1. Write A Java Program To Print Hello World

2. Write A Java Program to Find Out the smallest between 3 distinct number

3. Write A Java Program to input an age of person and check he is eligible for voting or not.

4. Write a program to Convert temperature from Fahrenheit to Celsius.

5. Write a program to input the marks of 5 subject of student. then calculate the percentage. if percentage is greater then 60 print you are passed with 1st division, if percentage is between 50 to 59 then print 2nd division, if percentage is between 33 to 49 then print 3rd division otherwise failed. You have print the marksheet with proper format with total marks obtained and division.

6. Find out the average of 5 numbers

7. Program to calculate simple interest

8. Write a program to swap to number.

9. Write a program to to swap to number without using third variable

10. Write to program to find out volume of cylinder

11. WAP to find out compound interest

12. Perform all relational operation

13. Program to convert uppercase to lowercase

14. program to convert lowercase to uppercase

15. program to check whether entered character is in uppercase

16. WAP to enter 2 number and both numbers are equal or not, if not then find out greater number.

17. Program to convert person height from inches to cm

18. program to convert days into month , weeks and day

19. WAP to enter a character and check it is vowel or not

20. Swap without using third variable and without using + , - operator

A person enter in a D-Mart mall for the shopping. He is first time visiting the D-mart mall.
He/She has to purchase 10 items.

System should ask for the name of the customer and Gender.

User will tell you the item name and quantity of each product purchased one by one.

You have to calculate the total bill amount on the following Criteria basis

on first product purchase if quantitiy greater then 4 then you have to offer 5% discount on total price of that product

on 5th product purchase you have to offer 10% discount on total price.

on 10th product purchase you have to offer 15% discount on total price of that product.

let suppose the cost of 1st product is 10
cost of 2nd product is 20
.
.
cost of 10th product is 100;

if Total Bill amount is greater then 10000 then you have to offer 15% of total bill amount
if total Bill amount is between 5000 and 10000 then you have to offer 10% of total bill amount

Also 10% GST of total Bill Amount

Then you have to ask for carry bag to customer
if he/she yes then add 10 rupees in total bill amount.

if the customer is female then you have to gift a Cadeberry
If the customer is male then you have to gift a Ladger Wallet

Develop a Java Application to Generate the Bill in Following Format

D-Mart

Name : Cheeku Sing Date: 12/9/2022

Item Name	Quantity	Price	Total	After-Discount
Item-1	5	10	50 Rs	47.5 Rs
Item-2	3	20	60 RS	60.0 RS
.				
.				
.				
.				
.				
.				
.				
Item-10	20	100	2000	300.0 Rs

	A.P	D.P
	45000	43500
Gift :- Cadeberry	0.00	0.00
Carry Bag : yes	10:00	10:00
GST (10%)	450	450

45460 43960 RS

Thank You
To Visit
D-Mart

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1. Take values of length and breadth of a rectangle from user and check if it is square or not.
2.A shop will give discount of 10% if the cost of purchased quantity is more than 1000.
Ask user for quantity
Suppose, one unit will cost 100.
Judge and print total cost for user.
3.A company decided to give bonus of 5% to employee if his/her year of service is more than 5 years.
Ask user for their salary and year of service and print the net bonus amount.
4.A school has following rules for grading system:
a. Below 25 - F
b. 25 to 45 - E
c. 45 to 50 - D
d. 50 to 60 - C
e. 60 to 80 - B
f. Above 80 - A
Ask user to enter marks and print the corresponding grade.
5.Take input of age of 3 people by user and determine oldest and youngest among them.
6. Write a program to print absolute vlaue of a number entered by user. E.g.-
INPUT: 1 OUTPUT: 1
INPUT: -1 OUTPUT: 1
7. A student will not be allowed to sit in exam if his/her attendence is less than 75%. Take following input from user
Number of classes held and Number of classes attended.
And print percentage of class attended Is student is allowed to sit in exam or not.
8. Modify the above question to allow student to sit if he/she has medical cause. Ask user if he/she has medical cause or not ('Y' or 'N') and print accordingly.
9. Write a program to check whether a entered character is lowercase (a to z) or uppercase (A to Z).
10.Write a program to check if a year is leap year or not.
If a year is divisible by 4 then it is leap year but if the year is century year like 2000, 1900, 2100 then it must be divisible by 400.
11. Ask user to enter age, sex (M or F), marital status (Y or N) and then using following rules print their place of service.
if employee is female, then she will work only in urban areas.
if employee is a male and age is in between 20 to 40 then he may work in anywhere
if employee is male and age is in between 40 t0 60 then he will work in urban areas only.
And any other input of age should print "ERROR".
12.A 4 digit number is entered through keyboard. Write a program to print a new number with digits reversed as of orignal one. E.g.-
INPUT : 1234 OUTPUT : 4321
INPUT : 5982 OUTPUT : 2895
13. Write a Java program that keeps a number from the user and generates an integer between 1 and 7 and displays the name of the weekday.
Test Data Input number: 3
Expected Output : Wednesday
14.Write a program to accept percantage from the user and display grade according to the following criteria

Marks	Grade
> 90	A
>80 and <=90	B
>=60 and <=80	C
below 60	D

15. Write a java program to accept the cost price of a bike and display the road tax to be paid according to the following criteria.

Cost Price(In Rs)	Tax
> 100000	15%
>50000 and <=100000	10%
<=50000	5%

Programs | Assignment sheet-3
Numerical Problems

1. The perimeter of a rectangle is 230 cm. If the length of the rectangle is 70 cm, find its breadth and area.

2. The area of a rectangle is 96 cm^2. If the breadth of the rectangle is 8 cm, find its length and perimeter.

3. How many tiles whose length and breadth are 13 cm and 7 cm respectively are needed to cover a rectangular region whose length and breadth are 520 cm and 140 cm?

4. Find the cost of tiling a rectangular plot of land 300 m long and 150 m wide at the rate of $6 per hundred square m.

5. If it costs 1600 rs. to fence a rectangular park of length 20 m at the rate of 25 rs. per m^2, find the breadth of the park and its perimeter. Also, find the area of the field.

6. Find the area of a triangle, sides of which are 10 cm and 9 cm and the perimeter 36 cm.

7. Find the height of a triangle whose base is 50 cm and whose area is 500 cm^2.

8. Find the base of a triangle whose altitude is 20 cm and area is 0.8 m^2.

9. Find the area of an equilateral triangle, the length of whose sides is 12 cm.

10. Find the area of an isosceles right angled triangle of equal sides 15 cm each.

11. The base and height of a triangle are in the ratio 8 : 5 and its area is 320 m^2. Find the height and base of the triangle.

12. Find the area of a right angled triangle whose hypotenuse is 13 cm and one of its sides containing the right angle is 12 cm. Find the length of the other side.

13. The area of a right triangle is 184 cm^2 and one of its legs is 16 cm long. Find the length of other leg.

14. The length of one of the diagonals of a field in the form of a quadrilateral is 46 m. The perpendicular distance of the other two vertices from the diagonal are 13 m and 10 m, find the area of the field.

15. Shelly has a rectangular garden of length 22 m and breath 15 m. Her friend Rachel has a square garden of side 21 m. Whose garden is bigger and by how much?

16. Tina wants a new carpet for her rectangular dining room. Her dining room is a 5 meters by 7 meters rectangle. How much carpet does she need to buy to cover her entire dining room.

17. Luci is making a display board for the school exhibition. The display board is a 3 m by 2 m rectangle. He needs to add a ribbon border around the entire display board. What is the length of ribbon that he needs?

18. Ron jogs around a rectangular park of length 50 m and breadth 30 m. If he takes 10 rounds of the park each day, how much distance does he cover in a day in km?

19. A cube with an edge of 7 cm and a cuboid measuring 7 cm × 4 cm × 8 am are kept on a table. Which shape has more volume?

20. What is the volume of a brick of ice-cream with length 25 cm, breadth 10 cm and height 8 cm?

21. A brick measures 15 cm in length, 8 cm in breadth and 5 cm in height. How many bricks will be used to make a wall of length 15 m, breadth 10 m and height 8 metres?

22. A pond is 50 m long, 30 m wide and 2 m deep. Find the capacity of the pond in cubic metre.

23. Find the number of cubical boxes of cubical side 3 cm which can be accommodated in carton of dimensions 15 cm × 9 cm × 12 cm.

