# Directions

1. Complete the following programs.
2. Screenshot the running programs. Include enough output to show the program works in it’s 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:

public class Horse {  
  
 private String name;  
 private String color;  
 private String year;  
  
 public Horse(String name, String color, String year) {  
 this.name = name;  
 this.color = color;  
 this.year = year;  
 }  
  
 public Horse() {  
 this.name = "";  
 this.color = "";  
 this.year = "";  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 public String getColor() {  
 return color;  
 }  
  
 public String getYear() {  
 return year;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public void setColor(String color) {  
 this.color = color;  
 }  
  
 public void setYear(String year) {  
 this.year = year;  
 }  
  
 @Override  
 public String toString() {  
 return "Horse{" +  
 "name='" + name + '\'' +  
 ", color='" + color + '\'' +  
 ", year='" + year + '\'' +  
 '}';  
 }

public class RaceHorse extends Horse{  
 private String races;  
  
 public RaceHorse(String name, String color, String year, String races) {  
 super(name, color, year);  
 this.races = races;  
 }  
  
 public String getRaces() {  
 return races;  
 }  
  
 public void setRaces(String races) {  
 this.races = races;  
 }  
  
 @Override  
 public String toString() {  
 return super.toString() +  
 " Races='" + races + '\'' +  
 '}';  
 }  
}

public class DemoHorse {  
 public static void main(String[] args) {  
 Horse h = new Horse("Sparky","Brown","2015");  
 RaceHorse rh = new RaceHorse("Bolt","White","2015","14");  
  
 System.*out*.println(h.toString());  
 System.*out*.println(rh.toString());  
 }  
}

Text

Description automatically generated

public class Candle {  
 private String color;  
 protected double height;  
 protected double price;  
  
 public Candle(String color, double height) {  
 this.color = color;  
 this.height = height;  
 this.price = this.height\*2;  
 }  
 public Candle() {  
 this.color = "";  
 this.height = 0.0;  
 this.price = 0.0;  
 }  
  
 public String getColor() {  
 return color;  
 }  
  
 public void setColor(String color) {  
 this.color = color;  
 }  
  
 public double getHeight() {  
 return height;  
 }  
  
 public void setHeight(double height) {  
 this.height = height;  
 this.price = height\*2;  
 }  
  
 public double getPrice() {  
 return price;  
 }  
  
 @Override  
 public String toString() {  
 return "Candle{" +  
 "color='" + color + '\'' +  
 ", height=" + height +  
 ", price=" + price +  
 '}';  
 }  
}

public class ScentedCandle extends Candle{  
 private String scent;  
  
 public ScentedCandle(String color, double height, String scent) {  
 super();  
 setHeight(height);  
 setColor(color);  
 this.scent = scent;  
 }  
  
 public String getScent() {  
 return scent;  
 }  
  
 public void setScent(String scent) {  
 this.scent = scent;  
 }  
 @Override  
 public void setHeight(double height)  
 {  
 super.height =height;  
 super.price = height \* 3;  
 }  
  
 @Override  
 public String toString() {  
 return super.toString() + "ScentedCandle{" +  
 "scent='" + scent + '\'' +  
 '}';  
 }  
}

import java.util.\*;  
  
public class DemoCandles {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 System.*out*.println("Enter the color for the candle");  
 String color = sc.next();  
  
 System.*out*.println("Enter the height of the candle");  
 double height = sc.nextDouble();  
  
 Candle c = new Candle(color,height);  
  
 System.*out*.println("Enter the color of the scented candle");  
 String colorTwo = sc.next();  
  
 System.*out*.println("Enter the height of the scented candle");  
 double heightTwo = sc.nextDouble();  
  
 System.*out*.println("Enter the scent of the candle <Pumpkin, Winter Breeze, Maple, Candy Apple>");  
 String scent = sc.next();  
  
 ScentedCandle s = new ScentedCandle(colorTwo,heightTwo,scent);  
  
 System.*out*.println(c.toString());  
 System.*out*.println(s.toString());  
 }  
}

Text

Description automatically generated

public class TeeShirt {  
 private String on;  
 private String size;  
 private String color;  
 private double price;  
  
 public TeeShirt(String on, String size, String color) {  
 this.on = on;  
 this.size = size;  
 this.color = color;  
  
 if(this.size.equalsIgnoreCase("XXL") || this.size.equalsIgnoreCase("XXXL"))  
 {  
 this.price=22.99;  
 }  
 else  
 {  
 this.price = 19.99;  
 }  
 }  
  
 public TeeShirt() {  
 this.on = "";  
 this.size = "";  
 this.color = "";  
 this.price = 0.0;  
 }  
  
 public void setOn(String on) {  
 this.on = on;  
 }  
  
 public void setSize(String size) {  
 this.size = size;  
  
 if(this.size.equalsIgnoreCase("XXL") || this.size.equalsIgnoreCase("XXXL"))  
 {  
 this.price=22.99;  
 }  
 else  
 {  
 this.price = 19.99;  
 }  
 }  
  
 public void setColor(String color) {  
 this.color = color;  
 }  
  
 public String getOn() {  
 return on;  
 }  
  
 public String getSize() {  
 return size;  
 }  
  
 public String getColor() {  
 return color;  
 }  
  
 public double getPrice() {  
 return price;  
 }  
  
 @Override  
 public String toString() {  
 return "TeeShirt{" +  
 "on='" + on + '\'' +  
 ", size='" + size + '\'' +  
 ", color='" + color + '\'' +  
 ", price=" + price +  
 '}';  
 }  
}

