FIRE EMBLEM™ Awakening

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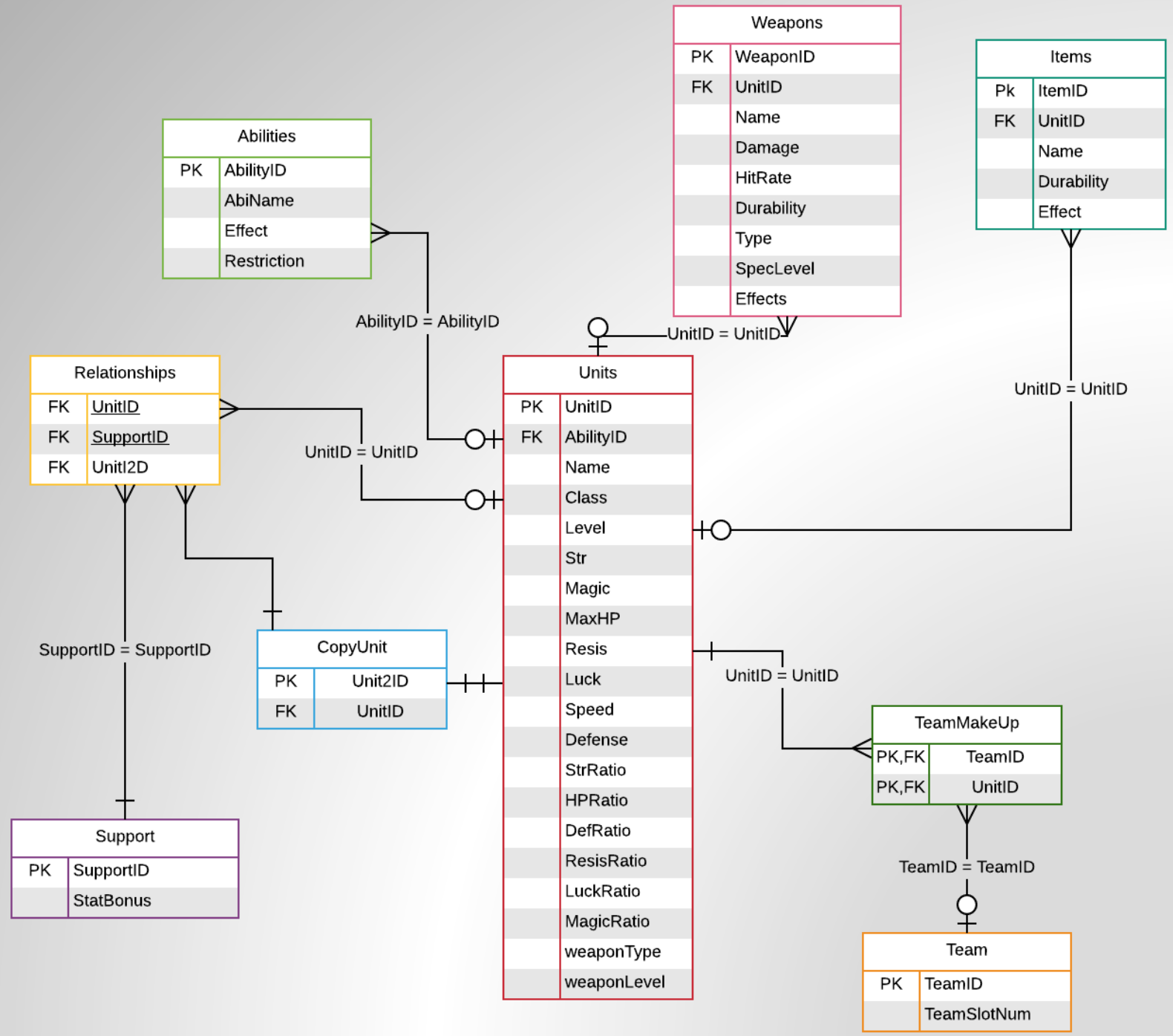
Executive Summary

Fire Emblem is a game where players are allowed to acquire units and use them to battle various strategy game modes. Each character can have weapons and items to aid them in these battles. Each character is also specialized in a type of combat (i.e. swords, bows etc.).
This database was created with the intent to allow users to easily access their units and view their available teams they have made. It also allows developers the ability to add more content if necessary over time.

