

# Java Backend Developer Technical Test

Aequilibrium does love transforming... people, lives, teams, companies. And there's no better representation of transformation than Hasbro's Transformers, the classic television series featuring heroic Autobots raging their battle to destroy the evil forces of the Decepticons.

The Transformers are at war and you are in charge of settling the score! You're to create an API that evaluates who wins a fight between the Autobots and the Decepticons.

Please watch this video:

<https://www.youtube.com/watch?v=nLS2N9mHWaw>

## Overview

The goal of the technical test is to create a Java RESTful API. Your API should allow the following main functionality:

- Create a Transformer
- Update a Transformer
- Delete a Transformer
- List Transformers
- Given a list of Transformer IDs, determine the winning team

## Transformer definition:

Each Transformer has the following criteria (ranked from 1 to 10) on their tech spec:

- Strength
- Intelligence
- Speed
- Endurance
- Rank
- Courage
- Firepower
- Skill

The "overall rating" of a Transformer is the following formula: (Strength + Intelligence + Speed + Endurance + Firepower).

Each Transformer must either be an Autobot or a Decepticon.

## Determining winning team:

Your API should take as input a list of Transformer IDs and based on input returns:

1. The number of battles

2. The winning team
3. The surviving members of the losing team

The basic rules of the battle are:

- The transformers are split into two teams based on if they are Autobots or Decepticons
- The teams should be sorted by rank and faced off one on one against each other in order to determine a victor, the loser is eliminated.
- A battle between opponents uses the following rules:
  - If any fighter is down 4 or more points of courage and 3 or more points of strength compared to their opponent, the opponent automatically wins the face-off regardless of overall rating (opponent has ran away)
  - Otherwise, if one of the fighters is 3 or more points of skill above their opponent, they win the fight regardless of overall rating
- The winner is the Transformer with the highest overall rating
- In the event of a tie, both Transformers are considered destroyed
- Any Transformers who don't have a fight are skipped (i.e. if it's a team of 2 vs. a team of 1, there's only going to be one battle)
- The team who eliminated the largest number of the opposing team is the winner

Special rules:

- Any Transformer named Optimus Prime or Predaking wins his fight automatically regardless of any other criteria
- In the event either of the above face each other (or a duplicate of each other), the game immediately ends with all competitors destroyed

## Example:

For example, given the following input:

Soundwave, D, 8,9,2,6,7,5,6,10

Bluestreak, A, 6,6,7,9,5,2,9,7

Hubcap: A, 4,4,4,4,4,4,4,4

The output should be:

1 battle

Winning team (Decepticons): Soundwave

Survivors from the losing team (Autobots): Hubcap

## Requirements

The API should be built using Java, Spring and Maven. If you do not have experience in these frameworks, please feel free to use any other alternative.

- API must be restful

- The project should be built with Java 8
- The project should build using maven
- The project should be delivered as a Web Application
- The project must include unit tests
- Short document explaining how to build and start the project

#### Bonus features

- Documentation of classes (using swagger or any other tools)