**Core Java Assignment 2 (OOPS)**

**Question 1**

class database {

    private static database dbObject;

    private database() {

    }

    public static database getInstance() {

       // create object if it's not already created

       if(dbObject == null) {

          dbObject = new database();

       }

        // returns the singleton object

        return dbObject;

    }

    public void getConnection() {

        System.out.println("You are now connected to the database.");

    }

 }

 class Main {

    public static void main(String[] args) {

       database db1;

       // refers to the only object of Database

       db1= database.getInstance();

       db1.getConnection();

    }

 }

**Question 2**

**import** java.util.Scanner;

**public** **class** Organization {

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

Manager manager = **new** Manager();

Labour labour = **new** Labour();

manager.addSalary();

manager.addIncentive();

labour.addSalary();

labour.addOverTime();

manager.salary();

labour.salary();

}

}

**class** Employee{

**int** salary;

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

**public** **void** salary() {

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

}

}

**class** Manager **extends** Employee{

**int** incentive;

**public** **void** addSalary() {

System.***out***.println("Enter salary to add for Manager:");

salary= sc.nextInt();

}

**public** **void** addIncentive() {

System.***out***.println("Add incentive:");

incentive = sc.nextInt();

}

**public** **void** salary() {

System.***out***.println("Salary of Employee : "+(salary+incentive));

}

}

**class** Labour **extends** Employee{

**int** overTime;

**public** **void** addSalary() {

System.***out***.println("Enter salary to add for Labour:");

salary= sc.nextInt();

}

**public** **void** addOverTime() {

System.***out***.println("Add over time:");

overTime = sc.nextInt();

}

**public** **void** salary() {

System.***out***.println("Salary of Labour : "+(salary+overTime));

}

}

}

**Question 3**

Bank.java

**public** **class** Bank {

**private** String name = "Bank";

**int** totalAmount;

**public** **void** addToTotalBankCash(Bank obj) {

totalAmount += obj.totalAmount;

}

**public** **void** showTotal() {

System.***out***.println("The total cash in " + name + " is " + totalAmount);

}

**public** **void** addAmt(**int** amt) {

totalAmount += amt ;

}

}

SavingAccount.java

**public** **class** SavingAccount **extends** Bank{

**private** String name = "Saving Account";

**public** **void** showTotal() {

System.***out***.println("Your Fixed Deposits " + name + " balnce is " + totalAmount);

}

}

CurrentAccount.java

**public** **class** CurrentAccount **extends** Bank {

**private** String name = "Current Account";

**public** **void** showTotal() {

System.***out***.println("The Cash Credits of " + name + " is " + totalAmount);

}

}

Three.java

**public** **class** Three {

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

Bank newBank = **new** Bank();

newBank.showTotal();

Bank savingAc = **new** SavingAccount();

Bank current = **new** CurrentAccount();

savingAc.addAmt(1000);

current.addAmt(20000);

newBank.addToTotalBankCash(current);

newBank.addToTotalBankCash(savingAc);

current.showTotal();

savingAc.showTotal();

newBank.showTotal();

}

}

Output-

The total cash in Bank is 0

The Cash Credits of Current Account is 20000

Your Fixed Deposits Saving Account balnce is 1000

The total cash in Bank is 21000

**Question 4**

**abstract** **class** Bike {

**abstract** **void** run();

}

**class** Honda **extends** Bike{

**void** run()

{

System.***out***.println("running safely");

}

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

Bike obj = **new** Honda();

obj.run();

}

}

Output- running safely

**Question 5**

**abstract** **class** Shape {

**abstract** **void** draw();

}

**class** Line **extends** Shape{

**void** draw()

{

System.***out***.println("drawing a line");

}

}

**class** Rectangle **extends** Shape{

**void** draw()

{

System.***out***.println("drawing rectangle");

}

}

**class** Cube **extends** Shape{

**void** draw()

{

System.***out***.println("drawing cube");

}

}

**class** TestAbstraction{

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

Shape s=**new** Line();

Shape s1=**new** Rectangle();

Shape s2=**new** Cube();

s.draw();

s1.draw();

s2.draw();

}

}

Output-

drawing a line

drawing rectangle

drawing cube

**Question 6**

**Persistence.java**

**abstract** **class** Persistence {

**public** **abstract** **void** persist();

}

DatabasePersistence.java

**public** **class** DatabasePersistence **extends** Persistence{

@Override

**public** **void** persist() {

System.***out***.println("Stored in Database");

}

}

FilePersistence.java

**public** **class** FilePersistence **extends** Persistence {

@Override

**public** **void** persist() {

System.***out***.println("Stored in File");

}

}

Six.java

**public** **class** Six {

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

Persistence obj1 = **new** FilePersistence();

Persistence obj2 = **new** DatabasePersistence();

obj1.persist();

obj2.persist();

}

}

Output-

**Question 7**

**Candy.java**

**public** **class** Candy **extends** DessertItems{

String dessertName = "Candy";

