**Zoho Interview set 1**

**ROUND 1(APTITUDE AND C MCQ’S):**

In that, they are two parts apditude(logical and reasoning) and C mcqs .

**ROUND 2(BASIC PROGRAMMING):**

1 . A ball is dropped from a height H (meters), it bounces back to a height of B\*H where B is the bouncing factor and 0<B<1. Calculate the total distance travelled by the ball before coming to rest while dropped from a height H on a surface with a bouncing factor of B. When height is less than 1m, ball does not bounce back.

Input: H=5, B=0.5​

Output: 12.5

Explanation : 5 + 2.5 + 2.5 + 1.25 + 1.25

2 . Replace the characters in a string based on the transformation: A -> Z, B->Y, C->X and so on​

Input: FADE​

Output: UZWV

3 . Given an array, fill the alternate duplicate elements by 0.

Input 1: 2 2 2 2

Output 1: 2 0 2 0

Input 2: 1 2 2 5 6 9 5 2

Output 2: 1 2 0 5 6 9 0 2

4 . Given 2 strings A and B, check if swapping 2 characters only once in string ‘A’ makes the string equal to ‘B’

Input: A = flrweo B = flower​

Output: True

5 . While typing, it is possible to press a key long enough that it could get typed more than once. Given two strings A and B, check if B could be a typed version of A.

Input 1: A = anime B = aanimeee​

Output 1: True

Input 2: A = Limcee B = Limmcce​

Output 2: False

6 . Given a matrix M of dimension A x B containing 0’s and 1’s, find out the number of positions at which the value is 1 and other elements in its corresponding rows and columns are all 0.

Input 1: A = 3, B = 3 100 M = 001 010

Output 1: 3

Input 2: A = 3, B = 3 100 M = 001 100

Output 2: 1

7. -1 represents ocean and 1 represents land find the number of islands in the given matrix.

Input:   n\*n matrix

1 -1 -1 1

-1 **1** -1 1

-1 -1 **1** -1

-1 -1 -1 1

Output: 2 (two islands that I have bold in matrix at 1, 1 and 2, 2)

8. Print all the possible subsets of array which adds up to give a sum.

Input: array {2, 3, 5, 8, 10} sum=10

Output: {2, 3, 5} {2, 8} {10}

9. There is a circular queue of processes. Every time there will be certain no of process skipped and a particular start position. Find the safe position.

Input: Number of process:5

Start position:3

Skip: 2nd

Output: 1 will be the safest position

(Logic: 1 2 3 4 **5** starting from 3, 5th process will be skipped…. 1 **2** 3 4 **5** process 2 will be skipped….. **2** 3 **4** **5** process 4 will be skipped….. **2** **3** **4** **5** process 3 will be skipped, so safest process is 1.

10. Pattern printing problem. ex: WATER. This should be printed as

T

TE

TER

TERW

TERWA

11. Alternate Sort

Ex : INPUT : 1,2,3,4,5,6,7 (will be in any order)

OUTPUT: 7,1,6,2,5,3,4

11.  **Sample Input-** 2

Hacker

Rank

**Sample Output-**

Hce akr

Rn ak

12.    **Sample Input-**

**Print the word with odd letters – PROGRAM**

**Sample Output-**  X pattern

13.  Print numbers in words.

For ex: Input: 1234

Output: One thousand two hundred and thirty-four.

14. Different times in a day will be given as input

For ex:

12:30:41 hh:mm:ss

10:15:20

24:01:05

You have to find the minimum difference between two times and display those times and the difference. (30 marks)

15. Three strings will be given as

Input string

1: I walk everyday in the morning.

2: I run everyday in the evening.

3: I swim everyday in the night.

Output:

I everyday in the

i.e The common words in three strings must be printed (30 marks)

16. Reverse words in a string ex: Dog barks output: god skrab.

17. Check if two strings are a rotation of each other

str1: helloworld str2: ldhellowor

Output: YES

str1: vicky str2: cvkyi

Output: NO

18. Remove the duplicates in the String.

**Testcase 1:** Input: Java1234

Output: Jav**b**1234 (Remove the second ‘a’ as it is duplicated)

**Testcase 2:** Input: Python1223:

Output: Python12**34** (Replace the second 2 with 3, and replace 3 with 4 as 3 is replaced for the duplicated 2)

**Testcase 3:** Input: aBuzZ9900

Output: aBuz**C**9**012**

19. Prime number – print n prime numbers

20 . Prime factor – sort the array based on the minimum factor they have.

