): String
- +setPassword(password: String)
- +getUserID(): long
- +setUserID(userID: long)

CustomersInterface

TradersInterface

Customers
- <<create>>+Customers(name: String, surname: String, userID: long, password: String)
- <<create>>+Customers(userID: long, password: String)
- +getAndCreateCustomerID(): long
- +searchForProduct(s: ShopSystem, string: String)
- +searchForProductTest(s: ShopSystem, string: String)
- +searchTrader(s: ShopSystem)
- +searchTraderTest(s: ShopSystem)
- +giveOrder(s: ShopSystem, productName: String, userId: long)
- +viewPreviousOrders(s: ShopSystem, userId: long)
- +toString(): String
- +customerSearching(s: ShopSystem, string: String)

Traders
- <<create>>+Traders(name: String, surname: String, userID: long, password: String)
- <<create>>+Traders(userID: long, password: String)
- +getName(): String
- +getUserID(): long
- +addProduct(s: ShopSystem)
- +removeProduct(s: ShopSystem)
- +editProduct(s: ShopSystem)
- +addProductTest(s: ShopSystem)
- +removeProductTest(s: ShopSystem)
- +editProductTest(s: ShopSystem)
- +seeCustomerOrders(s: ShopSystem)

2. PROBLEM SOLUTION APPROACH

Firstly, I saw some problems about Scanner. When I close Scanner in one place, it closes it for every place and use. But the problem is I used scanner both for file and for getting keyboard input. So I made scanner static final. When I say SCAN = new Scanner(System.in);
I don't have to change scanner in other place. So it made things easier. Also because of scanner is static, it prevent source leaks if I don't close scanner. Another thing it made things easier is, especially in Main class, to use scanner in other places I had to pass by parameter for every method I use. With making scanner public static final, I don't need to worry about passing it with parameter.

Other problem I faced was new line characters in csv file. When I make delimiter ";" character, the first line's last column and second line's first column becomes in same string variable. So I made delimiter new line character and I split it to the strings with String's split method.

Other problem I faced was changing or removing specific line in my files.
If I add it new things it adds to the end but I cannot change the middle. So I created both BufferReader and BufferWriter and every line that is not my line, I wrote it to temp file. When the line that I want to change comes I used my input to change, when I want to delete, I just continued in loop to jump other line.
After all in end, new file was created but the old one still exists. So I removed old one. And I changed new one's -temp file's- name to the old one.

Also when sorting it sorts with seeing uppercase and lower case chaacters. So in ascii, non-capital letters are at the end of the table so when printing with sorted, it will firstly show words begins with noncapital letters if there is.

I used LinkedList with List Interface. When I split the line to the columns, the reason why I use LinkedList is in LinkedList the insertion in LinkedList is constant time so it is so good for time passing. (In CsvHandler file.)

I used HashTable with HashSet in CsvHandler file. Because the insertion is constant time even in worst case. Also other reason for I use HashSet is every trader should be one in users file but in products/or csv file a trader could be in many lines. So HashSet made the every trader become once.

I used ArrayList in CsvHandler file when I hold searched products after searching.(Note that I didn't load all products in memory ever.)
When search elements kept in ArrayList, the important thing was getting. And getting in element from ArrayList is constant time O(1).

I used Tree with TreeSet when I shrink the prices by min and max thresholds. When shrinking the prices by threshold, I added the results to TreeSet in CsvHandler file. So after I print it printed it as sorted as I want because of price.

I used Queue with PriorityQueue in CsvHandler file to hold the search result's filtering by category. When it split " >> " characters it added the categories to the queue. It is good because enqueueing to the queue is O(logn) which is better than Linear time situations.

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3. TEST CASES

3.1) READING CSV FILE

```
public static void TestAllMethods() throws FileNotFoundException{
    ShopSystem s = new ShopSystem();
    Traders trader = null;
    Customers customer = null;

    System.out.println("-----READING CSV FILE-----");
    s.readCsv();    //Reading csv file.
```

3.2) ADDING NEW TRADER WITH ID PASSWORD AND NAME SURNAME WRITING TO USERS FILE.

```
    System.out.println("-----ADDING NEW TRADER-----");
    s.addTraders( trader = new Traders("tempName", "tempSurname", 12345678, "sifre1") );
```

