Design for Status Effect System

This document outlines the implementation for the status effect system, describing the basic structure of the code, and a guide for which components should be attached to which objects

Affectable vs imbuable

Some objects can be **imbued** with magic properties. A sword, for example, can be imbued with fire or water and then apply a fire or water effect to whatever it hits.

Some objects can be **affected** by a status effect. An enemy hit by a water sword would then be affected by the wet condition.

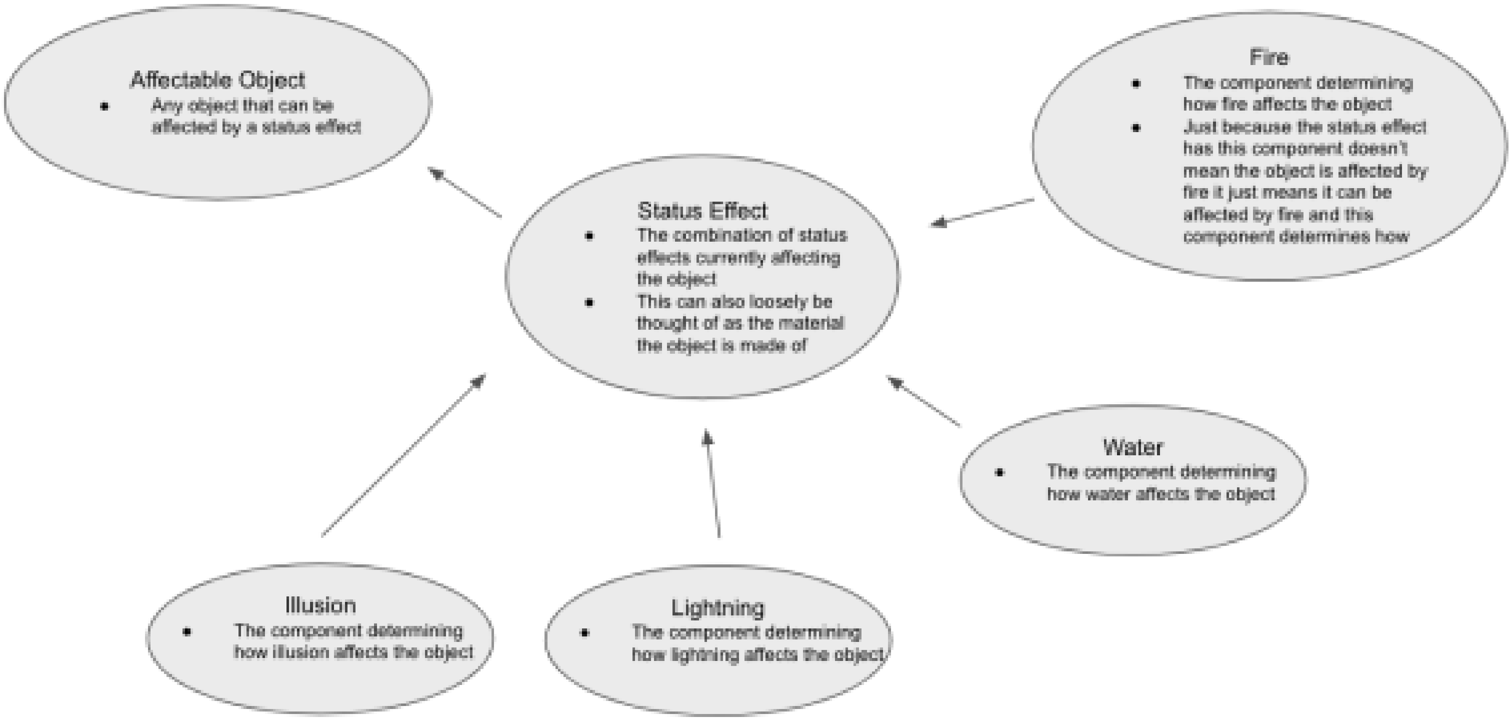
Objects can be both affectable and **imbuable**, in fact, many will be.

Component system for affectable objects:

This is basically the rough draft of the system so it's still very much open to change and suggestions.

Each object pictured below is a separate class/component, with the exception of the Affectable Object, which is an individual object in a scene that can be affected by the system.

The first picture shows the general structure for a standard object that can be affected by different status effects



Affectable Object
- Any object that can be affected by a status effect

Fire
- The component determining how fire affects the object
- Just because the status effect has this component doesn't mean the object is affected by fire it just means it can be affected by fire and this component determines how

