

## #ReadySetCode Challenge 2020

created by Twitter Engineers



## ⚡ Important Links ⚡

Dummy CodePair Link: <https://hr.gs/4c3de8> || 781a6e1a2

#ReadySetCode Code Pairing Link: <https://hr.gs/4210ee> || Access Code: b18a6bda5

### 📖 Guidelines

- Participants are split into 6 groups and **must** complete the challenge as a team
- Teams will use HackerRank code pairing pad to solve questions.
- Teams have **1-hour to complete questions (or as many as possible)**.
- Prizes will be awarded to the team that completes the most questions within the hour.
- **Your mentors are available to troubleshoot** - simply ping your mentor that you need assistance with **question #** in your private team slack channel. Text version of coding questions provided below.

### 🔑 Instructions

- **Step 1: Log into assigned team 'video conference room'** (Assigned link above)
- **Step 2: As a team, review the text version of questions** (See Below)
- **Step 3: Log into the HackerRank Codepair session and enter access code.**  
(Sign-in as Interviewer)
  - Step by step getting started guide found [here](#).
- **Step 4: #ReadySetCode - work as a team to solve questions in the code-pair environment**

- Tip 1: When reviewing questions, one person screen-share + read each question.
  - Tip 2: Divide and conquer. #OneTeam wins
  - Tip 3: You can either use C++, Java or Python. Once you have chosen a coding language for each question, please **avoid changing** to another language as it might result in some technical issues.
  - Tip 4: If you are getting stuck, just ping your mentor in your team Slack channel
  - Tip 5: Collapse the scorecard on the right hand side of the screen - this will allow you to expand the code window
  - **Step 5: Once your team has completed the questions --** simply ping your mentor in your private team channel stating that “**Team X** is ready to #SHIP” and your mentor will review your code and solutions.
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## **Question #1: Abbreviate the number**

Created by: Himanshu Jain

**Topic: String/Number manipulation**

**Description:**

A tweet is always displayed with the number of retweets. For Tweets with millions of retweets, displaying a huge number is not feasible given the UI constraints. Given a number, write a function to abbreviate it to a string representing the number. The output string should satisfy the following constraints:

1. It has a maximum length of 5. This includes the decimal and any other character in the string.
2. It is truncated minimally
3. It has decimal points when necessary
4. It has precision of up to 1 digit after decimal
5. It uses suffix 'K', 'M' and 'B' for thousands, millions and Billions respectively

**Example**

1123456789 → 1.1B

400 → 400



## **Question #2: Search the Tweet keyword**

Created by: Anusha Bilgi and Aishwarya Kaneri

**Topic: Trie, Text Processing**

### **Description:**

Twitter stores colossal amounts of content. Write a function that will quickly search for a keyword in a Trie storing the keywords from billions of Tweets.

If the given input keyword is found in the Trie then print “Found” else “Not Found”.

You’ll be given the Trie.

Trie eg:

```
{ "I": { "n": { "d": { "i": { "a": { "null": {}, "n": { "null": {} } } } }, "c": { "l": { "u": { "d": { "e": { "null": {} } } } } } }, "S": { "R": { "O": { "null": {} } } }, "C": { "h": { "a": { "n": { "d": { "r": { "a": { "y": { "a": { "a": { "n": { "null": {} } } } } } } } } } } } }
```

Input: “India”

Output: “Found”

Input: “Chandrayaan”

Output: “Found”

Input: “EIA”

Output: “Not Found”

Input: “ISRO”

Output: “Found”

Input: “draft”

Output: “Not Found”



