# Combat Engine

A Javascript based script that simulates a battle between Units organized into Sections of an Army that fight with other Armies in a behaviour-based fashion.

Designed to be generic, so it can apply to almost any setting of warfare, the primary intention is for use with space battles including space ships.

## Definitions

* Army: A force of sections that contains information on relation and alliances with other sides, such as two armies working against a single enemy,
* Section: A group of units that act as a squad or platoon. Turns are given to the section, and each unit acts in the turn itself.
* Unit: An individual unit, such as a soldier or vehicle. Contains statistics of the unit itself, including weapons.
* Weapon System: A distinct object of linked weaponry. The weapon system determines the target of the attack. All weapons contained within the system will attack the same target.
* Weapon: The individual weapon contained within a Weapon System. Contains the statistics of the weapon itself, such as damage.

## Combat Flow

* Define constructors for generalized Unit types
* Construct Side array based on Section array, construct Section array from Unit names.
  + Unit data taken from external file
* Assign speed to each Section by adding random number
* Loop and iterate each Section's speed down 1 per loop. Per loop:
  + If Section's speed reaches 0, it takes a turn.
  + Section determines action for the turn based on weighted options.
  + Iterate through each Unit in Section. Disabled or Destroyed Units are ignored. For each Unit:
    - If morale low, re-determine action for individual Unit (such as escape or panic)
    - Execute action:
      * If attack:
        + Get the target Section and select a Unit within.
        + For each valid weapon system on the Unit:
        + Roll for attack, add modifiers, determine if hit. If miss, pass resolution. If hit:

Assign damage to shields if they exists. Some weapons drain or bypass shields.

Reduce damage by armour if it exists. Some weapons shred or pierce armour.

Assign damage to hull/health.

If attack is severe, damage a Component.

Severe damage is based on attack damage

If Unit HP below threshold but above 0, disable it.

If Unit HP at or below 0, destroy it.

* + - * If bombing run:
        + Get the target Section and select a Unit within.
        + Execute Point Defence if it exists on target Unit. For each valid weapon system:

Attack function defined above.

* + - * + Execute Bombing Run on target. For each valid weapon system:

Attack function defined above.

* + - * + Execute Point Defence if it exists on target Unit. For each valid weapon system:

Attack function defined above.

* + Assign new speed to the Unit.
  + Optional: Remove destroyed Units from Section and place in separate Casualties array.
  + Log result of the turn. Record each turn as it comes up:
* Each Section taking a turn.
* Action for Section. Action if Unit action differed.
* Any hits, and the damage dealt where.
* Any destroyed or disabled targets.
* Summary of the action.