

## De Facto Programming Exercise

### Battle Simulator

#### Overview

Create a command line PHP application that simulates a battle between two combatants.

#### Properties

Each combatant has the following properties:

Property	Description of use	Value type
Name	Name of the combatant	String, 30 chars or less
Health	Amount of health remaining	Whole number, 0 to 100
Strength	Damage that is done upon attack	Whole number, 0 to 100
Defense	Damage reduction during defense of an attack	Whole number, 0 to 100
Speed	Determines attack order	Whole number, 0 to 100
Luck	Affects ability to dodge an attack	Decimal, 0 to 1

#### Combatant Types

There are 3 types of combatant: swordsman, brute and grappler. Each type has strengths and weaknesses. At the start of a battle, when combatants are created, every property must be randomly determined between the maximum and minimum values allowed for that type.

Type	Health	Strength	Defense	Speed	Luck
Swordsman	40-60	60-70	20-30	90-100	0.3-0.5
Brute	90-100	65-75	40-50	40-65	0.3-0.35
Grappler	60-100	75-80	35-40	60-80	0.3-0.4

#### Battle/Game Flow

The program runs on the command line. When the program starts, it asks for the names of two combatants and assigns them a type of battler at random. The properties are then determined randomly for each fighter as above.

The program runs the battle simulation and outputs a line of text each turn explaining what happened that round until either one runs out of health or 30 turns pass without a winner being declared.

The speed of the combatants determines which one will attack first, if two combatants have the same speed the one with the lower defense should go first and if those are the same combatant one should go first. The combatants then attack one at a time until the end of the battle. The damage dealt by the attacker is determined with the following calculation:

$$\text{Damage} = \text{Attacker strength} - \text{Defenders Defense}$$

The damage is subtracted from the defenders health. If a fighter's health drops to 0 they lose the fight. If the fight has not finished after 30 rounds a draw is declared.

Every time a defender is attacked there is a small chance the attacker misses. The chance of an attack missing is denoted by the defenders luck property (0.3 = 30%).

## **Special Skills**

Each type of battler has a special skill:

### **Swordsman – Lucky Strike**

- With each attack there is a 5% chance of their strength doubling for that attack.

### **Brute – Stunning blow**

- With each attack there is a 2% chance of stunning the enemy, causing them to miss their next attack.

### **Grappler – Counter Attack**

- When a grappler evades an attack their opponent is dealt 10 damage.

When a battle ends, the program should declare the winner by name, or announce the result as a draw.