21. Adding a digit to all the digits of a number eg digit=4, number = 2875, o/p= 612119

22. [Form the largest possible number using the array of numbers.](https://www.geeksforgeeks.org/problems/largest-number-formed-from-an-array/0)

23. Texicographic sorting.

24. Given a set of numbers, and a digit in each iteration, if the digit exists in any of  the numbers, remove its occurrences and ask for the next digit till the list becomes empty.

25. Check if a number ‘a’ is present in another number ‘b.

26. Given two dimensional matrix of integer and print the rectangle can be formed using given indices and also find the sum of the elements in the rectangle

Input:

mat[M][N] = {{1, 2, 3, 4, 6}, {5, 3, 8, 1, 2}, {4, 6, 7, 5, 5}, {2, 4, 8, 9, 4} };  
index = (2, 0) and (3, 4)

Output:  
Rectangle  
4 6 7 5 5  
2 4 8 9 4  
sum 54

 27. Find the result subtraction, multiplication, division of two integers using + operator.

Input: 6 and 4  
output:  
addition 6+4 = 10,    subtraction  6+(-4) = 2,   multiplication = 24,   division = 1

Input : -8 and -4  
Output:  
addition -8+(-4) = -12,    subtraction  (-8)+(-(-4)) = -4,   multiplication = 32,   division = 2

 28. Given a sentence of string, in that remove the palindrome words and print the remaining.

Input:  
He did a good deed  
Output:  
He good

Input:  
Hari speaks malayalam  
Output:  
Hari speaks

 29. [Given two dates, find total number of days between them.](https://www.geeksforgeeks.org/problems/find-number-of-days-between-two-given-dates/0)

Input: dt1 = {10, 2, 2014} dt2 = {10, 3, 2015}  
Output: 393

dt1 represents “10-Feb-2014” and dt2 represents “10-Mar-2015” The difference is 365 + 28

Input: dt1 = {10, 2, 2000} dt2 = {10, 3, 2000}  
Output: 29

Note that 2000 is a leap year

Input: dt1 = {10, 2, 2000} dt2 = {10, 2, 2000}  
Output: 0

Both dates are same

Input: dt1 = {1, 2, 2000}; dt2 = {1, 2, 2004};  
Output: 1461

Number of days is 365\*4 + 1

 30. [Let 1 represent ‘A’, 2 represents ‘B’, etc. Given a digit sequence, count the number of possible decodings of the given digit sequence.](https://www.geeksforgeeks.org/problems/total-decoding-messages/0)

Examples:

Input: digits[] = “121”  
Output: 3 // The possible decodings are “ABA”, “AU”, “LA”

Input: digits[] = “1234” Output: 3

// The possible decodings are “ABCD”, “LCD”, “AWD”

31. [Print all possible words from phone digits](https://www.geeksforgeeks.org/problems/possible-words-from-phone-digits/0)

32. [Given two Strings s1 and s2, remove all the characters from s1 which is present in s2.](https://www.geeksforgeeks.org/problems/remove-character/0)

Input: s1=”expErIence”, s2=”En” output: s1=”exprIece”

33. [Find the next greater element for each element in given array.](https://www.geeksforgeeks.org/problems/next-larger-element/0)

input: array[]={6, 3, 9, 10, 8, 2, 1, 15, 7};  
output: {7, 5, 10, 15, 9, 3, 2, \_, 8}

If we are solving this question using sorting, we need to use any O(nlogn) sorting algorithm.

