Frisco FirstBytes Programming Contest

October 15, 2016

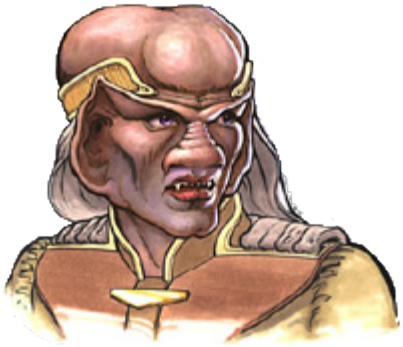
BEGINNER PROBLEM SET

DO NOT OPEN THE PACKET UNTIL TOLD TO DO SO.

The final <u>Beginner</u> winner will be decided by the total number of Beginner and Novice problems solved. Beginner teams can receive credit for solving Novice Problems.

O Ferengi Exchange

When you left for your first Starfleet cruise, your uncle (an old Fleet hand), gave you 17 strips of latinum, since he knew you'd visit a Ferengi outpost. Being from Earth, you are unfamiliar with money, but he warned you to shop for the best deal. The Ferengi saw the young Earthlings arrive & could hardly believe their luck! Every shop tells you your old currency must be converted to new strips and demands an exchange fee. The exchange of old strips to new strips is 1 to 1; the exchange fee is a flat fee. How much will you have to spend after subtracting the fee from your 17 strips?



The Input:

A single integer, the exchange fee.

The Output:

Print out the number of strips you will have left to spend.

Example:

Input
```
5
```

Output
```
Remaining latinum: 12
```

P See the Commandant!

Beyond your coursework at Starfleet Academy, you must also accumulate points for independent research – the Fleet only wants recruits who can think for themselves. Your first term at the Academy has been tough; have you done enough to stay?

Read the points earned from your first 5 papers and add them. If you've earned 100 or more points, you're good! Otherwise, the Commandant will want to see you.

The Input:

5 integers, the points earned for each paper.

The Output:

Print your independent research results with the total points.

Example 1:

Input
```
22
15
28
20
15
```

Output
```
You passed! 100 points
```

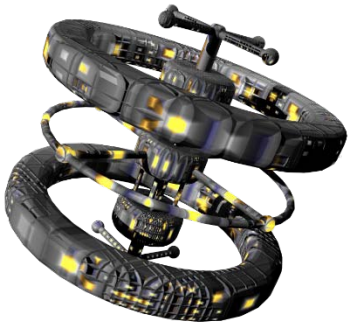
Example 2:

Input
```
12
15
28
20
15
```

Output
```
See the Commandant! 90 points
```

These are 2 *examples* of possible outcomes. Your program only checks one set of scores!

Q Weekend Pass



The Academy is tough, and you haven't been off campus in 3 months. As a reward for the entire class doing well on mid-terms, you get a weekend pass! Your friends want to check out a new station orbiting at a stable Lagrangian point (called "L5 Landing"). It sounds great, but can you take more than a toothbrush? Cadet luggage limits are tight. You get 200 transportation weight credits for the year, and you want to go to the moon at Spring Break. You are charged credits based on weight:

Weight less than 20 pounds: 1 credit per pound

Weight greater than or equal to 20 pounds and less than 40 pounds: 2 credits per pound

Weight greater than or equal to 40 pounds: 3 credits per pound

After fitting what you can into 4 vacu-paks, how many credits will this trip take?

The Input:

Four integers, each the weight of a vacu-pak.

The Output:

Print the total cost for your luggage to L5 Landing.

Example:

Input

```
5
4
20
6
```

Output

```
Your trip will take 55 credits.
```

R Warp Drive Malfunction

Here we go again. The warp core is experiencing one of its oddball malfunctions.

So just what is the warp core doing? When Captain Kirk gives the order "Warp speed, Mr. Sulu", Mr. Sulu presses the warp button on his engineering panel, causing the Enterprise to "hop" 20 light years. When he gives the command again the Enterprise hops another 10 light years. On the next command for warp speed the Enterprise can only hop 5 light years. But then the sequence resets so on the next command for warp speed the Enterprise leaps 20 light years.

Help Mr. Sulu out, write the code that, for a given number of hop commands by the Captain, he can tell Captain Kirk how far they will have gone.

The Input:

The first line will contain the number of test cases *T* (1<=*T*<=50). The *T* lines that follow contain one integer H (1<=H<=150), the number of hops the Captains calls for.

The Output:

The output will be Mr. Sulu's response to the Captain stating that for the given number of hops, the ship will travel a number of light years.

Example:

Input

```
2
2
6
```

Output

```
Captain, in 2 hops we will go 30 light years.
Captain, in 6 hops we will go 70 light years.
```

S USS Valiant

You and your classmates finally get to the bridge of a spaceship! The *USS Valiant* (a *Defiant* class starship) has been used as a cadet training ship since suffering significant crew loss in the Dominion wars. But she's beautiful – and you're giving the orders! Unfortunately, some of your new shipmates didn't study very hard in Applied Physics – and they're in engineering. Instead of 1 jump to your destination, the "engineers" can only manage a few half-hearted jumps (what is it with warp engines?). After the unsettling hops through subspace end, how far are you from your destination? Because they didn't understand 3-dimensional coordinates, the engineers have used 2-dimensional coordinates exclusively.

The Input:

The first line contains 2 integers, your destination coordinates relative to your current position of (0,0). The second line contains a single integer J, the number of subspace jumps. Each of the J following lines contains the end coordinates of the jump, referenced to the starting position *of that jump*. All units are light-years.

The Output:

Print the distance remaining to the destination. Since it probably won't matter with this bunch of engineers, you can round to the closest integer.