Fire Emblem ER Diagram



Units Table

```
CREATE TABLE units(
   UnitID          int                 not null,
   name            text                not null,
   class           text                not null,
   weaponType      text                not null,
   weaponLevel     text                not null,
   level           int                 not null,
   str             int                 not null,
   magic           int                 not null,
   maxHP           int                 not null,
   resis           int                 not null,
   luck            int                 not null,
   speed           int                 not null,
   defense int                         not null,
   strRatio int                        not null,
   HPRatio int                         not null,
   defRatio        int                 not null,
   resisRatio      int                 not null,
   speedRatio      int                 not null,
   luckRatio       int                 not null,
   magicRatio      int                 not null,
   AbilityID       int                 references Ability(AbilityID),
 check(weaponType = 'Sword' or weaponType = 'Axe' or weaponType = 'Tome' or
weaponType = 'Bow' or weaponType = 'Lance'),
   primary key(UnitID)
);
```

Functional Dependencies:
UnitID → name, class, weaponType, weaponLevel, level,
Str, magic, maxHP, resis, luck, speed, defense,
strRatio, HPRatio, defRatio, resisRatio, speedRatio, luckRatio,
magicRatio

unitid integer	name text	class text	weapontype text	weaponlevel text	level integer	str integer	magic integer	maxhp integer	resis integer	luck integer	speed integer	defense integer	strratio integer	hpratio integer	defratio integer	resisratio integer	speedratio integer	luckratio integer	magicratio integer
1	Ike	Hero	Sword	C	1	5	1	19	0	6	7	5	50	75	40	40	55	35	20
10	Hector	General	Axe	A	20	18	1	43	15	15	10	30	50	85	10	5	10	30	50
8	Julia	Priestess	Tome	B	15	3	26	37	21	8	17	6	10	90	10	14	30	30	100
23	Roy	Mercenary	Sword	C	11	11	1	27	0	6	12	8	80	75	40	20	65	30	10
33	Takumi	Sniper	Bow	B	7	12	0	24	6	11	10	9	50	60	45	25	55	50	0
61	Reinhardt	Mage Knight	Tome	A	20	13	20	48	17	18	14	12	45	75	60	80	55	70	90
54	Boyd	Fighter	Axe	D	2	7	0	30	0	4	6	5	60	75	25	25	45	35	5
102	Corrin	Princess	Sword	C	1	7	4	19	2	5	6	6	60	60	45	30	55	55	40
7	Alan	Dragon	Tome	A	20	22	9	51	17	12	20	33	90	100	50	30	45	25	40

-- No values can be null in this table --

```
create table weapons(
    WeaponID        int             not null,
    UnitID          int             references units(UnitID),
    Name            text            not null,
    Damage          int             not null,
    HitRate         int             not null,
    Durability      int,
    Type            text            not null,
    SpecLevel       char,
    Effects         text,
    check(Name is NOT NULL),
    primary key(WeaponID)
);
```

