# Directions

1. Complete the following programs.
2. Screenshot the running programs. Include enough output to show the program works in its entirety.
3. Submit screenshots/copies of the code.
   1. Partial credit can be had if you made a valiant effort
4. Submit to Brightspace.

Part 1: Complete Chapter 10 Programming Exercises starting on page 386; provide a snippet of the code and of enough output to show the program works in its entirety.

8. public abstract class Book {  
  
 protected String title;  
 protected double price;  
  
 public Book() {  
 this.title = "";  
 this.price = 0;  
 }  
  
 public Book(String title) {  
 this.title = title;  
 this.price =0;  
 }  
  
 public String getTitle() {  
 return title;  
 }  
  
 public double getPrice() {  
 return price;  
 }  
  
 @Override  
 public String toString() {  
 return "Book{" +  
 "title='" + title + '\'' +  
 ", price=" + price +  
 '}';  
 }  
  
 public abstract void setPrice();  
}

public class Fiction extends Book{  
 public Fiction(String title) {  
 super(title);  
 setPrice();  
 }  
 @Override  
 public void setPrice()  
 {  
 this.price = 24.99;  
 }  
  
}

public class NonFiction extends Book{  
 public NonFiction(String title) {  
 super(title);  
 setPrice();  
 }  
 @Override  
 public void setPrice() {  
 this.price = 37.99;  
 }  
  
}

import java.util.\*;  
  
public class UsedBook {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the title of the nonfiction book");  
 String nTitle = sc.nextLine();  
  
 System.*out*.println("Enter the title of the fiction book");  
 String fTitle = sc.nextLine();  
  
 NonFiction nf = new NonFiction(nTitle);  
 Fiction f = new Fiction(fTitle);  
  
 System.*out*.println(nf.toString());  
 System.*out*.println(f.toString());  
 }  
}

Text

Description automatically generated

import java.util.\*;  
  
public class BookArray {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 Book[] books = new Book[10];  
 String title;  
 String answer;  
  
 for(int x=0;x<10;x++)  
 {  
 System.*out*.println("Enter the title of the book");  
 title = sc.nextLine();  
  
 System.*out*.println("Is that a nonfiction or fiction book <N-F>");  
 answer = sc.nextLine();  
  
 if(answer.equalsIgnoreCase("n"))  
 {  
 NonFiction nf = new NonFiction(title);  
 books[x]= nf;  
 }  
 else if(answer.equalsIgnoreCase("f"))  
 {  
 Fiction f = new Fiction(title);  
 books[x]=f;  
 }  
 else  
 {  
 System.*out*.println("Error");  
 }  
 }  
  
 System.*out*.println(Arrays.*toString*(books));  
  
 sc.close();  
 }  
}

Text

Description automatically generated

9. public abstract class PhoneCall {  
 protected String num;  
 protected double price;  
  
 public PhoneCall() {  
 this.num ="";  
 this.price=0.0;  
 }  
  
 public PhoneCall(String num) {  
 this.num = num;  
 this.price=0.0;  
 }  
  
 public void setPrice(double price) {  
 this.price = price;  
 }  
  
 public abstract String getNum();  
 public abstract double getPrice();  
 public abstract String getInfo();  
}

public class IncomingCall extends PhoneCall{  
 public IncomingCall(String num) {  
 super(num);  
 setPrice(2);  
 }  
  
 @Override  
 public String getNum() {  
 return num;  
 }  
  
 @Override  
 public double getPrice() {  
 return price;  
 }  
  
 @Override  
 public String getInfo() {  
 return "IncomingCall{" +  
 "num='" + num + '\'' +  
 ", price=" + price +  
 ", rate=" +price + '}';  
 }  
}

public class OutgoingCall extends PhoneCall{  
  
 private int minutes;  
  
 public OutgoingCall(String num, int minutes) {  
 super(num);  
 this.minutes = minutes;  
 this.price = minutes\*4;  
 }  
  
