Java Assignment

Q1) Write a program in Java to accept the name of the user and then print welcome message.

Q2) Write a program in Java to accept two numbers from the user and then aa and print the sum.

Q3) Write a program in Java to convert temperature from Celsius to Fahrenheit scale.

Q4) Write a program in Java to find the area and perimeter of a circle where radius is taken from user.

Q5) Write a program in Java to check whether a number is prime or not.

Q6) Write a program in Java to check whether a year is leap year or not.

Q7) Write a program in Java to generate the prime numbers between a range (user input).

Q8) Write a program in Java to print n-th Fibonacci number where n is the user input.
[Fin(n)=Fib (n-1) + Fib(n-2)]

Q9) Write a program in Java to accept the obtained marks in theory and practical. Weighted Average is based on 40% of Practical and 60% of Theory. Now show the obtained grade based on the following conditions:
Average>=90 then Excellent; Average >=80 then Very Good; Average>=60 then Good; Average>=50 then Satisfactory; Average<50 then Fail. (use if-else and switch-case both)

Q10) Write a program in Java to convert a Binary Number to Decimal and Decimal to Binary.

Q11) Write a program in Java to find out the HCF and LCM of two numbers taken from the user.

Q12) Write a program in Java to reverse a number.

Q13) Write a program in Java to count the number of digits of an integer taken from user.

Q14) Write a program in Java to find the value of Euler's number that is used as the base of natural logarithms by using the formula mentioned below where n is the user input.

e= 1+ 1/1! +1 /2! + 1/3!+..... +1/n!

define a function for fact(n)
double e=1.0;
input n from user
now take a loop from c=1 to n
    e=e+1/fact(c)

print e

Q15) Write programs on java to print the following series:
1
1 2
1 2 3
1 2 4 4

A
B B
C C C
D D D D

1
2 3
4 5 6
7 8 9 10

Q16) Write a program in Java to generate all number combination of 1, 2, or 3 using loop.

Q17) Create a class call ComplexNumber which contains two data members (real and imaginary). Now add three methods as following:
void getComplex(int a, int b) - to get a complex number
void showComplex( ) - to show the complex number
ComplexNumber addComplex(Complex c) - to add two complex number. e.g. c=a.addComplex(b) will add a and b, the result will be stored in c.
Now write a suitable programme to test the class and its different methods.

Q18) Create a class called Calculation which contains various methods for addition, multiplication and substraction of integers and floats. Use method overloading to accept 2 integers/floats and 3 integers/floats and so on where the name for all addition functions will be same and same as for multiplication and substraction.

Q19) Define a class called Shape which contains two data members called area and perimeter of type float. Now write take suitable methods with the same name for calculating areas and perimeters by utilizing method overloading for rectangle and circle.

Q20) Create a class called Time contains three instance variables (data members) to store, hours, minutes and seconds.
Define constructor(s) to initialize the data members with user input.
Define a method to show the time in hh:mm:ss format.
Define a method to add two time-objects and store the result in a third time object.

Write suitable code to show the time in proper format where the values for seconds and minutes are lesser than 60.
Write suitable code to test the Time class and its functionalities.

Q21) Define a class called Point with two member variables x and y of type int. Define constructor(s) to initialize x and y.
Now define another class called Rectangle with width (int) , hight(int) and origin (Point) as member variables.
Define suitable constructor(s) to initialize the data members.
Define a method called move( ) which takes the value for x and y to move the origin.
Also, define suitable method(s) to calculate area and perimeter of the rectangle.
Write suitable code to test the functionalities of the Rectangle class.

Q22) Design a class program in Java to calculate the discount given to a customer on purchasing LED TV. The program also displays the amount paid by the customer after discount as following.

Class Name: Television
Data Members: cost (float), discount (float), amount (float)
Member Functions:
accept () – to input the cost of TV
calculate () – to calculate the discount
display () – to show the discount and the amount paid after discount

Q23) Design a class in Java that describes a Person. It should have instance variables to record name, age and salary. Create a person object. Set and display its instance variables.

Q24) Create a class in Java called Circle with instance variables for the centre and the radius. Initialize (constructors) and display its variables. Use this keyword. Also take a class variable that can count the number of instances created for the class.

Q25) Write a program in Java to show that the value of non-static variable is not visible to all the instances, and therefore cannot be used to count the number of instances.

Q26) Write a program in Java that implements method overloading and shows passing object as parameter.

Q27) Write a program in Java to accept 15 numbers (integers) from the user in an array. Calculate sum of the numbers and also print the numbers divisible by 3 and 5 both.

Q28) Write a program in Java to accept 15 numbers from the user in an array. Now print the smallest and largest numbers.

Q29) Write a program in Java to accept 10 integers and then display the odd numbers, even numbers and prime numbers.

Q30) Write a program in java to accept 6 numbers and then sort them in descending order and display the sorted array on the screen.

Q31) Write a program in Java to accept the elements (numbers) in a 4x4 matrix using 2D array. Find the largest and the smallest numbers of the matrix.

Q32) Write a program in Java to store the elements in a 3x4 matrix using 2D array. Now transpose and store the elements in another matrix (4x3) and show both the matrices.

Q33) A departmental store has 4 stores and 5 departments. The manager may want the total monthly sales of each store and each department at any time. Wire a program in Java to implement this.

Q34) Write a program in Java to implement binary search in a sorted array.