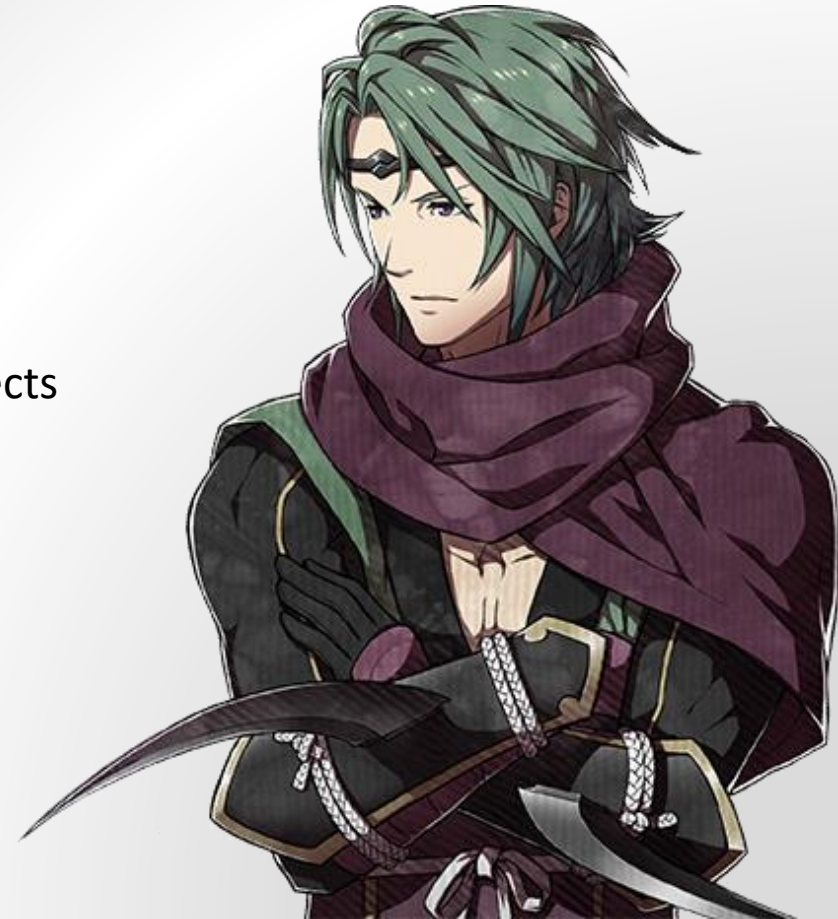
Weapons Table

Function Dependencies:
weaponID → Name, damage, HitRate, Durability, Type, SpecLevel, Effects

weaponid integer	unitid integer	name text	damage integer	hitrate integer	durability integer	type text	speclevel character (1)	effects text
1	54	Iron Axe	10	85	30	Axe	E	[null]
2	33	Fujin Yomi	12	90	[null]	Bow	[null]	Crit Rate + 10%
3	61	Thunder	14	75	40	Tome	D	Effective against Flying
6	102	Yato	12	70	[null]	Sword	[null]	[null]

Can be null do the fact that some weapons are unbreakable

Can be null because not all weapons have special effects



Abilities Table

```
create table abilities(
    AbilityID           int             not null,
    AbiName             text            not null,
    effect              text            not null,
    restriction         text,
    primary key(AbilityID)
);
```

Functional Dependencies:
AbilityID → AbiName,effect, restriction

abilityid integer	abiname text	effect text	restriction text
2	Vantage	50% chance to attack first always	Sword
5	Double-Take	Always Double Hit when initiating	Bow
4	Savage Blow	Deal 5 Damage to adjacent units after attacking	Tome

Items Table

```
create table items(
   ItemID          int         not null,
   UnitID          int         references units(UnitID),
   name            text        not null,
   durability      int,
   effect          text,
   primary key(ItemID)
);
```

itemid integer	unitid integer	name text	durability integer	effect text
1	1	Elixir	3	Heal 10 HP
3	8	Master Seal	1	Evolve Unit
7	61	Boots	1	Increase Speed by 3
12	[null]	Goddess Icon	1	Increase Max HP by 5
15	[null]	Member Card	[null]	Gives Access to Secret Shops

Some items are unbreakable

Functional Dependencies:
ItemID → name, durability, effect

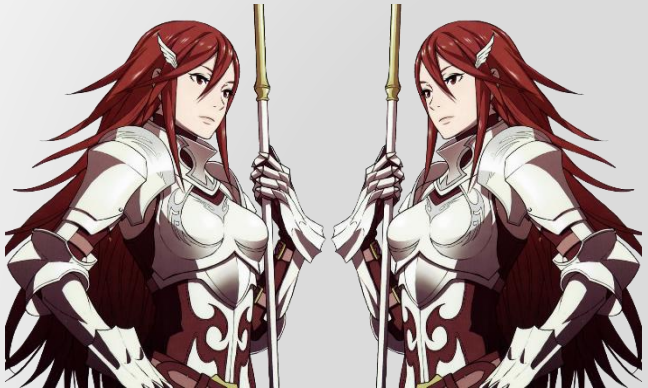
CopyUnit Table

Creates a copy ID of all units to allow relationships between two units

```
create table copyUnit(
   UnitID          int     not null references units(UnitID),
   Unit2ID         int     not null,
   primary key(Unit2ID)
);
```

