

## **Assignment 4**

1)

Write an algorithm to determine if a number  $n$  is happy.

A happy number is a number defined by the following process:

Starting with any positive integer, replace the number by the sum of the squares of its digits.

Repeat the process until the number equals 1 (where it will stay), or it loops endlessly in a cycle which does not include 1.

Those numbers for which this process ends in 1 are happy.

Return true if  $n$  is a happy number, and false if not.

Example 1:

Input:  $n = 19$

Output: true

Explanation:

$1^2 + 9^2 = 82$

$8^2 + 2^2 = 68$

$6^2 + 8^2 = 100$

$1^2 + 0^2 + 0^2 = 1$

Example 2:

Input:  $n = 2$

Output: false

Constraints:

$1 \leq n \leq 231 - 1$

2)

Jack's Text: Jack is learning to type english from the beginning and he is making an error of repeating the same words in his texts over whatsapp. Write a function that will take input for his text sent to you and then keep only the unique texts.

Note that, the uniqueness is about being word specific not position, there are nothing but alphabets in the sentences and words are separated only with white space.

Constraints:

Words in the line  $\leq 10^5$

Alphabets in the words  $\leq 20$

Sample Input:

Send send the image send to to to me

Output:

Send the mage to me

3)

#### Question 10 : Minimum Occurrence

Problem Statement – Given a string, return the character that appears the minimum number of times in the string. The string will contain only ASCII characters, from the ranges ("a"-"z", "A"-"Z", 0-9), and case matters. If there is a tie in the minimum number of times a character appears in the string, return the character that appears first in the string.

Input Format:

Single line with no space denoting the input string.

Output Format:

Single character denoting the least frequent character.

Constraints:

Length of string  $\leq 10^6$

Sample Input:

cdadcda

Sample Output:

c

Explanation:

C and A both are with minimum frequency. So c is the answer because it comes first with less index.

4)

#### Question 17 : Duplicates

Problem Statement – The principal has a problem with repetitions. Everytime someone sends the same email twice he becomes angry and starts yelling. His personal assistant filters the mails so that all the unique mails are sent only once, and if there is someone sending the same mail again and again, he deletes them. Write a program which will see the list of roll numbers of the student and find how many emails are to be deleted.

Sample Input:

6

1

3

3

4  
3  
3

Sample Output:

3

5)

Write the program for questions 31-40 from the given link

<https://www.programiz.com/python-programming/examples>