24. How many bricks each 25 cm long, 10 cm wide and 7.5 cm thick will be required for a wall 20 m long, 2 m high and 0.75 m thick? If bricks sell at $900 per thousand what will it cost to build the wall?

25. 100 bricks of length 24 cm and breadth 15 cm are used to tile a path of a garden. What is the area of the path?

26. How many bricks will be required to lay a path 120 m long and 2.4 m breadth if a brick is 24 cm long and 15 cm wide?

27. Find the cost of tiling a dining room 20 m long and 15 m wide at the rate of $ 5 per square m.

28. A carpet is 5 m long and 4 m wide. Find its price at the rate of $ 205 per square meter.

29. How many square tiles of side 10 cm will be required to tile a floor measuring 800 cm by 900 cm?

30. How many tiles of length 5 cm and breadth 8 cm are needed to tile the floor of a bed room 200 cm long and 400 cm wide?

31. What will be the area of a square with perimeter 200 m?

32. A square garden with a side length of 150 m has a square swimming pool in the very centre with a side length of 25 m . Calculate the area of the garden.

33. A rectangular garden has dimensions of 30 m by 20 m and is divided in to 4 parts by two pathways that run perpendicular from its sides. One pathway has a width of 3 m and the other, 4 m. Calculate the total usable area of the garden.

34. A wooded area is in the shape of a a trapezoid whose bases measure 128 m and 92 m and its height is 40 m. A 4 m wide walkway is constructed which runs perpendicular to the two bases. Calculate the area of the wooded area after the addition of the walkway.

35. Find the surface area of the cylindrical solid whose radius is 7.7 cm and height is 12 cm.

36. What is the surface area of a cylinder if the diameter is 15m height is 7m?

37. The surface of the cylinder is 149 cm^2. The cylinder height is 6 cm. What is the diameter of this cylinder?

38. The cylinder has a volume of 1287. The base has a radius 10. What is the area of the surface of the cylinder?

39. Find the surface of the cylinder if its diameter is 12 centimeters and its height is 9 centimeters.

40. Calculate the volume of the cylinder: r = 5 cm, h = 9 cm

41. I need to calculate the cylinder volume with a height of 50 cm and a diameter of 30 cm.

42. Find the Volume of Cylinder whose diameter and height are 2.25cm

43. Find the cost of polishing the base of a cone whose height is 4cm and slant height 5 cm at the rate of 10 rs. Per sq. cm

44. Find the 28th term of an Arithmetic Progression -21 -18 -15 -12 . . . . .

45. Find the sum of 28 terms of an Arithmetic Progression -21 -18 -15 -12 . . . . .

Condition Program

1. WAP to calculate area of circle
2. WAP to calculate area of rectangle
3. WAP to calculate the percentage of students
4. **WAP to exchange value to two variable with third variable and without third variable**
   // Bitwise ^ operator
5. **WAP to exchange value of two variable without using third variable and arithmetic operator**
6. WAP to find greater among two number
7. WAP to find greater among three number
8. **WAP to check wheather number is even or odd**
9. WAP to check wheater number is positive or negative
10. Print number between 1 to 5 in word format
11. Find even odd using switch case
12. **Check given character is vowel or not using switch case**
13. Program to perform arithmetic operation using switch case
14. WAP to find lowest number among four different number
15. WAP to check given year is a leap year or not
16. W.A.P to convert temperature from Fahrenheit to Celsius and Celsius to Fahrenheit. For given problem you have to take choice from user. If user enter choice 'c' or 'C' then convert Fahrenheit to Celsius. If user enter choice 'f' or 'F' then convert Celsius to Fahrenheit.
17. **W.A.P to check the sign of given number.**
18. W.A.P to check whether given number is even or odd Without using % operator.
19. W.A.P to check whether the traingle is equilateral, scalene, or isosceles. Hint: - Isosceles triangle: In geometry, an isosceles triangle is a triangle that has two sides of equal length. Equilateral triangle: In geometry, an equilateral triangle is a triangle in which all three sides are equal. Scalene triangle: A scalene triangle is a triangle that has three unequal sides.
20. W.A.P to check whether a charachter is an alphabet or not.
21. Java program to check whether the triangle is valid or not if angles are given. Hint:- The angle property of the triangle says that the sum of all three angles should be equal to 180.
22. Write a Java program to check whether a number is divisible by 5 and 11 or not.
23. Write a Java program to input day number and print week day.
24. Write a Java program to count total number of notes in given amount.
25. Write a Java program to calculate profit or loss.
26. Write a Java program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

    Percentage >= 90% : Grade A
    Percentage >= 80% : Grade B
    Percentage >= 70% : Grade C
    Percentage >= 60% : Grade D
    Percentage >= 40% : Grade E
    Percentage < 40% : Grade F

27. Write a Java program to input basic salary of an employee and calculate its Gross salary according to following:
Basic Salary <= 10000 : HRA = 20%, DA = 80% house rent allowance and Domestic allowace
Basic Salary <= 20000 : HRA = 25%, DA = 90%
Basic Salary > 20000 : HRA = 30%, DA = 95%
28. Write a C program to input electricity unit charges and calculate total electricity bill according to the given condition: For first 50 units Rs. 0.50/unit For next 100 units Rs. 0.75/unit For next 100 units Rs. 1.20/unit For unit above 250 Rs. 1.50/unit An additional surcharge of 20% is added to the bill.
29. Write a program to input choice from user. If user enter '+' as choice then calculate addition of 2 number. If Choice '>' then check which number is greaterst. If choice is '==' then check both number is equal or not.

Loop Program

1. Program to print 10 times hello on output screen using loop
2 Program to print 1 to 10 number using loop
3 Program to print 10 to 1 number using loop
4. WAP to print the series 1 2 3 4 5 .....n
5 WAP to print the series 1 3 5 7 9.....n terms
6 WAP to print the series 2 4 6 8 10.....n terms
7 WAP to print the series 1 4 9 16 25.....n terms
8 WAP to print the fibonacci series 0 1 1 2 3 5 8 13.....n terms
9 WAP to calculate the sum of given series 1 2 3 4 5 6 7 .....n terms
10 WAP to calculate the sum of given series 2 4 6 8 10.....n terms
11 WAP to calculate the sum of given series 1 - 2 + 3 - 4 + 5 - 6.....n terms
12 WAP to program to calculate the factorial of any given number.
13 WAP to calculate the reverse of any given number
14 WAP to input a number and check it palindrome or not
15 WAP to to input 3 digit number and check it is armstrong or not
16. WAP to enter an integer number and check it is prime or not
17. WAP to calculate x^y (x to the power y)
18. WAP to calculate the sum of given series x^1 + x^2 + x ^3.....x^n
19. WAP to calculate the sum of series 1/1! + 2/2! + 3/3!.....n\n!
20. WAP to print all prime number from 101 to 199
21. WAP to print the reverse of all number from 101 to 199
22. WAP to print all palindrome number from 101 to 199
23. WAP to print all armstrong number from 101 to 999
24. WAP in java to display the n terms of harmonic series and
their sum
1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms
25. Calculate the sum of following series 1/x + 1/x^2 + 1/x^3.....1/x^n