## **Question #3: Find center of stellar system**

Created by: Ashish Surana and Ayush Sethi

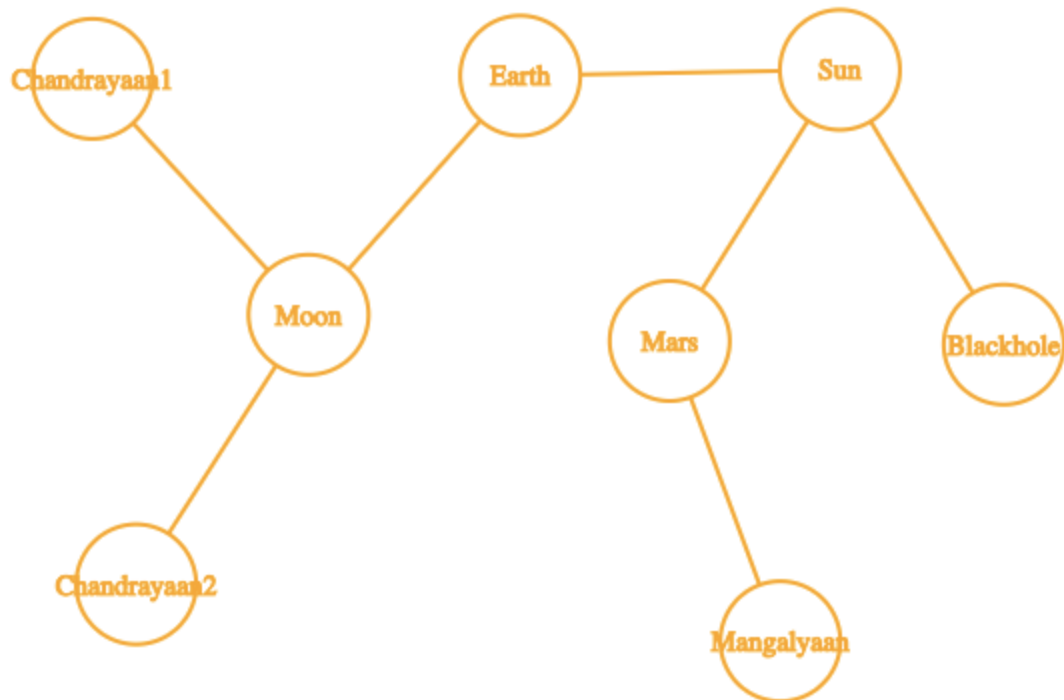
**Topic: Graph**

### **Description:**

In a stellar system, celestial bodies like stars, planets, satellites orbit other celestial bodies. When object A orbits object B, we say A and B are connected and this way any stellar system can be modeled as a graph. In a stellar system, the object which is connected to the farthest object with least number of hops is called center of the stellar system.

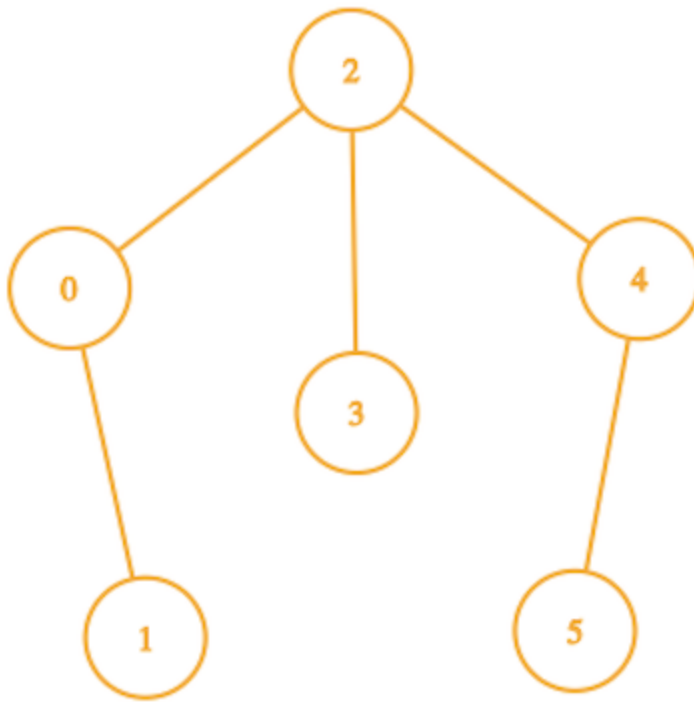
ISRO has discovered a new stellar system, and needs your help in finding the center of this stellar system.

