16. A retail store wants to keep track of item id and item price of the five items sold by them. Based on the item purchased by the customer, item price must be identified and the computation of bill amount must be done as per the price and quantity of the item purchased. Write a program to implement the above scenario.

1.Represent the item with their ids and price in array.

2. Search for the item purchased by the customer in the item ids arrays and identify the respective price. Display and appropriate error message if the item is not found in the array.

3. If the item is found

a. Compute the bill amount as quantity purchased \* price identified.

b. Display the bill id, customer id, purchase id , quantity purchased, discount and bill amount.

4. Change the purchase item id value to 5006 and run the program again and observe the result.

**CODE:**

**package** com.mindtree.OOPS;

**import** java.util.\*;

**public** **class** RetailStore {

**public** **static** **void** main(String args[]) {

Scanner in=**new** Scanner(System.***in***);

Item[] items=**new** Item[5];

**for**(**int** i=0;i<5;i++) {

items[i]=**new** Item();

System.***out***.println("Enter the Price of item"+(i+1));

**int** price=in.nextInt();

System.***out***.println("Enter the Quantity of item"+(i+1));

**int** quantity=in.nextInt();

System.***out***.println("Enter the Discount of item"+(i+1));

**int** discount=in.nextInt();

items[i].setBillId(i+1);

items[i].setCustomerId(100+i);

items[i].setItemId(5000+i);

items[i].setPrice(price);

items[i].setQuantity(quantity);

items[i].setDiscount(discount);

}

System.***out***.println("Item Ids and Price");

**for**(**int** i=0;i<5;i++) {

System.***out***.println("Item Id: "+items[i].getItemId());

System.***out***.println("Price : "+items[i].getPrice());

System.***out***.println();

}

Scanner in4=**new** Scanner(System.***in***);

System.***out***.println("Enter the customer id to be searched");

**int** customer=in4.nextInt();

**int** found=0;

**for**(**int** j=0;j<items.length;j++) {

**if**(items[j].getCustomerId()==customer) {

found=1;

System.***out***.println("Price of the Item : "+items[j].getPrice());

System.***out***.println();

System.***out***.println("Bill Id: "+items[j].getBillId());

System.***out***.println("Customer Id: "+items[j].getCustomerId());

System.***out***.println("Purchase Id: "+items[j].getItemId());

System.***out***.println("Quantity Purchased: "+items[j].getQuantity());

System.***out***.println("Discount: "+items[j].getDiscount());

System.***out***.println("Bill Amount: "+(items[j].getPrice()\*items[j].getQuantity()));

System.***out***.println();

items[j].setItemId(5006);

System.***out***.println("Purchase Id changed to "+items[j].getItemId());

}

}

**if**(found==0) {

System.***out***.println("Item is not found in the array");

}

}

}

**class** Item{

**private** **int** billId;

**private** **int** customerId;

**private** **int** itemId;

**private** **int** price;

**private** **int** quantity;

**private** **int** discount;

**public** Item(**int** billId,**int** customerId,**int** itemId,**int** price,**int** quantity,**int** discount) {

**this**.billId=billId;

**this**.customerId=customerId;

**this**.itemId=itemId;

**this**.price=price;

**this**.quantity=quantity;

**this**.discount=discount;

}

**public** Item() {

**this**.billId=0;

**this**.customerId=0;

**this**.itemId=0;

**this**.price=0;

**this**.quantity=0;

**this**.discount=0;

}

**public** **int** getBillId() {

**return** billId;

}

**public** **void** setBillId(**int** billId) {

**this**.billId = billId;

}

**public** **int** getCustomerId() {

**return** customerId;

}

**public** **void** setCustomerId(**int** customerId) {

**this**.customerId = customerId;

}

**public** **int** getItemId() {

**return** itemId;

}

**public** **void** setItemId(**int** itemId) {

**this**.itemId = itemId;

}

**public** **int** getPrice() {

**return** price;

}

**public** **void** setPrice(**int** price) {

**this**.price = price;}

**public** **int** getQuantity() {

**return** quantity;

}

**public** **void** setQuantity(**int** quantity) {

**this**.quantity = quantity;

}

**public** **int** getDiscount() {

**return** discount;

}

**public** **void** setDiscount(**int** discount) {

**this**.discount = discount;

}

@Override

**public** String toString() {

**return** "Item [billId=" + billId + ", customerId=" + customerId + ", itemId=" + itemId + ", price=" + price

+ ", quantity=" + quantity + ", discount=" + discount + "]";

}

}

17. Create an Employee class with following attributes

Write a program which creates an instance of employee class and sets the values for all the attributes.