public class CustomTee extends TeeShirt{  
  
 private String slogan;  
  
 public CustomTee(String on, String size, String color, String slogan) {  
 super(on, size, color);  
 this.slogan = slogan;  
 }  
  
 public CustomTee() {  
 super();  
 this.slogan = "";  
 }  
  
 public String getSlogan() {  
 return slogan;  
 }  
  
 public void setSlogan(String slogan) {  
 this.slogan = slogan;  
 }  
  
 @Override  
 public String toString() {  
 return super.toString() +  
 " Slogan='" + slogan + '\'' +  
 '}';  
 }  
}

public class DemoTees {  
 public static void main(String[] args) {  
 TeeShirt t1 = new TeeShirt("123","XXL","Blue");  
 TeeShirt t2 = new TeeShirt();  
  
 CustomTee c1 = new CustomTee("456","S","Green","We love java");  
 CustomTee c2 = new CustomTee();  
  
 t2.setOn("789");  
 t2.setSize("M");  
 t2.setColor("Red");  
  
 c2.setOn("321");  
 c2.setSize("XXXL");  
 c2.setColor("Purple");  
 c2.setSlogan("We hate java");  
  
 System.*out*.println(t1.toString());  
 System.*out*.println(t2.toString());  
 System.*out*.println(c1.toString());  
 System.*out*.println(c2.toString());  
 }  
}

Text

Description automatically generated

public class Rock {  
  
 private int samples;  
 private String dec;  
 private double weight;  
  
 public Rock(int samples, double weight) {  
 this.samples = samples;  
 this.weight = weight;  
 this.dec = "Unclassified";  
 }  
  
 public Rock() {  
 this.samples = 0;  
 this.weight = 0.0;  
 this.dec = "";  
 }  
  
 public int getSamples() {  
 return samples;  
 }  
  
 public String getDec() {  
 return dec;  
 }  
  
 public double getWeight() {  
 return weight;  
 }  
  
 public void setDec(String dec) {  
 this.dec = dec;  
 }  
  
 @Override  
 public String toString() {  
 return "Rock{" +  
 "samples=" + samples +  
 ", dec='" + dec + '\'' +  
 ", weight=" + weight +  
 '}';  
 }  
}

public class MetamorphicRock extends Rock{  
  
 public MetamorphicRock(int samples, double weight) {  
 super(samples,weight);  
 setDec("Metamorphic rocks arise from the transformation of existing rock to new types of rock in a process called metamorphism.");  
 }  
}

public class IgneousRock extends Rock{  
  
  
 public IgneousRock(int samples, double weight) {  
 super(samples,weight);  
 setDec("Igneous rocks are formed through the cooling and solidification of magma or lava.");  
 }  
  
  
}

public class SedimentaryRock extends Rock{  
 public SedimentaryRock(int samples, double weight) {  
 super(samples,weight);  
 setDec("Sedimentary rocks are types of rock that are formed by the accumulation or deposition of mineral or organic particles at Earth's surface, followed by cementation.");  
 }  
}

import java.util.\*;  
public class DemoRocks {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 System.*out*.println("Enter the type of rock you would like to make <U,I,S,M>");  
 String answer = sc.next();  
  
 if(answer.equalsIgnoreCase("U") ||answer.equalsIgnoreCase("I") || answer.equalsIgnoreCase("S") || answer.equalsIgnoreCase("M"))  
 {  
 System.*out*.println("Enter the sample number");  
 int sn = sc.nextInt();  
 System.*out*.println("Enter the weight");  
 double weight = sc.nextDouble();  
  
 switch (answer) {  
 case "U":  
 Rock u = new Rock(sn,weight);  
 System.*out*.println(u.toString());  
 break;  
 case "I":  
 IgneousRock i = new IgneousRock(sn,weight);  
 System.*out*.println(i.toString());  
 break;  
 case "M":  
 MetamorphicRock m = new MetamorphicRock(sn,weight);  
 System.*out*.println(m.toString());  
 break;  
 case "S":  
 SedimentaryRock s = new SedimentaryRock(sn,weight);  
 System.*out*.println(s.toString());  
 break;  
 default:  
 break;  
 }  
  
 }  
 else  
 {  
 Rock blank = new Rock();  
 System.*out*.println(blank.toString());  
 }  
  
 }  
}

Text

Description automatically generated

import java.util.Random;  
  
public class Die {  
 protected int val;  
  
 public int getVal() {  
 return val;  
 }  
  
 public Die() {  
 this.val = (int) (Math.*random*()\*6)+1;  
 }  
}

public class LoadedDie extends Die{  
 public LoadedDie() {  
 this.val = (int)(Math.*random*()\*5)+2;  
 }  
}

public class TestLoadedDie {  
 public static void main(String[] args) {  
 int count1=0;  
 int count2=0;  
  
 for(int x =0;x<1000;x++)  
 {  
 Die d = new Die();  
 Die test = new Die();  
 Die d2 = new Die();  
 LoadedDie ld2 = new LoadedDie();  
  
 if(d.getVal()>test.getVal())  
 {  
 count1++;  
 }  
  
 if(d2.getVal()>ld2.getVal())  
 {  
 count2++;  
 }  
 }  
  
 System.*out*.println("The first die rolled a higher number "+ count1 + " times");  
 System.*out*.println("The second die rolled a higher number "+ count2 + " times");  
 }  
}

Text

Description automatically generated