34. Print all distinct permutations of a given string with duplicate characters.  
[https://www.geeksforgeeks.org/distinct-permutations-string-set-2](https://www.geeksforgeeks.org/distinct-permutations-string-set-2/)

35. [Given a number, find the next smallest palindrome.](https://www.geeksforgeeks.org/problems/next-greater-even-number/0)

36. Given an array with repeated numbers, Find the top three repeated numbers.

input: array[]={3, 4, 2, 3, 16, 3, 15, 16, 15, 15, 16, 2, 3}  
output: 3, 16, 15

37. Given two sorted arrays output a merged array without duplicates.

Array1: [1, 2, 3, 6, 9]  
Array2: [2, 4, 5, 10]  
Merged Array: [1, 2, 3, 4, 5, 6, 9, 10]

***38.*** [Given a sliding window of size k print the maximum of the numbers under the sliding window.](https://www.geeksforgeeks.org/problems/maximum-of-all-subarrays-of-size-k/0)

Example: Consider a sliding window of size k equals 3. Let the array be [3,2,7,6,5,1,2,3,4] the output should print 7 as the first output as first window contains {3,2,7} and second window contains {2,7,6} and so on and the final output is {7,7,7,6,5,3,4}

***39.***[Given a array with n elements print the number of occurrences of that number each number in that array.](https://www.geeksforgeeks.org/problems/frequency-of-array-elements/0) The order of number doesn’t matter. You can reorder the elements.

Example : [2,1,3,2,2,5,8,9,8]  
Output:  
2-3  
1-1  
3-1  
5-1  
8-2  
9-1

**40.** Enter two strings from command line and check whether any substring present in first string that follows the pattern of second sting.. They asked to implement  regular expressions for \* and backslash without built in functions.

“abcd” “a\*cd” answer : yes  
“aaaa” “a\*”  answer : yes  
“a\*c” “a\\*c” answer:yes  
“adsd” “ad” answer:no

**41.** They gave a passage and the output should be printing out the number of occurrence of each word and the indices it occurs without using string matching

The passage given was “jana Gana Mana” and so on.. and we have to print number of jana and it’s indices.i.e at which position it occurs.

42. [Given an array, find the minimum of all the greater numbers for each element in the array](https://www.geeksforgeeks.org/problems/smallest-greater-elements-in-whole-array/0/).

Sample:

Array : {2, 3, 7, ­1, 8, 5, 11}

Output:

{2­>3, 3­>5, 7­>8, ­1­>2, 8­>11, 5­>7, 11­>}

43. Find the largest sum contiguous subarray which should not have negative numbers. We have to print the sum and the corresponding array elements which brought up the  
sum.

Sample: Array : {­2, 7, 5, ­1, 3, 2, 9, ­7}

Output:

Sum : 14

Elements : 3, 2, 9

44. [Given a string, we have to reverse the string without changing the position of punctuations and spaces.](https://www.geeksforgeeks.org/problems/special-array-reversal/0)

Sample: house no : 123@ cbe

Output: ebc32 1o : nes@ uoh

45. Given a 2D grid of characters, you have to search for all the words in a dictionary by  
moving only along two directions, either right or down. Print the word if it occurs.

Sample :

a z o l

n x h o

v y i v

o r s e

Dictionary = {van, zoho, love, are, is}

Output:

zoho

love

Is

46. [Given a string, change the order of words in the string (last string should come first)](https://www.geeksforgeeks.org/problems/reverse-words-in-a-given-string/0).  
Should use RECURSION

Sample: one two three

Output : three two one

47. Find the minimum number of times required to represent a number as sum of squares.

12 = 1^2 + 1^2 + 1^2 + 1^2 + 1^2 + 1^2 +

1^2 + 1^2 + 1^2 + 1^2 + 1^2 + 1^2

12 = 2^2 + 2^2 + 2^2

12 = 3^2 + 1^2 + 1^2

Input: 12

Output: min: 3

48. And print its possible path.

allowed movements are right left up and down.

49. In a given pascal triangle find the possible triangles.

50. In a matrix find the number of rectangles filled with 1s.

Input: 0 1 1 0

1 1 1 0

0 0 1 1

0 0 1 1

Output: 2.

51. [There are n items each with a value and weight. A sack is filled with the weights. In other words there is an array with of length n having the values of the items arr[0…n-1] and another array with weight arr[0…n-1].](https://www.geeksforgeeks.org/problems/0-1-knapsack-problem/0)

if a sack is to be filled with weight W find the minimum possible value subset.