3.3) TRADER PERFORMS ADDING REMOVING AND EDITING PRODUCTS.

```
    System.out.println("-----TRADER ADDS NEW PRODUCT-----");
    trader.addProductTest(s);
    System.out.println("-----TRADER REMOVES PRODUCT-----");
    trader.removeProductTest(s);
    System.out.println("-----TRADER EDITS PRODUCT-----");
    trader.editProductTest(s);
```

3.4) CREATING NEW CUSTOMER WITH INFO AND WRITING TO USERS FILE.

```
    System.out.println("-----ADDING NEW CUSTOMER / WRITING TO USERS FILE-----");
    s.addCustomer( customer = new Customers("tempName", "tempSurname", 11111111, "000000") );
```

3.5) CUSTOMER SEARCHING/ SORTING WITH QUICK SORT BY NAME

```
    System.out.println("-----CUSTOMER SEARCHES-----");
    System.out.println("-----SORTING SEARCH BY NAME WITH QUICK SORT-----");
    customer.searchForProductTest(s, "Icon");
```

3.6) SORTING BY OTHER ALGROTIHMS THAN QUICK

```
System.out.println("-----SORTING BY PRICE WITH HEAP SORT-----");
s.getCsvHanler().myHeapSortByPrices( s.getCsvHanler().getSearchedProducts() );
s.getCsvHanler().printData();
System.out.println("-----SORTING BY DISCOUNT WITH MERGE SORT -----");
s.getCsvHanler().myMergeSortByDiscount( s.getCsvHanler().getSearchedProducts() );
s.getCsvHanler().printData();
System.out.println("-----SORTING BY TRADER NAME WITH HEAP SORT -----");
s.getCsvHanler().myHeapSortByTrader( s.getCsvHanler().getSearchedProducts() );
s.getCsvHanler().printData();
```

3.7) FILTERING SEARCHED RESULTS BY PRICE THRESHOLDS

```java
System.out.println("-----FILTERING SEARCHED RESULTS BY PRICE THRESHOLDS-----");
s.getCsvHanler().shrinkByPriceThreshold(100, 420);
```

3.8) FILTERING SEARCHED RESULTS BY CATEGORY

```java
System.out.println("-----FILTERING SEARCHED RESULTS BY CATEGORY-----");
s.getCsvHanler().filterByCategoryTest( s.getCsvHanler().getSearchedProducts() );
```

3.9) CUSTOMER DISPLAYS PRODUCTS OF TRADER WITH SEARCHING.

```java
System.out.println("-----CUSTOMER DISPLAYS PRODUCTS OF TRADER-----");
customer.searchTraderTest(s);
```

3.10) CUSTOMER GIVES ORDER DOESN'T EXIST

```java
System.out.println("-----CUSTOMER GIVES ORDER THAT DOESN'T EXIST-----");
customer.giveOrder(s, "Suleymanin olmayan urunu", customer.getUserID());
```

3.10) CUSTOMER GIVES ORDER EXISTS

```java
System.out.println("-----CUSTOMER GIVES ORDER-----");
customer.giveOrder(s, "Aria Rhodium Sterling Silver Pendant", customer.getUserID());
```

3.11) TRADER CHECKS IF CUSTOMER GAVE ORDER AND CHANGING STATUS TO MEET ORDER

```java
System.out.println("-----TRADER CHECKS IF CUSTOMER GAVE ORDER-----");
System.out.println("-----TRADER CHANGES STATUS OF ORDER TO GIVEN-----");
s.getCsvHanler().seeCustomerOrdersTest( customer.getUserID(), s.getCsvHanler().getTraderIdFromNane("Aria") , true);
```

3.12) TRADER CHECKS IF CUSTOMER GAVE ORDER AND CHANGING STATUS TO CANCEL ORDER

```java
System.out.println("-----TRADER CHANGES STATUS OF ORDER TO CANCLLED-----");
customer.giveOrder(s, "Janhvi PS-L045B Solar Lights", customer.getUserID());
s.getCsvHanler().seeCustomerOrdersTest( customer.getUserID(), s.getCsvHanler().getTraderIdFromNane("Janhvi") , false);
```

4. RUNNING AND RESULTS

ENTERING TO THE TEST METHODS IN MENU AND READING
CSV.

