

**Clements High School Computer Science Invitational**

**Novice Division**

**November 12, 2016**

**Programming**

**Time!!!**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Team Number:** | | **School:** | | |
| **Problem Checklist** | | | | |
| Each problem is worth 60 points. Every incorrect submission is -5 points for when you get the problem correct. | | | | |
| **Problem Number** | **Problem Name** | | **Tally of Incorrect**  **Submissions** (Tiebreaker) | **Score** |
| 1 | A Grand Entrance | |  |  |
| 2 | Archer’s Words | |  |  |
| 3 | Bad Luck Byrone | |  |  |
| 4 | Chemistry Cat | |  |  |
| 5 | Coma | |  |  |
| 6 | Dio the Hero! | |  |  |
| 7 | Factorial | |  |  |
| 8 | Food for Dooge | |  |  |
| 9 | Jackie Chan | |  |  |
| 10 | Jojo the Psychic | |  |  |
| 11 | Leoneardo Dicaprio’s Suits | |  |  |
| 12 | Meme Starter Packs | |  |  |
| 13 | Popular Memes | |  |  |
| 14 | Response Faces | |  |  |
| 15 | Shoes in Twos | |  |  |
| 16 | Temper Cat | |  |  |
| 17 | Wacky Captions?!? | |  |  |
| 18 | Worst of Byrone | |  |  |
|  |  | | **Total:** |  |

**1. A Grand Entrance**

**Program Name: Pepe.java Input File: (no input file)**

Pepe is invited to the Meme Party at Clements High School. In order to make his dramatic entrance, Pepe is determined to prepare multiple Pepe style costumes for his Pepe crew. He has decided to find a novice costume designer to create them through printing.

**Input**

(no file input)

**Output**

Display the costume exactly as it appears below.

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@@@@@@@@/ \@@@@@

@@@@@@@/ \@@@

@@@@@@/ \@

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**2. Archer’s Words**

**Program Name: Archer.java Input File: archer.in**

Archer is a perfect gentleman. Archer is particularly well known for using extremely long words when he is talking. However, since he wants to be a lady’s man at the Clements Meme Party, he will be shortening his words. He deems any word ten or more letters is far too long for a gentleman-like speech. He needs a personal translator to make sure he doesn’t say any word at least 10 letters long.

If Archer says a word that is at least 10 letters, convert it into a word with the first letter followed by the number of letters between the first and last character and then the last letter. For example, if Archer says "submissive", it will be converted to "s8e". If the word is fewer than ten characters long then you will leave the word unchanged.

**Input**

There will be an unknown number of lines in the input. Each line will contain a String, representing the word that Archer has said.

**Output**

Output the converted form of Archer’s word for each line.

**Assumptions**

The longest possible word will be 100 letters long.

The word will contain only lowercase letters.

**Example Input File Example Output to Screen**

food food

antidisestablishment a18t

economy economy

sequential s8l

**3. Bad Luck Byrone**

**Program Name: Byrone.java Input File: byrone.in**

Byrone is notoriously known for having bad luck - even when he has good luck. For example, Byrone once escaped a burning building only to be hit by a fire truck. More recently, Byrone has been finding spare change to add to his piggy bank to buy a ticket to go to the Clements Meme Party. However, he doesn’t know that for every coin he puts in, two fall out, each with the same value of the coin that Byrone put in.

**Input**

The first line indicates the amount of money originally in Byrone’s piggy bank (in cents).

The next line contains an integer **N**, representing the number of coins Byrone puts into his piggy bank.

Each of the following **N** lines contains the value of the coin that Byrone will deposit (not necessarily US denominations).

**Output**

Output the amount of money in dollars that will be in Byrone’s piggy bank once all the coins are deposited.

**Assumptions**

Byrone will deposit a maximum of 500 coins.

Byrone’s piggy bank will never have a negative amount of money.

**Example Input File Example Output to Screen**

249 $1.86

3

6

48

9

**4. Chemistry Cat**

**Program Name: ChemCat.java Input File: chemcat.in**

Chemistry Cat has been invited to the Clements Meme Party. However he is notorious for making horrible chemistry-related jokes. To encourage Chemistry Cat to come to the Meme Party, the Clements staff has assured that everyone will laugh at his jokes. The staff has decided to designate a certain amount of people to continuously listen to the cat. However, these people are just dummies who are programmed to laugh at the cat. Help the staff write a program to simulate the laughs for the dummies.

