Ruby Programming Questions

String

1. Create a function that takes an array of strings and integers, and filters out the array so that it returns an array of integers only.
2. Write a function to return reverse of a string using recursion.
3. Given a string s, reverse only all the vowels in the string and return it.The vowels are 'a', 'e', 'i', 'o', and 'u', and they can appear in both cases.
4. Given an n-digit large number in form of string, check whether it is divisible by 7 or not. Print 1 if divisible by 7, otherwise 0.
5. Given a string S, print all permutations of a given string.
6. Given a String S, reverse the string without reversing its individual words. Words are separated by dots.
7. Given two strings s and t, return true if t is an anagram of s, and false otherwise.
8. A phrase is a palindrome if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers. Given a string s, return true if it is a palindrome, or false otherwise
9. Given a string s, find the first non-repeating character in it and return its index. If it does not exist, return -1.
10. Given a string s and an array of strings words, determine whether s is a prefix string of words.
    A string s is a prefix string of words if s can be made by concatenating the first k strings in words for some positive k no larger than words.length. Return true if s is a prefix string of words, or false otherwise.
11. Return true if s is a prefix string of words, or false otherwise.You are given an array of strings nums and an integer k. Each string in nums represents an integer without leading zeros.
    Return the string that represents the kth largest integer in nums.
    Note: Duplicate numbers should be counted distinctly. For example, if nums is ["1","2","2"], "2" is the first largest integer, "2" is the second-largest integer, and "1" is the third-largest integer.
12. Given two strings s and part, perform the following operation on s until all occurrences of the substring part are removed:
    Find the leftmost occurrence of the substring part and remove it from s.Return s after removing all occurrences of part.
    A substring is a contiguous sequence of characters in a string.
13. You are given the array paths, where paths[i] = [cityAi, cityBi] means there exists a direct path going from cityAi to cityBi. Return the destination city, that is, the city without any path outgoing to another city.
    It is guaranteed that the graph of paths forms a line without any loop, therefore, there will be exactly one destination city.

    Input: paths = [["London","New York"],["New York","Lima"],["Lima","Sao Paulo"]]
    Output: "Sao Paulo"
    Explanation: Starting at "London" city you will reach "Sao Paulo" city which is the destination city. Your trip consist of: "London" -> "New York" -> "Lima" -> "Sao Paulo"

Array

14. Write a function which takes an integer (positive) and return an array of factorials of each index in index position till given number.
15. Create a function that takes an array of numbers and returns a new array containing only prime numbers.
16. Given an integer limit being the upper limit of the range of interest, implement a function that returns the last 15 palindromes numbers lower or equal to limit as an array sorted ascendingly.

17. Write a function which takes an integer (positive) and return an array of Fibonacci number of each index in index position till given number.
18. Write a function which takes an array of integers, return how many of them contain an even number of digits.
19. Given an integer array nums, find a contiguous non-empty subarray within the array that has the largest product, and return the product. Elements can also be negative numbers.
    Input: nums = [2,3,-2,4]
    Output: 6
    Explanation: [2,3] has the largest product 6.
20. Given an unsorted array **Arr** of size **N** of positive integers. **One number 'A'** from set {1, 2, …N} is missing and **one number 'B'** occurs twice in array. Find these two numbers.
21. Write a function that takes an integer (less than 1000) and return an array of primes till that number.
22. Given an integer array nums and an integer k, return the number of pairs (i, j) where i < j such that |nums[i] - nums[j]| == k.
    The value of |x| is defined as:
    x if x >= 0.
    -x if x < 0.
23. Given an array nums. We define a running sum of an array as running Sum[i] = sum(nums[0]…nums[i]). Return the running sum of nums.
24. Write a function which takes square matrix mat, return the sum of the matrix diagonals.
    Only include the sum of all the elements on the primary diagonal and all the elements on the secondary diagonal that are not part of the primary diagonal.
25. Given an array nums of size n, return the majority element. The majority element is the element that appears more than ⌊n / 2⌋ times. You may assume that the majority element always exists in the array.
26. A distinct string is a string that is present only once in an array. Given an array of strings arr, and an integer k, return the kth distinct string present in arr. If there are fewer than k distinct strings, return an empty string "".
    Note that the strings are considered in the order in which they appear in the array.
27. Given an integer array nums, move all the even integers at the beginning of the array followed by all the odd integers. Return any array that satisfies this condition.
28. Given an array of integers nums, return the number of good pairs.
    A pair (i, j) is called good if nums[i] == nums[j] and i < j