**ADDING NEW TRADER WITH ID PASSWORD AND
NAME SURNAME WRITING TO USERS FILE AND
TRADER PERFORMS ADDING REMOVING AND EDITING
PRODUCTS.**

**CREATING NEW CUSTOMER WITH INFO AND WRITING
TO USERS FILE.**

CUSTOMER SEARCHING/ SORTING WITH QUICK SORT BY NAME

```
-----SORTING SEARCH BY NAME WITH QUICK SORT-----
Printing:
ID is: ACCEGWH3M56QEA7Q
PRODUCT is: Steelseries Siberia 200 Wired Headset | PRICE is: 6999 | DISCOUNT is: 5999
DESCRIPTION: Key Features of Steelseries Siberia 200 Wired Headset Over the Ear Headset Circumaural He
000 Hz Headset Driver Units 50 mm General Headset Design Over the Head Brand Steelseries Wired/Wireles
 Sound Features Noise Reduction Headphones 112 Warranty Warranty Summary 2 Years Warranty Connectivity
al Features Adapter: Single 3.5 mm, 4 Pole Plug, Microphone Pickup Pattern: Unidirectional, Iconic 50
ID is: ACCECA554ZHRTYAG
PRODUCT is: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 | PRICE is: 699 | DISCOUNT is:
DESCRIPTION: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 (Black)
ID is: DIAEE8YAHKX7HWP3
PRODUCT is: InstaNote Iconic Colored Pages A5 Notebook Hand Sewn | PRICE is: 179 | DISCOUNT is: 179
DESCRIPTION: Buy InstaNote Iconic Colored Pages A5 Notebook Hand Sewn for Rs.179 online. InstaNote Ico
ID is: USGEDZUWG5Y26SAZ
PRODUCT is: Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card | PRI
DESCRIPTION: Buy Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card
ucts. 30 Day Replacement Guarantee.
ID is: USGEDNR8U6ZAETKA
PRODUCT is: Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Channel
DESCRIPTION: Buy Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Ch
ping & cash on delivery. Only Genuine Products. 30 Day Replacement Guarantee.
ID is: USGEDZUWKVQNZUZN
PRODUCT is: Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound Card
DESCRIPTION: Buy Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound
nuine Products. 30 Day Replacement Guarantee.
ID is: USGEDZX5ERUQRW8B
PRODUCT is: Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card | PRIC
DESCRIPTION: Buy Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card f
ts. 30 Day Replacement Guarantee.
ID is: USGEDZUWZ9SFHSXZ
PRODUCT is: Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card | PRICE is: 1200 | DISC
DESCRIPTION: Buy Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card for Rs.509 online.
ID is: USGEDZYR9XGUFNWZ
PRODUCT is: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card | PRICE is: 700 |
DESCRIPTION: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card (Black)
ID is: ACCE3YFFQY82H72D
PRODUCT is: Icon Book Cover for iPad Mini | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad Mini (Red)
ID is: ACCE3YFFEW3TAXZA
PRODUCT is: Icon Book Cover for iPad Mini | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad Mini only for Rs. 599 from Flipkart.com. Only Genuine Produc
ID is: ACCE3YFF5RDZJKG3
PRODUCT is: Icon Book Cover for iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 4 (Red)
ID is: ACCE3YFFDZYHG4MM
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2, iPad 3, iPad 4 (Ziggy Brown)
ID is: ACCE3YFF2ERBY5ZV
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad 2, iPad 3, iPad 4 only for Rs. 599 from Flipkart.com. Only G
ID is: ACCE3YFFWB4HHHG2
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2, iPad 3, iPad 4 (Ziggy Green)
ID is: ACCE3YFF4D4KYBF4
PRODUCT is: Icon Book Cover for iPad 2 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2 (Ziggy Red)
ID is: ACCECR24JGSPKHDG
PRODUCT is: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD | PRICE is: 699 | DISCOUNT is: 349
DESCRIPTION: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD (Multicolor)
```

