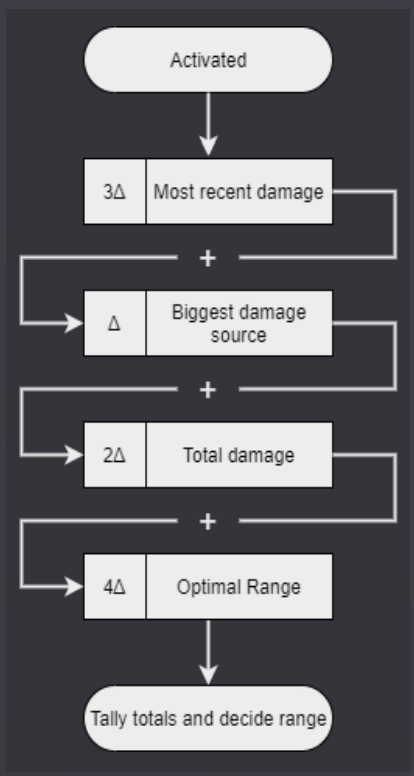
Threat Assessment

Combat is more interesting when you are able to fight to your strengths. Players build loadouts with limitations (Snipers excel at long range but suffer at closer ranges, Shotguns and Swords are high damage point blank options but offer nothing beyond their effective range). The AI reacting to player loadouts would allow for more options in terms of **build diversity** and allow for the "**power fantasy**" to be maintained.

As an example, shotguns suffer from the fact that they need to close the gap on enemies in order to be effective. If a combatant is targeting a player using a shotgun, they will be able to kill them before that range is traversed, in most high level content. Another member of their fireteam may try to catch the attention of the AI by sitting back and using a sniper rifle, but there is no guarantee that it will maintain focus on that player. With this proposed threat assessment system, the AI would focus on the player that is the most **immediate** threat. In this example, the player with the sniper is more immediately dangerous than the one with the shotgun, so it will focus on the former. Once the shotgun player is in their effective range, the AI may switch focus, but only after the player has had a chance to play their hand. This would encourage greater build diversity between members of a fireteam, and allow for players to fit into their desired roles more easily.



Concern: Build diversity is limited by threat to players

Proposal: An overhaul to Champion AI, specifically regarding their targeting, could allow for more archetypes of weapon to flourish in endgame content.

Threat Assessment (cont.)

The included diagram shows a simplified visualisation of my proposed combat algorithm. 4 categories of data are taken into consideration, 3 of which are determined by player actions. Each category is weighted with a delta, depending on their priority. Within each category, a value will be generated for each range type: “Long”, “Medium”, or “Short”. The final operation will simply tally these values and select the category with the greatest value.

The first three categories involve the damage that the players have dealt to the enemy. Each range will be given values according to their priority; for the “Most recent damage” category, this would be “3” for the most recent damage, “2” for the next most recent, and so on. “Biggest damage source” would be calculated per player, hence why it has no modifier on its delta. For each player, the range at which they produced the **largest burst** of damage would be given the largest value. The last of the damage based calculations would be for “Total damage”, which would simply look at the summary of damage within each range and assign values from highest to lowest.

For the final category, “Optimal Range”, the values will be predetermined by the enemy type. As an example, a Knight may prefer close-range engagements the most, followed by medium and finally long range. This category has the greatest delta because **predictability** in enemies is important to the feel of an encounter. Having combatants favour particular ranges will help make combat feel both organic and fair.

Following these calculations, the final summation will result in the three ranges being assigned priority of 1st, 2nd and 3rd. In cases of a tied result, the AI will default to the closest of the tied ranges. When a range has been chosen, the enemy will then attempt to identify a player within this range and engage them with whichever attacks are appropriate.

This system was designed with Champions in mind, as this type of AI is considerably too complex for standard fodder enemies but would have too little impact to be restricted to only a Nightfall final boss. As Champions comprise a considerable amount of the difficulty of endgame content, it is my hope that this system will help in keeping these activities feel **engaging** and **challenging**, without being unfairly punishing.