52. Find the maximum of three numbers?

53. Print the total number of odd and even digits in the given number.

Ex. Input : 1234567

Output : ODD 4

EVEN 3

54. [Find the second maximum among the given numbers.](https://www.geeksforgeeks.org/problems/find-second-largest-element/0)

Ex. INPUT :

Size of Array : 8

Enter the elements : 2 5 1 6 2 6 7 10

OUTPUT : 7

Ex. INPUT :

Size of Array : 4

Enter the elements : 4 1 2 2

OUTPUT : 2

Ex. INPUT :

Size of Array : 1

Enter the elements : 1

OUTPUT : No second maximum

55. Print the following pattern

Ex. INPUT : 5

OUTPUT :

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

Ex. INPUT : 7

OUTPUT :

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

1 5 10 10 5 1

1 6 15 20 15 6 1

56. [Given a two dimensional array which consists of only 0’s and 1’s. Print the matrix without duplication.](https://www.geeksforgeeks.org/problems/unique-rows-in-boolean-matrix/1)

Ex. INPUT : Enter Row Size : 4 Enter column size : 3

Enter the matrix :

1 0 1

1 1 0

1 1 1

1 0 1

OUTPUT : Unique Matrix :

1 0 1

1 1 0

1 1 1

56. [Given an array of positive numbers. Print the numbers which have longest continuous range.](https://www.geeksforgeeks.org/problems/longest-consecutive-subsequence/0)

Ex. INPUT : Enter array size : 8 Enter arryay elements : 1 3 10 7 9 2 4 6

OUTPUT : 1 2 3 4

Ex. INPUT : Enter array size : 8 Enter arryay elements : 1 3 9 7 8 2 4 6

OUTPUT :

1 2 3 4

6 7 8 9

57. [Given two arrays. Find its union.](https://www.geeksforgeeks.org/problems/union-of-two-arrays/0)

Input : Enter size of first array : 6 Enter the elements : 1 2 3 4 5 3

Enter size of second array : 4 Enter the elements : 1 2 7 5

OUTPUT : 1 2 3 4 5 7

58. [Given an array of numbers. Print the numbers without duplication.](https://www.geeksforgeeks.org/problems/make-a-distinct-digit-array/0)

INPUT :Enter the array size: 4 Enter the elements:1 1 2 4 OUTPUT:1 2 4

59. [Given an array of numbers and a number k. Print the maximum possible k digit number which can be formed using given numbers.](https://www.geeksforgeeks.org/problems/largest-number-formed-from-an-array/0)

INPUT:Enter the array size:4 Enter the elements:1 4 973 97 Enter number of digits:3

OUTPUT : 974

INPUT:Enter the array size:6 Enter the elements:1 4 89 73 9 7 Enter number of digits:5

OUTPUT : 98973

60. [Given an array of numbers and a window of size k. Print the maximum of numbers inside the window for each step as the window moves from the beginning of the array.](https://www.geeksforgeeks.org/problems/maximum-of-all-subarrays-of-size-k/0)

INPUT :Enter the array size:8 Enter the elements:1,3,5,2,1,8,6,9 Enter the window size:3

OUTPUT : 5 5 5 8 8 9

61. [Find the extra element and its index](https://www.geeksforgeeks.org/problems/index-of-an-extra-element/1)

Input : [ 10, 20, 30, 12, 5 ] [ 10, 5, 30, 20 ]

Output : 12 is the extra element in array 1 at index 4

Input : [ -1, 0, 3, 2 ] [ 3, 4, 0, -1, 2 ]

Output : 4 is the extra element in array 3 at index 5

62. Find the least prime number that can be added with first array element that makes them divisible by second array elements at respective index (check for prime numbers under 1000, if exist return -1 as answer) & (Consider 1 as prime number)

Input : [ 20, 7 ] [ 11, 5 ]

Output : [ 1, 3 ]

Explanation :

(20 + ?) % 11

( 7 + ?) % 5

63. [Sort the array elements in descending order according to their frequency of occurrence](https://www.geeksforgeeks.org/problems/sorting-elements-of-an-array-by-frequency/0)

Input : [ 2 2 3 4 5 12 2 3 3 3 12 ]