3.6) SORTING BY PRICE WITH HEAP SORT

```
-----SORTING BY PRICE WITH HEAP SORT-----
Printing:
ID is: ACCEGWH3M56QEA7Q
PRODUCT is: Steelseries Siberia 200 Wired Headset | PRICE is: 6999 | DISCOUNT is: 5999
DESCRIPTION: Key Features of Steelseries Siberia 200 Wired Headset Over the Ear Headset Circumaural Headset Over the
000 Hz Headset Driver Units 50 mm General Headset Design Over the Head Brand Steelseries Wired/Wireless Wired Compati
 Sound Features Noise Reduction Headphones 112 Warranty Warranty Summary 2 Years Warranty Connectivity Connector Type
al Features Adapter: Single 3.5 mm, 4 Pole Plug, Microphone Pickup Pattern: Unidirectional, Iconic 50 mm Drivers, Ret
ID is: ACCE3YFF4D4KYBF4
PRODUCT is: Icon Book Cover for iPad 2 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2 (Ziggy Red)
ID is: ACCE3YFF2ERBY5ZV
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad 2, iPad 3, iPad 4 only for Rs. 599 from Flipkart.com. Only Genuine Products
ID is: ACCE3YFFQY82H72D
PRODUCT is: Icon Book Cover for iPad Mini | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad Mini (Red)
ID is: ACCE3YFFDZYHG4MM
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2, iPad 3, iPad 4 (Ziggy Brown)
ID is: ACCE3YFFWB4HHHG2
PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2, iPad 3, iPad 4 (Ziggy Green)
ID is: ACCE3YFF5RDZJKG3
PRODUCT is: Icon Book Cover for iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 4 (Red)
ID is: ACCE3YFFEW3TAXZA
PRODUCT is: Icon Book Cover for iPad Mini | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad Mini only for Rs. 599 from Flipkart.com. Only Genuine Products. 30 Day Repl
ID is: USGEDZUWKVQNZUZN
PRODUCT is: Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound Card | PRICE is: 150
DESCRIPTION: Buy Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound Card for Rs.549
nuine Products. 30 Day Replacement Guarantee.
ID is: USGEDZUWG5Y26SAZ
PRODUCT is: Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card | PRICE is: 1200 | D
DESCRIPTION: Buy Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card for Rs.519 onli
ucts. 30 Day Replacement Guarantee.
ID is: USGEDZUWZ9SFHSXZ
PRODUCT is: Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card | PRICE is: 1200 | DISCOUNT is: 509
DESCRIPTION: Buy Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card for Rs.509 online. Iconnect World
ID is: USGEDZX5ERUQRW8B
PRODUCT is: Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card | PRICE is: 1200 | DI
DESCRIPTION: Buy Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card for Rs.549 onlin
ts. 30 Day Replacement Guarantee.
ID is: USGEDNR8U6ZAETKA
PRODUCT is: Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Channel USB Sound Card
DESCRIPTION: Buy Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Channel USB Sound
ping & cash on delivery. Only Genuine Products. 30 Day Replacement Guarantee.
ID is: USGEDZYR9XGUFNWZ
PRODUCT is: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card | PRICE is: 700 | DISCOUNT is: 44
DESCRIPTION: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card (Black)
ID is: ACCECR24JGSPKHDG
PRODUCT is: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD | PRICE is: 699 | DISCOUNT is: 349
DESCRIPTION: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD (Multicolor)
ID is: ACCECA554ZHRTYAG
PRODUCT is: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 | PRICE is: 699 | DISCOUNT is: 449
DESCRIPTION: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 (Black)
ID is: DIAEE8YAHKX7HWP3
PRODUCT is: InstaNote Iconic Colored Pages A5 Notebook Hand Sewn | PRICE is: 179 | DISCOUNT is: 179
DESCRIPTION: Buy InstaNote Iconic Colored Pages A5 Notebook Hand Sewn for Rs.179 online. InstaNote Iconic Colored Pag
```

