

CODELOGICX FRESHER INTERVIEW

Machine Test

Instructions:

- Time Allotted- 2 hrs
- Run the code and check before submission
- No usage of internet
- Any programming language can be used to complete this Machine Test
- Attempt the MCQ and any 4 from the rest questions

Best of Luck!

1. Nth Smallest Element

Given an array `arr[]` and a number `N` where `N` is smaller than size of array, the task is to find the Nth smallest element in the given array. It is given that all array elements are distinct.

Example:

Input:

`arr[] = 7 10 4 3 20 15`

`N = 3`

Output : 3rd smallest element in the given

array is 7.

2. Find Minimum number of Coins

Given an infinite supply of each denomination of Indian currency { 1, 2, 5, 10, 20, 50, 100, 200, 500, 2000 } and a target value N.

Find the minimum number of coins and/or notes needed to make the change for Rs N.

Example:

Input: N = 43

Output: 20 20 2 1

Explanation:

Minimum number of coins and notes needed
to make 43.

3. Permutations of a given string

Given a string S. The task is to print all permutations of a given string

Example:

Input: ABC

Output:

ABC ACB BAC BCA CAB CBA

Explanation:

Given string ABC has permutations in 6
forms as ABC, ACB, BAC, BCA, CAB and CBA .

4. Chocolate Distribution

Given an array $A[]$ of positive integers of size N , where each value represents the number of chocolates in a packet. Each packet can have a variable number of chocolates. There are M students, the task is to distribute chocolate packets among M students such that :

1. Each student gets exactly one packet.
2. The difference between maximum number of chocolates given to a student and minimum number of chocolates given to a student is minimum.

Example:

Input:

$N = 8, M = 5$

$A = \{3, 4, 1, 9, 56, 7, 9, 12\}$

Output: 6

Explanation: The minimum difference between maximum chocolates and minimum chocolates

is $9 - 3 = 6$ by choosing following M packets : $\{3, 4, 9, 7, 9\}$.

5. Write a function to transpose of the following associative array:

Input array:

```
[  
  ['one' => 1, 'two' => 2],  
  ['one' => 11, 'two' => 22],  
  ['one' => 111, 'two' => 222],  
]
```

Output should be:

```
[  
    'one' => [1, 11, 111],  
    'two' => [2, 22, 222],  
];
```

6. Print below output: (input row=5)

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

7. Write a program to print alphabet pattern 'S'.

```
****  
  
*  
  
*  
  
***  
  
*  
  
*  
  
****
```

8. Convert a string to uppercase without using strtoupper()

9. Write a Program to print values by spirally traversing a n X n matrix. (Input : n=4)

Input:

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Output: 1 2 3 4 8 12 16 15 14 13 9 5 6 7 11 10

10. What will be the output of \$a and \$b?

```
<?php
```

```
$a = 0;
```

```
$b = 0;
```

```
    for( $i = 0; $i<5; $i++ ) {
```

```
        $a += 10;
```

```
        $b += 5;
```

```
    }
```

```
echo $a;
```

```
echo $b;
```

```
?>
```