Coding Questions

1. You are given an array of strings (a dictionary). The task is to implement two functions. The first is setup(), which preprocesses the dictionary to your liking. The second isMatch(), that, given a word, returns whether or not the word exists in the dictionary. The word given to isMatch() may contain dots ('.') which match exactly one character, but any character value, as shown in the example below. Words may contain any number of dots in any position.

setup({"foo", "bar", "baz"});

isMatch("foo"); // returns true

isMatch("garply"); // returns false

isMatch("f.o"); // returns true (it matches foo)

isMatch(".."); // returns false (there are no two-letter words)

isMatch("..."); // returns true (any 3 letter word will suffice)

Answer: Question 1

1. Write a function that takes an input string and an alphabet, and returns the shortest substring of the input which contains every letter of the alphabet at least once.

Input: "aaccbc"

Alphabet: "abc"

Output: "accb"

Answer: Question 2

1. You are given a tree of nodes, where each node has a collection of children and has an integer 'id' field. Write a function which takes a node and assigns each node in the tree a unique integer id

Answer: Question 3

1. Implement the following data structure.

A screen shot of a computer program

Description automatically generated

Answer: Question 4

1. Given a sequence of integers and an integer total target, return whether a continuous sequence of integers sums up to the target

Ex. Nums = [1,2,3,4,5], target = 10, output = true (subarray [1,2,3,4] sums to 10)

Answer: Question 5

1. Find the first common ancestor of two nodes in a tree. We'll assume that the tree nodes have a structure like the one described, with pointers to their parent and children.

Note – this is a generic tree not binary tree

1. Given an input string, write a function that can check to see if the string can be made into palindrome by removing one character

Ex. String = “abca”, output = true. Removed ‘c’ to make “aba” which is palindrome

Empty string or null string is true by default.

Answer: Question 7

1. Given the root node of a binary tree, all the values of the nodes are integers. We want to print the values in this tree based on columns. As you go down to left child node, you go towards left column. As you go to the right you increase column. You want to print from top to bottom

In other words: Print values in binary tree from left to right and from top to bottom (vertical traversal). We do not care about maintaining order of values in asc or desc, but must be top down.

Answer: Question 8