# 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 Blackboard.

Part 1: Complete Chapter 12 Programming Exercises starting on page 437; provide a snippet of the code and of enough output to show the program works in its entirety

import java.util.\*;  
  
public class BadSubscriptCaught {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 String[] names = {"Colin","Zac","Joe","Christian","Nicolei","Dylan","Enzo","Jacob"};  
 int answer;  
  
 try{  
 System.*out*.println("Enter an integer 0-7");  
 answer = sc.nextInt();  
 System.*out*.println(names[answer]);  
 }  
 catch(ArrayIndexOutOfBoundsException a){  
 System.*out*.println(a.getMessage());  
 }  
 }  
}

* + - 1. Graphical user interface, text

         Description automatically generated

1. import java.util.\*;  
     
   public class TryToParseDouble {  
    public static void main(String[] args) {  
    Scanner sc = new Scanner(System.*in*);  
    String answer;  
    try {  
    System.*out*.println("Enter a String number to parse into a double");  
    answer = sc.nextLine();  
    System.*out*.println("It worked >>> " + Double.*parseDouble*(answer));  
    }  
    catch(NumberFormatException n){  
    answer = "0";  
    System.*out*.println(Double.*parseDouble*(answer));  
    System.*out*.println("Number Format Exception: Number set to 0 " + n.getMessage());  
    }  
     
     
     
    sc.close();  
    }  
   }
2. Graphical user interface, text

   Description automatically generated
3. import java.util.\*;  
     
   public class QuartsToGallons {  
    public static void main(String[] args) {  
    Scanner sc = new Scanner(System.*in*);  
    double quarts;  
    double gallons =0;  
     
    try {  
     
    System.*out*.println("Enter a how many quarts");  
    quarts = sc.nextDouble();  
    gallons = quarts/4;  
    System.*out*.println("Gallons >>> "+ gallons);  
    }  
    catch(InputMismatchException i)  
    {  
    System.*out*.println("Invalid input >>> Please enter a numerical value");  
    }  
     
     
    }  
   }
4. Text

   Description automatically generated
5. import java.util.\*;  
     
   public class DistanceFromAverage {  
    public static void main(String[] args) {  
    Scanner sc = new Scanner(System.*in*);  
    String arrayLength ="0";  
    int lengthInt =0;  
    double[] nums = new double[0];  
    double avg=0;  
    double difference =0;  
     
    try{  
    System.*out*.println("Enter an integer value for the length of an array");  
    arrayLength = sc.nextLine();  
    lengthInt = Integer.*parseInt*(arrayLength);  
     
    nums = new double[lengthInt];  
    }  
    catch(NumberFormatException n)  
    {  
    System.*out*.println("Number Format Exception >>> Please enter an integer value only");  
    }  
    catch(NegativeArraySizeException n)  
    {  
    nums = new double[5];  
    }  
     
     
    try{  
    for(int x=0;x<nums.length;x++)  
    {  
    System.*out*.println("Enter value: "+ (x+1));  
    nums[x]= sc.nextDouble();  
    avg+=nums[x];  
    }  
     
    avg/=nums.length;  
     
    for(int x = 0;x<nums.length;x++)  
    {  
    if(nums[x]>avg)  
    difference=nums[x]-avg;  
    else  
    difference=avg-nums[x];  
    System.*out*.println("Distance from Average for value " + (x+1) + " :" + difference);  
    }  
     
     
     
    }  
    catch(InputMismatchException inputMismatchException)  
    {  
    System.*out*.println("Input Mistmatch Excption >>> Enter doubles only for the array ");  
    }  
     
    sc.close();  
     
    }  
   }
6. Text

   Description automatically generated
7. import java.util.\*;  
     
   public class SqrtException {  
    public static void main(String[] args) {  
    Scanner sc = new Scanner(System.*in*);  
    String answer="";  
    int num =0;  
     
    try {  
    System.*out*.println("Enter an integer to find the square root of");  
    answer = sc.nextLine();  
    num = Integer.*parseInt*(answer);  
     
    if(num<0)  
    throw(new ArithmeticException());  
     
    System.*out*.println("Square Root >>> " + Math.*sqrt*(num));  
    }  
    catch(NumberFormatException n)  
    {  
    System.*out*.println("Number format exception >>> enter an integer value");  
    num =0;  
    }  
    catch(ArithmeticException a)  
    {  
    System.*out*.println("Arithmetic Exception >>> Cannot take the square root of a negative number");  
    }  
     
    }  
   }

A screenshot of a computer

Description automatically generated with medium confidence

1. public class CourseException extends Exception{  
    private String department;  
    private int courseNum;  
    private double credits;  
     
    private String message;  
     
    public CourseException(String department,int courseNum,double credits,String message)  
    {  
    this.department = department;  
    this.courseNum = courseNum;  
    this.credits = credits;  
    this.message = message;  
    }  
     
    @Override  
    public String getMessage() {  
    return message;  
    }  
   }
2. public class Course {  
    private String department;  
    private int courseNum;  
    private double credits;  
     
    public Course() {  
    this.department = "Default";  
    this.courseNum = 000;  
    this.credits =0.0;  
    }  
     
    public Course(String department, int courseNum, double credits)  
    {  
    try {  
    if (department.length() < 3) {  
    throw new CourseException(department, courseNum, credits, "Department number is less than three letters");  
    }  
    else if(courseNum<100 || courseNum > 499)  
    {  
    throw new CourseException(department,courseNum,credits,"Course Num has to be between 100-499");  
    }  
    else if(credits<.5 || credits>6)  
    {  
    throw new CourseException(department,courseNum,credits,"Credits has to be over .5 and 6 or less");  
    }  
     
    this.department = department;  
    this.courseNum = courseNum;  
    this.credits = credits;  
    }  
    catch(CourseException c)  
    {  
    System.*out*.println(c.getMessage());  
    }  
    }  
     
