

# Final Exam Preparation – 21 July 2023

## 1. The Imitation Game

Link: <https://judge.softuni.org/Contests/Practice/Index/2525#0>

During World War 2, you are a mathematician who has joined the cryptography team to decipher the enemy's enigma code. Your job is to create a program to crack the codes.

On the first line of the input, you will receive the **encrypted message**. After that, until the **"Decode"** command is given, **you will be receiving strings with instructions** for different **operations** that need to be performed upon the **concealed message** to **interpret it** and reveal its true content. There are several types of instructions, split by '|'

- **"Move {number of letters}":**
  - **Moves** the **first n letters** to the **back** of the string
- **"Insert {index} {value}":**
  - **Inserts** the given value **before the given index** in the string
- **"ChangeAll {substring} {replacement}":**
  - **Changes all occurrences** of the given substring with the replacement text

### Input / Constraints

- On the first line, you will receive a string with a message.
- On the following lines, you will be receiving commands, split by '|'.

### Output

- After the **"Decode"** command is received, print this message:  
**"The decrypted message is: {message}"**

### Examples

Input	Output
zzHe ChangeAll z l Insert 2 o Move 3 Decode	The decrypted message is: Hello
Comments	
<b>ChangeAll z l</b> zzHe → llHe (We replace all occurrences of 'z' with 'l') <b>Insert 2 o</b> llHe → lloHe (We add an 'o' before the character on index 2) <b>Move 3</b>	

lloHe → Hello (We take the first three characters and move them to the end of the string)

Finally, after receiving the "Decode" command, we print the resulting message.

Input	Output
owyouh Move 2 Move 3 Insert 3 are Insert 9 ? Decode	The decrypted message is: howareyou?

## 2. Destination Mapper

Link: <https://judge.softuni.org/Contests/Practice/Index/2518#1>

Now that you have planned out your tour, you are ready to go! Your next task is to mark all the points on the map that you are going to visit.

You will be given a **string** representing some **places** on the map. You have to **filter** only the **valid ones**. A valid location is:

- Surrounded by "=" or "/" on **both sides** (the **first** and the **last** symbols must **match**)
- After the **first** "=" or "/" there should be **only letters** (the **first** must be **upper-case**, other letters could be upper or lower-case)
- The **letters** must be **at least 3**

**Example:** In the string "**=Hawai=/Cyprus/=Invalid/invalid==i5valid=/I5valid/=i=**" only the **first two** locations are valid.

After you have **matched** all the **valid locations**, you have to **calculate travel points**. They are calculated by **summing** the **lengths** of all the **valid destinations** that you have found on the map.

In the end, on the **first line**, print: "Destinations: {destinations joined by ', '}".

On the **second line**, print "Travel Points: {travel\_points}".

### Input / Constraints

- You will receive a string representing the **locations on the map**
- **JavaScript:** you will receive a **single parameter: string**

### Output

- Print the **messages described above**

### Examples

Input	Output
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=Hawai=/Cyprus/=Invalid/invalid==i5valid=/I5valid/=i=	Destinations: Hawaii, Cyprus Travel Points: 11
ThisIs some InvalidInput	Destinations: Travel Points: 0

### 3. Heroes of Code and Logic VII

Link: <https://judge.softuni.org/Contests/Practice/Index/2303#2>

*You got your hands on the most recent update on the best MMORPG of all time – Heroes of Code and Logic. You want to play it all day long! So cancel all other arrangements and create your party!*

On the first line of the standard input, you will receive an integer **n** – the number of heroes that you can choose for your party. On the next **n** lines, the heroes themselves will follow with their **hit points** and **mana points** separated by a single space in the following format:

"{hero name} {HP} {MP}"

- **HP** stands for hit points and **MP** for mana points
- a hero can have a **maximum** of **100 HP** and **200 MP**

After you have successfully picked your heroes, you can start playing the game. You will be receiving different commands, each on a new line, separated by " - ", until the "End" command is given.

There are several actions that the heroes can perform:

"CastSpell - {hero name} - {MP needed} - {spell name}"

- If the hero has the required MP, he casts the spell, thus reducing his MP. Print this message:
  - "{hero name} has successfully cast {spell name} and now has {mana points left} MP!"
- If the hero is unable to cast the spell print:
  - "{hero name} does not have enough MP to cast {spell name}!"

"TakeDamage - {hero name} - {damage} - {attacker}"

- Reduce the hero HP by the given damage amount. If the hero is still alive (his HP is greater than 0) print:
  - "{hero name} was hit for {damage} HP by {attacker} and now has {current HP} HP left!"
- If the hero has died, remove him from your party and print:
  - "{hero name} has been killed by {attacker}!"

"Recharge - {hero name} - {amount}"

- The hero increases his MP. If it brings the MP of the hero above the **maximum value (200)**, MP is increased to **200**. (the MP can't go over the maximum value).
- Print the following message:
  - "{hero name} recharged for {amount recovered} MP!"

"Heal - {hero name} - {amount}"

- The hero increases his HP. If a command is given that would bring the HP of the hero above the **maximum value (100)**, HP is increased to **100** (the HP can't go over the maximum value).
- Print the following message:
  - "{hero name} healed for {amount recovered} HP!"

## Input

- On the first line of the standard input, you will receive an integer **n**
- On the following **n** lines, the heroes themselves will follow with their **hit points** and **mana points** separated by a space in the following format
- You will be receiving different **commands**, each on a new line, separated by " - ", until the "End" command is given

## Output

- Print all members of your party who are **still alive** in the following format (their HP/MP need to be indented 2 spaces):

"{hero name}"

HP: {current HP}

MP: {current MP}"

## Constraints

- The starting HP/MP of the heroes will be valid, 32-bit integers will never be negative or exceed the respective limits.
- The HP/MP amounts in the commands will never be negative.
- The hero names in the commands will always be valid members of your party. No need to check that explicitly.

## Examples

Input	Output
2	Solmyr healed for 10 HP!
Solmyr 85 120	Solmyr recharged for 50 MP!
Kyrre 99 50	Kyrre was hit for 66 HP by Orc and now has 33 HP left!
Heal - Solmyr - 10	Kyrre has successfully cast ViewEarth and now has 35 MP!
Recharge - Solmyr - 50	Solmyr
TakeDamage - Kyrre - 66 - Orc	HP: 95
CastSpell - Kyrre - 15 - ViewEarth	MP: 170
End	Kyrre
	HP: 33

	MP: 35
Input	Output
4 Adela 90 150 SirMullich 70 40 Ivor 1 111 Tyris 94 61 Heal - SirMullich - 50 Recharge - Adela - 100 CastSpell - Tyris - 1000 - Fireball TakeDamage - Tyris - 99 - Fireball TakeDamage - Ivor - 3 - Mosquito End	SirMullich healed for 30 HP! Adela recharged for 50 MP! Tyris does not have enough MP to cast Fireball! Tyris has been killed by Fireball! Ivor has been killed by Mosquito! Adela HP: 90 MP: 200 SirMullich HP: 100 MP: 40
Comments	
Heal – SirMullich healed for 30 HP due to the HP max limit. Recharge – Adela recharged for 50 MP due to the MP max limit. CastSpell – Tyris does not have enough MP to cast the spell. TakeDamage – Tyris's HP is reduced by 99, thus becoming -5, which means he is dead. TakeDamage – Ivor's HP is now -2, so he is dead too. After the "End" command, we print the remaining living heroes.	