**Input**

The first line will contain an integer **N**, representing the number of dummies being programmed.

After the first line, there will be an unknown number of lines each containing one of Chemistry Cat’s jokes.

**Output**

Output all the dummies laughing at Chemistry Cat’s jokes. Each laugh will be programmed to be "Haha". If there are multiple dummies, separate each laugh with a space.

**Assumptions**

There will be at least 1 dummy and fewer than 20 dummies.

**Example Input File Example Output to Screen**

4 Haha Haha Haha Haha

All My Pringles Argon Haha Haha Haha Haha

Lost An Electron, Now I’m Positive Haha Haha Haha Haha

Tell Me A Potassium Joke. K.

**5. Coma**

**Program Name: Coma.java Input File: coma.in**

At the Clements Meme Party, the Clements staff will be creating a postcard that people can send to their best friends or just some other memers. The postcard will contain a meme called the Sir You’ve Been in A Coma meme. To make it very interactive for everyone, it will be customized for each person. All the applicants will have to provide their favorite thing in history and a year.

**Input**

The first line will contain integer **N**, the number of data sets that will follow. The next **N** lines will contain an integer, representing a year, and a one word String, representing a figure or location.

**Output**

The output will have "Nurse: Sir you’ve been in a coma since " and then the year given in the input. The next line of output will have "Me: How’s my favorite "followed by that specific figure or location and then " doing?". Separate each data set with an empty line.

**Assumptions**

There will be fewer than 100 data sets.

**Example Input File**

3

1495 Constantinople

1962 JFK

1990 USSR

**Example Output to Screen**

Nurse: Sir you’ve been in a coma since 1495

Me: How’s my favorite Constantinople doing?

Nurse: Sir you’ve been in a coma since 1962

Me: How’s my favorite JFK doing?

Nurse: Sir you’ve been in a coma since 1990

Me: How’s my favorite USSR doing?

**6. Dio the Hero!**

**Program Name: Dio.java Input File: dio.in**

Dio likes getting all the recognition for tasks he didn’t even do. Jotaro, on the other hand, dislikes Dio for trying to steal all his credit, so they have decided to settle it at the Clements Meme Party. To determine who deserves the actual recognition, Jotaro and Dio have decided to fight it out at Clements inside the Meme Brawl.

A meme is given a rank when it is made. The order of the ranks is that S rank is the highest rank followed by A, B, C, D, and E.

**Input**

The first line contains an integer **N**, representing the number of lines to follow.

The next **N** lines will contain the rank of Jotaro’s memes followed by a space and then the rank of Dio’s memes.

**Output**

On each battle if Jotaro’s meme is better, print out "Here’s your receipt.". If Dio’s stand is stronger, print "It was me, Dio!". In the case of a tie, output "Almost there...".

**Assumptions**

There will be fewer than 100 data sets.

**Example Input File Example Output to Screen**

5 Here’s your receipt.

S A It was me, Dio!

C B Here’s your receipt.

S E It was me, Dio!

E S Almost there...

C C

**7. Factorial**

**Program Name: Factorial.java Input File: factorial.in**

Success Kid has been invited to go to the Clements Meme Party. However, in order to go, Success Kid’s parents have forced him to memorize the factorial chart. Success Kid has never been good at math, so he needs assistance and tutoring. He has decided to create a cheat system to help him calculate what the factorial will be, so he hired someone coming to the Clements Meme Party to write him a program to ace his parents’ test over factorials.

0! (0 factorial) = 1

1! (1 factorial) = 1

2! (2 factorial) = 1 x 2

3! (3 factorial) = 1 x 2 x 3

… and so on

Factorials are found by multiplying all the numbers from 1 to that number. For example, if given the number 10, the factorial would be equal to 1x 2 x 3 x 4 x 5 x 6 x 7 x 8 x 9 x 10. Thus, the value is 3,628,800. The only exception to this rule is 0 factorial which is always equal to 1.

**Input**

The first line will contain integer **N**, the number of data sets that will follow. The next **N** lines will contain a number that Success Kid needs to find the factorial of.

**Output**

Output on each line the factorial of the number given in the input.

**Assumptions**

There will be no numbers less than 0 and greater than 13.