Programs | Class Room Assignment-5

1) WAP to print a statement 1000 number of times.
2) WAP to print N natural number.
3) WAP to find out the sum of N natural number.
4) WAP to print table of a number.
5) WAP to find out the factorial of a number.
6) WAP to find out the factors of a number.
7) WAP to check whether entered number is prime or not.
8) WAP to print Fibonacci series.
9) WAP to print N even numbers.
10) WAP to print Even numbers upto N.
11) WAP to print N odd numbers.
12) WAP to print Odd numbers upto N.
13) WAP to print N natural numbers in reverse order
14) WAP to print alphabets in uppercase
15) WAP to print alphabets in lowercase
16) ..... -6 -3 0 3 6 9 ..... n terms
17) 1 2 4 7 11 16 ..... n terms
18) 1 2 2 4 8 32 ..... n terms
19) 1 + 1/2 + 1/3 + 1/4 + 1/5 ..... n terms(find out sum)
20) 0 7 14 21 28 35 .....
21) 1, 4, 9, 16, 25 .....
22) 1 8 27 64 125 .....
23) 1 9 25 49 81 .....
24) 0 4 16 36 64 ..... 1 2 3 4 5 6 7 8
25) 1 27 125 343 .....
26) 0 8 64 216 .....
27) * # * # * # * # * .....
28) 1 2 3 4 Hello 6 7 8 9 Hello 11 12 ....
29) 1 11 111 1111 11111 .....
30) 1+11+111+1111+11111+....
31) 9 99 999 9999 99999 .....
32) A b C d E f G h ..... n terms
33) WAP to print Alphabets in reversing order.
34) WAP to check whether entered number is perfect or not
35) WAP to count number of digits
36) WAP to reverse a number
37) WAP to check whether entered number is palindrome or not
38) WAP to check whether entered number is Armstrong or not
39) WAP to check whether entered number is strong or not
40) WAP to count no. Of even and odd digits in a number
41) WAP to find out LCM of a number
42) WAP to find out HCF of a number
43) WAP to convert binary number into decimal number
44) WAP to interchange first and last digit of a number
45) WAP to find out the sum of all the digits of a number
46) WAP to find out the sum of first and last digit of a user entered number
47) WAP to print tables of all the numbers between two entered numbers
48) WAP to find out the factors of all the numbers between two entered numbers
49) WAP to find out all the perfect numbers between two entered numbers
50) WAP to find out all the palindrome numbers between two entered numbers
51) WAP to reverse all the numbers between two entered number

52) WAP to find out all the Armstrong numbers between two entered numbers
53) WAP to print all the strong numbers between two entered numbers
54) WAP to print all the even numbers between two entered numbers
55) WAP to print all the odd numbers between two entered numbers
56) WAP to print factorial of all the numbers between two entered numbers
57) WAP to print all the prime numbers between two entered numbers
58) WAP to convert decimal number into binary number without using array
59) WAP to find out the sum of all integer between 100 and 200 which are divisible by 9
60) WAP to print Square, Cube and Square Root of all numbers from 1 to N
61) WAP to find out all the leap years between two entered years
62) Draw patterns

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		 *
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		  *
		  *
			*****
			*****
			*****
			*****
			*****
				12345
				12345
				12345
				12345
				12345
					11111
					22222
					33333
					44444
					55555
						1
						00
						111
						0000
						11111
							7

* ** *** **** *****	1 12 123 1234 12345	1 22 333 4444 55555	A AB ABC ABCD ABCDE	a ab abc abcd abcde	1 01 101 0101 10101	1 23 456 78910	14
A BB CCC DDDD EEEEE	a bc def ghij klmno	* ## *** #### *****	1 10 101 1010 10101	* * * * * * * * * * * *	1 12 1 3 1 4 12345	1 22 3 3 4 4 55555	21
A AB A C A D ABCDE	a bc d f g j klmno	* ** *@* *@@* * * * * *	5 54 543 5432 54321	* *# *#* *#*# *#*#*	1 10 1 1 1 0 10101	1 123 12345 1234567 123456789	28
1 222 33333 4444444 555555555	***** **** *** ** *	12345 1234 123 12 1	55555 4444 333 22 1	ABCDE ABCD ABC AB A	EEEEE DDDD CCC BB A	***** * * * * ** *	35
ABCDE A D A C AB A	***** #### *** ## *	55555 4 4 3 3 22 1	123456 54321 1234 321 12 1	* ** **** ******* **********	A BCD EFGHI JKLMNOP	54321 5432 543 54 5	42
1 12 123 1234 12345	1 22 333 4444 55555	5 44 333 2222 11111	A AB ABC ABCD ABCDE	1 11 1*1 1**1 11111	A AB A_C A__D ABCDE	1 10 101 1010 10101	49
12345 1234 123 12 1	55555 4444 333 22 1	12345 1__4 1_3 12 1	55555 4__4 3_3 22 1	ABCDE A__D A_C AB A	ABCDE ABCD ABC AB A	11111 2222 333 44 5	56
* * * * * * * * * * * * * * *	1 1 2 1 2 3 1 2 3 4 1 2 3 4 5	A A B A B C A B C D A B C D E	X X X X__X X___X X X X X X	* *** ***** *******<br*********	1 123 12345 1234567 123456789	A ABC ABCDE ABCDEEF ABCDEFGHI	63

* * * * _ * * ___ * * _____ * *********	1 1 1 1 2 1 1 3 3 1 1 4 6 4 1	1 1*1 1***1 1*****1 111111111	A B B C C D D EEEEEEEEE	# *#* **#** ***#*** ****#****	********* ******* ***** *** *	* * * * * * * * * * * * * * *	70
123456789 1234567 12345 123 1	A B C D E A B C D A B C A B A	5 5 5 5 5 4 4 4 4 3 3 3 2 2 1	123456789 1 7 1 5 1 3 1	123456789 1++++++7 1+++5 1+3 1	x xx xxx xxxx xxx xx x	1 12 123 1234 123 12 1	77
1 12 123 1234 123 12 1	1 1 2 1 3 1 4 1 3 1 2 1	* * * * _ * * _ * _ * * _ * _ * * _ * *	* *** ***** ******* ***** *** *	* * * * _ * * ___ * * _____ * * ___ * * _ * *		1 212 32123 4321234 543212345	84
* * ** ** *** *** **** **** ***** *****	**** **** *** *** ** ** * *	***** ***** **** **** *** *** ** ** * * * * ** ** *** *** **** **** ***** *****	1 2 3 4 123454321 4 3 2 1	1 101 10101 1010101 101010101 10101010101	* * * * * * * * * * * * *		90

WAP to print all the alphabets in pattern according to the selected case using switch case.

ARRAY ASSIGNMENT

Array Assignment :-

Q.1 Peak an element

An element is called a peak element if its value is not smaller than the value of its adjacent elements(if they exists).
Given an array arr[] of size N, find the index of any one of its peak elements.
Note: The generated output will always be 1 if the index that you return is correct. Otherwise output will be 0.
Example 1:
Input: N = 3
arr[] = {1,2,3}
Output: 1
Explanation: index 2 is 3.
It is the peak element as it is
greater than its neighbor 2.
Example 2:
Input: N = 2
arr[] = {3,4}
Output: 1
Explanation: 4 (at index 1) is the
peak element as it is greater than
its only neighbor element 3.
Constraints:
$1 \leq N \leq 105$.
$1 \leq A[\ ] \leq 106$

Q.2 Find minimum and maximum element in array

Q.3 Write a program to reverse the array.

Q.4 Write a program to sort the array

Q.5 Find the kth largest and kth smallest element in array.

Q.5 Find occurrence of an integer number in array.

Q.6 Sort the array of 0s , 1s and 2s.

Q.7 Sub array with given sum

Given an unsorted array A of size N that contains only non-negative integers, find a continuous sub-array which adds to a given number S.
Example 1:
Input:
N = 5, S = 12
A[] = {1,2,3,7,5}
Output: 2 4
Explanation: The sum of elements
from 2nd position to 4th position is 12.
Example 2:
Input:
N = 10, S = 15
A[] = {1,2,3,4,5,6,7,8,9,10}
Output: 1 5
Explanation: The sum of elements
from 1st position to 5th position is 15.
1 <= N <= 105
1 <= Ai <= 109

ARRAY ASSIGNMENT

Q.8 Given an unsorted array arr[] of size N having both negative and positive integers. The task is place all negative element at the end of array without changing the order of positive element and negative element.

Example 1:

Input :

N = 8

arr[] = {1, -1, 3, 2, -7, -5, 11, 6 }

Output :

1 3 2 11 6 -1 -7 -5

Example 2:

Input : N=8

arr[] = {-5, 7, -3, -4, 9, 10, -1, 11}

Output : 7 9 10 11 -5 -3 -4 -1

Q.9 Find the Union and Intersection of two sorted array.

Given two arrays a[] and b[] of size n and m respectively. The task is to find union between these two arrays. Union of the two arrays can be defined as the set containing distinct elements from both the arrays. If there are repetitions, then only one occurrence of element should be printed in the union.

Example 1:

Input:

5 3

1 2 3 4 5

1 2 3

Output: 5

Explanation:

1, 2, 3, 4 and 5 are the

elements which come in the union set

of both arrays. So, count is 5.

Example 2:

Input: 6 2

85 25 1 32 54 6

85 2

Output: 7

Explanation:

85, 25, 1, 32, 54, 6, and

2 are the elements which comes in the

union set of both arrays. So count is 7.

Q.10 Write a program to cyclically rotate array by one.

