Questions on Java and Solutions

From Basic to Advanced Level

Problem #1:
Write a Java program to calculate sum of two numbers.

Problem #2:
Write a java program to prints the count of odd and even no's entered.

Problem #3:
Write a program to convert the temperature given in Fahrenheit to Celsius using the following conversion formula
C = F-32 / 1.8 and displaythe value in atabular form.

Problem #4:
Write Java program to print the squares and cubes for the numbers 1 to 5.

Problem #5:
Write ajavaprogram to find the roots of aquadratic equation. Assign thevaluesof a, b and cof theequations in the program itself. (Consider imaginary as well as real roots).

Problem #6:
Write ajavaprogram forfindingthe sum, difference, product,quotient, minimum and maximum of anytwo integers.

Problem #7:

Write ajavaprogram '*MyNumber.java*" that performs followingoperations on avariable 'num' of type **double**:

a) Finds the round value of 'num' and stores the result in a variable num Round of type **double**.
b) Finds the ceil value of 'num' and stores the result in a variable num Ceil of type **double**.
c) Finds the floor value of 'num' and stores the result in a variable num Floor of type **double**

d) Cast 'num' to type **int** and stores the result in a variable num Integer of type **int**.

Display output of num Round, num Ceil, num Floor and num Integer on screen.
Note:
Test your program with following value of num
num=56.764
num=36.432

Use Math.round, Math.ceil, Math.floor methods of class Math for1,2and3.

Problem #8:
Write Javaprogram to show uses of allMath classmethods.

Problem #9:

Write Javaprogram to computethe sum of the2+4+6+---------+10.

Problem #10:

Write ajavaprogram that computes the sum ofthe reciprocals:

1/1 + 1/2 +1/3 +... +1/10

Problem #11:

Shown below is a Floyd's triangle

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

(a).Write aprogram to print this triangle.

(b). Modifythe programto producethe following form of Floyd's triangle.

1
0 1
1 0 1
0 1 0 1
1 0 1 0 1

Problem #12:

Write aprogram using do…while loop to produce following sequence of Fibonacci numbers.

1 1 2 3 5 8 13 21 ……

Problem #13:

Write aprogram to accept threedigits (i.e. 0-9)and printallits possible combinations.
(Forexampleif thethreedigits are1, 2, 3 than allpossible combinations are: 123,

132,213, 231, 312, 321.)

Problem #14:

Write aprogram to calculatethe areaof triangle, square, circle, rectanglebyusing method overloading.

Problem #15:

WriteaJavaProgramwhichpromptstheusertoenter4numbers.Theprogramwillthen computes anddisplaytheir sum and their product.

Problem #16:

Write aJavaprogramwhich reads an-digitnumber andprints thedigits onseparatelines. (Each digitshould be printed onseparateline).

Problem #17:

Theintersection methodcomputes the intersectionof two rectangles-that is, the rectangle that is formed bytwo overlappingrectangles:You callthis method as follows:

```
Rectangle r3=r1.intersection(r2);
```

Write aprogram that constructs two rectangleobjects, prints them, and then prints their intersection. What happens when the rectangles do not overlap?

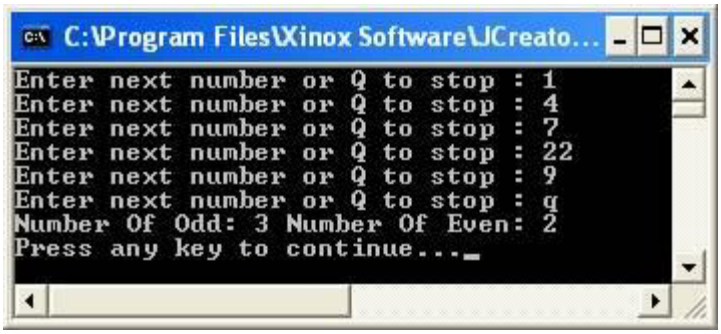
Problem #18:

Write a Java program involving two classes: **Odd And Even** and **Test Odd And Even**. **Odd And Even** has the following members:

- instance variables count Of Odd and count Of Even both of type int
- A method add Number that takes a number as parameter and increment count Of Odd, if the number is odd, else increment count Of Even.
- A method to String that returns a string in the form:"Number of Odd: x, Number of Even: y ",where x and y are the values of the instance variables.