 @Override  
 public String getNum() {  
 return num;  
 }  
  
 @Override  
 public double getPrice() {  
 return price;  
 }  
  
 @Override  
 public String getInfo() {  
 return "OutgoingCall{" +  
 "minutes=" + minutes +  
 "num='" + num + '\'' +  
 ", price=" + price +  
 ", rate=" +(price/minutes) + '}';  
 }  
}

c. import java.util.\*;  
  
public class DemoCall {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 String choice;  
 boolean check=true;  
 PhoneCall p;  
  
 do{  
 System.*out*.println("What type of call would you like to choose <I-O>");  
 choice = sc.nextLine();  
  
 if(choice.equalsIgnoreCase("i") || choice.equalsIgnoreCase("o"))  
 {  
 check=false;  
 }  
 }while(check);  
  
 if(choice.equalsIgnoreCase("i")) {  
 IncomingCall i = new IncomingCall("412-4124-1241");  
 p= i;  
 }  
 else {  
 OutgoingCall o = new OutgoingCall("412-4124-1241",2);  
 p=o;  
 }  
  
 System.*out*.println(p.getInfo());  
  
  
 }  
}

Text

Description automatically generated

11. public class Blanket {  
 protected String size;  
 protected String color;  
 protected String material;  
 protected double price;  
  
 public Blanket() {  
 this.size = "Twin";  
 this.color = "White";  
 this.material ="Cotton";  
 this.price = 30.00;  
 }  
  
 public void setSize(String size) {  
 this.size = size;  
  
 if(this.size.equalsIgnoreCase("Double"))  
 {  
 this.price+=10;  
 }  
 else if(this.size.equalsIgnoreCase("Queen"))  
 {  
 this.price+=25;  
 }  
 else if(this.size.equalsIgnoreCase("King"))  
 {  
 this.price+=45;  
 }  
 else  
 {  
 this.material = "Twin";  
 }  
 }  
  
 public void setColor(String color) {  
 this.color = color;  
 }  
  
 public void setMaterial(String material) {  
 this.material = material;  
  
 if(this.material.equalsIgnoreCase("Wool"))  
 {  
 this.price+=20;  
 }  
 else if(this.material.equalsIgnoreCase("Cashmere"))  
 {  
 this.price+=45;  
 }  
 else  
 {  
 this.material = "Cotton";  
 }  
 }  
  
  
 @Override  
 public String toString() {  
 return "Blanket{" +  
 "size='" + size + '\'' +  
 ", color='" + color + '\'' +  
 ", material='" + material + '\'' +  
 ", price=" + price +  
 '}';  
 }  
}

public class ElectricBlanket extends Blanket{  
 private int numSettings;  
 private boolean shutoff;  
  
 public ElectricBlanket() {  
 super();  
 this.numSettings =1;  
 this.shutoff=false;  
 }  
  
 public int getNumSettings() {  
 return numSettings;  
 }  
  
 public void setNumSettings(int numSettings) {  
 if(numSettings<1 || numSettings>5)  
 this.numSettings=1;  
 else  
 this.numSettings = numSettings;  
 }  
  
 public boolean isShutoff() {  
 return shutoff;  
 }  
  
 public void setShutoff(boolean shutoff) {  
 this.shutoff = shutoff;  
  
 if(this.shutoff==true)  
 {  
 this.price+=5.75;  
 }  
 }  
  
 @Override  
 public String toString() {  
 return "ElectricBlanket{" +  
 "numSettings=" + numSettings +  
 ", shutoff=" + shutoff +  
 super.toString();  
 }  
}

import java.util.\*;  
  
public class DemoBlankets {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 Blanket b = new Blanket();  
 System.*out*.println(b.toString());  
  
 System.*out*.println("Enter the material you would like");  
 String material = sc.nextLine();  
 b.setMaterial(material);  
 System.*out*.println(b.toString());  
  
 System.*out*.println("Enter the size");  
 String size = sc.nextLine();  
 b.setSize(size);  
 System.*out*.println( b.toString());  
  