Q.11 Count pair with given sum.

Given an array of N integers, and an integer K, find the number of pairs of elements in the array whose sum is equal to K

Example 1:

Input:

N = 4, K = 6

arr[] = {1,5,7,1}

Output: 2

Explanation:

arr[0] + arr[1] = 1 + 5 = 6

and arr[1] + arr[3] = 5 + 1 = 6.

Example 2:

Input: N = 4, X = 2

arr[] = {1, 1, 1, 1}

ARRAY ASSIGNMENT

Output: 6
Explanation:
Each 1 will produce sum 2 with any 1.
Q.12 Find common elements in three sorted arrays.
Given three arrays sorted in increasing order. Find the elements that are common in all three arrays.
Note: can you take care of the duplicates without using any additional Data Structure?
Example 1:
Input:
n1 = 6; A = {1, 5, 10, 20, 40, 80}
n2 = 5; B = {6, 7, 20, 80, 100}
n3 = 8; C = {3, 4, 15, 20, 30, 70, 80, 120}
Output: 20 80
Explanation: 20 and 80 are the only
common elements in A, B and C.
Q.13 Find the first repeating element in array of integers
Q.14. Find the first non-repeating elment in given array of integers
Find the first non-repeating element in a given array arr of N integers.
Note: Array consists of only positive and negative integers and not zero.
Example 1:
Input : arr[] = {-1, 2, -1, 3, 2}
Output : 3
Explanation:
-1 and 2 are repeating whereas 3 is
the only number occurring once.
Hence, the output is 3.
Example 2:
Input : arr[] = {1, 1, 1}
Output : 0
Q.15 Sub with equal 0s and 1s
Given an array containing 0s and 1s. Find the number of subarrays having equal number of 0s and 1s.
Example 1:
Input:0
n = 7
A[] = {1,0,0,1,0,1,1}
Output: 8
Explanation: The index range for the 8
sub-arrays are: (0, 1), (2, 3), (0, 3), (3, 4),
(4, 5) ,(2, 5), (0, 5), (1, 6)
Example 2:
Input:
n = 5
A[] = {1,1,1,1,0}
Output: 1
Explanation: The index range for the
subarray is (3,4).
Q.16 Rearrange the array in alternating positive and negative items
Given an unsorted array Arr of N positive and negative numbers. Your task is to create an array of alternate positive and negative numbers without changing the relative order of positive and negative numbers.
Note: Array should start with positive number.

ARRAY ASSIGNMENT

Example 1:
Input:
N = 9
Arr[] = {9, 4, -2, -1, 5, 0, -5, -3, 2}
Output:
9 -2 4 -1 5 -5 0 -3 2
Example 2:
Input:
N = 10
Arr[] = {-5, -2, 5, 2, 4, 7, 1, 8, 0, -8}
Output:
5 -5 2 -2 4 -8 7 1 8 0

Q.17 Find it there is any subarray with sum equals to zero
Given an array of positive and negative numbers. Find if there is a subarray (of size at-least one) with 0 sum.
Example 1:
Input:5
4 2 -3 1 6
Output: Yes
Explanation:
2, -3, 1 is the subarray
with sum 0.
Example 2:
Input: 5
4 2 0 1 6
Output: Yes
Explanation:
0 is one of the element
in the array so there exist a
subarray with sum 0.

Q.18) Find largest sum contiguous sub array
Given an array Arr[] of N integers. Find the contiguous sub-array(containing at least one number) which has the maximum sum and return its sum.
Example 1:
Input:
N = 5
Arr[] = {1,2,3,-2,5}
Output:9
Explanation:
Max subarray sum is 9
of elements (1, 2, 3, -2, 5) which
is a contiguous subarray.
Example 2:
Input:
N = 4
Arr[] = {-1,-2,-3,-4}
Output: -1
Explanation:
Max subarray sum is -1
of element (-1)

ARRAY ASSIGNMENT

Q.19) Find Maximum product contiguous sub array

Given an array Arr[] that contains N integers (may be positive, negative or zero). Find the product of the maximum product subarray.

Example 1:

Input:

N = 5

Arr[] = {6, -3, -10, 0, 2}

Output: 180

Explanation: Subarray with maximum product

is [6, -3, -10] which gives product as 180.

Example 2:

Input:

N = 6

Arr[] = {2, 3, 4, 5, -1, 0}

Output: 120

Explanation: Subarray with maximum product

is [2, 3, 4, 5] which gives product as 120.

Q.20 Longest consecutive sequence.

Given an array of positive integers. Find the length of the longest sub-sequence such that elements in the subsequence are consecutive integers, the consecutive numbers can be in any order.

Example 1:

Input: N = 7

a[] = {2,6,1,9,4,5,3}

Output: 6

Explanation:

The consecutive numbers here

are 1, 2, 3, 4, 5, 6. These 6

numbers form the longest consecutive

subsequence.

Example 2:

Input: N = 7

a[] = {1,9,3,10,4,20,2}

Output: 4

Explanation:

1, 2, 3, 4 is the longest

consecutive subsequence.

Q.21 Max Sum in configuration

Given an array(0-based indexing), you have to find the max sum of i*A[i] where A[i] is the element at index i in the array. The only operation allowed is to rotate(clock-wise or counter clock-wise) the array any number of times.

Example 1:

Input: N = 4

A[] = {8,3,1,2}

Output: 29

Explanation: Above the configuration

possible by rotating elements are

3 1 2 8 here sum is 3*0+1*1+2*2+8*3 = 29

1 2 8 3 here sum is 1*0+2*1+8*2+3*3 = 27

2 8 3 1 here sum is 2*0+8*1+3*2+1*3 = 17

8 3 1 2 here sum is 8*0+3*1+1*2+2*3 = 11

Here the max sum is 29

ARRAY ASSIGNMENT

Q.22) C program to find nearest lesser and greater element in array

Given an array of N elements and we have to find nearest lesser and nearest greater element using java program.

Example:

Input:

Enter the number of elements for the array : 3

Enter the elements for array_1..

array_1[0] : 1

array_1[1] : 2

array_1[2] : 3

Enter the number : 2

Output:

Element lesser than 2 is : 1

Element greater than 2 is : 3

23. Write a Java program to find the sum and average of one dimensional integer array.

24. Write a Java program to swap first and last element of an integer 1-d array.

25. Write a Java program to reverse the element of an integer 1-D array.

26. Write a Java program to find the largest and smallest element of an array.

28. P is one-dimensional array of integers. Write a Java program search for a data VAL from P. If VAL is present in the array then “element found ” otherwise “element not found” should be displayed.

29. Suppose a one-dimensional array AR containing integers is arranged in ascending order. Write a java program to search for an integer from AR with the help of Binary search method,

30. Suppose A, B, C are arrays of integers of size M, N, and M + N respectively. The numbers in array A appear in ascending order while the numbers in array B appear in descending order. Write a java program to produce third array C by merging arrays A and B in ascending order.

31. Suppose X, Y, Z are arrays of integers of size M, N, and M + N respectively. The numbers in array X and Y appear in descending order. Write a java program to produce third array Z by merging arrays X and Y in descending order.

32. Given two arrays of integers A and B of sizes M and N respectively. Write a Write a c program, which will produce a third array named C. such that the following sequence is followed.

All even numbers of A from left to right are copied into C from left to right.

All odd numbers of A from left to right are copied into C from right to left.

All even numbers of B from left to right are copied into C from left to right.

All old numbers of B from left to right are copied into C from right to left.

e.g., A is {3, 2, 1, 7, 6, 3} and B is {9, 3, 5, 6, 2, 8, 10} the resultant array C is {2, 6, 6, 2, 8, 10, 5, 3, 9, 3, 7, 1, 3}

33. Write a java program to implement binary search algorithm

34. Write a java program to implement linear search

35. Write a java program to implement selection sort algorithm

36. Write a java program to implement bubble sort algorithm

37. Write a java program to implement insertion sort algorithm

STRING

1) What is String in java? What do you mean by mutability and immutability?

String: - Generally, String is a sequence of characters. But in Java, string is an object that represents a sequence of characters. The java.lang.String class is used to create a string object.

Mutable:- The mutable objects are objects whose value can be changed after initialization. We can change the object's values, such as field and states, after the object is created. For example, Java.util.Date, StringBuilder, StringBuffer, etc.