unitid integer	unit2id integer
1	1
8	8
10	10
23	23
33	33
61	61
54	54
102	102
7	7

Functional Dependencies:
Unit2ID → UnitID



Support Table

```
create table support(
   SupportID          int          not null,
   StatBonus          int,         -- Stat bonuses are treated as flat increases. Ex: 2 = +2 to all stats of a unit--
   primary key(SupportID)
);
```

supportid integer	statbonus integer
1	2
2	4
3	1
4	5

Functional Dependencies:
SupportID → StatBonus

Relationships Table

```
create table relationships(
   UnitID          int        not null references units(UnitID),
   Unit2ID         int        not null references copyUnit(Unit2ID),
   SupportID       int        not null references support(SupportID),
   primary key(UnitID, SupportID)
);
```

Functional Dependencies:
UnitID, SupportID → Unit2ID

unitid integer	unit2id integer	supportid integer
1	8	1
10	102	2
54	23	1
61	33	4

TeamMakeUp Table

```
create table teamMakeUp(
   TeamID          int          not null references teams(TeamID),
   UnitID          int          references units(UnitID),
   primary key(TeamID, UnitID)
);
```

teamid integer	unitid integer
1	1
1	102
1	8
2	1
2	61
2	54
3	33
3	54
3	8

Functional Dependencies:
None: Full Keyed Relation

Teams Table

```
create table teams(
   TeamID          int         not null,
   teamName        text        not null,
   primary key(TeamID)
);
```

teamid integer	teamname text
1	OP
2	BackseatWarriors
3	OG Squad

Functional Dependencies:
TeamID → teamName

useAbilities View

Displays All Units who can use the available Abilities:

```
CREATE VIEW useAbilities as
        SELECT units.name, units.class, units.weaponType, abilities.effect, abilities.AbiName
        FROM units
        INNER JOIN abilities on units.weaponType = abilities.restriction;
```

name text	class text	weapontype text	effect text	abiname text
Corrin	Princess	Sword	50% chance to attack first always	Vantage
Roy	Mercenary	Sword	50% chance to attack first always	Vantage
Ike	Hero	Sword	50% chance to attack first always	Vantage
Takumi	Sniper	Bow	Always Double Hit when initiating	Double-Take
Alan	Dragon	Tome	Deal 5 Damage to adjacent units after attacking	Savage Blow
Reinhardt	Mage Knight	Tome	Deal 5 Damage to adjacent units after attacking	Savage Blow
Julia	Priestess	Tome	Deal 5 Damage to adjacent units after attacking	Savage Blow

CurrentTeam View

Displays the currently selected team:

```
CREATE VIEW currentTeam as
        SELECT units.name,units.class,units.level, units.str, units.magic,
                units.maxHP,units.resis,units.luck,units.speed,units.defense, teams.teamName
        FROM teamMakeup
        INNER JOIN units on units.UnitID = teamMakeUp.UnitID
        INNER JOIN teams on teamMakeUp.teamID = teams.teamID
        WHERE teams.teamID = 01;
```

name text	class text	level integer	str integer	magic integer	maxhp integer	resis integer	luck integer	speed integer	defense integer	teamname text
Ike	Hero	1	5	1	19	0	6	7	5	OP
Julia	Priestess	15	3	26	37	21	8	17	6	OP
Corrin	Princess	1	7	4	19	2	5	6	6	OP

Report – Equipped Weapons

-- show all units with their equipped or unequipped to check who still needs weapons--

```
SELECT units.name, units.class, weapons.name as Weapon_Name
FROM Units
FULL JOIN Weapons ON units.UnitID = weapons.UnitID
ORDER BY units.name DESC;
```

name text	class text	weapon_name text
Takumi	Sniper	Fujin Yomi
Roy	Mercenary	[null]
Reinhardt	Mage Knight	Thunder
Julia	Priestess	[null]
Ike	Hero	[null]
Hector	General	[null]
Corrin	Princess	Yato
Boyd	Fighter	Iron Axe
Alan	Dragon	[null]