Example:

Input

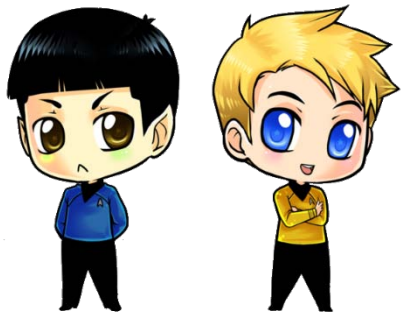
```
100 100
2
20 30
40 20
```

Output

```
64 light-years away from destination
```

T Longest Service

After the fiasco of the *USS Valiant*, you find yourself in an argument with the chief "engineer." He insists he's the senior officer, but you know seniority amongst equal ranking cadets is based on time since enlistment. A simple records check will prove you enlisted first. United Federation of Planets service records are time-stamped using Federation Precision Time (FPT), the number of nanoseconds since the establishment of the Federation on October 9, 2161. Who's the senior cadet?



The Input:

The input contains your enlistment date, the second line his. Each contains a single integer representing the number of nanoseconds since 2161 (a very long time).

The Output:

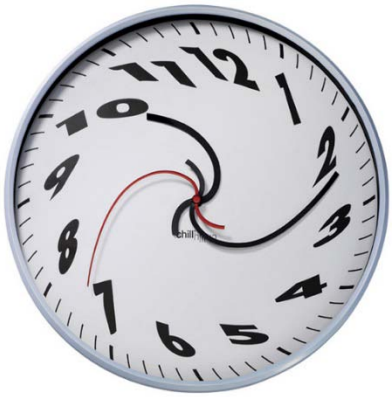
Print either "You are senior" or "Salute him". On the next line, print the absolute value of the difference in time in nanoseconds.

Example:

Input
```
56792114678
56792001265
```

Output
```
You are senior
113413
```

U Where in Time is Kirk?



While researching Admiral Kirk for independent research, you happened upon a report concerning changes he made to history. According to the report, agents from the Department of Temporal Investigations have said in reference to James Tiberius Kirk, "The man's a menace." His file indicates 17 temporal violations, meaning he has altered history on 17 occasions, always explained away with the flimsiest of rationales. But is this accurate? Write a program to check the department's records against Kirk's logs (available in the archives).

The Input:

The first line contains a single integer, the number of "incidents" to check. Each of the following incidents has a line with the number of alterations per incident, followed on the same line with the number of days changed for each alteration.

The Output:

Print the total number of days for which Kirk altered history.

Example:

Input

```
3
1 4
2 1 2
3 3 2 5
```

Output

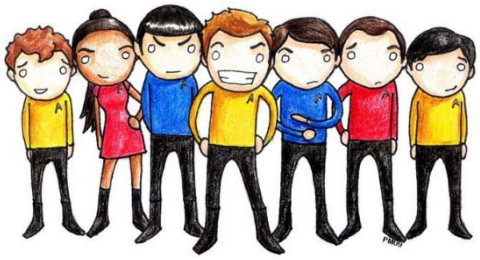
```
Kirk changed what happened on 17 days.
```

V Ship's Muster

You've been assigned to the *USS Firebrand*! Will any of your 3 best friends be there? New assignments to the ship have been posted by Service ID number only, but you have the service numbers of your friends.

46903 Janson Janeway
45099 Chris Sisko
60132 Alan Riker

Write a program to scan the list of new crew & print the results.



The Input:

The first line contains a single integer, the number of crew to check. Each of the following lines contains a crew member's service number.

The Output:

Print whether each friend will be aboard.

Example:

Input

```
5
26998
45099
65551
23987
87452
```

Output

```
Janson Janeway will NOT be aboard.
Chris Sisko WILL be aboard.
Alan Riker will NOT be aboard.
```

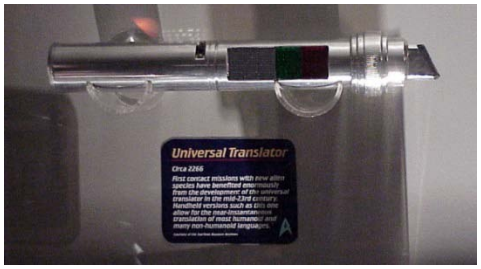
W Translator Confusion

In Star Trek everyone can communicate with everyone else (actually it seems that everyone speaks 1960's English) because of the highly advanced computerized system "The Universal Translator".

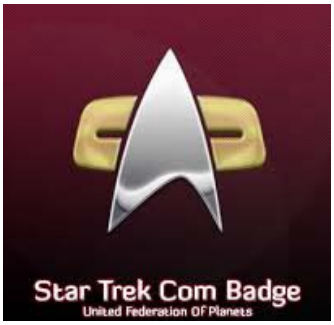
As advanced as the Universal Translator is, on occasion (like every other piece of technology), it develops hiccups. And this time it is confusing words. Mr. Spock is running a diagnostic to determine just what is going on and develop a plan to fix it.

Mr. Spock wants to speak a series of words into the Universal Translator and count the difference in letters of the output of the Universal Translator. As the lowest Science Officer available, he has told you to write the diagnostic program while he tries to beat Captain Kirk in another game of 3D Chess.

Your program should compare the input word to the output word and output the difference between the two words, ignoring case. The two words will be the same length – at the least the Universal Translator got that right!



The Universal Translator became so universal and miniaturized that by 2400 AD (Captain Picard's time) it had been built into the communication badge!



The Input:

The first line contains a single word, the input to the universal translator. The second line also contains a single word, the output of the universal translator.

The Output:

Print the total number of changed characters.

Example:

Input

```
Computers
Commuting
```

Output

```
There are 4 differences between Computers and Commuting.
```