1. While setting values for empName,setEmpName() method should check for NullPointer and display appropriate error message.
2. While setting value for empDesig, the Designation must have any of the following values: developer,tester,Lead or Manager.If none of these values is matching,then setter method display ‘Invalid designation’ error message.
3. While setting value for empDept, the Department must have any of the following values: TTH,RCM,Digital,DevOps.If none of these values is matching , then setter method should display ‘Invalid Dept’ error message.

**CODE:**

**package** com.mindtree.OOPS;

**import** java.util.\*;

**public** **class** EmployeeMain {

**public** **static** **void** main(String[] args) {

Scanner in=**new** Scanner(System.***in***);

System.***out***.println("Enter the Employee ID");

**int** id=in.nextInt();

System.***out***.println("Enter the Employee Name");

String name=in.nextLine();

System.***out***.println("Enter the Employee Designation");

String empDesig=in.nextLine();

System.***out***.println("Enter the Employee Department");

String empDept=in.nextLine();

in.close();

Employee emp=**new** Employee();

emp.setempId(id);

emp.setEmpName(name);

emp.setEmpDesig(empDesig);

emp.setEmpDept(empDept);

**if**(emp.getEmpName().isEmpty()) {

System.***out***.println("Please Enter a Valid Name");

}

**else** **if**(emp.getEmpDept().isEmpty()) {

System.***out***.println("Please Enter a Valid Department");

}

**else** **if**(emp.getEmpDesig().isEmpty()) {

System.***out***.println("Please Enter a Valid Designation");

}

**else** {

System.***out***.println("Employee Details");

System.***out***.println("Employee Id : "+emp.getempId());

System.***out***.println("Employee Name : "+emp.getEmpName());

System.***out***.println("Employee Designation : "+emp.getEmpDesig());

System.***out***.println("Employee Department : "+emp.getEmpDept());

}

}

}

**class** Employee{

**private** **int** empId;

**private** String empName;

**private** String empDesig;

**private** String empDept;

**public** Employee() {

}

**public** Employee(**int** empId,String empName,String empDesig,String empDept) {

**this**.empId=empId;

**this**.empName=empName;

**this**.empDesig=empDesig;

**this**.empDept=empDept;

}

**public** **int** getempId() {

**return** empId;

}

**public** **void** setempId(**int** empId) {

**this**.empId = empId;

}

**public** String getEmpName() {

**return** empName;

}

**public** **void** setEmpName(String empName) {

**if**(empName!=**null**) {

**this**.empName = empName;

}

}

**public** String getEmpDesig() {

**return** empDesig;

}

**public** **void** setEmpDesig(String empDesig) {

**if**(empDesig.equals("Developer")||empDesig.equals("Lead")||empDesig.equals("Manager")||empDesig.equals("Tester")) {

**this**.empDesig = empDesig;

}

**else** {

**this**.empDesig="";

}

}

**public** String getEmpDept() {

**return** empDept;

}

**public** **void** setEmpDept(String empDept) {

**if**(empDept.equals("TTH")||empDept.equals("RCM")||empDept.equals("Digital")||empDept.equals("DevOps")) {

**this**.empDept=empDept;

}

**else** {

**this**.empDept="";

}

}

@Override

**public** String toString() {

**return** "Employee [empId=" + empId + ", empName=" + empName + ", empDesig=" + empDesig + ", empDept=" + empDept

+ "]";

}

}

18. Develop a program that assists bookstore employees. For each book, the program should track the book’s title ,its price, its year of publication, and the author’s name. Develop an appropriate Java Class. Create instances of the class to represent these three books:

1. Daniel Defoe, Robinson Crusoe,$15.50,1719

2. Joseph Conrad, Heart of Darkness, $12.80,1902

3. Pat Conroy, Beach Music, $9.50,1996

**CODE:  
package** com.mindtree.OOPS;

**public** **class** BookStore {

**public** **static** **void** main(String[] args) {

Book book[]=**new** Book[3];

**for**(**int** i=0;i<3;i++) {

book[i]=**new** Book();

}

book[0]=**new** Book("Daniel Defoe","Robinson Crusoe","$15.50",1719);

book[1]=**new** Book("Joseph Conrad","Heart of Darkness","$12.80",1902);

book[2]=**new** Book("Pat Conroy","Beach Music","$9.50",1996);

System.***out***.println("Book Details");

System.***out***.println();

**for**(**int** i=0;i<3;i++) {

System.***out***.println("Book "+(i+1));

System.***out***.println("Book Name: "+book[i].getName());

System.***out***.println("Author of the Book: "+book[i].getAuthor());

System.***out***.println("Price of the Book: "+book[i].getPrice());

System.***out***.println("Year of Publication: "+book[i].getYear());

System.***out***.println();