The **Test Odd And Even** class first creates **Odd And Even** object, then in a loop, read a number and use it to call the **add Number** method until the user enters **Q**. Finally, it prints the count of odd and even numbersentered.

Output ofyour programmustbein the following format:



Problem #19:

Inasmallfirm,employeenumbersaregiveninserialnumericalorder,thatis1,2,3etc. writeamenu driven program to perform following operations:

a) Createa fileof employeedatawith followinginformation:
EmployeeNo, Name, Sex, GrossSalary.
b)Append the data ofanew employeejoiningthefirm.
c)Ifagiven employeeleaves, delete his record.
d)Ifgross salaryofagiven employeeincreases, update thegross salary. e)
Displaythe record of (i) a given employee or (ii) all employees.

Problem #20:

Designa class Circleandimplement the following methods:

- Defineacirclemethod to compute its area
- Defineacirclemethod to compute its perimeter
- Defineamethodthattakesagivenpointrepresentedbyapairofnumbersand checks whetherornot thepointis inside the circle.

Thecircleclassneedstohaveinstancevariablestostoretheradiusofthecircle,andthex andycoordinatesofthecenter.Addmainprogramtotesttheclass Circlerepeatedly, until user enters negativevalue fortheradius of the circle.

Problem #21:

The certain instructor assigns lettergradeforhis coursebased on the followingtable:

Score	Grade
>=90	A+
>=85	A
>=80	B+
>=75	B
>=65	C+
>=60	C
>=55	D+
>=50	D
<50	F

figure (b)

Write aclass, **Grader**, which has:
an instancevariable, **score**, an appropriate**constructor**and appropriate **methods**

- a method, letter Grade() that returns the lettergrade as a String.

Nowwriteademo class to test theGrader class byreadingascorefrom theuser, usingitto create aGrader object after validatingthat thevalue is not negative and is not greater then 100. Finally, call the **letter Grade()** method to get andprintthe grade. Seefigure(b) forsample run.

Problem #22:

A sales person is paidcommission based on the sales hemakes as shown bythe followingtable:

Figure (a)

SALES	COMMISSION
Under SR500	2 % of SALES
SR500 and under SR5000	5 % of SALES
SR5000 and over	8 % of SALES

Write aclass, **Commission**, which has:
an instancevariable,**sales**; an appropriate**constructor**; andamethod, **commission()** that returns the commission.

Nowwriteademo class to test theCommission class byreading asalefrom the user, usingitto createaCommission object aftervalidatingthat the valueis not negative. Finally,callthe**commission()** method to getand printthe commission. Ifthe salesarenegative,yourdemo should print the message “InvalidInput”.

See figure (a) forsample run.

Problem #23:

Create apackagecalled "Arithmetic"that contains methods to deal all arithmetic operations. Also, writeaprogram to usethepackage.

Problem #24:

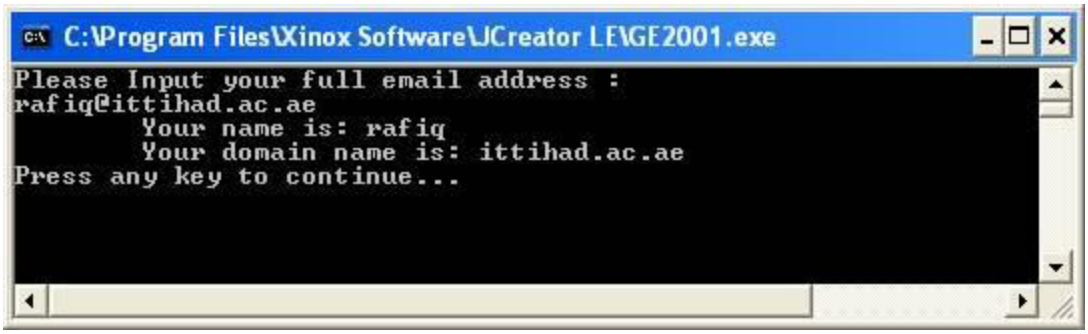
Write aprogram to makeuse of aparameterized method inside a class. Takethe followingcase: Create aclass Boxand defineamethod in this class which will return the volumeof thebox.Initializetwo objects foryour class and print out the volumes respectively.

Problem #25:

Write aprogram to readalineof text from keyboard then using ***String Tokeniz er***class print each word of this text in separate line (oneword per line)and at thelast printtotal numberof words in the text.