    @Override  
    public String toString() {  
    return "Course{" +  
    "department='" + department + '\'' +  
    ", courseNum='" + courseNum + '\'' +  
    ", credits=" + credits +  
    '}';  
    }  
   }
3. import java.util.\*;  
     
   public class ThrowCourseException {  
    public static void main(String[] args) {  
    Scanner sc = new Scanner(System.*in*);  
    Course[] courses = new Course[6];  
    String[] departments = new String[6];  
    int[] courseNums = new int[6];  
    double[] credits = new double[6];  
     
    for(int x=0;x<courses.length;x++)  
    {  
    System.*out*.println("Enter the department name for course #" + (x+1));  
    departments[x]=sc.nextLine();  
     
    do{  
    System.*out*.println("Enter a course num");  
    try {  
    courseNums[x] = Integer.*parseInt*(sc.nextLine());  
    break;  
    }  
    catch(Exception e)  
    {  
    continue;  
    }  
    }while(true);  
     
    do{  
    System.*out*.println("Enter the credits");  
    try {  
    credits[x] = Double.*parseDouble*(sc.nextLine());  
    break;  
    }  
    catch(Exception e)  
    {  
    continue;  
    }  
    }while(true);  
    }  
     
    for(int x=0;x<courses.length;x++)  
    {  
    try{  
    courses[x] = new Course(departments[x],courseNums[x],credits[x]);  
    }  
    catch(Exception c)  
    {  
    System.*out*.println("Exception caught");  
    courses[x]=new Course();  
    }  
    }  
     
    for(int x=0;x<courses.length;x++)  
    {  
    System.*out*.println(courses[x].toString());  
    }  
     
     
    }  
   }
4. Text

   Description automatically generated

import java.util.Arrays;  
  
public class UsedCar {  
 String vin;  
 String make;  
 int year;  
 int mileage;  
 int price;  
  
 public final static String *DEFAULT\_VIN* = "9999";  
  
 final int VIN\_NUM\_LENGTH = 4;  
 final int LOW\_YEAR = 1997;  
  
 final int HIGH\_YEAR = 2024;  
  
 final String[] MAKES = {"ford", "honda", "Toyota", "Chrysler","Other"};  
  
 public UsedCar(String num, String carMake,int carYear, int miles, int pr) throws UsedCarException  
 {  
 boolean isBad = false;  
 boolean isGoodMake = false;  
 int x;  
 if(num.length() != VIN\_NUM\_LENGTH)  
 isBad = true;  
 for(x = 0;x< num.length();x++)  
 {  
 if(!Character.*isDigit*(num.charAt(x)))  
 {  
 isBad = true;  
 }  
 }  
  
 for(x =0;x<MAKES.length;x++)  
 {  
 if(carMake.equals(MAKES[x]))  
 isGoodMake = true;  
 }  
  
 if(isGoodMake)  
 isBad = true;  
 if(carYear < LOW\_YEAR || carYear> HIGH\_YEAR || miles < 0 || pr < 0)  
 isBad = true;  
 if(isBad)  
 throw(new UsedCarException("Error is used car # " + num));  
  
 vin = num;  
 make = carMake;  
 year = carYear;  
 mileage = miles;  
 price = pr;  
 }  
  
 public UsedCar()  
 {  
 vin = *DEFAULT\_VIN*;  
 make = "XXX";  
 }  
  
 public String getVin() {  
 return vin;  
 }  
  
 @Override  
 public String toString() {  
 return "UsedCar{" +  
 "vin='" + vin + '\'' +  
 ", make='" + make + '\'' +  
 ", year=" + year +  
 ", mileage=" + mileage +  
 ", price=" + price +  
 ", VIN\_NUM\_LENGTH=" + VIN\_NUM\_LENGTH +  
 ", LOW\_YEAR=" + LOW\_YEAR +  
 ", HIGH\_YEAR=" + HIGH\_YEAR +  
 ", MAKES=" + Arrays.*toString*(MAKES) +  
 '}';  
 }  
  
  
}

public class UsedCarException extends Throwable {  
 public UsedCarException (String s)  
 {  
 super(s);  
 }  
}

import java.util.\*;  
  
public class ThrowUsedCarException {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 UsedCar[] cars = new UsedCar[7];  
 String vin;  
 String make;  
 int year;  
 int mileage;  
 int price;  
 int x;  
 for(x=0;x < cars.length;x++)  
 {  
 cars[x] = new UsedCar();  
 }  
  
 for(x=0; x<cars.length;x++)  
 {  
 try  
 {  
 System.*out*.println("Enter 4 = digit VIN >> ");  
 vin = sc.nextLine();  
 System.*out*.println("Enter make >> ");  
 make = sc.nextLine();  
 System.*out*.println("Enter year >> ");  
 year = sc.nextInt();  
 System.*out*.println("Enter mileage >> ");  
 mileage = sc.nextInt();  
 System.*out*.println("Enter price >> ");  
 price = sc.nextInt();  
 sc.nextLine();  
 cars[x] = new UsedCar(vin,make, year, mileage, price);  
 }  
 catch(UsedCarException error)  
 {  
 System.*out*.println("Object creation error: " + error.getMessage());  
 }  
 catch(Exception error)  
 {  
 System.*out*.println("Data entry error ");  
 }  
  
 System.*out*.println("Good used car values");  
 for(x=0;x<cars.length;x++)  
 {  
 if(!cars[x].getVin().equals(UsedCar.*DEFAULT\_VIN*))  
 System.*out*.println(cars[x].toString());  
 }  
  
 }  
  
}  
}