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# Problem 1: Celsius to Fahrenheit

Given a temperature in Celsius C. You have to convert it in Fahrenheit.

**Example 1:**

Input: C = 32

Output: 89.60

**Explanation:**

For 32 degree C temperature, Fahrenheit = (C*9/5)+32

Hence, in Fahrenheit = 89.60

**Example 2:**

Input: C = 25

Output: 77.00

**Explanation:**

For 25 degree C temperature, in Fahrenheit = 77.00

# Problem 2: Reverse digits of a number

Given an integer N, reverse the digits of N. Remember that you need to make changes to the same number.

**Example 1:**

Input: 32

Output: 23

**Example 2:**

Input: C = 7250

Output: 527

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# Problem 3: Change time format

Given a time T in 12hr clock format [HH:MM AM/PM], change it to 24hr clock format [HHMM hrs]. You can choose input type as per your convenience.

**Example 1:**
Input: T = 11:30 PM
Output: 1230 hrs
**Explanation:**
Since, 11:30 + 12 = 23:30, 11:30 PM is denoted by 2330 hrs in 24hr clock format


**Example 2:**
Input: T = 9:00 PM
Output: 0900 hrs


# Problem 4: Get rid of boring Maths?

Complete the function Squareroot(int N), which takes N as argument and returns the square root of N.

**Code:**
```
#include <stdio.h>
double Squareroot(int N){


}
```

Hint: Can you recall the concept of binary search? high? low?
and **mid**??

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# Problem 5: Kejri is back!

Due to an immense rise in Pollution, Kejriwal is back with the Odd and Even Rule in Delhi. The scheme is as follows, each car will be allowed to run on Sunday if the sum of digits which are even is divisible by 4 or sum of digits which are odd in that number is divisible by 3. However to check every car for the above criteria can't be done by the Delhi Police. You need to help Delhi Police by finding out if a car numbered N will be allowed to run on Sunday?

**Input Format:**
The first line contains N , then N integers follow each denoting the number of the car.

**Output Format:**
N lines each denoting "Yes" or "No" depending upon whether that car will be allowed on Sunday or Not !

**Sample Input**
2
12345
12134
**Sample Output**
Yes
No

**Explanation**
1 + 3 + 5 = 9 which is divisible by 3
1 + 1 + 3 = 5 which is NOT divisible by 3 and 2+4 = 6 which is not divisible by 4.

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# Problem 6: Inverse of a number

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Input a number

Assume that for a number of n digits, the value of each digit is from 1 to n and is unique. E.g. 32145 is a valid input number.

Write a function that returns its inverse, where inverse is defined as follows

Inverse of 32145 is 12543. In 32145, "5" is at 1st place, therefore in 12543, "1" is at 5th place; in 32145, "4" is at 2nd place, therefore in 12543, "2" is at 4th place.

Print the value returned.

**Example 1:**
Input: 32145
Output: 12543

# Problem 7: Happy Hours

Tanay always tells time in minutes, but the students find it difficult to comprehend. Design a function that converts [minutes] into [hours and minutes] which makes time reading more comprehensive.

**Input Format:** Time in minutes
**Output Format:** Time in hours and minutes

**Example 1:**
Input: 490
Output: 06:10

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## Problem 8: It's Tim to Cook!

After the backlash at titanium body of iPhone 15, Tim has decided to change the build material of iPhone 16. This new build material has to go under drop testing.
In this test, phone will be dropped from any floor of an N-storey building, and tested if it breaks or not.
Find the minimum number of tries in which you can tell: at which minimum level does my phone break

**Sample Input:** N=13
[No, No, No, No, No, No, No, No, No, No, No, Yes, Yes]
**Sample Output:** 12
**Explanation:** Since, all the elements till 11th index of array are No, And the first time we get a Yes is at 12th place.

## Problem 9: Rotate the Array

Given an **array** 'arr' with 'n' elements, the task is to **rotate** the **array** to the left by 'k' steps, where 'k' is non-negative.