**Example Input File Example Output to Screen**

4 1

0 1

1 3628800

10 6

3

**8. Food for Dooge**

**Program Name: Dooge.java Input File: dooge.in**

Dooge has just eaten pizza from the Clements Meme Party. However, he’s still hungry. In order to get full, he must unlock the locks that are preserving the rest of the pizza. Each lock is labeled with a number. The key to unlock each lock is its Pizza Value. In order to fill his stomach, he requires assistance unlocking the doors. Dooge knows that the Pizza Value is the number of steps before the value reaches 1 in a certain sequence. Help Dooge out by unlocking the locked pizza cabinets.

To find the Pizza Value, you take the number given on the lock and apply the Pizza Rule which is as follows:

* If the number is even, divide it by 2
* If the number is odd, multiply by 3 and add 1
* If the result is not 1, apply the Pizza Rule again

For example, the Pizza Value for the number 3 is found as 7 through the following steps:

* 3: New Pizza Value = 3 x 3 + 1 = 10
* 10: New Pizza Value = 10 / 2 = 5
* 5: New Pizza Value = 5 x 3 + 1 = 16
* 16: New Pizza Value = 16 / 2 = 8
* 8: New Pizza Value = 8 / 2 = 4
* 4: New Pizza Value = 4 / 2 = 2
* 2: New Pizza Value = 2 / 1 = 1

**Input**

The first line of input will contain an integer **N**, representing the number of pizza cabinets that need to be opened. Each **N** line after the first will have an integer representing the number on the lock.

**Output**

Output the Pizza value for each pizza cabinet on separate lines.

**Assumptions**

The number on each lock will be numbered starting from 1.

**Example Input File Example Output to Screen**

4 7

3 8

6 14

11 18

28

**9. Jackie Chan**

**Program Name: Chan.java Input File: chan.in**

Jackie Chan is driving to go to the Clements Meme Party. He is using a special type of GPS to route him to Clements High School. Jackie Chan is taking a lot of other guests to Clements, and they are also very curious as to how to get to Clements.

Jackie’s GPS only gives at most a 5 word direction at a time. If there are more than 3 words in the directions, Jackie Chan will be turning right. If there are fewer than 3 words in the directions, Jackie Chan will be turning left. If there are 3 words, then Jackie Chan will be going straight.

**Input**

The line contains an integer **N**, representing the number of data sets to follow.

Each data set contains up to a String with five words, representing the directions given by the GPS.

**Output**

If the GPS tells Jackie Chan to turn right, print out "Chan, Turn Right." If the GPS tells Jackie Chan to turn left, print out "Chan, Turn Left." If the GPS tells Jackie Chan to go straight, print out "Chan, Keep Going." Each data set should be on its own separate line.

**Assumptions**

There will be fewer than 100 data sets.

**Example Input File Example Output to Screen**

3 Chan, Turn Left.

A cat Chan, Turn Right.

Cheese in the house Chan, Keep Going.

Grapes are purple

**10. JoJo the Psychic**

**Program Name: Jojo.java Input File: jojo.in**

Joseph Joestar is at it again with his cleverness. During his fights with his opponents, he loves to show off how much he knows about them by predicting their next sentence and consequently their next move. Upon encountering an enemy at the Clements Meme Party, Joseph wants to find out if he can predict his opponent’s next line.

**Input**

The first line contains an integer **N**, representing the number of data sets to follow.

Each data set contains the sentence "Your next line is... " followed by more words on the same line. The actual sentence spoken by his opponent will be on the next line.

**Output**

If Joseph correctly outplays and predicts his opponent's next sentence, print out "HUH?! How did he know what I was gonna say". If Joseph is wrong, print out "YOU are the super dumb".

**Assumptions**

There are fewer than 100 data sets. The sentence must be the exact same, with correct case and punctuation in order for the prediction to be correct.

**Example Input File**

2

Your next line is... Why aren’t you dead??

Why aren’t you dead??

Your next line is... What a beautiful Duwang!

Morioh is such a beautiful town...

**Example Output to Screen**

HUH?! How did he know what I was gonna say

YOU are the super dumb

**11. Leoneardo Dicaprio’s Suits**

**Program Name: Suits.java Input File: suits.in**

Leoneardo Dicaprio needs to prepare for the Clements Meme Party. He is looking through his wardrobe to find dress shirts and he needs some help. Because of his preferences he will only wear a long sleeve white dress shirt. Although he may have different types of dress shirts in the closet, he doesn’t find them as appealing. Help him calculate how many potential dress shirts he can wear to the Meme Party.