When we made a change in existing mutable objects, no new object will be created; instead, it will alter the value of the existing object. These object's classes provide methods to make changes in it.

The Getters and Setters (get() and set() methods) are available in mutable objects. The Mutable object may or may not be thread-safe.

Immutable:- The immutable objects are objects whose value can not be changed after initialization. We can not change anything once the object is created. For example, primitive objects such as int, long, float, double, all legacy classes, Wrapper class, String class, etc.

In a nutshell, immutable means unmodified or unchangeable. Once the immutable objects are created, its object values and state can not be changed.

Only Getters (get() method) are available not Setters (set() method) for immutable objects.

Let's see how to create classes for mutable and immutable objects.

Why are Strings in Java Immutable

String in Java is a very special class, as it is used almost in every Java program. That's why it is Immutable to enhance performance and security. Let's understand it in detail:

In Java, strings use the concept of literals. Suppose we have an object having many reference variables. In such a scenario, if we will change the value of a reference variable, it will affect the entire object and all of its values.

Apart from the above reasons, the following reasons are also responsible for making the String immutable:

Immutable objects are very simple; there is no need for synchronization and are inherently thread-safe. But, Immutable objects make good building blocks for other objects, so we have to provide them special care.

STRING

2) What is difference between String , SrtingBuffer and StringBuilder? Explain with example.

Parameter	String	StringBuffer	StringBuilder
Storage	String Pool	Heap	Heap
Mutability	Immutable	Mutable	Mutable
Thread Safe	Not used in a threaded environment	Used in a multi-threaded environment	Used in a single-threaded environment
Performance	Slow	Slower than StringBuilder but faster than String	Faster than StringBuffer
Syntax	String var =“Edureka”; String var= new String(“Edureka”);	StringBuffer var = new StringBuffer("Edureka");	StringBuilder var = new StringBuilder("Edureka");

```
class GFG {
        // Method 1
        // Concatenates to String
        public static void concat1(String s1)  {
                s1 = s1 + "forgeeks";
        }
        // Method 2
        // Concatenates to StringBuilder
        public static void concat2(StringBuilder s2) {
                s2.append("forgeeks");
        }
        // Method 3
        // Concatenates to StringBuffer
        public static void concat3(StringBuffer s3)  {
                s3.append("forgeeks");
        }
        // Method 4
        // Main driver method
        public static void main(String[] args)        {
                // Custom input string
                // String 1
                String s1 = "Geeks";
                // Calling above defined method
                concat1(s1);
                // s1 is not changed
                System.out.println("String: " + s1);
                // String 1
                StringBuilder s2 = new StringBuilder("Geeks");
                // Calling above defined method
                concat2(s2);
                // s2 is changed
                System.out.println("StringBuilder: " + s2);
                // String 3
                StringBuffer s3 = new StringBuffer("Geeks");
                // Calling above defined method
                concat3(s3);
                // s3 is changed
                System.out.println("StringBuffer: " + s3);
                }
        }
```

```
String: Geeks
StringBuilder: Geeksforgeeks
StringBuffer: Geeksforgeeks
```

STRING

3) What is difference between == operator and String class equals() method?

Ans. In general, both equals() and "==" operators in Java are used to compare objects to check equality, but here are some of the differences between the two:

1. The main difference between the .equals() method and == operator is that one is a method, and the other is the operator.
2. We can use == operators for reference comparison (address comparison) and .equals() method for content comparison. In simple words, == checks if both objects point to the same memory location whereas .equals() evaluates to the comparison of values in the objects.

4) How many ways to initialize String in java? Explain role of String literal pool.

1. Object Initialization

String initialization using the new keyword. Initializing String using a new keyword creates a new object in the heap of memory. String initialized through an object is mutable means to say the value of the string can be reassigned after initialization.

```
String strMsg = new String("Be specific towards your goal!");
```

When initiating objects using the constructor, java compilers create a new object in **the heap memory**. Heap memory is a reserved memory for the JVM.

2. Direct Initialization

String initialization using Literals. String initializing using the Literal creates an object in the pooled area of memory.

```
String strMsg = "Be specific towards your goal!";
```

When initializing String using Literal & value assigned to it already initialized in another String. In such a scenario, String created through Literal doesn't create a new object. It just passed the reference to the earlier created object.

5) Write a java program to reverse each word of String.

Sample Input: "Java Is Plateform Independent"

Output: "avaJ sI mrofetalP tnednepednI"

Ans. infobeans java\String\String5.java

6) Write a java program to find all possible palindrome of given String.

Sample Input: "aaabbbacccababacccaabb"

Ans.

7)WAP to remove the duplicate letters from given String.

Sample Input: "aabbccddd"

Output: "abcd"

Ans. infobeans java\String\String7.java

STRING

8) WAP to find out total occurrence of each letter in string.

Sample Input: “aabbccddd”

Output: a- 2 times
b- 2 times
c- 2 times
d- 3 times

Ans. infobeans java\String\String8.java

9) WAP to find word of maximum length in given String.

Sample Input: “Dear Student, you have need to work hard”

Output: “Student”

Ans. infobeans java\String\String9.java

10) WAP to count the word whose first letter is vowel.

Ans. infobeans java\String\String10.java

11) Input name of a person and count how many vowels it contains. Use String class methods.

Ans. infobeans java\String\String11.java

12) Input data exactly in the following format, and print sum of all integer values.
Sample Input: “67, 89, 23, 67, 12, 55, 66”. (Hint use String class split method and Integer class parseInt method)

Ans. infobeans java\String\String12.java

13)WAP check if two Strings are anagrams of each other?
(Hint Anagram words: LISTEN - SILENT
TRIANGLE - INTEGRAL)

Ans. infobeans java\String\String13.java

14) WAP check if a String contains only digits?

Ans. infobeans java\String\Str14.class

STRING

1. Write a Java program to concatenate Two strings
Ans. infobeans java\String\Str1.java
2. Write a Java program to get the character at the given index within the String
Ans. infobeans java\String\Str2.java
4. Write a Java program to count a number of Unicode code points in the specified text range of a String
Ans. infobeans java\String\Str4.java
5. Write a Java program to compare two strings lexicographically Two strings are lexicographically equal if they are the same length and contain the same characters in the same positions
Ans. infobeans java\String\Str5.java
6. Write a Java program to compare two strings lexicographically , ignoring case differences
Ans. infobeans java\String\Str6.java
7. Write a Java program to concatenate a given string to the end of another string
Ans. infobeans java\String\Str7.java
8. Write a Java program to test if a given string contains the specified sequence of char values
Ans. infobeans java\String\Str8.java
11. Write a Java program to check whether a given string ends with the contents of another string
Ans. infobeans java\String\Str11.java
12. Write a Java program to check whether two String objects contain the same data
Ans. infobeans java\String\Str12.java
13. Write a Java program to get the contents of a given string as a byte array
Ans. infobeans java\String\Str13.java
14. Write a Java program to get the canonical representation of the string object
Ans. infobeans java\String\Str14.java
15. Write a Java program to create a character array containing the contents of a string
Ans. infobeans java\String\Str15.java
16. Write a Java program to convert all the characters in a string to Lowercase
Ans. infobeans java\String\Str16.java
17. Write a Java program to convert all the characters in a string to Uppercase
Ans. infobeans java\String\Str17.java
18. Write a java program to get the length of a given string
Ans. infobeans java\String\Str18.java
19. Write a Java program to replace a specified character with another character
Ans. infobeans java\String\Str19.java

STRING

20. Write a Java program to replace each substring of a given string that matches the given regular expression with the given replacement

Ans.