SORTING BY DISCOUNT WITH MERGE SORT

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 Sound Features Noise Reduction Headphones 112 Warranty Warranty Summary 2 Years Warranty Connectivity Connector Type Dual 3.5 mm, 3 Pole Plug M
al Features Adapter: Single 3.5 mm, 4 Pole Plug, Microphone Pickup Pattern: Unidirectional, Iconic 50 mm Drivers, Retractable Mic, Suspension He
ID is: USGEDNR8U6ZAETKA
PRODUCT is: Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Channel USB Sound Card | PRICE is: 900 | DISCOUNT
DESCRIPTION: Buy Iconnect World Premium Quality External Audio Adapter With Mic 1 Year Warranty 7.1 Channel USB Sound Card for Rs.649 online. Ic
ping & cash on delivery. Only Genuine Products. 30 Day Replacement Guarantee.
ID is: ACCE3YFFEW3TAXZA
PRODUCT is: Icon Book Cover for iPad Mini | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad Mini only for Rs. 599 from Flipkart.com. Only Genuine Products. 30 Day Replacement Guarantee. Free Shi
ID is: ACCE3YFF5RDZJKG3
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PRODUCT is: Icon Book Cover for iPad 2, iPad 3, iPad 4 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Buy Icon Book Cover for iPad 2, iPad 3, iPad 4 only for Rs. 599 from Flipkart.com. Only Genuine Products. 30 Day Replacement Guaran
ID is: ACCE3YFF4D4KYBF4
PRODUCT is: Icon Book Cover for iPad 2 | PRICE is: 1999 | DISCOUNT is: 599
DESCRIPTION: Icon Book Cover for iPad 2 (Ziggy Red)
ID is: USGEDZX5ERUQRW8B
PRODUCT is: Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card | PRICE is: 1200 | DISCOUNT is: 549
DESCRIPTION: Buy Iconnect World External Adapter 7.1 Channel Audio Output + Mic Input USB Sound Card for Rs.549 online. Iconnect World External
ts. 30 Day Replacement Guarantee.
ID is: USGEDZUWKVQNZUZN
PRODUCT is: Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound Card | PRICE is: 1500 | DISCOUNT is: 549
DESCRIPTION: Buy Iconnect World Premium Quality 7.1 Channel External Audio Adapter With Mic USB Sound Card for Rs.549 online. Iconnect World Pre
nuine Products. 30 Day Replacement Guarantee.
ID is: USGEDZUWG5Y26SAZ
PRODUCT is: Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card | PRICE is: 1200 | DISCOUNT is: 519
DESCRIPTION: Buy Iconnect World Sound 7.1 Channel Hi Speed External Audio Card Adapter USB Sound Card for Rs.519 online. Iconnect World Sound 7.
ucts. 30 Day Replacement Guarantee.
ID is: USGEDZUWZ9SFHSXZ
PRODUCT is: Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card | PRICE is: 1200 | DISCOUNT is: 509
DESCRIPTION: Buy Iconnect World 7.1 Virtual Channel 3D Audio Adapter USB Sound Card for Rs.509 online. Iconnect World 7.1 Virtual Channel 3D Aud
ID is: ACCECA554ZHRTYAG
PRODUCT is: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 | PRICE is: 699 | DISCOUNT is: 449
DESCRIPTION: JLRS Bumper Case for Acer Iconia W3-810|Acer Iconia W4-820 (Black)
ID is: USGEDZYR9XGUFNWZ
PRODUCT is: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card | PRICE is: 700 | DISCOUNT is: 449
DESCRIPTION: Iconnect World 3D Dual 7.1 Virtual Channel Audio Adapter USB Sound Card (Black)
ID is: ACCECR24JGSPKHDG
PRODUCT is: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD | PRICE is: 699 | DISCOUNT is: 349
DESCRIPTION: Fastway Book Cover for Acer Iconia One 7 (B1-760) HD (Multicolor)
ID is: DIAEE8YAHKX7HWP3
PRODUCT is: InstaNote Iconic Colored Pages A5 Notebook Hand Sewn | PRICE is: 179 | DISCOUNT is: 179
DESCRIPTION: Buy InstaNote Iconic Colored Pages A5 Notebook Hand Sewn for Rs.179 online. InstaNote Iconic Colored Pages A5 Notebook Hand Sewn at
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FILTERING SEARCHED RESULTS BY PRICE THRESHOLDS

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-----FILTERING SEARCHED RESULTS BY PRICE THRESHOLDS-----
Printing datas with shrinked list:
ID is: Price: 179 DIAEE8YAHKX7HWP3
PRODUCT is: InstaNote Iconic Colored Pages A5 Notebook Hand Sewn | PRICE is: 179 | DISCOUNT is: 179
DESCRIPTION: Buy InstaNote Iconic Colored Pages A5 Notebook Hand Sewn for Rs.179 online. InstaNote Iconic (
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3.8) FOR FILTERING SEARCHED RESULTS BY CATEGORY ADDING ALL CATEGORIES

