# Data structures and Algorithms
## Project phase 1.1 Report

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## Proposed Data Structures

| List Name | Inside class | Chosen DS | Justification |
|---|---|---|---|
| Earth Soldiers | Army | Queue | The order of ES joins the battle is the same order they attack/ be attacked (FIFO) Complexity Add a solider = O (1) Remove a solider = O (1) Display soldiers = O (n) |
| Earth Tanks | Army | Stacks | The last tank that joined is the one to attack/ be attacked (LIFO) Complexity Add a tank = O (1) Remove a tank = O (1) Display Tanks = O(n) |
| Earth Gunnery | Army | Priority Queue | Since Gunners are picked to attack/ be attacked according to the highest power and health Complexity Add a gunnery = O (n) Remove a gunnery = O (1) Display Gunneries = O (n) |
| Alien Soldiers | Alien | Queue | The order of AS joins the battle is the same order they attack/ be attacked (FIFO) Complexity Add a solider = O (1) Remove a solider = O (1) |

| | | | Display soldiers = O (n) |
|---|---|---|---|
| Alien Monsters | Alien | Array of pointers | Monsters are hard to control so there is a lot randomness in their logic of attacking and being attacked. Complexity Remove a monster = O (1) Add a monster = O (1) Display Monsters = O (n) |
| Alien Drones | Alien | Double-ended Queue | The AD that attack/ be attacked are the newest and the oldest live drones Complexity Add a drone = O (1) Remove a drone = O (1) Display Drones = O (n) |
| Killed Units | Units | Queue | The unit which first died is the first to be displayed Complexity Insert a unit = O (1) Remove a unit = O (1) Display Killed units = O (n) |