Survive from Scratch

# Summary

A 3D game where you can fight monsters and build with lots of control.

The primary goal is fighting.

Should be multiplayer eventually. Should have smart AI that can help you fight with NPC friends or fight you with NPC enemies. Should have boss fights and challenges to give progression.

# Definitions

Character: A player, NPC, enemy, or other virtual thing representing a life form

NPC: Non-player character, usually refers to non-enemy

Enemy: an NPC that tends to attack the player

Ally: a character who is in the same party or otherwise considered a friend in battle

# Features

## Fighting

Characters can fight each other using skills

Unlike many fighting games, the attacks are not turn based, but more physics based. If a character attacks with a sword, the character that they are attacking might run back to dodge. Using a skill does not always guarantee hitting an enemy, even if the enemy was within range when the skill started.

### Armor

armorValue depends on the type of attack, etc. Currently it is equal to the armor of the same type of the attack. E.g. if an armor that has 5 slash def and 20 blunt def is attacked by a 20 dmg slash attack, an armor value of 5 is used.

RESIST\_EXPONENT\_BASE = 2;

dmgMult = 1 – (RESIST\_EXPONENT\_BASE) ^ (-damage / armorValue);

damage taken = damage \* dmgMult;

using this formula, dmgMult is the same for 10 armor vs 15 attack and 20 armor vs 30 attack.

This formula allows very small dmg attacks to still do something and keeps armor somewhat effective vs high attacks.

## Environments

There should be many environments with different aesthetics and rules.

### Urban

Cities and towns. These places should have buildings and relatively high safety.

## Adventuring

Players can explore new environments.

## Party

NPCs can be part of a party. Nested parties are a possibility (a party can join another party without merging and losing hierarchy)

NPCs in a party might heal party members more than a random NPC. NPCs in a party won’t attack party members.

Party member stats can be seen. An NPC might choose to heal a party member with lower hp first. An NPC might choose to buff the attack of the party member with the highest attack for a greater effect.

## Crafting

Characters can craft items.

### Mechanics

#### Time

crafting takes time, depending on the skill of the character

#### Materials

Crafting an item usually takes materials

## Building

Characters can place placeable items.

Unlike many fighting/adventuring games, the player should be able to build detailed buildings. Rather than placing a whole building down, the player could place individual planks or wall pieces, etc. in a configuration to make a house.

## NPCs

### Aggro

Algorithm to check if aggression “aggro” should be towards a certain character.

### Enemies

Enemies are NPCs that are configured to tend towards hostility and attacking

## Never ending

The game will not have a definitive “win” and thus will continue forever. Just like Minecraft, there could be great boss fights, but the game continues.

## Stats

Stats effect the performance of characters. Some skills or crafting could be limited to only characters with certain stats.

### Health

Die if reaches 0

### Mana, etc.

Used for skills etc.

### Armor

Used to reduce dmg taken

### Intelligence

#### Fighting decisions

NPCs with higher intelligence should fight better. E.g. an NPC with 0 intelligence would randomly move and use skills (without even targeting an enemy). Very low intelligence might make an NPC randomly target enemies and use skills. Low intelligence would consider strength differences. Higher intelligence should consider enemy strength, hp, etc.

#### Best Fighting decisions

These are the fighting decisions that a character with infinite intelligence should make.

* Finish off weaker enemies
* Attack enemies who are currently attacking or about to attack an ally
* Keep distance from enemies if a ranged attack can be used instead
* Budget mana etc. in case the battle will last
* Buff allies who will receive the most benefit
* Use skills effectively (e.g. AOE skills should hit many enemies)

#### Worst Fighting Decisions

These are mistakes that low intelligence characters should make

* Attacking enemies that are too strong
* Not keeping distance
* Attacking when enemies are out of the attack range
* Using skills randomly, perhaps even healing an enemy
* Not helping when an ally is in trouble