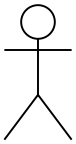
General rules

1. The simulation represents a battle between humans and zombies who try to defeat each other
2. Human can kill a zombie and zombie can transform a human into a zombie
3. The simulation takes place on a 2D map of an island sorrouned by water
4. Both types of characters are described by: x coordinate, y coordinate, velocity, color, radius (when showing on the map) and a set of features individual for both classes

Individual features



Humans

- **smell** - indicates on how much given human attracts the zombies
- **eye** - indicates on how efficient given human is in terms of spotting zombies around
- **strength** - parameter determining how efficient given human is in fighting the zombies
- **stamina** - level of fatigue of a given human
- **n_killed** - number of zombies already killed by a given human

Zombies

- **nose** - indicates on how efficient given zombie is in smelling the humans
- **poison** - indicates on how deadly given zombie is when it comes to a fight
- **n_infected** - number of humans already infected by a given zombie

Fight

If a human and a zombie come across each other on the map, they have a fight trying to defeat the other one. Mathematical model of the fight between them is comparison of *battle points* (BP) which can be calculated for each character based on their features. The character with bigger BP number wins. The formulas are the following:

Human:

$$BP = \mathbf{strength} \cdot \left(1 + \frac{\mathbf{n\_killed}}{10}\right) \cdot \left(\frac{\mathbf{stamina}}{5}\right)$$

Zombie

$$BP = \mathbf{poison} \cdot \left(1 + \frac{\mathbf{n\_infected}}{10}\right)$$