**Input**

The first line contains an integer **N**, representing the number of dress shirts in his closet.

The next n lines will have lines that contain two words separated by a space. The first word will either be "long" or "short". The second word will be the color of the shirt.

**Output**

Output the potential number of dress shirts that Leoneardo Dicaprio can wear to the Clements Meme Party.

**Assumptions**

There will be fewer than 500 data sets. All the words will always be in lowercase.

**Example Input File Example Output to Screen**

4 2

short blue

long black

long white

long white

**12. Meme Starter Packs**

**Program Name: MemePacks.java Input File: memepacks.in**

Many newcomers to the Clements Meme Party do not know their way around the school, so Bad Luck Byrone is selling Meme Starter Packs for everyone. However, Bad Luck Byrone is pretty good at math and loves money, so he will be starting the base price at $5 with an increase of $3 for every "L" or "l" in the buyer’s name.

**Input**

The first line contains an integer **N**, representing the number of students waiting in line to buy a meme starter pack.

The next **N** lines contain the name of the student, a String, followed by a single integer, representing the amount of Meme Starter Packs being bought by that student, separated by a space.

**Output**

Output a list of all the students’ names in increasing order of the amount of money being spent on Bad Luck Byrone’s Meme Starter Packs. If there is a tie between the amount of money, output the students’ names in the order they come in from the input.

**Assumptions**

There will be fewer than 1000 names in the list. Each name will begin with a capital letter.

**Example Input File Example Output to Screen**

4 Valedictorian

Valedictorian 1 Byrone

LAkash 69 LAkash

Leone 222222 Leone

Byrone 2

**13. Popular Memes**

**Program Name: PopMemes.java Input File: popmemes.in**

Memes at Clements have been getting out of hand. With so many quality memes to choose from, there simply isn’t enough time for people to appreciate them all. In an effort to combat this growing malady, the Clements Computer Science Club has been tasked with the job of finding the most popular meme at the Clements Meme Party. However, they are really lazy and require someone else to find the most popular meme for them. Given a list of memes and their number of likes and dislikes, find the most popular meme of the week. Popularity is defined as 2 times the amount of likes subtracted by the amount of dislikes.

**Input**

The first line of input will contain an integer **N**, representing the number of memes to process. Each **N** line after the first will have the meme’s name, the meme’s number of likes, and the meme’s number of dislikes separated by spaces. The meme’s name may contain spaces; however, there will always be the number of likes and dislikes following the name.

**Output**

Output the most popular meme in the list. In the case of a tie, the meme with the most likes takes precedence. If they’re still tied, output the meme that comes first in the input.

**Assumptions**

There are fewer than 1000 memes to process.

**Example Input File Example Output to Screen**

3 Bad Luck Byrone

Pepe 4 2

Bad Luck Byrone 9 3

One Does Not Simply 7 1

**14. Response Faces**

**Program Name: Faces.java Input File: faces.in**

At the Clements Meme Party, there is a judge panel watching talent show performances. However, their scoring system is much different from all the other TV shows. Instead of giving a score, the judges give faces for each performance. Each performer is incompetent and cannot add up their own scores, so the Clements staff needs a score tallyer. The judge panel will consist of 3 judges.

|  |  |
| --- | --- |
| Score | Faces |
| 1 | Troll Face |
| 2 | OkayGuy Face |
| 3 | LolCrazy Face |
| 4 | Rage Face |
| 5 | MeGusta Face |

**Input**

The first line will contain an integer **N**, representing the number of data sets there will be.

Each data set contains two lines. The first line will be the name of the contestant. The second line will contain the faces that the three judges make.

**Output**

Output the name of each contestant’s name with their total score on the same line separated by a space.

**Assumptions**

There will be fewer than 1000 data sets.

**Example Input File Example Output to Screen**

2 Bad Luck Byrone 12

Bad Luck Byrone Pepe 3

LolCrazy Face Rage Face MeGusta Face

Pepe

Troll Face Troll Face Troll Face

**15. Shoes in Twos**

**Program Name: Shoes.java Input File: shoes.in**

LAkash became rich when he received money for his birthday and was very giddy. He has a list of shoes he wants to buy at the Clements Meme Party and wants to spend as much money as possible. However, due to not enough hands, he can only buy 2 pairs of shoes. But he wants to make sure he has enough money for the rest of the stalls at the Clements Meme Party, so he can’t purchase any 2 pairs of shoes that are worth more than $100.