**Example 1:**



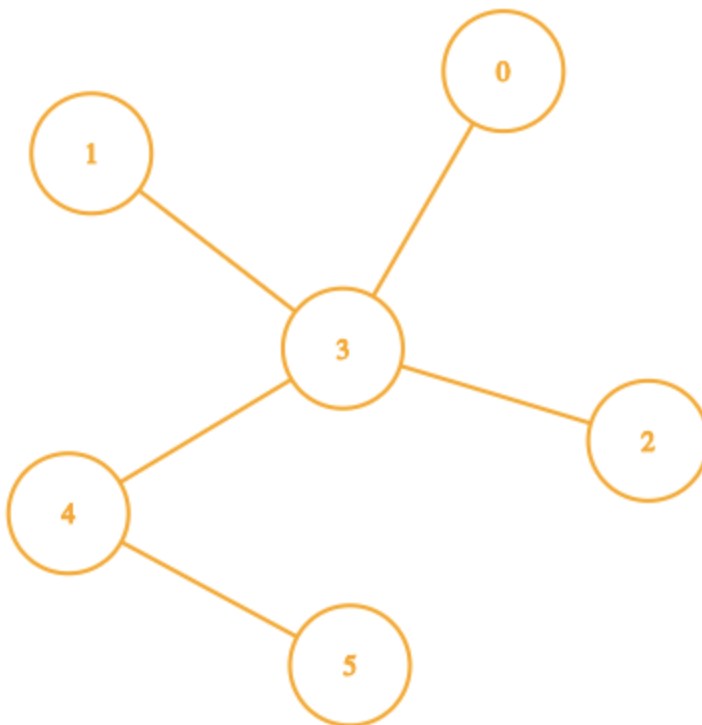
Earth has 3 hops to Mangalyaan, and Sun has 3 hops to Chandrayaan1/Chandrayaan2. All objects except Earth and Sun have more than 3 hops to atleast one other object. Either of Earth or Sun can be considered center of this stellar system.

**Example 2:**



All objects except 2 have more than 2 hops to at least one other object. So 2 is the center.

**Example 3:**



All objects except 3 and 4 have three or more hops to at least one other object. Here either object 3 or object 4 can be the center.



## Question #4: Data Center Tweet Flow

Created by: Deepesh Maheshwari and Harsh Pathak

### Topic: Graph Traversal

#### Description:

Because of the huge number of Tweets during IPL, Twitter has just setup two brand-new data centers - Bengaluru and Delhi. Twitter has also setup a  $m \times n$  grid of network routers in India.

You are given an  $m \times n$  matrix of non-negative integers representing the network router speed of each grid coordinate in India. The "Bengaluru" data center is connected to the left and top edges of the matrix and the "Delhi" data center is connected to the right and bottom edges.

Network traffic can only flow in four directions (up, down, left, or right) from a cell to another one with network router speed equal or higher. For example, traffic can flow from network router speed "5" to one with speed "8" but not in the other direction.

But Tweets are only shown to their followers if they reach both Bengaluru and Delhi data centers (to ensure that Tweets don't disappear if one of the data centers goes down).

On 27-May-2018, people are tweeting heavily from everywhere in India. Find the list of grid coordinates where network traffic can flow to both the Bengaluru and Delhi data centers.

Note:

1. The order of returned grid coordinates does not matter.
2. Both  $m$  and  $n$  are less than 50.

Given the following 5x5 matrix:

Bengaluru	~	~	~	~	~
~	9	8	8	7	(5) *
~	7	8	7	(6)	(6) *
~	8	6	(5)	7	9 *
~	(4)	(3)	9	6	5 *
~	(5)	9	9	8	6 *
*	*	*	*	*	* Delhi

## **Question #5: IAF Gets Rafale**

Created by: [Ayush Sethi](#) and [Ashish Suranaw](#)

**Topic: DP**

### **Description:**

India has decided to strengthen its defence system and they are looking to buy some modern, high-tech attack planes. For this reason, Indian Airforce chief is visiting France to finalize some fighter jets presented by Dassault Systems. Dassault Systems's Rafale jets come with different configurations and each plane has some firepower associated with it. India wants to form exactly 2 squadrons with the same firepower. To do this task efficiently, the IAF chief needs your help. The task is to find the maximum firepower that we can have for 2 squadrons from the jets at display.

For example, suppose there are three jets of firepower 3, 4 and 7. So you can build two squadrons of firepower 7. One contains a single jet of firepower 7, and the other contains a jet of firepower 3 and firepower 4.

If you are given jets of firepower 2, 2, 3 and 4 then you can make two squadrons with firepower 4 (just don't use jet with firepower 3).

### **Input**

Input starts with an integer  $T$  ( $\leq 100$ ), denoting the number of test cases. Each case starts with an integer  $n$  ( $1 \leq n \leq 50$ ), denoting the number of jets. The next line contains  $n$  space separated integers, each containing the firepower of the jet  $fp$  ( $1 \leq fp \leq 500000$ ). You can safely assume that the sum of firepower of all jets will not be greater than 500000.

### **Output**

For each case, print the case number and the firepower of the strongest 2 squadrons that can be built. If it's impossible to build the 2 squadrons as stated, print "impossible".

### **Sample Input**

```
4
3
3 4 7
3
10 9 2
2
21 21
```

9

15 15 14 24 14 3 20 23 15

Sample Output

Case 1: 7

Case 2: impossible

Case 3: 21

Case 4: 64