Problem #26:

Write aprogram that prompts for and read e-mailaddress ofauser. Theprogram then prints the user nameandthe domain nameon different lines using ***String Tokeniz er***class.

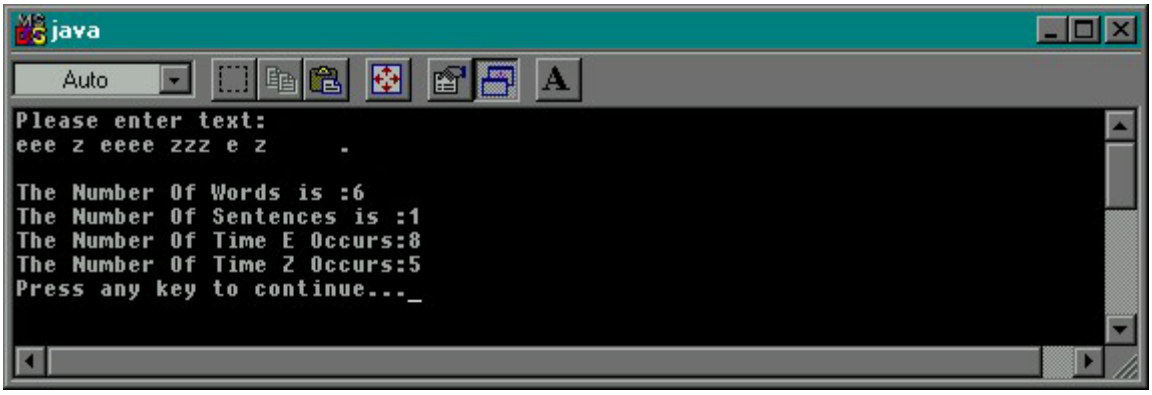


Problem #27:

Write aprogram in Javathat reads in text andprints as output the following:

Thenumberofwords in the text
Thenumberof sentences in thetext
Thenumberof times theletter "e"occurs in the text
Thenumberof times theletter "z"occurs in the text

(**Note:** Use String Tokeniz erclass)



Problem#:

Implementa **Student**class with the followingfields, constructors and methods
:Fields:

name; total Score;
number Of
Quizzes;

Constructors:

publicStudent(Stringname, doublescore)
publicStudent(double score, Stringname)
publicStudent(Stringname){

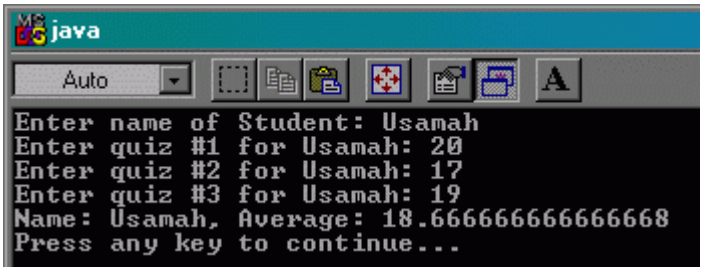
Methods:

Public String get Name()
Public double get Average() //this should return zero if no quizhas been taken.
Public double get Total Score()

public void add Quiz(double score)
public void print Student() //this should print the student's name and average score
public String to String()

Write an application **Test Student** that reads a student name and usethe **Student**class to createaStudent object. Then read the scores of thestudent in threequizzes and add each to the ***total Score*** of the student using ***add Quiz()***method and print the student object.

(**Note:** Makeuseof **this**keyword wherever it can beused).



Problem #28:

Write aprogram to design a class to represent a bank account.Include thefollowing members.

Date members
- Name ofdepositor
- Account Number
- Typeof account
- Balanceaccount in the account

Methods:-
- Toassign initial values
- To deposit an account
- Towithdraw anaccountaftercheckingbalance.
- To displaythe name andbalance

Problem #29:

Write aprogram that reads in asentencefrom theuser and prints itout with each word reversed, but with the words and punctuation in the original order:

Problem #30:

Implementa superclass**Person**. Maketwoclasses,**Student** and **Instructor**, inheritfrom Person. A person hasaname and ayear of birth.A student has amajor, and an instructor has a salary. Write theclass definitions, the constructors, and the methods **to String** for all classes. Supplyatest program that teststhese classes andmethods.