**Input**

The first line in the input will contain an integer **N**, representing the amount of shoes in his list.

Each of the next **N** lines contains the name of the shoe and the cost in dollars separated by a space.

**Output**

Output the maximum amount of money that LAkash can spend buying new shoes.

**Assumptions**

LAkash will not buy two pairs of shoes of the same type.

There will be fewer than 1000 pairs of shoes.

**Example Input File Example Output to Screen**

4 92

Flyknit 24

Lebrons 68

BiteemShark 101

Navybluebrowns 12

**16. Temper Cat**

**Program Name: TemperCat.java Input File: tempercat.in**

Temper Cat is always mad and he’s not really sure why. Sometimes he thinks it’s just everything around him, but after doing some research, he found out that certain combinations of numbers made him mad while others calmed him down. Temper Cat has decided to hire someone at the Clements Meme Party to find out if the set of numbers will make him mad or not.

**Input**

The line contains an integer, **N**, that represents the number of data sets to follow.

Each data set contains five numbers, ranging from 1 to 500. In order for a set of numbers to make Temper Cat mad, one number must be prime, the average must be less than or equal to the median, and the largest number must be less than the sum of the other numbers.

**Output**

If the set of numbers makes Temper Cat mad, print out "Temper Cat is mad." If the set does not make Temper Cat mad, print out "Temper Cat is not so mad."

**Assumptions**

There are fewer than 500 data sets.

**Example Input File Example Output to Screen**

4 Temper Cat is mad.

8 3 5 10 14 Temper Cat is not so mad.

290 4 68 8 100 Temper Cat is mad.

340 233 487 274 34 Temper Cat is not so mad.

359 5 89 1 24

**17. Wacky Captions?!?**

**Program Name: captions.java Input File: captions.in**

For the Meme Party at Clements, the Clements staff needs extra assistance in picking which meme captions should be used on its pictures. Each team has now been designated to find captions with the highest score of dankness.

The job is pretty simple. Just look at the captions proposed by the greatest memer alive, Bad Luck Byrone, and measure how dank each is.

**Input**

The first line contains an integer **N**, representing the number of words in the dictionary. The following N lines contains one word that is case sensitive followed by a score that is greater than 0 and less than 50.

Following the words in the dictionary, the next line contains an integer M, the number of captions. The following M lines contains a String with words that may be in the dictionary.

**Output**

The score for each caption is calculated by adding up the scores of each word in the dictionary for that particular caption. Words that are not found in the dictionary have a score of 0.

Output the captions with the highest score possible followed by all the captions with that score in the order they come in on separate lines.

**Assumptions**

There will be fewer than 100 words in the dictionary and fewer than 500 captions.

A word will not be given two different scores.

**Example Input File Example Output to Screen**

6 13

Feelsbadman 1 Keepo I have to do homework

Byrone 3

MasteringPhysics 6

homework 5

Keepo 8

Kappa 6

4

Keepo I have to do homework

Kappa I love MasteringPhysics

Byrone marry me Byrone

Hi there

**18. Worst of Byrone**

**Program Name: WorstJokes.java Input File: worstjokes.in**

Bad Luck Byrone’s parents want him to try out for the Clements Meme Party’s talent show. His act will be a stand up comedy where he tells the bad jokes he makes up. However, he can only make up horrible puns. Thus, he is trying to increase his pun arsenal as much as possible before the day of the show. If he finds two words that are similar enough, he will be able to make a pun out of them which he can use for his show.

If the two words are the same, then it will not be a pun. Two words are similar enough if Byrone can turn the first word into the second by doing one (and no more than one) of the following:

* Replace exactly one letter of the word with any other letter
* Insert exactly one letter anywhere in the word
* Delete exactly one letter of the word

**Input**

The first line of input will contain an integer **N**, representing the number of data sets to follow. Each data set will contain two words separated by a space.

**Output**

For each pair of words, output "YES" if the words are similar enough for Byrone to make a pun out of them. Otherwise, output "NO".

**Assumptions**

There are no more than 1,000 pairs of words, and each word is at least 1 letter and no longer than 100 characters. All characters will be lowercase letters.

**Example Input File Example Output to Screen**

4 YES

punny funny YES

drank dank NO

not similar YES

same shame