
# THE CODERS CUP

## FRESHMEN ROUND

## QUESTION SET -A

# Competition Rules:

## Participation Guidelines:

- The Freshmen Coders Cup round spans for 1 hour. If you have completed the problem set before the allocated time, you may leave the competition room quietly, but inform the coordinator must.
- If you leave the room, you cannot return.
- You can discuss only with your team mates. If you discuss with anyone else, both team will be disqualified from the competition.

## Submission Guidelines:

- Find sample inputs from net-storage.
- The problem submission will be through PC^2
- Clarifications to any problem can be obtained using PC^2. No in room managers will be responsible for problems/confusions in problem set given.
- You are allowed to use language
    - C, C++, C#.NET, JAVA.
- IDEs allowed are:
    - Bloodshed Dev C++ for C and C++
    - Visual Studio 2008 or 2010 for C#.NET
    - NetBeans 6.8 for JAVA.
- Make console projects for all afore mentioned IDEs.
- Show output on console; don't write on a text file.
- Do not prompt for input from console in the program.
- Remove system ("pause")/getch()/package inclusion statements from your choice before submitting.

## Additional Guidelines:

- The solution will be judged by multiple input files and execution time.
- The decision of judge will stand unchallenged.
- Books, manuals, and any sort of guide materials are not allowed.
- Your team can be dis-qualified, if found hard coding for solutions.
- Your team can be dis-qualified, if found using internet.
- Your team can be dis-qualified, if found unfair in anyway.

Note: Save your work continuously, ACM NUCES is not responsible for any loss of work due to power failure or any other reason.

# Question 1:

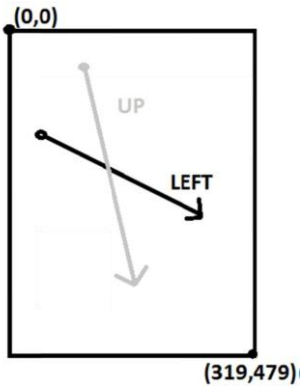
## DEVELOPING THE EPHONE

The ePhone is the latest innovation in touch-based mobile technology. As a part of the ePhone development team, you've been asked to develop the browser app for the ePhone. Your team has developed the web browser, but it seems they've missed a crucial functionality. You cannot scroll a web page!

You're required to build the scrolling component of the web browser app. The ePhone users can scroll left, right, up, or down on any page using the 'swipe' gesture. The swipe gesture consists of swiping your finger over the touch screen. If the user swipes left to right, it means he wants to scroll left. Similar gestures can be assumed for right, up, and down.

The ePhone has a screen resolution of 320 x 480. The top left corner of the screen has the coordinates (0, 0) and the bottom right corner has the coordinates (319,479). The component you are developing will receive two coordinates C1 and C2. C1 denotes the point where the user touched the screen initially, and c2 denotes the point where the user lifted his finger off the screen. It can be assumed that the user drags his finger across the touch screen from point C1 to C2 in a straight line.

A problem arises when the user swipes in a direction that isn't exactly vertical or horizontal. For those cases, you need to figure out whether the swipe is closer to horizontal, or closer to vertical, and then scroll the page accordingly. The following image illustrates this concept:




### INPUT

The first line consists of a positive integer indicating the number of test cases.

Each test case consists of a single line containing 4 integers- x1, y1, x2, y2. The pair (x1, y1) denotes point c1 and the pair (x2,y2) denotes the point c2. The line joining the points c1and c2will never be exactly Diagonal (i.e. at 45, 135, 225, 315 degrees).

### OUTPUT

For each test case, print a single line containing the word 'left', 'right', 'up', or 'down' indicating the direction of scroll.

***Sample:***

| Input | Output |
|---|---|
| **2**<br>**4 5 100 15**<br>**300 400 250 300** | Left Down |

# Question 2:

## PRE-DEFINED CRICKET

Mr. Mahindra Singh Afridi is a new talented PakInd cricket player. He has reached to international level with his interesting rule to play the game in certain set of balls i.e. he predefines a number 'n' which is number of balls and then defines what he will score on each of those balls (I1, I2……I(n-1), I n). If he plays more balls then 'n' then the set restarts for example if 'n' is 6 and he is playing 8th ball then he will score the runs he decided to score on 2nd ball. Your task is to calculate how much runs he scores in a match.

### INPUT:

First line of input contains an integer 't' which is the number of test cases. Followed by 't' test cases each having 2 line. First line of the test case contains 'n' i.e. number of balls in a set and 'b' i.e. number of balls he played in the match (b-th ball is the ball on which he got out i.e. no score on b-th ball) separated by space. Second line contains 'n' integers separated by space defining each ball in the set of n balls.

### OUTPUT:

Output contains t line each for a test case, determining how much runs he scored.

***Sample:***

| Input | Output |
|---|---|
| 3 | 19 |
| 5 7 | 12 |
| 6 2 0 1 4 | 4 |
| 10 3 | |
| 6 6 6 6 6 6 6 6 6 6 | |
| 2 10 | |
| 0 1 | |

# Question 3:

## SECRET MESSAGES; THE SQUARE CODE

One classic method for composing secret messages is called a square code. The spaces are removed from the English text and the characters are written into a square (or rectangle). For example, the sentence "If man was meant to stay on the ground god would have given us roots" is 54 characters long, so it is written into a rectangle with 7 rows and 8 columns.

- ifmanwas
- meanttos
- tayonthe
- groundgo
- dwouldha
- vegivenu
- sroots

The coded message is obtained by reading down the columns going left to right. For example, the message above is coded as:

- imtgdvs fearwer mayoogo anouuio ntnnlvt wttddes aohghn sseoau

### INPUT:

First line of input contains an integer ‘t’ which is the number of test cases. Followed by ‘t’ test cases. Each case starts with an integer ‘l’ which is the number of lines in the message. Followed by ‘l’ lines of message in english with no spaces between the words.

### OUTPUT:

Output displays ‘t’ lines each is the encoded message of each case. (Watch out that no "garbage" characters are printed.)

***Sample***

| Input | Output |
|---|---|
| 2<br>3<br>haveaniceday<br>feedthedog<br>chillout<br>4<br>Win?<br>hsa<br>aum<br>tre | hfc aeh vei edl atl nho ieu cdt eo dg a y<br>what isur name ? |