 System.*out*.println("Enter the color");  
 String color = sc.nextLine();  
 b.setColor(color);  
 System.*out*.println( b.toString());  
  
  
 //Electric Blanket  
  
 ElectricBlanket e = new ElectricBlanket();  
 System.*out*.println(e.toString());  
  
 System.*out*.println("Enter the material you would like");  
 String material2 = sc.nextLine();  
 e.setMaterial(material2);  
 System.*out*.println(e.toString());  
  
 System.*out*.println("Enter the size");  
 String size2 = sc.nextLine();  
 e.setSize(size);  
 System.*out*.println(e.toString());  
  
 System.*out*.println("Enter the color");  
 String color2 = sc.nextLine();  
 e.setColor(color);  
 System.*out*.println(e.toString());  
  
 System.*out*.println("Enter the number of settings");  
 int settings = sc.nextInt();  
 e.setNumSettings(settings);  
 System.*out*.println(e.toString());  
  
 System.*out*.println("Enter if it can shutoff or not <true-false>");  
 Boolean shutoff = sc.nextBoolean();  
 e.setShutoff(shutoff);  
 System.*out*.println(e.toString());  
  
  
 }  
}

Text

Description automatically generated

13. public abstract class GeometricFigure implements SidedObject{  
 protected double width;  
 protected double height;  
 protected String type;  
  
 public GeometricFigure(double width, double height, String type) {  
 this.width = width;  
 this.height = height;  
 this.type = type;  
 }  
  
 public double getWidth() {  
 return width;  
 }  
  
 public void setWidth(double width) {  
 this.width = width;  
 }  
  
 public double getHeight() {  
 return height;  
 }  
  
 public void setHeight(double height) {  
 this.height = height;  
 }  
  
 public String getType() {  
 return type;  
 }  
  
 public void setType(String type) {  
 this.type = type;  
 }  
  
 public String toString()  
 {  
 return "Type: "+ this.type + " Height: "+ this.height + " Width: "+ this.width;  
 }  
  
  
 public abstract double Area();  
}

public class Square2 extends GeometricFigure{  
  
 public Square2(double width, double height, String type) {  
 super(width, height, type);  
 }  
  
 @Override  
 public double Area()  
 {  
 return this.height\*this.width;  
 }  
  
 @Override  
 public String toString() {  
 return "{" + super.toString() + " Area: " + Area();  
 }  
  
 public void displaySides()  
 {  
 System.*out*.println("A square has 4 sides");  
 }  
  
}

public class Triangle2 extends GeometricFigure{  
  
 public Triangle2(double width, double height, String type) {  
 super(width, height, type);  
 }  
  
 @Override  
 public double Area()  
 {  
 return this.height\*this.width\*.5;  
 }  
  
 @Override  
 public String toString() {  
 return "{" + super.toString() + " Area: " + Area() +"}";  
 }  
  
 public void displaySides()  
 {  
 System.*out*.println("A triangle has 3 sides");  
 }  
}

public interface SidedObject {  
 public void displaySides();  
}

import java.util.\*;  
  
public class UseGeometric2{  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 double width;  
 double height;  
 String ans;  
 GeometricFigure[] g = new GeometricFigure[5];  
  
 for(int x=0;x<5;x++)  
 {  
 System.*out*.println("Enter the width");  
 width = sc.nextDouble();  
 System.*out*.println("Enter the height");  
 height = sc.nextDouble();  
 sc.nextLine();  
  
 System.*out*.println("Square or Triangle <Square-Triangle>");  
 ans = sc.nextLine();  
  
 if(ans.equalsIgnoreCase("Square"))  
 {  
 Square2 s = new Square2(width,height,ans);  
 g[x]=s;  
 }  
 else if(ans.equalsIgnoreCase("Triangle"))  
 {  
 Triangle2 t = new Triangle2(width,height,ans);  
 g[x]=t;  
 }  
 }  
  
 System.*out*.println(Arrays.*toString*(g));  
  
 }  
}

Text

Description automatically generated