Hash (Try to use Hash)

29. Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

Write a function which takes roman number and return integer corresponding to that roman number.

30. A pangram is a sentence where every letter of the English alphabet appears at least once.

Given a string sentence containing only lowercase English letters, return true if sentence is a pangram, or false otherwise.

31. Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to 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.
32. Given a string s, return true if s is a good string, or false otherwise. A string s is good if all the characters that appear in s have the same number of occurrences (i.e., the same frequency).
33. Given an array nums containing n distinct numbers in the range [0, n], return the only number in the range that is missing from the array.
34. Given two integer arrays nums1 and nums2, return an array of their intersection. Each element in the result must be unique and you may return the result in any order.
35. You are given two strings of the same length s and t. In one step you can choose any character of t and replace it with another character. Return the minimum number of steps to make t an anagram of s. An Anagram of a string is a string that contains the same characters with a different (or the same) ordering.
36. Given a string text, you want to use the characters of text to form as many instances of the word "balloon" as possible. You can use each character in text at most once. Return the maximum number of instances that can be formed.

    Example: loonballxballpoon

    You can create only 2 balloon from example text, so return 2

37. Given a string s which consists of lowercase or uppercase letters, return the length of the longest palindrome that can be built with those letters.Letters are case sensitive, for example, "Aa" is not considered a palindrome here.
38. Given an array of integers nums sorted in non-decreasing order, find the starting and ending position of a given target value.

    If target is not found in the array, return [-1, -1].
39. Given two unsorted arrays **A** of size **N** and **B** of size **M** of distinct elements, the task is to find all pairs from both arrays whose sum is equal to **X**.

Date & Time

40. Write a function which takes year and returns how many Saturday 14ths there are in a given year.
41. Create a function that converts dates from one of five string formats:

    "January 9, 2019" (MM D, YYYY)
    "Jan 9, 2019" (MM D, YYYY)
    "01/09/2019" (MM/DD/YYYY)
    "01-09-2019" (MM-DD-YYYY)
    "01.09.2019" (MM.DD.YYYY)

    The return value will be an array formatted like: [MM, DD, YYYY], where MM, DD, and YYYY are all integers.

42. Create a function that takes time1 and time2 and return how many hours and minutes have passed between the two times.
43. Write a function that, given a date (in the format MM/DD/YYYY), returns the day of the week as a string. Each day name must be one of the following strings: "Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", or "Saturday".

    To illustrate, the day of the week for "12/07/2016" is "Wednesday".
44. Create a function that takes the month and year (as integers) and returns the number of days in that month.

45. Given a range of years as a string, return the number of leap years there are within the range (inclusive).
46. Given the parameters day, month and year, return whether that date is a valid date.
    is_valid_date(35, 2, 2020) ➞ false
    # February doesn't have 35 days.
47. Given the month and year as numbers, return whether that month contains a Friday 13th.
48. Given a date, return how many days date is away from 2023 (end date not included). date will be in mm/dd/yyyy format.
49. The 2nd of February 2020 is a palindromic date in both dd/mm/yyyy and mm/dd/yyyy format (02/02/2020). Given a date in dd/mm/yyyy format, return true if the date is palindromic in both date formats, otherwise return false
50. If today was Monday, in two days, it would be Wednesday.
    Create a function that takes in an array of days as input and the number of days to increment by. Return an array of days after n number of days has passed.
    after_n_days(["Thursday", "Monday"], 4) ➞ ["Monday", "Friday"]

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