**Sample Input:** *arr[] = [1, 2, 3, 4, 5, 6], d = 2.*
**Sample Output:** arr[] = {3, 4, 5, 6, 1, 2}
**Explanation:**
*First Step:arr[] = {2, 3, 4, 5, 6, 1}*
*Second Step:arr[] = {3, 4, 5, 6, 1, 2}*
*Rotation is done 2 times, array becomes arr[] = {3, 4, 5, 6, 1, 2}*

Array rotation concept

## Problem 10: Arpit and numbers

Arpit isn't good at numbers but he loves inverting digits in them. Inverting digit t means replacing it with digit 9 - t.
Help Arpit to transform the initial number x to the minimum possible positive number by inverting some (possibly, zero) digits. The decimal representation of the final number shouldn't start with a zero.

**Sample Input:** 4545
**Sample Output:** 4444
**Explanation**
There are many numbers formed after inverting the digit. For minimum number, check if inverting digit is less than or greater than the original digit. If it is less, then invert it otherwise leave it.

## Problem 11: Balanced Parentheses

Given a string s containing just the characters '(', ')', '{', '}', '[' and ']', determine if the input
string is valid. An input string is valid if:
Open brackets must be closed by the same type of brackets.
Open brackets must be closed in the correct order.
Every close bracket has a corresponding open bracket of the same type.

**Input 1**: s = "()"
**Output 1**: true

**Input2**: s = "()[]{}"
**Output 2**: true          String basics reading material

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## Problem 12: Pattern

Print the following pattern using loop:

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

## Problem 13: Nth Fibonacci

Take N as input. Print Nth Fibonacci Number, given that the first two numbers in the Fibonacci Series are 0 and 1.

**Sample Input**: 10
**Sample Output**: 55

Challenge: Can you solve this without recursion?

## Problem 14: N factorial using Recursion

For a given number N, calculate and return N factorial, use recursion.
N! = N*(N-1)*(N-2)...3*2*1

Recursion reference material

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# Problem 15: Two Sum

Given an array of integer numbers and an integer target, return indices of the two numbers such that they add up to the target. You may assume that each input would have exactly one solution, and you may not use the same element twice. You can return the answer in any order.

**Example 1:**
Input: nums = [2,7,11,15], target = 9
Output: [0,1]
**Explanation**: Because nums[0] + nums[1] == 9, we return [0, 1].

**Example 2:**
Input: nums = [3,2,4], target = 6
Output: [1,2]

# Problem 16: Count Digits

Given a number N and a digit K, Write a function that returns the number of times K is found in N. Print the value returned.

**Sample Input:** 5433231
**Sample Output:** 3

**Explanation:**
The digit can be from 0 to 9. Assume decimal numbers. In the given case digit 3 is occurring 3 times in the given number.

Searching Algorithm reading material

## Problem 17: FizzBuzz

Given an integer n, return a string array answer (1-indexed) where:
answer[i] == "FizzBuzz" if i is divisible by 3 and 5.
answer[i] == "Fizz" if i is divisible by 3.
answer[i] == "Buzz" if i is divisible by 5.
answer[i] == i (as a string) if none of the above conditions are true.

**Example 1:**
Input: n = 3
Output: ["1","2","Fizz"]

**Example 2:**
Input: n = 15
Output:
["1","2","Fizz","4","Buzz","Fizz","7","8","Fizz","Buzz","11","Fizz","13","14","FizzBuzz"]

## Problem 18: Max of an array

Given an integer array **nums**, return the largest element present in the array.

**Sample Input:** [5, 0, -1, 3, 6, 9, 2, 7]
**Sample Output:** 9

Challenge: Can number of operations be reduced to n?

Time and Space Complexity introduction

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## Problem 19: Find Duplicates

Given an array of integers **nums** containing n + 1 integers where each integer is in the range [1, n] inclusive.
There is only one repeated number in nums, return this repeated number.
You must solve the problem without modifying the array nums and uses only constant extra space.

**Example 1:**
Input: nums = [1,3,4,2,2]
Output: 2
**Example 2:**
Input: nums = [3,1,3,4,2]
Output: 3

## Problem 20: Sort the array

Given an integer array **nums**, sort it in descending order (from largest to smallest element) and return the sorted array.

**Note**: You are not allowed to use the built-in sort() function.

**Sample Input :** [5, 0, -1, 3, 6, 9, 2, 7]
**Sample Output:** [9, 7, 6, 5, 3, 2, 0, -1]

[Sorting Algorithms and their working](#)