Output : 3 3 3 3 2 2 2 12 12 4 5

Explanation : 3 occurred 4 times, 2 occurred 3 times, 12 occurred 2 times, 4 occurred 1 time, 5 occurred 1 time

Input : [ 0 -1 2 1 0 ]

Output : 0 0 -1 1 2

Note : sort single occurrence elements in ascending order

64. [Print true if second string is a substring of first string, else print false.](https://www.geeksforgeeks.org/problems/check-for-subsequence/0)

Note : \* symbol can replace n number of characters

Input : Spoon Sp\*n Output : TRUE

Zoho \*o\*o Output : TRUE

Man n\* Output : FALSE

Subline line Output : TRUE

65. Adding 2 numbers

[Given 2 huge numbers as separate digits, store them in array and process them and calculate the sum of 2 numbers and store the result in an array and print the sum.](https://www.geeksforgeeks.org/problems/sum-of-numbers-or-number/0)

Input:  
Number of digits:12  
9 2 8 1 3 5 6 7 3 1 1 6  
Number of digits:9  
7 8 4 6 2 1 9 9 7  
Output :  
9 2 8 9 2 0 2 9 5 1 1 3

66.[Given sorted array check if two numbers sum in it is a given](https://www.geeksforgeeks.org/problems/key-pair/0) value

Input  
Array = {1 3 4 8 10 } N = 7  
output  
true

67. Compiuting value of sin (x)

Input x = 30 n = 10  
output = 0.5

Hint : The equation sin(x) = x – x^3 / 3! + x^5 / 5! – ….

68. Write function to find multiplication of 2 numbers using +  
operator You must use minimum possible iterations.

Input: 3 , 4  
Output 12

69. [Given array find maximum sum of contiguous sub array](https://www.geeksforgeeks.org/problems/kadanes-algorithm/0)

{-2 -3 4 -1 -2 1 5 -3}

output 7 elements [ 4 -1 -2 1 5]

70. [Given unsorted array find all combination of the element for a given sum.](https://www.geeksforgeeks.org/problems/subarray-with-given-sum/0) Order should be maintained.

Input :  
8 3 4 7 9 N=7  
Output  
{3 4 } {7}

71. Maximum triplet of product in an array.

72. Numbers whose sum is closest to zero in an array

73. Find the prime number in the given range. (test cases: interval is negative in range)

74. Find palindrome by word in sentences.

**ROUND 3(ADVANCED PROGRAMMING):**

1.create the snake and ladder game .In that there are 5 modules.

2. **Round 3: Advanced Programming (L3) Duration: 3hours**

Create an engine that can process the user query. The main focus is not the logic but System Design.

1. How the created query engine scales out perfectly even upon adding new features later?
2. How do we create a system that can handle the following inputs and process the input query?

**Question:**

1. Given a table containing a set of 10 employees with respective fields:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Name | Age | Designation | Department | Reporting To |

1. Show all employee data
2. Process the query:
   1. Get input from the user until presses exit.
   2. Get field value to compare, comparison operator as input
      1. If the field value is age (int data type), supported comparators: >, <, !=, ==
      2. If the field value is of string data type, supported comparators: ‘startswith’, ‘contains’, ‘endswith’, ‘notcontains’, ‘equals’ and ‘notequals’.
   3. Use ‘AND’ in default for queries with multiple checks.
   4. Eg: age > 30 and age < 50 and department contains finance and reporting to A
3. Show the reporting to hierarchy for the given employee name: J -> I -> F -> D -> C -> B-> A
4. Show the employees reporting to the given manager.
5. Show summary of Department, Designation, ReportingTo.

The entire application is to have a menu and the user could be able to select from the menu.

