1. Program to remove duplicates in an unsorted linked list

2. . Given a Doubly linked list containing N nodes, the task is to remove all the nodes from the list which contains elements whose digit sum is even.

Examples:

Input: DLL = 18 <=> 15 <=> 8 <=> 9 <=> 14

Output: 18 <=> 9 <=> 14

Explanation:

The linked list contains :

18 -> 1 + 8 = 9

15 -> 1 + 5 = 6

8 -> 8

9 -> 9

14 -> 1 + 4 = 5

3. You have to classify a string as “GOOD”, “BAD” or “MIXED”. A string is composed of lowercase alphabets and ‘?’. A ‘?’ is to be replaced by any of the lowercase alphabets. Now you have to classify the string on the basis of some rules. If there are more than 3 consonants together, the string is considered to be “BAD”. If there are more than 5 vowels together, the also string is considered to be “BAD”. A string is “GOOD” if its not “BAD”. Now when question marks are involved, they can be replaced with consonants or vowels to make new strings. If all the choices lead to “GOOD” strings then the input is considered as “GOOD”, and if all the choices lead to “BAD” strings then the input is “BAD”, else the string is “MIXED?

### ****LOGIC****

1. Convert the string in **0’s and 1’s**. All consonants will be considered as 1 and vowels as 0.
2. Make 2 D array (this is dynamic programming approach) and start matching.
3. For string matching, one side will be the string (converted with 0’s and 1’s) and another side with vowels and consonants as 0 and 1.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| cons & Vow/ String |  | W | A | Y | T | O | C | R | A | C | K |
|  | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 |

1. Whenever the 0 will be matched with 0, increment previous array element by 1. Similarly when 1 will be matching with 1, increment previous array element by 1.
2. In case of 3 consecutive consonants, the current array value reaches to 3 or 5 consecutive vowels the string is said to **“BAD**”.

### Now here comes ? marks case

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| cons & Vow/ String |  | W | A | Y | T | **?** | C | R | A | C | K |
|  | 0 | 1 | 0 | 1 | 1 | **?** | 1 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 | **1** | 0 | 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 | 1 | 2 | **3** | **4** | **5** | 0 | 1 | 2 |

I**n case of question mark “?” add one to both consonant and vowel array**. Also, make a Boolean flag which will be true in case of “?” occurs. If “?” and 3 consecutive consonants or 5 consecutive vowels occurred then the string is said to be **“MIXED”**, otherwise the string is **“GOOD**”.