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-----FILTERING SEARCHED RESULTS BY CATEGORY-----
Categories from your search are:
[Cases & Covers , Cases & Covers , Cases & Covers , Cases & Covers , Cases & Covers , Cases & Covers , Cases & Covers , Computers , Cases & Covers , Computers , Computers , Computers , Computers , Computers , Cases & Covers , Gaming , Headphones (With Mic) , Laptop Accessories
 , Cases & Covers , Icon Cases & Covers , Laptop Accessories , Iconnect World USB Gadgets , Laptop Accessories , Icon Cases & Covers , Laptop Accessories , Fastway Cases & Covers , Laptop Accessories , Iconnect World USB
 , Diaries & Notebooks , InstaNote Planners , Gaming Accessories , Icon Cases & Covers , Icon Cases & Covers , Mobiles & Accessories , Mobiles & Accessories , USB Gadgets , Tablet Accessories , Tablet Accessories , Iconnect World USB Gadgets , Mobiles & Accessories , USB Gadget
s , Tablet Accessories , Iconnect World USB Gadgets , Mobiles & Accessories , USB Gadgets , Tablet Accessories , JLRS Cases & Covers , Mobiles & Accessories , USB Gadgets , Tablet Accessories , Iconnect World USB Gadgets , Mobiles & Accessories , USB Gadgets , Tablet Accessori
es , Iconnect World USB Gadgets , Mobiles & Accessories , USB Gadgets , Tablet Accessories , Pens & Stationery , Mobiles & Accessories , Planners & Organisers , Tablet Accessories , Planners , Mobiles & Accessories , Icon Cases & Covers , Tablet Accessories , Steelseries Headp
hones (With Mic) , Steelseries Siberia 200 Wired Headset (Forged Red) ]

PRODUCT is: Steelseries Siberia 200 Wired Headset | PRICE is: 6999 | DISCOUNT is: 5999
DESCRIPTION: Key Features of Steelseries Siberia 200 Wired Headset Over the Ear Headset Circumaural Headset Over the Head Wired Headset Padded Earcups,Specifications of Steelseries Siberia 200 Wired Headset (Forged Red) Headset Sound Features Headset Frequency Response 10 - 28
000 Hz Headset Driver Units 50 mm General Headset Design Over the Head Brand Steelseries Wired/Wireless Wired Compatible Devices Computer, Mobile, Tablet Type of Headset Over the Ear Model ID Siberia 200 In Sales Package Main Unit, Manual Magnet Type Neodymium Color Forged Red
 Sound Features Noise Reduction Headphones 112 Warranty Warranty Summary 2 Years Warranty Connectivity Connector Type Dual 3.5 mm, 3 Pole Plug Microphone Features Microphone Type Mono Microphone Microphone Frequency Response 50 - 16000 Hz Microphone Impedance 2200 Ohm Additi
al Features Adapter: Single 3.5 mm, 4 Pole Plug, Microphone Pickup Pattern: Unidirectional, Iconic 50 mm Drivers, Retractable Mic, Suspension Headband
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CUSTOMER DISPLAYS PRODUCTS OF TRADER WITH SEARCHING.

