# Programming Fundamentals Final Exam

## Problem 1. Tank Warfare

*It’s World War 2, two tanks and their crews find themselves in a firefight. Who will win?*

You’re tasked to write a program that will calculate the outcome of a tank battle between two tanks and that will show the battle result.

On the first and second lines of the input you will receive both **tanks as objects**. After that, until the “Ceasefire!” command is given, **you will be receiving strings** with commands.

Each tank has model, power, hit points (HP) and gunReloaded as initial properties.

The commands you can receive will contain {tank model} and {order} separated by “ : “. The ordrers are:

* Reload
  + If the gun is already reloaded you need to print:

**“{tank model} main gun already loaded and ready to fire!”**

* + Otherwise reload the tank gun - set **gunReloaded** propertyto **true** and print:

**“{tank model} main gun successfully reloaded!”**

* Fire
  + The tank tries to fire its gun, but first you need to **check** if its gun is **reloaded**. If it’s **not reloaded**, print on console:

**“{tank model} unable to fire. Main gun not reloaded!”**

Then you need to **trigger** the “**Reload”** command instead and proceed with the next command line.

* + If the gun is reloaded, the tank fires - reduce the other tank HP with the power value of the tank firing and print on the console:

“{tank model} was hit for {damage suffered} HP!”, where {tank model} is the model value of the tank being hit.

* + After each shot you need to check if both tanks are still operational or one is destroyed (its HP is less or equal to 0) and also set its gunReloaded value to false.
  + If one of the tanks is destroyed you need to print:

**“{tank 1 model} is destroyed!”**, where the **{tank 1 model}** is the **model value** of the destroyed tank and on a **new line:**

**“{tank 2 model} wins the tank duel!”** ,

where the **{tank 2 model}** is the **model value** of the tank that survived the battle and you need to **stop the program**.

* Retreat
  + The tank retreats from the battle, leaving the **other tank victorious.**
  + This command also **must be triggered by the program**, **if** one of the tanks has fired 3 times without destroying the other tank.
  + After receiving the command or meeting the above requirement, you need to print:

“{tank 1 model} crew is frightened by the {tank 2 model} and decides to retreat from the battle!”

where the **{tank 1 model}** is the **model value** of the retreating tank and **{tank 2 model}** is the **model value** of the tank still standing.

### Input / Constraints

* On the first and second lines you will receive **two objects** representing both tanks.
* On the next lines you will receive commands as **strings.**
* Each command consists of **tank model** and **order** separated by **“** : **“**
* The input will always be valid!

### Output

* Print the corresponding outputs following the above conditions.
* After the "Ceasefire!" command is received, print this message:  
  "**{tank1 model} and {tank2 model} fought valiantly, and both survived the battle!**"

### Examples

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| **JavaScript Input** | **Output** |
| {  model: "T-34",  power: 15,  HP: 100,  gunReloaded: true  },  {  model: "Pz IV",  power: 50,  HP: 100,  gunReloaded: true  },  "Pz IV : Fire",  "T-34 : Fire",  "T-34 : Reload",  "Ceasefire!" | T-34 was hit for 50 HP!  Pz IV was hit for 15 HP!  T-34 main gun successfully reloaded!  T-34 and Pz IV fought valiantly, and both survived the battle! |
| **Comments** | |
| **Pz IV : Fire**  Main gun is loaded, so Pz IV fire at T-34 and deals 50 dmg and we print the message on the console.  **T-34 : Fire**  Main gun is loaded, so T-34 fires at Pz IV and deals 15 dmg and we print the message on the console.  **T-34 : Reload**  Main gun is reloaded, and we print the message.  After receiving the **"Ceasefire!"** command, we print the corresponding message. | |

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| **JavaScript Input** | **Output** |
| {      model: "T-70",      power: 15,      HP: 100,      gunReloaded: true  },  {      model: "Pz V",      power: 100,      HP: 100,      gunReloaded: false  },  "T-70 : Fire",  "T-70 : Reload",  "T-70 : Fire",  "T-70 : Reload",  "T-70 : Fire",  "T-70 : Reload",  "Ceasefire!" | Pz V was hit for 15 HP!  T-70 main gun successfully reloaded!  Pz V was hit for 15 HP!  T-70 main gun successfully reloaded!  Pz V was hit for 15 HP!  T-70 crew is frightened by the Pz V and decides to retreat from the battle! |

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| **JavaScript Input** | **Output** |
| {  model: "Pz I",  power: 10,  HP: 100,  gunReloaded: true  },  {  model: "M4A1",  power: 100,  HP: 100,  gunReloaded: true  },  "Pz I : Fire",  "Pz I : Reload",  "Pz I : Fire",  "Pz I : Retreat",  "Ceasefire!" | M4A1 was hit for 10 HP!  Pz I main gun successfully reloaded!  M4A1 was hit for 10 HP!  Pz I crew is frightened by the M4A1 and decides to retreat from the battle! |

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| **JavaScript Input** | **Output** |
| {  model: "Pz VI",  power: 100,  HP: 100,  gunReloaded: false  },  {  model: "KV-1",  power: 90,  HP: 100,  gunReloaded: true  },  "Pz VI : Fire",  "KV-1 : Fire",  "KV-1 : Reload",  "Pz VI : Fire",  "Ceasefire!" | Pz VI unable to fire. Main gun not reloaded!  Pz VI main gun successfully reloaded!  Pz VI was hit for 90 HP!  KV-1 main gun successfully reloaded!  KV-1 was hit for 100 HP!  KV-1 is destroyed!  Pz VI wins the tank duel! |

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| **JavaScript Input** | **Output** |
| {      model: "T-70",      power: 10,      HP: 100,      gunReloaded: true  },  {      model: "Pz V",      power: 100,      HP: 100,      gunReloaded: false  },  "T-70 : Fire",  "T-70 : Reload",  "T-70 : Fire",  "T-70 : Reload",  "T-70 : Fire",  "T-70 : Reload",  "T-70 : Fire",  "T-70 : Fire",  "T-70 : Fire",  "Ceasefire!" | Pz V was hit for 10 HP!  T-70 main gun successfully reloaded!  Pz V was hit for 10 HP!  T-70 main gun successfully reloaded!  Pz V was hit for 10 HP!  T-70 crew is frightened by the Pz V and decides to retreat from the battle! |