Problem #31:

Write aprogram whereinterfacecan beusedto support multipleinheritances. Develop a standalone Javaprogramforthe example.

Problem #32:

Implement theclasses for theshapes usingan interface forthe common methods, rather than inheritancefrom thesuperclass, while still Shape as a baseclass.

Problem #33:

Write aprogram that calls a method that throws an exception of type Arithmetic Exception at a random iteration in a forloop. Catch the exception in themethod and pass the iteration count when theexception occurred to thecallingmethod byusing an object of anexception classyou define.

Problem #34:

Write aprogram that will count the number ofcharacter in a file

Problem #35:

Write aprogram to createasequentialfile that could storedetails about fiveproducts. Details include productcode, cost, and number ofitems available and areprovided through the keyboard.

Problem #36:

Write aJavaprogramwhich reads studentgrades from atext file called*grades.txt*and prints onlythe correspondinglettergrades into a file called*letter.txt*. Thelettergrades are assignedaccordingto thefollowingtable. Assumethat the*grades.txt* file can have any number ofstudents'grades. Hint: Thelast numberin the*grades.txt* file is -1

Score	Grade
>=90	A+
>=85	A
>=80	B+
>=75	B
>=65	C+
>=60	C

>=55	D+
>=50	D
<50	F

Problem #37:

Write a program to read a,b,c from data file and store roots of thequadraticequation in outputfile. You must openyour output file in append mode.

Problem #38:

Develop anapplet that receives threenumeric values as input from theuser and then displays the largestofthethreeon the screen. WriteaHTMLpages andtestthe applet.

Problem #39:

Write applets to draw thefollowingshapes:

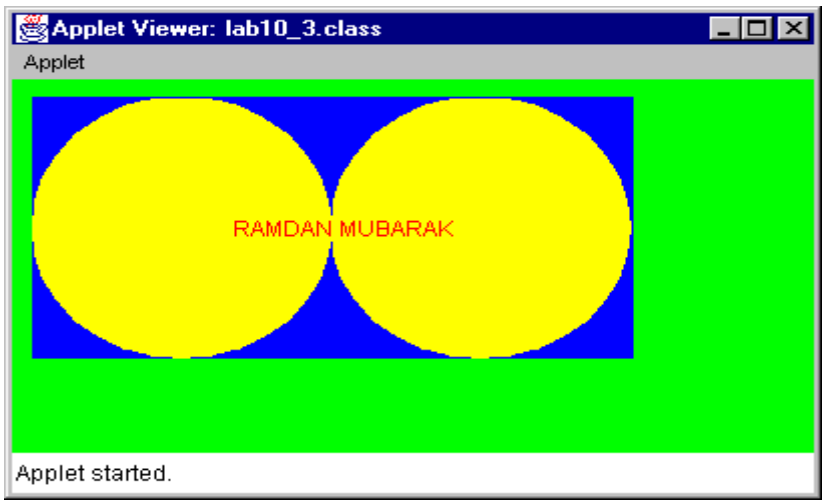
a).Cone b).Cylinder
c).Squareinsidea circle d). Circle inside square

Problem #40:

Write an applet that willdisplaythe followingonagreen background. Usethe following dimension:

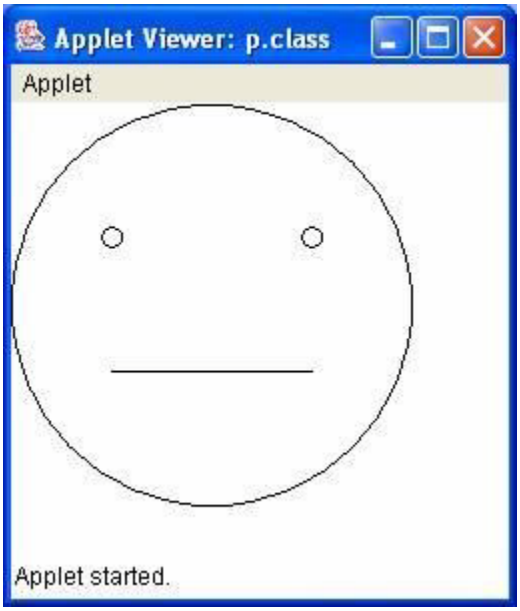
Rectangle:	(10, 10, 300, 150), fill color: blue
Left circle:	(10, 10, 150, 150), fill color:yellow
Right circle:	(159,10,150, 150), fill color:yellow
Text:	(110, 90), color: red