**int** dessertCost = 60;

@Override

**public** **int** getCost() {

**return** dessertCost;

}

}

**Customer.java**

**import** java.util.Scanner;

**public** **class** Customer {

**int** noOfCandy,noOfCookies,noOfIcecream;

**public** **void** placeOrder(DessertItems candy , DessertItems cookies , DessertItems iceCream) {

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

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

Boolean isTrue = **true**;

**while**(isTrue) {

System.***out***.println("Select your order :"+"\n"+ "1. Candy(60rs)" +"\n"+"2. Cookies(50)"

+"\n"+"3. Icecream(70)"+"\n"+"Press 1 for candy, 2 for cookies, 3 for icecream"

+"\n");

**int** selected = sc.nextInt();

**switch** (selected) {

**case** 1: {

System.***out***.println("Enter number of Candy to add : ");

noOfCandy = sc.nextInt();

cookies.numOfDesert -= noOfCandy;

**break**;

}

**case** 2: {

System.***out***.println("Enter number of Cookies to add : ");

noOfCookies = sc.nextInt();

cookies.numOfDesert -= noOfCookies;

**break**;

}

**case** 3: {

System.***out***.println("Enter number of Icecream to add : ");

noOfIcecream = sc.nextInt();

iceCream.numOfDesert -= noOfIcecream;

**break**;

}

**default**:

System.***out***.println("Wrong option");

}

System.***out***.println("Enter 1 to select more and 0 if exit : ");

**int** num = sc.nextInt();

**if** (num == 0) {

isTrue = **false**;

}

}

System.***out***.println("Added successfully!!!");

showOrder(candy.getCost(), cookies.getCost(), iceCream.getCost());

}

**public** **void** showOrder(**int** a, **int** b, **int** c) {

System.***out***.println("Your order is:" + "\n" + "Desserts "+"Qty " +"Amount"

+"\n"+"1. candy "+noOfCandy+" "+(a\*noOfCandy)+"\n"+"2. Cookies "+noOfCookies+" "+(b\*noOfCookies)+"\n"

+"3. Icecream "+noOfIcecream+" " +(c\*noOfIcecream)+"\n"+"-----------------------"+"\n"+"Total bill"+" "

+((a\*noOfCandy)+(b\*noOfCookies)+(c\*noOfIcecream)));

}

}

**IceCream.java**

**public** **class** IceCream **extends** DessertItems{

String dessertName = "IceCream";

**int** dessertCost = 70;

@Override

**public** **int** getCost() {

**return** dessertCost;

}

}

Cookies.java

**public** **class** Cookies **extends** DessertItems {

String dessertName = "Cookies";

**int** dessertCost = 50;

@Override

**public** **int** getCost() {

**return** dessertCost;

}

}

**DessertItems.java**

**abstract** **class** DessertItems {

**int** numOfDesert=0;

**public** **abstract** **int** getCost();

}

DessertShop.java

**import** java.util.Scanner;

**public** **class** DessertShop {

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

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

DessertItems candy = **new** Candy();

DessertItems cookies = **new** Cookies();

DessertItems iceCream = **new** Candy();

Owner owner = **new** Owner();

Customer customer = **new** Customer();

Boolean isTrue = **true**;

**while**(isTrue) {

System.***out***.println("\n\nOwner or Cutomer");

System.***out***.println("press 1 for Owner press 2 for customer and 0 to exti");

**int** key = sc.nextInt();

**if**(key == 1) {

System.***out***.println("\n"+"Owner:");

owner.addDessert(candy, cookies, iceCream);

}**else** **if**(key == 2){

customer.placeOrder(candy, cookies, iceCream);

}

**else** **if**(key == 0){

**int** num = sc.nextInt();

**if** (num == 1) {

isTrue = **false**;

}

}

}

sc.close();

}

}

**Owner.java**

**import** java.util.Scanner;

**public** **class** Owner {

**public** **void** addDessert(DessertItems candy , DessertItems cookies , DessertItems iceCream ) {

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

System.***out***.println("Add dessert: ");

Boolean isTrue = **true**;

**while**(isTrue) {

System.***out***.println("Enter number of Candy to add : ");

candy.numOfDesert += sc.nextInt();

System.***out***.println("Enter number of Cookies to add : ");

cookies.numOfDesert += sc.nextInt();

System.***out***.println("Enter number of Icecream to add : ");

iceCream.numOfDesert += sc.nextInt();

System.***out***.println("Enter 0 to add more and 1 if completed : ");

**int** num = sc.nextInt();

**if** (num == 1) {

isTrue = **false**;

}

System.***out***.println("Added successfully!!!");

}

}

}

**Output**

Owner or Customer

press 1 for Owner press 2 for customer and 0 to exti

1

Owner:

Add dessert:

Enter number of Candy to add :

2

Enter number of Cookies to add :

2

Enter number of Icecream to add :

1

Enter 0 to add more and 1 if completed :

1

Added successfully!!!