-----CUSTOMER DISPLAYS PRODUCTS OF TRADER-----
Enter the trader name that you want to see products: Readline is PELEGNTWTJCSWSED;RosesNRibbons Rhodium Sterling Silver;["""Jewellery >> Pendants & Lockets >> RosesNRibbons Rhodium Sterling Silver"""];2149;1849;Key Features of RosesNRibbons Rhodium Sterling Silver Ideal For: W
omen, Girls Occasion: Everyday Theme: NA,RosesNRibbons Rhodium Sterling Silver Price: Rs. 1,849 A Gemstone Pendant from Ribbonkart makes quite the Powerful Statement. Simple, yet always a show Stopp
er, Our Stunning Gemstone Pendant sure to win her Compliments Every Single Day. Made of Sterling Silver with (Rhodium) Featuring of Glorious.Jewellery Care & Disclaimer: - Keep it away from Sprays, Perfumes, Soaps and other Chemicals & Product Color may slightly vary due to Photographic Lighting Sources or your Monitor Settings.,Specifications of RosesN
Ribbons Rhodium Sterling Silver Pearl Features Pearl Type NA General Body Material Sterling Silver Brand RosesNRibbons Gemstone NA Theme NA Model Number PN 920 Precious/Artificial Jewellery Semi Precious Jewellery Plating Rhodium Occasion Everyday Ideal For Women, Girls Chain
Features Chain Included No Diamond Features Diamond Weight 0 carat Diamong Color Grade NA Diamond Cut NA Diamond Clarity NA Dimensions Width 27.36 mm Additional Features Certification Brand Certification;RosesNRibbons
ID is: PELEGNTWTJCSWSED
PRODUCT is: RosesNRibbons Rhodium Sterling Silver | PRICE is: 2149 | DISCOUNT is: 1849
DESCRIPTION: Key Features of RosesNRibbons Rhodium Sterling Silver Ideal For: Women, Girls Occasion: Everyday Theme: NA,RosesNRibbons Rhodium Sterling Silver Price: Rs. 1,849 A Gemstone Pendant from Ribbonkart makes quite the Powerful Statement. Simple, yet always a show Stopp
er, Our Stunning Gemstone Pendant sure to win her Compliments Every Single Day. Made of Sterling Silver with (Rhodium) Featuring of Glorious.Jewellery Care & Disclaimer: - Keep it away from Sprays, Perfumes, Soaps and other Chemicals & Product Color may slightly vary due to P
hotographic Lighting Sources or your Monitor Settings.,Specifications of RosesNRibbons Rhodium Sterling Silver Pearl Features Pearl Type NA General Body Material Sterling Silver Brand RosesNRibbons Gemstone NA Theme NA Model Number PN 920 Precious/Artificial Jewellery Semi Pre
cious Jewellery Plating Rhodium Occasion Everyday Ideal For Women, Girls Chain Features Chain Included No Diamond Features Diamond Weight 0 carat Diamong Color Grade NA Diamond Cut NA Diamond Clarity NA Dimensions Width 27.36 mm Additional Features Certification Brand Certific
ation
Readline is PELEGNSQYKXHT2ZH;RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver;["""Jewellery >> Pendants & Lockets >> RosesNRibbons Rhodium Garnet, Amethyst, Citrine,..."""];5849;4999;Key Features of RosesNRibbons Rhodium Garnet, Amethyst,
, Citrine, Topaz, Quartz, Peridot Sterling Silver Ideal For: Women, Girls Occasion: Everyday Theme: Coin,RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver Price: Rs. 4,999 A Gemstone Pendant from Ribbonkart makes quite the powerful statemen
t. Simple, yet always a ShowStopper, our stunning color gemstone Pendant are sure to win her compliments every single day. Crafted from 925 Sterling Silver, this sparkling Pendant weighing approximately 6.40 Ct. (Avg) ct. stones. Jewellery Care & Disclaimer : Keep it away from
sprays, perfumes, soaps and other chemicals & Product color may slightly vary due to photographic lighting sources or your monitor settings.,Specifications of RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver Pearl Features Pearl Type NA
General Body Material Sterling Silver Brand RosesNRibbons Gemstone Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Theme Coin Precious/Artificial Jewellery Semi Precious Jewellery Model Number PN 151 MLT Pla
ting Rhodium Ideal For Women, Girls Occasion Everyday Chain Features Chain Included No Diamond Features Diamond Weight 0 cent Diamong Color Grade NA Diamond Cut NA Diamond Clarity NA Dimensions Width 43.99 mm Additional Features Certification Brand Certification
ID is: PELEGNSQYKXHT2ZH
PRODUCT is: RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver | PRICE is: 5849 | DISCOUNT is: 4999
DESCRIPTION: Key Features of RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver Ideal For: Women, Girls Occasion: Everyday Theme: Coin,RosesNRibbons Rhodium Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Sterling Silver Price: Rs. 4,999
A Gemstone Pendant from Ribbonkart makes quite the powerful statement. Simple, yet always a ShowStopper, our stunning color gemstone Pendant are sure to win her compliments every single day. Crafted from 925 Sterling Silver, this sparkling Pendant weighing approximately 6.40 C
t. (Avg) ct. stones. Jewellery Care & Disclaimer : Keep it away from sprays, perfumes, soaps and other chemicals & Product color may slightly vary due to photographic lighting sources or your monitor settings.,Specifications of RosesNRibbons Rhodium Garnet, Amethyst, Citrine,
Topaz, Quartz, Peridot Sterling Silver Pearl Features Pearl Type NA General Body Material Sterling Silver Brand RosesNRibbons Gemstone Garnet, Amethyst, Citrine, Topaz, Quartz, Peridot Theme Coin Precious/Artificial Jewellery Semi Precious Jewellery Model Number PN 151 MLT Pla
ting Rhodium Ideal For Women, Girls Occasion Everyday Chain Features Chain Included No Diamond Features Diamond Weight 0 cent Diamong Color Grade NA Diamond Cut NA Diamond Clarity NA Dimensions Width 43.99 mm Additional Features Certification Brand Certification;RosesNRibbons
Readline is PELEGNWBZXXXXDNZ;RosesNRibbons Rhodium Garnet Sterling Silver;["""Jewellery >> Pendants & Lockets >> RosesNRibbons Rhodium Garnet Sterling Silver"""];4049;3449;Key Features of RosesNRibbons Rhodium Garnet Sterling Silver Ideal For: Women, Girls Occasion: Everyday T
heme: Animal,RosesNRibbons Rhodium Garnet Sterling Silver Price: Rs. 3,449 A Gemstone Pendant from Ribbonkart makes quite the powerful statement. Simple, yet always a ShowStopper, our stunning color gemstone Pendant are sure to win her compliments every single day. Crafted fro
m 925 Sterling Silver, this sparkling Pendant weighing approximately 1.12 Ct. (Avg) ct. stones. Jewellery Care & Disclaimer : Keep it away from sprays, perfumes, soaps and other chemicals & Product color may slightly vary due to photographic lighting sources or your monitor se
ttings.,Specifications of RosesNRibbons Rhodium Garnet Sterling Silver Pearl Features Pearl Type NA General Body Material Sterling Silver Brand RosesNRibbons Gemstone Garnet Theme Animal Precious/Artificial Jewellery Semi Precious Jewellery Model Number PN 1281 SR Plating Rhod
ium Ideal For Women, Girls Occasion Everyday Chain Features Chain Included No Diamond Features Diamond Weight 0 carat Diamong Color Grade NA Diamond Cut NA Diamond Clarity NA Dimensions Width 16.5 mm Additional Features Certification Brand Certification;RosesNRibbons
ID is: PELEGNWBZXXXXDNZ
PRODUCT is: RosesNRibbons Rhodium Garnet Sterling Silver | PRICE is: 4049 | DISCOUNT is: 3449
DESCRIPTION: Key Features of RosesNRibbons Rhodium Garnet Sterling Silver Ideal For: Women, Girls Occasion: Everyday Theme: Animal,RosesNRibbons Rhodium Garnet Sterling Silver Price: Rs. 3,449 A Gemstone Pendant from Ribbonkart makes quite the powerful statement. Simple, yet a
lways a ShowStopper, our stunning color gemstone Pendant are sure to win her compliments every single day. Crafted from 925 Sterling Silver, this sparkling Pendant weighing approximately 1.12 Ct. (Avg) ct. stones. Jewellery Care & Disclaimer : Keep it away from sprays, perfume
s, soaps and other chemicals & Product color may slightly vary due to photographic lighting sources or your monitor settings.,Specifications of RosesNRibbons Rhodium Garnet Sterling Silver Pearl Features Pearl Type NA General Body Material Sterling Silver Brand RosesNRibbons G
emstone Garnet Theme Animal Precious/Artificial Jewellery Semi Precious Jewellery Model Number PN 1281 SR Plating Rhodium Ideal For Women, Girls Occasion Everyday Chain Features Chain Included No Diamond Features Diamond Weight 0 carat Diamong Color Grade NA Diamond Cut NA Dia
mond Clarity NA Dimensions Width 16.5 mm Additional Features Certification Brand Certification