21. Write a Java program to check whether a given string starts with the contents of another string

Ans. infobeans java\String\Str21.java

22. Write a Java program to get a substring of a given string between two specified positions

Ans. infobeans java\String\Str22.java

23. Write a Java program to trim any leading or trailing whitespace from a given string

Ans. infobeans java\String\Str23.java

24. Write a Java program to create a new string repeating every character twice of a given string

Ans. infobeans java\String\Str24.java

25. Write a Java program to return the sum of the digits present in the given string. If there is no digits the sum return is 0

Ans. infobeans java\String\Str25.java

26. Write a Java program to Count words in Given String

Ans. infobeans java\String\Str26.java

27. Write a Java program to Swap Two Strings

Ans. infobeans java\String\Str27.java

28. Write a Java program to Swap Two Strings without Third String Variable

Ans. infobeans java\String\Str28.java

29. Write a Java program to Reverse Each Word of a String

Ans. infobeans java\String\Str29.java

30. Write a Java program How to search a word inside a string?

Ans. infobeans java\String\Str30.java

31. Write a Java program to find first non-repeating character in a string

Ans. infobeans java\String\Str31.java

32. Write a Java program to print after removing duplicates from a given string

Ans. infobeans java\String\Str32.java

33. Write a Java program to find the maximum occurring character in a string

Ans. infobeans java\String\Str33.java

34. Write a Java program to reverse words in a given string

Ans. infobeans java\String\Str34.java

STRING

35. Write a Java program to find maximum between two string
Ans. infobeans java\String\Str35.java
36. Write a Java program How to check Palindrome String
Ans. infobeans java\String\Str36.java
37. Write a Java program to check if the letter 'x' is present in the word 'String Exercises'
Ans. infobeans java\String\Str37.java
38. Write a Java program to Given string Convert Lowercase to Uppercase
Ans. infobeans java\String\Str38.java
39. Write a Java program to Given string Convert Uppercase to Lowercase
Ans. infobeans java\String\Str39.java
40. Write a Java program to Count Number of Uppercase and Lowercase letters
Ans. infobeans java\String\Str40.java
41. Write a program to Trim a given string using String.trim() method
Ans. infobeans java\String\Str41.java
42. Write a program to Replace string with another string in java using String.replace() method
Ans. infobeans java\String\Str42.java
43. Write a program to Convert any type of value to string value using String.valueOf() method
Ans. infobeans java\String\Str43.java
45. Write a program to Compare the strings using equals(), compareTo() and == operator
Ans. infobeans java\String\Str45.java
46. Write a program to First alphabet capital of each word in given string
Ans. infobeans java\String\Str46.java
47. Write a program to Convert a character array to string
Ans. infobeans java\String\Str47.java
48. Write a program to String concatenation with primitive data type values
Ans. infobeans java\String\Str48.java
49. Write a program to Check given strings are Anagram or not
Ans. infobeans java\String\Str49.java
50. Write a program to separate all tokens (words) using StringTokenizer
Ans. infobeans java\String\Str50.java

INHERITANCE

1)What is Inheritance ? Is Java Support the multiple inheritance ? If no then why.

Ans. Inheritance in Java is a concept that acquires the properties from one class to other classes; for example, the relationship between father and son. Inheritance in Java is a process of acquiring all the behaviors of a parent object.

java doesn't provide support for multiple inheritance in classes.

The reason behind this is to prevent ambiguity. Consider a case where class B extends class A and Class C and both class A and C have the same method display(). Now java compiler cannot decide, which display method it should inherit. To prevent such situation, multiple inheritances is not allowed in java.

2)What is method overriding ? List down the difference between method overloading and method overriding.

Ans. If subclass (child class) has the same method as declared in the parent class, it is known as method overriding

Overriding Overloading

Implements “runtime polymorphism” Implements “compile time polymorphism”

The method call is determined at runtime based on the object type The method call is determined at compile time

Occurs between superclass and subclass Occurs between the methods in the same class

Have the same signature (name and method arguments) Have the same name, but the parameters are different

On error, the effect will be visible at runtime On error, it can be caught at compile time

3)What is the role of return type in case of method overloading and method overriding?

Ans. Method overloading has nothing to do with return-type.

If there are two methods of the same signature within a class in the program, then Ambiguity Error comes, whether their return-type is different or not.

method overloading can't be performed by changing return type of the method only. Return type can be same or different in method overloading. But you must have to change the parameter. Return type must be same or covariant in method overriding.

4) Can we Override static, private method?

Ans. No, we cannot override static methods because method overriding is based on dynamic binding at runtime and the static methods are bonded using static binding at compile time. Private methods in Java are not visible to any other class which limits their scope to the class in which they are declared so we can not override the static and private method.

5) Create class OneBHK with instance variable roomArea , hallArea and price.

Create default and parameterized constructor.

Method show(): to print OneBHK data member information.

Ans. infobeans java\Inheritance\In5.java

INHERITANCE

6) Create another class TwoBHK which has all the properties and behaviour of OneBHK and a new instance variable room2Area.
Create default and parameterized constructor.
Method show(): to print all data member information.
Write main function in another class(Say XYZ) and store three TwoBHK flat's.information and print information using show method. Also print total amount of all flats.
Ans. infobeans java\Inheritance\In6.java

7) Create three classes Faculty (facultyid, salary), FullTimeFaculty (basic, allowance) inherits class Faculty, PartTimeFaculty (hour, rate) inherits class Faculty.
Create a method for accepting input in FullTimeFaculty and PartTimeFaculty, but salary should not be accepted. salary is calculated on the basis of (basic+allowance) for FullTimeFaculty and (hour*rate) for PartTimeFaculty. Also create method in above classes to display faculty data.
Create another class(say XYZ) for main method and store 2 fulltime and 2 parttime faculty information. Also print their details.
Ans. infobeans java\Inheritance\In7.java

8) Create a class Student with two members : rollno and percentage.
Create default and parameterized constructors. Create method show() to display information.Create another class CollegeStudent inherits Student class. Add a new membersemester to it. Create default and parameterized constructors. Also override show() method.Create another class SchoolStudent inherits Student class. Add a new memberclassname(eg 12 th ,10 th etc.) to it. Create default and parameterized constructors. Also override show() method.
Create a class(say XYZ) with main method that carries out the operation of the project :
has array to store objects of any class(Student or CollegeStudent, SchoolStudent).
create two CollegeStudent and three SchoolStudent record objects and store them inside the array. display all record from the array. search record on the basic of rollno and check given rollno is of SchoolStudent or of CollegeStudent.
count how many students are having A grade,if for A grade percentage >75.
Ans. infobeans java\Inheritance\In8.java

9) What is abstract class?. What is interface? Differentiate abstract class and interface.
Ans. Abstraction :- Java abstract class is a class that can not be initiated by itself, it needs to be subclassed by another class to use its properties. An abstract class is declared using the "abstract" keyword in its class definition.
Interface : - An Interface in Java programming language is defined as an abstract type used to specify the behavior of a class. An interface in Java is a blueprint of a behaviour. A Java interface contains static constants and abstract methods.
Difference between Abstract Class and Interface

S.No.	Abstract Class	Interface

INHERITANCE

1.An abstract class can contain both abstract and non-abstract methods.Interface contains only abstract methods.
2.An abstract class can have all four; static, non-static and final, non-final variables. Only final and static variables are used.
3.To declare abstract class abstract keywords are used. The interface can be declared with the interface keyword.
4.It supports multiple inheritance. It does not support multiple inheritance.
5.The keyword 'extend' is used to extend an abstract class The keyword implement is used to implement the interface.
6.It has class members like private and protected, etc. It has class members public by default.

10) Write down difference b/w abstract class and jdk1.8 interface.
Ans. The difference between abstract class and interface is a common topic in Java programming. Here are some of the main points that you should know:
•An abstract class can have both abstract and non-abstract methods, while an interface can only have abstract methods (except for default and static methods introduced in Java 8).
•An abstract class can have any kind of variables, such as final, non-final, static, non-static, private, protected, or public, while an interface can only have public, static, and final variables.
•An abstract class can extend another class and implement multiple interfaces, while an interface can only extend another interface.
•An abstract class can have constructors, while an interface cannot.
•An abstract class can have any access modifier for its members, while an interface can only have public members.
11) Create an Abstract class Processor with int member variable data and method showData to display data value.
Create abstract method process() to define processing of member data.
Create a class Factorial using abstract class Processor to calculate and print factorial of a number by overriding the process method.
Create a class Circle using abstract class Processor to calculate and print area of a circle by overriding the process method Ask user to enter choice (factorial or circle area). Also ask data to work upon; Use Processor class reference to achieve this mechanism.

12) Create Interface Taxable with members salesTax=7% and incomeTax=10.5%. Create abstract method calcTax().
Create class Employee(empId,name,salary) and implement Taxable to calculate incomeTax on yearly salary.
Create class Product(pid,price,quantity) and implement Taxable to calculate salesTax on unit price of product.

INHERITANCE

Create class for main method(Say XYZ), accept employee information and a product information from user and print income tax and sales tax respectively.

13) Explain the importance of toString() and equals() method of the Object class and override them on class Employee (empId,name,salary).