3. The bank has initially three customers.There were  around eight modules .   
  1. Account Login

2. Purchase

Account Login

Giving customer id and password .Password should be encrypted and stored

Encryption is like A-> B, B->C

a-> b, b->c, c->d

0->1, 1->2

On successful login, it should print the account details

          1.Create Gift Card

          2. TopUp

         3.Transaction History

         4.Block

         5.Logout

1.Create Gift Card

Gift card with 5 digit card no and 4 digit pin number will be generated

2.TopUp

For topup, amount need to be reduced from main account balance and added to gift card

3.Transaction History

Should print all the transaction details of a particular gift card

4.Block

If the card is blocked, shouldn’t be available for topUp, Purchase.the amount in gift card should be transferred to main account

5.Logging Out

After log out, should go to main module,

2.Purchase

Login to the gift card

Purchase Amount

Then print Available balance

3.Redeem points :

For Every 100 rupee purchase, 1 reward point is added .For 10 reward points, 10 will be added to main account

4.Doing for Multiple gift cards

Around 5 to 6 of us  who completed 6 to 7 modules were shortlisted to next round

4. Given an employee date base.

Name, Age, Designation, Department Of ten people.

and Five tasks were given such as

1. Print all employee details.

2. Searching employee details

3. Employees under the given manger name of the department

4. reporting to tree of the given employee name

5. The application was TOLL PAYMENT PROCESSING .  
They insisted us to do it in a object oriented language. First they asked the design( what are all the classes and objects & what data structure do you use).

Application description:

* There are ‘n’ number of points in a highway out of which some points collect toll.
* Each toll has its own charging scheme according to the vehicles and whether or not they  
  are a VIP user.
* If they are VIP user, 20% discount apply.
* If the vehicle passes 3 toll gates, it has to pay in all the 3 toll gates according to the  
  scheme of respective tolls.

There were 4 modules.

1. Given the details of vehicle type, start and destination……display the total toll paid during  
the journey and print the amount after applying the discount.

2. Display the details of all the tolls…..like what are all the vehicles(vehicle number) passed  
that respective toll and the amount each vehicle paid……and the total amount charged in  
that toll.

3. Display the details of all the vehicles …….like what are all the journeys did it take….the  
start and destination of the same……tolls it passed during that journey….amount paid in  
that journey…..and the total amount paid by that vehicle.

4. Assume the highway as a circular path……we have to find the short route and identify  
the tolls between that route and calculate the amount.

5. **ADVANCED PROGRAMMING :** Given a MxN matrix filled with ‘-‘ and you need to drop the balloons in the desired columns starting from the bottom. You need to print the matrix when a new balloon is dropped.  
You need to continue getting inputs until the box is full or until the user chooses to stop.

TEST CASE :

Enter the matrix size(m\*n) : 3 3 Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

- R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : B

Contents of the matrix :

- - -

- B -

- R -

Do you wish to continue(Y/N) : Enter colm no : 1 Enter the color of the balloon : R

Contents of the matrix :

- - -

- B -

R R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- R -

- B -

R R -

Do you wish to continue(Y/N) : N Program Stopped

ii). Extended version of the previous problem. Now you need to quit when a row become filled completely.

TEST CASE :

Enter the matrix size(m\*n) : 3 3 Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

- R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : B

Contents of the matrix :

- - -

- B -

- R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- R -

- B -

- R -

Column is filled completely. Program is terminated.

iii). Extended version of the previous problem. Now you need to drop balloon in the first free cell from left if the specified column is filled in every row.

TEST CASE :

Enter the matrix size(m\*n) : 3 3 Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

- R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : B

Contents of the matrix :

- - -

- - -

B R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

B R R

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- R -

B R R

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : B

Contents of the matrix :

- - -

B R -

B R R

Do you wish to continue(Y/N) : N Program terminated.

iv). If any column has three continuous balloons of same colors then we need to burst them.

TEST CASE :

Enter the matrix size(m\*n) : 3 3 Enter colm no :2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

- R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

R R -

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- - -

R R R

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

- R -

R R R

Do you wish to continue(Y/N) : Y colm no : 2 Enter the color of the balloon : B

Contents of the matrix :

- - -

R R -

R R R

Do you wish to continue(Y/N) : Y Enter colm no: 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

R R R

R R R

Do you wish to continue(Y/N) : Y Enter colm no : 2 Enter the color of the balloon : R

Contents of the matrix :

- - -

R - R

R - R

Do you wish to continue(Y/N) : N

Program Terminated.

v). Extended version of the previous problem. Now you need to burst the three continuous colors in the same row.

