لطفا به سوال زیر پاسخ دهید و نتیجه را ارسال فرمایید.

Find the questions in the following context and answer as many as you can:

Algorithm Questions
Use any language, or write in pseudo-code.

1. Given a string, ASCII characters along with any character, how would you reverse a string without affecting none ASCII characters?
    Input: str = "arash,bahram$cookie"
    Output: str = "eikoo,cmarha$bhsara"

2. A `palindrome` is a word, number, phrase, or other sequences of characters that reads the same backward as forward, such as madam or racecar or the number 10801.
Write a function that is case-sensitive to check if the input string is a palindrome or not.

3. You have two operations: add by one and multiply by 2. Find the minimum number of operations to get from 0 to an integer over 10.

4. Find the missing numbers in an unsorted integer array. There might be duplicate numbers in the list.

5. How do you find all pairs of an integer array whose sum is equal to a given number?

6. Determine if two rectangles intersect.
Give an algorithm to solve this problem when rectangles are defined by the width, height, and (x, y) coordinates of their top-left corners.

7. Given a function that returns a random integer number between 1 and 5, create a function that creates a random integer between 1 and 7.

8. According to
    ADD = 9
    BAD = 7
    CAD = 8
find proper number for ADA. (Explain your method)

DB Questions

9. What is an Index in Database?

10. How would you empty a table in a specific database?

11. We have two tables :
    parents (id:int , name:string , has_children:boolean default false)
    children (id:int , name:string , parent_id: foreign key to parents)
Write a SQL query to update "has_children" field in parents table to "false" if a parent has no child.

OOP Questions

12. Define two polygons' classes as Rectangle and Triangle which will inherit from the Polygon class.
Each child class has only one method 'area()' without any class attributes which will return the area of polygon based on height and width that are setter methods of Polygon class.
If no height and width were defined before calling the area, this method should return 0.