Create class for main method(say XYZ),and accept five employees information and store in an array. Also ensure if entered empId already exist or not (use equals method).

Display all employee info using toString() method.

14) What is the difference b/w jdk1.7 and jdk1.8 interface. Explain jdk1.8 new changes for interface with example.

15) Explain functional interface, predicate, lambda expression, method reference and constructor reference with example.

16) Create a program that helps banks to maintain records. It should havefollowing facilities.

Anybody can create current or saving account with following initial information:account number, name, balance, and branch.

display account detail for a particular accounts.

display total money deposited in bank.

allow deposit and withdrawal in an account .

for saving account opening balance and minimum balance must be 5000.

for current account opening balance and minimum balance must be 1000.

can not withdraw the amount from the account that makes balance less than the minimum balance.

Read once :-

Object-oriented programming: Object-oriented programming (OOP) is a programming paradigm based on the concept of "objects", which can contain data and code. The data is in the form of fields (often known as attributes or properties), and the code is in the form of procedures (often known as methods).

A Java class file is a file (with the .class filename extension) containing Java bytecode that can be executed on the Java Virtual Machine (JVM). A Java class file is usually produced by a Java compiler from Java programming language source files (.java files) containing Java classes (alternatively, other JVM languages can also be used to create class files).

If a source file has more than one class, each class is compiled into a separate class file.

---

1. Write a Java program to create a class called "Person" with a name and age attribute. Create two instances of the "Person" class, set their attributes using the constructor, and print their name and age.

2. Write a Java program to create a class called "Dog" with a name and breed attribute. Create two instances of the "Dog" class, set their attributes using the constructor and modify the attributes using the setter methods and print the updated values.

3. Write a Java program to create a class called "Rectangle" with width and height attributes. Calculate the area and perimeter of the rectangle.

4. Write a Java program to create a class called "Circle" with a radius attribute. You can access and modify this attribute. Calculate the area and circumference of the circle.

5. Write a Java program to create a class called "Book" with attributes for title, author, and ISBN, and methods to add and remove books from a collection.

6. Write a Java program to create a class called "Employee" with a name, job title, and salary attributes, and methods to calculate and update salary.

7. Write a Java program to create a class called "Bank" with a collection of accounts and methods to add and remove accounts, and to deposit and withdraw money. Also define a class called "Account" to maintain account details of a particular customer.

8. Write a Java program to create class called "TrafficLight" with attributes for color and duration, and methods to change the color and check for red or green.

9. Write a Java program to create a class called "Employee" with a name, salary, and hire date attributes, and a method to calculate years of service.

10. Write a Java program to create a class called "Student" with a name, grade, and courses attributes, and methods to add and remove courses.

11. Write a Java program to create a class called "Library" with a collection of books and methods to add and remove books.

12. Write a Java program to create a class called "Airplane" with a flight number, destination, and departure time attributes, and methods to check flight status and delay.

13. Write a Java program to create a class called "Inventory" with a collection of products and methods to add and remove products, and to check for low inventory.

14. Write a Java program to create a class called "School" with attributes for students, teachers, and classes, and methods to add and remove students and teachers, and to create classes

15. Write a Java program to create a class called "MusicLibrary" with a collection of songs and methods to add and remove songs, and to play a random song.

16. Write a Java program to create a class called "Shape" with abstract methods for calculating area and perimeter, and subclasses for "Rectangle", "Circle", and "Triangle".

17. Write a Java program to create a class called "Movie" with attributes for title, director, actors, and reviews, and methods for adding and retrieving reviews.

18. Write a Java program to create a class called "Restaurant" with attributes for menu items, prices, and ratings, and methods to add and remove items, and to calculate average rating.

19. Write a Java program to create a class with methods to search for flights and hotels, and to book and cancel reservations.

ARRAY

1 wap to define an array of integer of size Take input from user and display it in reverse order

2 wap to ask 5 names from user and check if particular name exists in array or not .

3 wap to define an array of integer and assign value in program and print sum of all values

4 wap to print max and minimum value in given array

5 wap to find and print even numbers in given array

6 wap to find and print prime numbers in given array

7 wap to search a particular number in given array and print its position

8.Write a program to find the sum and product of all elements of an array.

9.Initialize and print all elements of a 2D array.

10.Take 20 integer inputs from user and print the following: number of positive numbers number of negative numbers number of odd numbers number of even numbers number of 0s.

Q.11 There are two arrays object one containing 100 elements and another containing 50 elements. Both are of same data type. Can we assign one Array to another Array

Q.12 a) Write a statement that declares a string array initialized with the following strings: "Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday" and "Saturday". b) Write a loop that displays the contents of each element in the array that you declared.

Q13. Write a program to array elements to print sum of Cubic Values

Q.14Write a program in java to array size to be user input print it

Q.15 Write a Java program to print the following grid. Expected Output :

- -

Q.16 Write a Java program to calculate the average value of array elements.

Q.17 Write a Java program to find duplicate values in an array of string values.

Q.18 Write a Java program to add two matrices of the same size.

ARRAY

Q.1 Write a program to make a Jagged Array .
Q.2 Write a program for Sorting an array .
Q.3 Write a program for Swapping Two Arrays .
Q.4 Write a Java program to swap first and last element of an integer 1-d array.g
Q.5 Write a Java program to test two arrays' equality.
Q.6 Find a missing number in an array
Q.7 Wap to Insert an element at a specific position in an Array in Java
Q.8 Java Program to Increment All Element of an Array by One
Examples:
Input : arr1[] = {50, 25, 32, 12, 6, 10, 100, 150}
Output: arr1[] = {51, 25, 33, 13, 7, 11, 101, 151}
Input : arr2[] = {3, 6, 8, 12, 45}
Output: arr2[] = {4, 7, 9, 13, 46}
Q.9 Find a peak element which is not smaller than its neighbours Given an array arr[] of integers. Find a peak element i.e. an element that is not smaller than its neighbors.
Note: For corner elements, we need to consider only one neighbor.
Example:
Input: array[]= {5, 10, 20, 15}
Output: 20
Explanation: The element 20 has neighbors 10 and 15, both of them are less than 20.
input: array[] = {10, 20, 15, 2, 23, 90, 67}
Output: 20 or 90
Explanation: The element 20 has neighbors 10 and 15, both of them are less
than 20, similarly 90 has neighbors 23 and 67.
The following corner cases give a better idea about the problem.
1. If the input array is sorted in a strictly increasing order, the last element is always a peak element. For example, 50 is peak element in {10, 20, 30, 40,50}.
2. If the input array is sorted in a strictly decreasing order, the first element is always a peak element. 100 is the peak element in {100, 80, 60, 50, 20}.
3. If all elements of the input array are the same, every element is a peak element.It is clear from the above examples that there is always a peak element in the input array. Follow the below steps to Implement the idea:
 If the first element is greater than the second or the last element is greater than the second last, print the respective element and terminate the program.
 Else traverse the array from the second index to the second last index i.e. 1 to N – 1
If for an element array[i] is greater than both its neighbours, i.e., and, then print that element and terminate.
Q.10 Check for Majority Element in a sorted array Given an array arr of N elements, A majority element in an array arr of size N is an element that appears more than N/2 times in the array. The task is to write a function say isMajority() that takes an array (arr[]), array's size (n) and a number to be searched (x) as parameters and returns true if x is
a majority element (present more than n/2 times).
Examples:
Input: arr[] = {1, 2, 3, 3, 3, 3, 10}, x = 3
Output: True (x appears more than n/2 times in the given array)
Input: arr[] = {1, 1, 2, 4, 4, 4, 6, 6}, x = 4
Output: False (x doesn't appear more than n/2 times in the given array)
Input: arr[] = {1, 1, 1, 2, 2}, x = 1
Output: True (x appears more than n/2 times in the given array
METHOD 1 (Using Linear Search): Linearly search for the first occurrence of the element, once you find it (let at index i), check element at index i + n/2. If element is present at i+n/2 then return 1 else return 0.