3.10) CUSTOMER GIVES ORDER DOESN'T EXIST

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-----CUSTOMER GIVES ORDER THAT DOESN'T EXIST-----
Porduct looked couldn't found.
```

3.10) CUSTOMER GIVES ORDER EXISTS

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-----CUSTOMER GIVES ORDER-----
File added.
```

3.11) TRADER CHECKS IF CUSTOMER GAVE ORDER AND CHANGING STATUS TO MEET ORDER

```
-----TRADER CHECKS IF CUSTOMER GAVE ORDER-----
-----TRADER CHANGES STATUS OF ORDER TO GIVEN-----
Customer ordered: Aria Rhodium Sterling Silver Pendantnot Met
Aria Rhodium Sterling Silver Pendant;11111111;15631709;Met
```

3.12) TRADER CHECKS IF CUSTOMER GAVE ORDER AND CHANGING STATUS TO CANCEL ORDER

```
-----TRADER CHANGES STATUS OF ORDER TO CANCLLED-----
File added.
Customer ordered: Janhvi PS-L045B Solar Lightsnot Met
Janhvi PS-L045B Solar Lights;11111111;63288522;Canceled
All methods are tested.
sglbl@SglblPC:/mnt/c/Araclar/GTU/2.Sinif/2.Dönem/Cse222/hw6$
```