6. Lift system

There were 8 modules  
1. Display the position of Lift

Lift : L1 L2 L3 L4 L5

Floor: 0 0 0 0 0

2. Assign Lift to the users

Input : 2 5

Output : L1 is assigned

Lift : L1 L2 L3 L4 L5

Floor: 5 0 0 0 0

3. Assign nearest lift by comparing their current positions  
Assume,

Lift : L1 L2 L3 L4 L5

Floor: 5 2 7 9 0

Input : 4 10

Output :

L1 is assigned

Lift : L1 L2 L3 L4 L5

Floor: 10 2 7 9 0

Explanation : L1 is near to 4 floor

4. If two lifts are nearest to the user’s source floor, the assign the lift with same direction of user’s requirement.  
Example: if user request to move from 4 to 2 ,and if L3 is in 5th floor & L5 is in 3rd floor, then we should assign L3 because user requested for downward motion so L3 ill move down from 5th floor

5. Restrict L1 & L2 for 0-5th floor , L3 & L4 for 6-10th floor , L5 for 0-10th  
Initially all lifts are at 0th floor.

6. Assign lift with least number of stops  
Example:  
If L3 is in 9th floor  
And L5 is at 8nd floor  
If user wants to move from 8 to 0  
We should assign L3 because L3 ill stop at 8,7,6 and then 0 NumberOfStops = 3, but L5 ill stop at 8,7,6,5,4,3,2,1,0 and NumberOfStops = 8 so we should assign L3

7. Assign capacity (Number of people capable to travel) to all lift and assign according to the capacity

8. If any lift is under maintenance then their current position should be marked as “-1” and that lift should not be assigned at any cost.

7. Advanced programming.

You are given coordinates as input  
(0 0 ) (0 1 ) ( 0 2) (0 3) (1 5) (1 4 ) (3 5 )

1. Check if the given points lie in the same line

2. GIven a point find the points on the largest line [in terms of the points it contain ] passing through that point

Input : 0 1  
Output : (0 0 ) (0 1) (0 2 ) (0 3 )

3. Given 2 points find the points in between them.  
Input (0 0) (0 3 )  
Output : (0 1) (0 2 )

4. Find the number of points in the line with the largest number of points in it.

5. Given a point print all the lines passing through it [ie for each line print the points in it ]

PREPARATION :This round usually consist on making modules and oop stuffs. This was out of the blue. Previous problems, I just did Railway Reservation partially for this round.  
If you have done some projects and is good with oop you will get through no need to practice specifically for this else brush up your OOP Designing skills and do some previous questions.

I solved all the problems. The invigilator will be around  
checking your code all the time, SO NO SLOPPY CODING GUYS!! They need good code. Take a paper and figure out your aproch before solving each of them. And also check if you could use one problem to solve the other. Here The function written for Q2 can be used for Q5 with some modification if you’re out of time.

8.Railway reservation. We need to handle booking, cancellation, user priority and no of seats left etc.

9. **ZULO CAB APPLICATION**

Create a Cab booking application, ZULA as per the details given below. The program should first present a menu with the following options

1. Driver login
2. Customer Login
3. ZULA Administrator
4. Exit

**Task 1:** Initialization

Initialize the data as per the details are given below to be loaded when the program starts. Note: It can be loaded and kept in the memory. No need to maintain a File or DB.

Initial Cab Drivers:

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **NAME** | **PASS** | **AGE** |
| **1** | **aaa** | **111** | **25** |
| **2** | **bbb** | **222** | **36** |
| **3** | **ccc** | **333** | **31** |
| **4** | **ddd** | **444** | **28** |

Initial Customers:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **NAME** | | | **PASS** | | **AGE** | |
| **1** | **WW** | | | **55** | | **25** | |
| **2** | **XX** | | | **66** | | **36** | |
| **3** | **YY** | | **77** | | **31** | |
| **4** | **ZZ** | | **88** | | **28** | |

initial location

|  |  |  |
| --- | --- | --- |
| **ID** | **NAME** | **DISTANCE FROM ORIGIN** |
| **1** | **A** | **0** |
| **3** | **C** | **4** |
| **4** | **D** | **7** |
| **6** | **F** | **9** |
| **2** | **B** | **15** |
| **7** | **G** | **18** |
| **8** | **H** | **20** |
| **5** | **R** | **23** |

      4                3                  2                 6                3               2                   3

A——-C———-D———-F———-B———G———H———-E

Initial Cab location

|  |  |
| --- | --- |
| **Location** | **CabID’s** |
| **D** | **1** |
| **G** | **2** |
| **H** | **3** |
| **A** | **4** |

**Task 2:** Cab Drive/Customer Login

Cab Driver should have the option to login using existing credentials (Username and Password)

Customers should have an option to login using existing credentials (Username and Password) or create a new account with all the details.