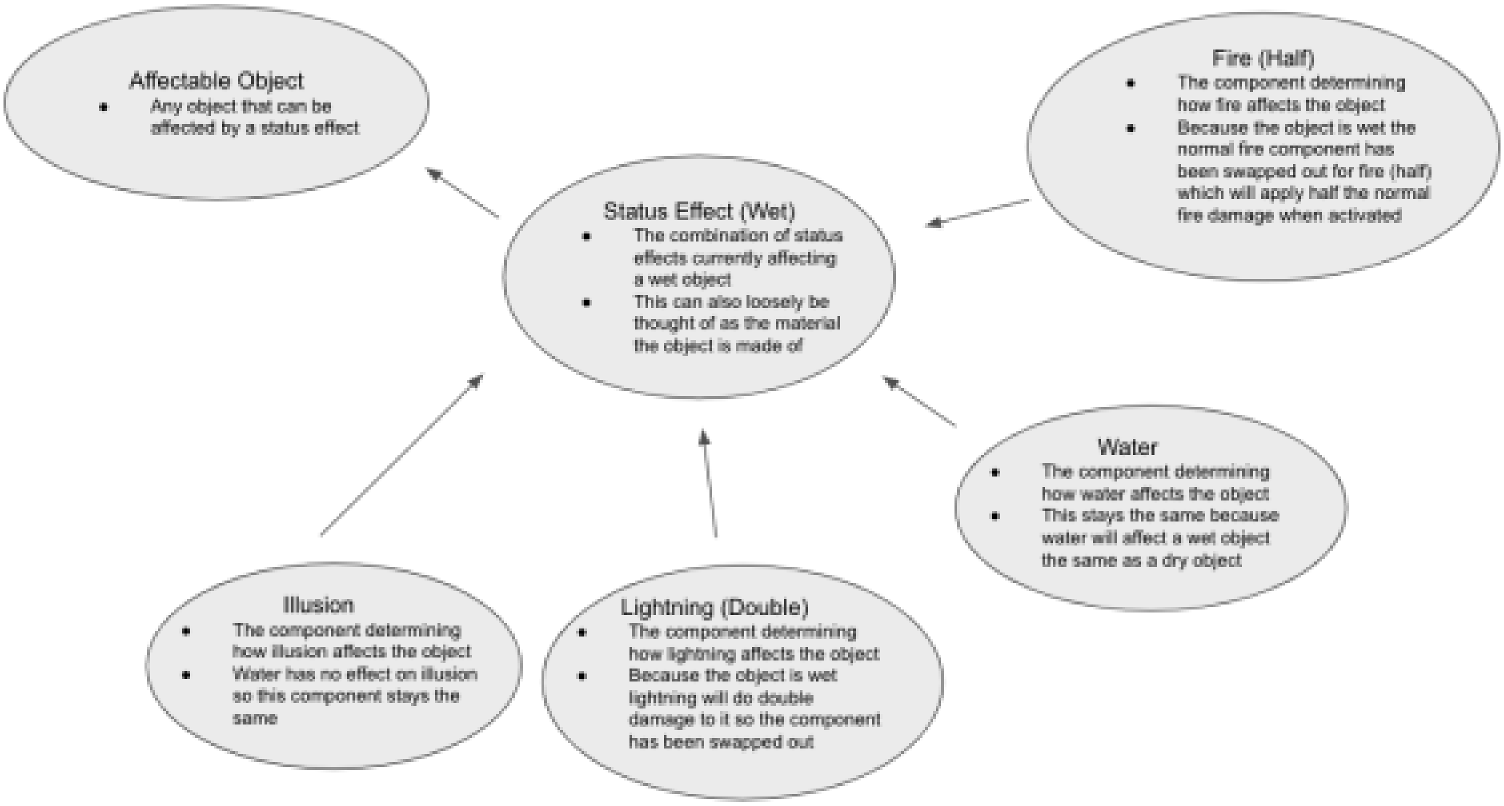
Status Effect
- The combination of status effects currently affecting the object
- This can also loosely be thought of as the material the object is made of

Water
- The component determining how water affects the object

Illusion
- The component determining how illusion affects the object

Lightning
- The component determining how lightning affects the object

The second picture shows how that system changes when the same object is affected by the wet condition. This change will be facilitated by the water component being applied to the status effect component.


Affectable Object
Any object that can be affected by a status effect
Fire (Half)
The component determining how fire affects the object
Because the object is wet the normal fire component has been swapped out for fire (half) which will apply half the normal fire damage when activated
Status Effect (Wet)
The combination of status effects currently affecting a wet object
This can also loosely be thought of as the material the object is made of
Water
The component determining how water affects the object
This stays the same because water will affect a wet object the same as a dry object
Illusion
The component determining how illusion affects the object
Water has no effect on illusion so this component stays the same
Lightning (Double)
The component determining how lightning affects the object
Because the object is wet lightning will do double damage to it so the component has been swapped out

Implementation and organization in engine

All **affectable objects** will have the **StatusEffectController** (see the Status Effect bubble above) component

- This will hold boolean values for each status effect
  - The “imbued” objects will set values for that object to true/false (but to true in most cases when they come into contact with the affectable object)

An individual object will then have several other *components* (Tier 2 components we’re calling them) that will govern the effect that a status effect has on the object, the combination of these components can be thought of as the object’s “material”

- These scripts will trigger when their respective booleans in “Status Effect Controller” are true
- Broadly, there will be two different types of Tier 2 components, EffectBasic ones, which will be reused across materials (ex: BurnedBasic), and EffectMaterial ones which will will be used when a material should be affected in a different way (ex: BurnedWood)

List of status effects and their “Basic” effect:

Burned

- Extra damage

Wet

- Makes wet, reduces extra damage from burned,

Electrified

- More extra damage, applied “stunned” for a brief time if object is also “wet”

Acided

- Damage over time

Stunned

- Unable to act for a short period of time

Frozen

- All object’s movement are slowed

Anti-healing

- Prevents from regaining hitpoints *and* casting healing magic

Anti-transforming

- Prevents from casting transforming magic

Anti-illusion

- Negates the effect of illusion magic *and* casting illusion magic

Anti-warding

- Destroys wards and magical shields

Anti-telekinesis

- Prevents from being controlled by telekenis *and* casting telekenesis magic for x amount of time

Silenced

- Prevents from casting all spells(use on limited items and while in “affected area” given)

List of “materials” and their specific effects:

Flesh

Wood

Destroyed (over some time) when set to “burned”

Fire

Destroyed when set to wet

Generic destructible (can take damage but doesn’t have many (if any) special reactions to status effects)

Medicine

“Ground” (non destructible but still sometimes status effectable. Ex: ground can get wet”)
When set wet, If Ground or any object touching ground is Electrified, set ALL objects touching ground to Electrified and Stunned

Water (all water should set objects touching it to “wet”

Acid

Ice

Zinc

Lightning

Anti-illusion powder

Anti-healing toxin

Anti-transforming toxin

Anti-telekinesis powder