Q35) Define a class in Java called Commission, which has an instance variable, salesAmount; an appropriate constructor; and a parameterized method, commission(float rate) that returns the commission. Now write a test class to test the Commission class by reading a sales values for three salespersons in an array of objects. Finally, get and show the commission for three salespersons. If the sales are negative, your program should print the message “Invalid Amount”.

Q36) Write a program in Java to implement Money class. This class should have field for initializing a rupee and paisa value. The paisa value will be in the range from 0 -99 with the paisa being the same sign as that of rupees. The class should have all reasonable constructors, addition, subtraction methods. Create another public class TestMoney cantaining main () method that provides a thorough test of all the methods in the class.

Q37) Define a class MotorVehicle as mentioned below:
Data members: modelName, modelNumber, modelPrice
Methods: display() – to display the name, price and model number

Define another class named Car that inherits the class MotorVehicle and has the following:
Data members: discountRate
Methods:
display() – to display the Car name, Car model number, Car price and the discount rate
discount() – to compute the discount.
Create the classes MotorVehicle and Car with suitable constructors and test it.

Q38) Create an abstract class **Accounts** with the following details:
Data members: balance, accountNumber, accountHoldersName, address
Methods:
withdrawal () – abstract
deposit() – abstract
display() – to show the balance of the account number

Create a subclass of this class **SavingsAccount** and add the following details:
Data members:
rateOfInterest

Method:
calculateAmount()
display – to display rate of interest with new balance and full account holder details

Create another subclass of the Accounts class, i.e. **CurrentAccount** with the following:
Data Members:
overdraftLimit
Method:
display() – to show overdraft limit along with the full account holder details

Create objects of these two classes and call their methods. Use appropriate constructors.

Q39. Design an interface with a method reversal( ). This method takes a string as its input and returns the reversed string. Create a class StringReversal and implement the method (do not use predefined methods).

Q40. Write a program in Java to accept a sentence from user. Find and display the following assuming that the sentence contains only letters and digits but no special characters:
Number of words present in the sentence
Number of letters present in the sentence

Q41. A string is said to be unique if none of the letters present in the string are repeated. Write a program in Java to accept a string and check whether the string is unique or not

Q42. Write a program in Java to accept a name and then print the initial as following:

Input: Mahendra Singh Dhoni Output: M S Dhoni
Input: Mahendra Dhoni Output: M Dhoni
Input: Dhoni

Q43. Write a program in Java to accept a string and display the new string after removing all the vowels present in it.
Input: computer applications
Output: c@mp@t@r @ppl@c@t@@ns

Q44. Write a program in Java to accept a string and display the new string after removing all the vowels present in it.
Input: computer applications
Output: cmptr pplctns

Q45. Implement the following in Java
Create a package named shape which contains the following public classes:
class: Rectangle
public methods:
constructor
float area()
float perimeter()

class: Circle

public methods:
constructor
float area()
float perimeter()

Finally, test your package and classes in it through another program TestShape.java under default package (contains main ())

Q46. Design an interface named Stack with the following methods:
Push and pop elements from the stack
Check whether the stack is empty or not. Implement the stack is empty or not. Implement the stack with the help of arrays and if the size of the array becomes too small to hold the elements, create a new one. Test this interface by inheriting it in its subclass StackTest.java

Q47) Define an exception called “NoMatchFoundException” that is thrown when a string is not equal to “SKF”. Write a program that uses this exception.

Q48) Write a program called Factorial.java that computes factorials and catches the result in an array of type long for reuse. The long type of variable has its own range. For example 20! Is as high as the range of long type. So check the argument passes and “throw an exception”, if it is too big or too small.

If x is less than 0 throw an IllegalArgumentException with a message “Value of x must be positive”.

If x is above the length of the array throw an IllegalArgumentException with a message “Result will overflow”.

Here x is the value for which we want to find the factorial.

Q50) Write a program in java using try and catch to generate ArrayIndexOutOfBoundsException and NumberFormatException.

Q51) Write a program in java which will accept the name and age of the user. If name is blank/empty, then raise an exception (user defined) “NameException” which will show the appropriate messege. Age of the user should be above 18 or else raise an exception “InsufficientAgeException” with proper message. You may incorporate other exceptions to make your program robust.

Q52) Write a program in java which accepts username and password. Raise a user defined exception if username is less than 6 characters and password does not match.

Q53) Write a program in Java to create two user-defined exceptions named “TooHot” and “TooCold” to check the temperature (in Celsius) given by the user .
If temperature > 40, throw exception “TooHot”.
If temperature <8, throw exception “TooCold”.
Otherwise, print “Normal” and convert it to Fahrenheit.

Q54) Write a program to develop a Quiz Management System, where a user needs to answer 3 questions. If any of the answer is wrong, throw an exception “WrongAnswerException”. If the answer is correct give a message “good! The answers are correct”.

Q55) Write a program in Java to accept the student’s name and obtained marks in three subjects. The marks should be between 0 and 50 and the name cannot be blank or else an appropriate exception to be raised. Find the total marks and percentage.

Q56) Write a multithreading program in java which takes two lines of texts as input. Now print both the line (word wise) as output of two concurrent threads.

Example:

Enter a line of text:
Welcome to SKF Mankundu
Enter another line of text:
Today is Tuesday and 30th November

Output:
Welcome
Today
is
to
Tuesday
SKF
and
Mankundu
30th
November