Sample application prompt

**Welcome to ZULA!!**

**1.Cab driver login**

**2.Customer login.**

**3.Administration login**

**4.Quit**

Please choose a service:

**Task 3:** Hail a cab

The customer should be able to hail a cab based on the following conditions:

1. He/She should be able to choose the source and the destination locations. 2. The cab which is available and present in the nearest location to the source should be chosen.

3. Fare estimate should be provided to the customer. Calculated at Rs.10/km. 4. Customer should be shown a confirmation and journey initiated only if accepted.

Print the location of each cab, before booking a ride.

Sample Output:

|  |  |
| --- | --- |
| **Location** | **Cab IDs** |
| **A** | **3** |
| **E** | **1** |
| **C** | **2,4** |

**Task 4:** The following conditions have to be met for every booking.

1. The cab which is present in the nearest location to the source should be chosen.

2. The cab driver will have a mandatory rest of 1 ride after completing each ride and should not be chosen even if he is the nearest.

3. If 2 or more cabs are in the same location, the cab which has completed a fewer number of total trips should be allocated.

**Task 5:** ZULA Commission & Cab Driver Ride Summary

For every ride, ZULA gets a commission of 30% of the Ride Fare

The cab drivers should be able to see the complete history of their rides. The Cab Driver Name, Source, Destination, Customer Detail, Fare, and ZULA commission

Sample Output:

Cab Id: 1

Cab Driver Name: aaa

Trip Details:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **Destination** | **customer detail** | **ZULA commission** | **Fare** |
| **D** | **H** | **4** | **39** | **130** |
| **E** | **G** | **2** | **15** | **50** |
| **C** | **B** | **2** | **33** | **110** |

**Task 6:** Customer Rides Summary

The Customer should be able to see the complete history of their rides. The Customer Name, Source, Destination, Cab Detail, and Fare.

Sample Output:

Customer Id: 2

Customer Name: yy

Trip Details:

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** | **Destination** | **CabDetail** | **Fare** |
| **A** | **E** | **3** | **230** |
| **E** | **G** | **1** | **50** |
| **C** | **B** | **1** | **110** |

**Task 7:** Summary of all the cabs running in ZULA available to the admin.

The admin should be able to see a summary of all the cabs which are being managed by ZULA. It should contain the Total Number of Rides, Total Fare Collected, Total ZULA Commission, Details of each trip. Sample Output

Cab Id: 1

Total Number of Trips: 3

Total Fare Collected: 290

Total ZULA Commission: 87

Trip Details:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **Destination** | **Customer Detail** | **Fare** | **ZULA commission** |
| **D** | **F** | **4** | **130** | **39** |
| **E** | **G** | **2** | **50** | **15** |
| **C** | **B** | **2** | **110** | **33** |

Cab ld: 2

Total Number of Trips: 0

Total Fare Collected: 0

Total ZULA Commission: 0

Trip Details: No trips were given

**ROUND 4(TECHNICAL INTERVIEW 1):**

1. They asked about the oops concept
2. what is mean by JDK and JRE
3. why java is called as compiler-depended
4. Is java is fully object-oriented language or not, why?
5. If you have power to automate anything in the world using program what will automate and why?
6. Most of the questions were from DSA. Some of the questions that I remember are listed below:
7. What is the difference between arrays and vectors?
8. What is recursion?
9. Finding the factorial of a number using recursion.
10. What is a binary tree?
11. What is the difference between Binary Tree and a Binary Search Tree?
12. What is a heap?
13. What is a deque?
14. Applications of the deque.
15. If I delete the root value from a BST what do I replace it with?
16. Tree Traversal methods.
17. DFS and BFS.
18. What are Processes and Threads in OS?
19. What is a deadlock?
20. Questions on joins in SQL.