ARRAY

Q.11 K-th Element of Two Sorted Arrays Given two sorted arrays of size m and n respectively, you are tasked with finding the element that would be at the k'th position of the final sorted array.
Examples:
Input : Array 1 - 2 3 6 7 9
Array 2 - 1 4 8 10
k = 5
Output : 6
Explanation: The final sorted array would be -
1, 2, 3, 4, 6, 7, 8, 9, 10
The 5th element of this array is 6.
Input : Array 1 - 100 112 256 349 770
Array 2 - 72 86 113 119 265 445 892
k = 7
Output : 256
Explanation: Final sorted array is -
72, 86, 100, 112, 113, 119, 256, 265, 349, 445, 770, 892 7th element of this array is 256.
Q.12 Find the number of zeroes Given an array of 1s and 0s which has all 1s first followed by all 0s. Find the number of 0s. Count the number of zeroes in the given array.
Examples :
Input: arr[] = {1, 1, 1, 1, 0, 0}
Output: 2
Input: arr[] = {1, 0, 0, 0, 0}
Output: 4
Input: arr[] = {0, 0, 0}
Output: 3
Input: arr[] = {1, 1, 1, 1}
Output: 0
Q.13 Find the Rotation Count in Rotated Sorted array Given an array arr[] of size N having distinct numbers sorted in increasing order and the array has been right rotated (i.e. the last element will be cyclically shifted to the starting position of the array) k number of times, the task is to find the value of k.
Examples:
Input: arr[] = {15, 18, 2, 3, 6, 12}
Output: 2
Explanation: Initial array must be {2, 3, 6, 12, 15, 18}.
We get the given array after rotating the initial array twice.
Input: arr[] = {7, 9, 11, 12, 5}
Output: 4
Input: arr[] = {7, 9, 11, 12, 15};
Output: 0
(Using linear search): This problem can be solved using linear search. If we take a closer look at examples, we can notice that the number of rotations is equal to the index of the minimum element. A simple linear solution is to find the minimum element and returns its index. Illustration:
Consider the array arr[]={15, 18, 2, 3, 6, 12};
Initially minimum = 15, min_index = 0
At i = 1: min = 15, min_index = 0
At i = 2: min = min(2, 15) = 2, min_index = 2
At i = 3: min = 2, min_index = 2
At i = 4: min = 2, min_index = 2
At i = 5: min = 2, min_index = 2
The array is rotated twice to the right Follow the steps mentioned below to implement the idea:

ARRAY

 Initialize two variables to store the minimum value and the index of that value.
 Traverse the array from start to the end:
 Find the minimum value and index where the minimum value is stored.
 Return the index of the minimum value.
Below is the code implementation of the above idea.
Q.14 Find Subarray with given sum | Set 1 (Non-negative Numbers)
Given an array arr[] of non-negative integers and an integer sum, find a subarray that adds to a given sum.
Note: There may be more than one subarray with sum as the given sum, print first such subarray.
Examples:
Input: arr[] = {1, 4, 20, 3, 10, 5}, sum = 33
Output: Sum found between indexes 2 and 4
Explanation: Sum of elements between indices 2 and 4 is 20 + 3 + 10 = 33
Input: arr[] = {1, 4, 0, 0, 3, 10, 5}, sum = 7
Output: Sum found between indexes 1 and 4
Explanation: Sum of elements between indices 1 and 4 is 4 + 0 + 0 + 3 = 7
Input: arr[] = {1, 4}, sum = 0
Output: No subarray found
Explanation: There is no subarray with 0 sum
Find subarray with given sum using Nested loop The idea is to consider all subarrays one by one and check the sum of every subarray. Following program implements the given idea.
Run two loops: the outer loop picks a starting point i and the inner loop tries all subarrays starting from i.
Follow the steps given below to implement the approach:
 Traverse the array from start to end.
 From every index start another loop from i to the end of the array to get all subarrays starting from i, and keep a variable currentSum to calculate the sum of every subarray.
 For every index in inner loop update currentSum = currentSum + arr[j]
 If the currentSum is equal to the given sum then print the subarray.
Q.15 Find Second largest element in an array
Given an array of integers, our task is to write a program that efficiently finds the second-largest element present in the array.
Example:
Input: arr[] = {12, 35, 1, 10, 34, 1}
Output: The second largest element is 34.
Explanation: The largest element of the array is 35 and the second largest element is 34
Input: arr[] = {10, 5, 10}
Output: The second largest element is 5.
Explanation: The largest element of the array is 10 and the second largest element is 5
Input: arr[] = {10, 10, 10}
Output: The second largest does not exist.
Explanation: Largest element of the array is 10 there is no second largest element
Q.16 Rearrange array such that even positioned are greater than odd Given an array A of n elements, sort the array according to the following relations :
 , if i is even, ∀ 1 <= i < n
 , if i is odd , ∀ 1 <= i < n
Print the resultant array.
Examples :
Input : A[] = {1, 2, 2, 1}
Output : 1 2 1 2
Explanation :
For 1st element, 1 1, i = 2 is even.

3rd element, 1 1, i = 4 is even.
Input : A[] = {1, 3, 2}
Output : 1 3 2
Explanation :
Here, the array is also sorted as per the conditions.
1 1 and 2 < 3.
Q.17 Print All Distinct Elements of a given integer array
Given an integer array, print all distinct elements in an array. The given array may contain duplicates and the output should print every element only once. The given array is not sorted.
Examples:
Input: arr[] = {12, 10, 9, 45, 2, 10, 10, 45}
Output: 12, 10, 9, 45, 2
Input: arr[] = {1, 2, 3, 4, 5}
Output: 1, 2, 3, 4, 5s
Input: arr[] = {1, 1, 1, 1, 1}
Output: 1
Q.18 Write a program to print all the LEADERS in the array. An element is a leader if it is greater than all the elements to its right side. And the rightmost
element is always a leader.
For example:
Input: arr[] = {16, 17, 4, 3, 5, 2},
Output: 17, 5, 2
Input: arr[] = {1, 2, 3, 4, 5, 2},
Output: 5, 2

CONSTRUCTOR

Q.1 What is Object oriented? Write down difference b/w Object oriented and procedureoriented programming approach.

Q.2 What is class and object? Explain all oop features in java with example.

Q.3 WAP using parameterized constructor with two parameters id and name. While creatingthe objects obj1 and obj2 passed two arguments so that this constructor gets invoked after creation of obj1 and obj2

Q 4. Can we have a class with no Constructor in it.

Q 5 Can we declare class constructor as private

Q.6 Can we make multiple constructor inside a class? if yes then what is the need of it.Explain,

Q 7 Difference between constructor and function

Q 8 Can we have both Default Constructor and Parameterized Constructor in the sameclass?

Q 9 Write a program by creating an 'Employee' class having the following methods and printthe final salary.

1.- 'getInfo()' which takes the salary, number of hours of work per day of employee asparameter

2 - 'AddSal()' which adds 10000 to salary of the employee if it is less than 50000.

3 - 'AddWork()' which adds 5000 to salary of employee if the number of hours of work per dayis more than 6 hours.

Q.10 create a class Toy having variable toyname ,price,and static variable "madein" .create no arg and parameterized constructor to initialize class variables .

Define static function static display and non static method display

--display() print class non static variable

--static display print static variable

create another class Electronic Toy which has fields like model no and Toy reference .create parameterized constructor to initialize both variables.

In Electronic Class define print All function that print all values of same class as well as calltoy class static and non static functions .

Q.11 Create class Product (pid, price, quantity) with parameterized constructor. Create a mainfunction in different class (say XYZ) and perform following task:

a. Accept five product information from user and store in an array

b. Find Pid of product with highest price.

c. Create method (with array of product's object as argument) in XYZ class to calculate and return total amount spent on all products. (amount spent on single product=price of product * quantity ofproduct)

Q.12 Create a class Employee with(empNo ,salary and totalSalary)) with following features.

a. Only parameterized constructor;

b. totalSalary always represent total of all the salaries of all employees created.

c. empNo should be auto incremented.

d. display total employees and totalSalary using class method.

Q.13 Create a class Person with properties (name and age) with following features.

a. Default age of person should be 18;

b. A person object can be initialized with name and age;

c. Method to display name and age of person

Q.14 Create a class to calculate Area of circle with one data member to store the radius and anotherto store area value. Create method members

1. init - to input radius from user
2. calc - to calculate area
3. display- to display area 31.

Q.15 Create a class Math Operation with two data member X and Y to store the operand and third data member to store result of operation. Create method members ● init - to input X and Y from user ● add - to add X and Y and store in R ● multiply - to multiply X and Y and store in R ● power - tocalculate X Y and store in R ● display- to display Result R .