QUESTION BANK- PROGRAMS-Set 2

1.Write a function to calculate the factorial of a given number.

2. WAP to create a class Box, with width, and height as data members. Define constructors to initialize Box with shape cube and cuboid. Also, wite a method to calculate the volume of the box.

3.Write a java class to represent a Vehicle. The data members classify the vehicle as geared or ungeared, petrol or diesel, vehicleType, mileageRate. Define a default constructor and a parameterized constructor. Accept the values from the user.

4. A toy store offers discount on toys. For age-group between 0-5 years, discount is 30% and for others it is 15%. Wap to write a class Toy, which has type, age group and price as member variables. Define a default constructor with default values and a parameterized constructor. Calculate the discount, and write a main method that instantiates 2 toys and displays the discount offered.

5. Define a java class ‘Time’ which has the private member variables hrs, min, sec, totSeconds. The main() method should accept the above values from the user and initialize the values through a constructor. Also, it should call a function to calculate the total seconds, and another function to display all the values.

(Hint: Convert hrs into mins and then both the mins to seconds and add up all the seconds).

6. Count the number of times a character occurs in a string. Both the character and the string have to be accepted from the user.

7. Replace the character ‘a’ by ‘s’ in a string.

8. Count the number of times a sting occurs in another.

9. Check whether a string is a palindrome.

10. Write a program to create an integer array with size 10. Accept the values from the user and sort the array in descending order using bubble sort method

11.WAP to accept 10 values into an integer array and sort the array using exchange sort in descending order.

12. Convert all the alphabets to uppercase.

13. Convert all to lowercase.

14. Convert all uppercase to lowercase and all lowercase to uppercase.

15. Concatenate 2 strings.(Use concat() function).

16. Remove spaces from a string.

18. Extract the 6th character to 12th character in a string.

19.Accept a string from the user and convert the string such that each word begins with capital letter.

20. Remove duplicates from an integer array.

21. Create a class Interest which calculates the simple interest, where principal, time and rate are the member variables. The values of the member variables should be displayed using the getter and setter methods and also the simple interest should be displayed.

Class GetSet

{

Int time;

Double principle, rate;

Public void setTime(int t) // T is capital

{

time=t;

}

Public void setPrinciple(double p)

{

principle=p;

}

Public void setRate(double r)

{

Rate=r;

}

Public double getPrinciple()

{

return principle;

}

Public double getRate()

{

return rate;

}

Public int getTime()

{

return time;

}

}

Class Calculate

{

Psv main()

{

Double p,r,sI;

Int t;

GetSet obj=new GetSet();

p=obj.setPrinciple(25000.0);

r=obj.setRate(2.5);

t=obj.setTime(5);

sI=(p\*t\*r)/100;

System.out.println(“Principle :”+p);

System.out.println(“Rate :”+r);

System.out.println(“Time:”+t);

System.out.println(“Simple Interest :”+sI);

}

}

(Note : The getter functions can be used in SOPln also.)

22. Accept a value from the user and do a binary search for the value if:

a. The array is sorted in ascending order

b. The array is sorted in descending order

23. Write a program to create an integer array with size 10. Accept the values from the user and sort the array in descending order using bubble sort method.

24. WAP to input a 2D matrix of integer type and print the sum of all non-repeated elements in it?

25. WA P to print the following 2 patterns :

1 \*

12 \*\*

123 \*\*\*

1234 \*\*\*\*

26. Find the sum of the following series. N should be accepted from the user.

1+7+26+…+n terms

The terms are created by the cubes of natural numbers minus 1, except the first one.

27. Write a program to print the value of the following series :

1+x2 + x3 +…+ xn

3! 4! (n+1)!

where n is accepted from the user.

28. Write a program to print the value of the following series, for n=8 :

(x+1)+(x+2)2 + (x+3)3 +…+(x+n)n

29. WAP to input any given string. Calculate the total number of characters and vowels present in the string. Write the acronym of the string. (Ex. HRA for House Rent Allowance). Accept the string from the user.

Ans : Accept string s from the user.

Total number of characters using s.length()

Int totvow=0;

Char c;

For(int i=0;i<s.length();i++)

{

C=s.charAt(i);

If(c==’a’ || c==’A’ || c==’e’ etc)

Totvow+=1;

}

String acr=””;

String arr[]=s.split(“ “);

Now use for loop for each item of array, and use

For(int i=0;i<arr.length;i++)

{

acr=acr+Character.toUpperCase(arr[i].charat[0]);

//This extracts the first alphabet of all the words

30. Write a program to calculate the roots of the quadratic equation:

ax2+bx+c=0

root1= -b+ √b2-4ac root2= -b- √b2-4ac

2a 2a

(This program has already been given to you.)

31.Learn programs to sort by selection sort and bubble sort.

Learn how to assign values while declaring, as arguments, as input from the user.

32. Learn linear search and binary search.

Values should be assigned in all the above mentioned three ways.

33. Imp : Constructor functions do not have a return type, not even void.

35. Print ½ inch by ½ inch grid.

36. Print ¼ inch by ¼ inch grid. (in the above program just change INCH/4, rest same.)

37.Define a class ‘student’ described as below:

Data members: Name,Age,m1,m2,m3(marks in 3 subjects),max, avg

Member methods:a.A parameterized constructor to initialize the data members

b.To accept the details of a student.

c.To compute the average and the maximum out of 3 marks

d.To display the name, age, marks in 3 subjects and max and avg.

done38.Sasha travels pvt ltd gives the following discount to it’s customers:

|  |  |
| --- | --- |
| **Ticket amt** | **Discount** |
| Above Rs.70000 | 18% |
| Rs 55001 to Rs70000 | 16% |
| Rs 35001 to Rs 55000 | 12% |
| Rs 25001 to 35000 | 10% |
| Less than 25001 | 2% |

WAP to input the name and ticket amt for the customer and calculate the discount amt and net amount to be paid in the following format:

Name Ticket charges Discount Net Amount

40.WAP to accept a no. and check whether it is prime or not.

41.WAP to store 6 elements into an array P and 4 elements into an array Q. Create an array R and store all the elements of P and Q in it.

42.WAP to input a string in upper case and print the frequency of each character.

43. Write a class to represent an Employee.It’s data members can be id,name,department,designation and salary. Write a constructor and a method to display the details of the employee

44.Write a class to represent a rt.angled triangle.A constructor should take the length of two shorter sides and calculate the length of the hypotenuse. Include a method to calculate the area of the triangle.

(hint: hypot=sqrt(side12+side22) )

45. Define a class Salary as below :

Data members : Name, Address, Phone, Subject specialization,Monthly salary, IncomeTax

Member methods : 1.To accept the details of the teacher including the monthly salary

46.To display the details of the teacher

47.To compute the annual income tax as 5% of annual income, above Rs.1,75,000/-

Write a main() method to call object of class and call the member methods.

done48.Compute and display the sum of the following series :

(1+2)/(1x2) +(1+2+3)/(1x2x3)+…(1+2+…n)/(1x2x…n)

49.WAP to initialize an array with 5 elements and find the min and max values and the sum of all the elements.

50. Wap to swap the 3rd and 4th element of a 1d array.

51. Wap to swap 2 numbers. Both are members of a class. Pass the object of class to the swap function.

done 52. Using a switch statement, write a menu driven program to convert a given temperature from Fahrenheit to Celsius and vice versa. For an incorrect choic, an appropriate error message should be displayed. Accept the value from the user.

(Hint: Celcius=(F-32)\*(5/9)

F=(9/5)\*celcius+32)