}

}

}

**class** Book{

**private** String author;

**private** String name;

**private** String price;

**private** **int** year;

**public** Book() {

}

**public** Book(String author,String name,String price,**int** year) {

**this**.author=author;

**this**.name=name;

**this**.price=price;

**this**.year=year;

}

**public** String getAuthor() {

**return** author;

}

**public** **void** setAuthor(String author) {

**this**.author = author;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

**public** String getPrice() {

**return** price;

}

**public** **void** setPrice(String price) {

**this**.price = price;

}

**public** **int** getYear() {

**return** year;

}

**public** **void** setYear(**int** year) {

**this**.year = year;

}

@Override

**public** String toString() {

**return** "Book [author=" + author + ", name=" + name + ", price=" + price + ", year=" + year + "]";

}

}

19. XYZ bank wants to maintain customer details.It will register the customer details whenever a person opens an account with the bank. Below is the customer class diagram:

At times, the customer registration process changes, here are the guidelines.

1. Admin may register customer by filling only ID, name and address details.
2. Admin may register customer by filling only ID and name.
3. Admin may register customer by filling all the details.

Write an application which implements above scenario .Write main method in separate class. Which creates different customer objects and invokes appropriate constructors, here is sample code:

Note: When other data members which are not initialized through constructors should have appropriate default values.

**CODE:**

**package** com.mindtree.OOPS;

**import** java.util.\*;

**public** **class** BankMain {

**public** **static** **void** main(String args[]) {

Scanner in=**new** Scanner(System.***in***);

Customer[] customer=**new** Customer[3];

**for**(**int** i=0;i<customer.length;i++) {

customer[i]=**new** Customer();

}

System.***out***.println("Enter the details for the customer");

System.***out***.println("Enter customer Id");

**int** id=in.nextInt();

System.***out***.println("Enter customer Name");

String name=in.nextLine();

System.***out***.println("Enter the Customer Address");

String address=in.nextLine();

System.***out***.println("Enter the customer account type");

String accType=in.nextLine();

System.***out***.println("Enter the Customer Balance");

**double** custBalance=in.nextDouble();

//Customers

customer[0]=**new** Customer(id,name,address); // Constructor with id,name and address

customer[1]=**new** Customer(id,name); // constructor with id and name

customer[2]=**new** Customer(id,name,address,accType,custBalance); //constructor with id,name,address,accType and custBalance

System.***out***.println("Bank details of the customer");

System.***out***.println();

**for**(**int** i=0;i<customer.length;i++) {

**if**(i==0) {System.***out***.println("Constructor with id,name and address");}**else** **if**(i==1) {System.***out***.println("constructor with id and name");}**else** {System.***out***.println("constructor with id,name,address,accType and custBalance");}

System.***out***.println("Customer ID: "+customer[i].getCustId());

System.***out***.println("Customer Name: "+customer[i].getCustName());

System.***out***.println("Customer Address: "+customer[i].getCustAddress());

System.***out***.println("Customer Account Type: "+customer[i].getAccType());

System.***out***.println("Customer Balance: "+customer[i].getCustBalance());

System.***out***.println();

}

}

}

**class** Customer{

**private** **int** custId;

**private** String custName;

**private** String custAddress;

**private** String accType;

**private** **double** custBalance;

**public** Customer() {

}

**public** Customer(**int** custId,String custName,String custAddress) {

**this**.custId=custId;

**this**.custName=custName;

**this**.custAddress=custAddress;

**this**.accType="Savings Account";

**this**.custBalance=1000;

}

**public** Customer(**int** custId,String custName) {

**this**.custId=custId;

**this**.custName=custName;

**this**.custAddress="Nagercoil";

**this**.accType="Savings Account";

**this**.custBalance=1000;

}

**public** Customer(**int** custId,String custName,String custAddress,String accType,**double** custBalance) {

**this**.custId=custId;

**this**.custName=custName;

**this**.custAddress=custAddress;

**this**.accType=accType;

**this**.custBalance=custBalance;

}

**public** **int** getCustId() {

**return** custId;

}

**public** **void** setCustId(**int** custId) {

**this**.custId = custId;

}

**public** String getCustName() {

**return** custName;

}

**public** **void** setCustName(String custName) {

**this**.custName = custName;

}

**public** String getCustAddress() {

**return** custAddress;

}

**public** **void** setCustAddress(String custAddress) {

**this**.custAddress = custAddress;

}

**public** String getAccType() {

**return** accType;

}

**public** **void** setAccType(String accType) {

**this**.accType = accType;

}

**public** **double** getCustBalance() {

**return** custBalance;

}

**public** **void** setCustBalance(**double** custBalance) {

**this**.custBalance = custBalance;

}

@Override

**public** String toString() {

**return** "Customer [custId=" + custId + ", custName=" + custName + ", custAddress=" + custAddress + ", accType="

+ accType + ", custBalance=" + custBalance + "]";

}

}