SampleOutput:



Problem #41:

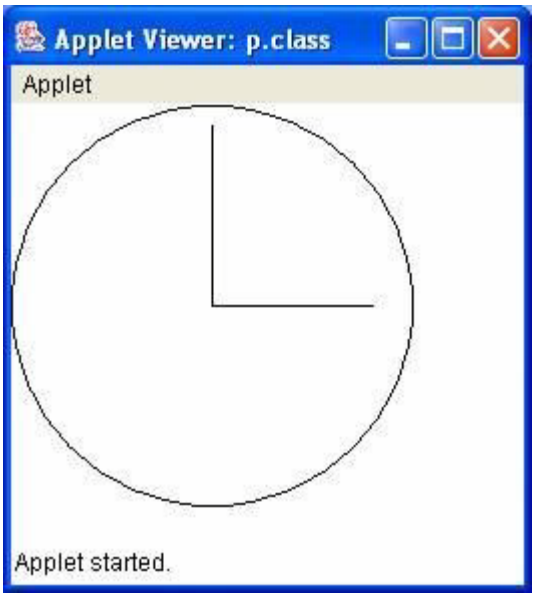
Write ajavaApplet program to plotthe following face:



Problem #42:

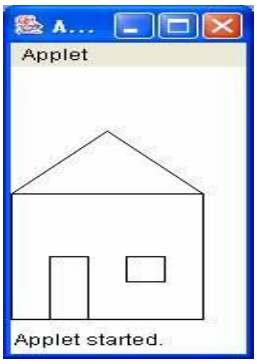
Write a graphics program that draws a clock facewith a timethat the userenters in a text field. (The user must enter the time in the form at hh:mm, for example 09:45.).

Hint:You need to find out the angles of thehourhand and the minutehand. The angle of the hourhand is harder; it travels 360 degreein 12x60 minutes.
Youroutputmustbein the following format:



Problem #43:

Write aprogram that draws thepictureofahouse.
Sample Output:



Problem #44:

Definea classEmployeehavingprivate members–id,name, department,salary.Define defaultand parameterizedconstructors.Createasubclasscalled“Manager” withprivate member bonus. Definemethods accept and displayin both the classes. Create n objects of theManagerclassanddisplaythedetailsofthemanagerhavingthemaximumtotal salary(salary+bonus)

Problem #45:

WriteaJavaprogramtocreateasuperclass**Vehicle**havingmembersCompanyand price. Derive 2 different classes Light Motor Vehicle (members–mileage)and Heavy Motor Vehicle(members– capacity-in-tons). Acceptthe informationfor nvehicles anddisplaytheinformationinappropriateform.Whiletaking data,asktheuserabouttthe typeof vehiclefirst.

Problem #46:

A bank maintains two kinds of accounts- Savings Account and Current Account. The savings account provides compound interest, deposit and withdrawal facilities. The currentaccountonly providesdepositandwithdrawalfacilities.Currentaccountholders shouldalsomaintainaminimumbalance.Ifbalancefallsbelowthislevel,aservice chargeisimposed.CreateaclassAccountthatstorescustomername,accountnumber, and type of account. From this derive the classes Curr-acct and Sav-acct. Include the necessary methods in order to achievethe followingtasks.

a. Accept deposit froma customer and update thebalance.

b. Displaythe balance.

c. Compute interest and add to balance.

d.Permitwithdrawalandupdatethebalance(Checkfortheminimumbalance,impose penaltyif necessary).

Problem #47:

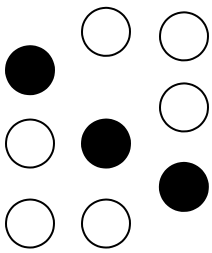
.Defineaclass called fruit with the followingattributes:

1. Name ofthefruit.
2. Single fruit or bunchfruit.
3. Price.

Defineasuitableconstructoranddisplay Fruit()methodthatdisplaysvaluesof allthe attributes. Write aprogram that creates 2 objects of fruit class and displaytheir attributes.

Problem #48:

Write an applet to displaythe followingfigure:



Problem #49:

Drawa “bull’s eye”aset of concentric rings in alternation blackand whitecolors: Fill a blackcircle, and then fillasmaller white circle ontop, and so on.