NULL values mean you still need to equip a weapon

Report - InRelationship

-- Show all units that are in a relationship --

```
SELECT Units.name
FROM units
INNER JOIN copyunit on units.UnitID = copyUnit.Unit2ID;
```

name text
Ike
Julia
Hector
Roy
Takumi
Reinhardt
Boyd
Corrin
Alan

Report - BestStats

```
-- Show Unit with best current Stats --
SELECT units.name, units.class, (units.str +
                                 units.magic +
                                 units.maxHP +
                                 units.luck +
                                 units.speed +
                                 units.defense +
                                 units.resis) as Total_Stat
FROM Units
ORDER BY Total_Stat DESC
LIMIT 1;
```

WOW!

name text	class text	total_stat integer
Alan	Dragon	164

COOL!

Strong!

Reports – Best Stat Ratio

```
-- Show Units with best Stat Ratios --
SELECT units.name,units.class, (units.strRatio + units.magicRatio +
                                units.HPRatio +units.luckRatio +
                                units.speedRatio + units.defRatio +
                                units.resisRatio) as Total_Ratio

FROM Units
ORDER BY Total_Ratio DESC
LIMIT 1;
```

name text	class text	total_ratio integer
Reinhardt	Mage Knight	475

This is useful to find out who may be the most efficient to level

Report –Unit Stats at Max Level

```
-- Show possible stats for all units if not already max level of 20 --
Select units.name, units.str + ((20-units.level) * (units.strRatio )/ 100) as Str,
                   units.magic + ((20-units.level) * (units.magicRatio )/ 100) as Magic,
                   units.maxHP + ((20-units.level) * (units.HPRatio )/ 100) as MaxHP,
                  units.luck + ((20-units.level) * (units.LuckRatio )/ 100) as Luck,
                  units.speed + ((20-units.level) * (units.SpeedRatio )/ 100) as Speed,
                  units.defense + ((20-units.level) * (units.defRatio )/ 100) as Def,
                  units.resis + ((20-units.level) * (units.resisRatio )/ 100) as Resis
FROM units;
```

name text	str integer	magic integer	maxhp integer	luck integer	speed integer	def integer	resis integer
Ike	14	4	33	12	17	12	7
Hector	18	1	43	15	10	30	15
Julia	3	31	41	9	18	6	21
Roy	18	1	33	8	17	11	1
Takumi	18	0	31	17	17	14	9
Reinhardt	13	20	48	18	14	12	17
Boyd	17	0	43	10	14	9	4
Corrin	18	11	30	15	16	14	7
Alan	22	9	51	12	20	33	17

Stored Procedure - ValidAbility

```
-- Ensures all abilities are inputted correctly –

CREATE OR REPLACE FUNCTION ValidAbility()
RETURNS TRIGGER AS $$
BEGIN
        IF NEW.Restriction IS NULL THEN
                RAISE EXCEPTION 'Restrictions must be entered. If no restriction, put none';
        END IF;
        IF NEW.Effects IS NULL THEN
                RAISE EXCEPTION 'Effects must be entered. If no restrictions, put no effect';
        END IF;
        RETURN NEW;
END;
$$ LANGUAGE plpgsql;
```

Output Will be Shown in Trigger Slide

Stored Procedure – TeamUnits

```
-- Creates a table that lists all unit's names in a table with their team number
CREATE OR REPLACE FUNCTION TeamUnits(IN TeamID INT)
        RETURNS TABLE (UnitName text, TeamNumber int) AS
        $$
BEGIN
RETURN QUERY SELECT DISTINCT units.Name, teams.teamID
                    FROM TeamMakeUp
                    INNER JOIN Units
                    ON units.UnitID = teamMakeUp.UnitID
                    INNER JOIN Teams
                    ON teams.TeamID = teamMakeUp.TeamID
                    WHERE teamMakeUp.teamID is NOT NULL;
END;
$$ LANGUAGE plpgsql;
```

INPUT

```
select TeamUnits(1);
```

OUTPUT

teamunits record
(Corrin,1)
(Julia,1)
(Takumi,3)
(Ike,1)
(Reinhardt,2)
(Boyd,2)
(Julia,3)
(Ike,2)
(Boyd,3)

Trigger – ValidAbility

```
-- Creates a trigger whenever an ability is added to check and ensure all the ability's info is added --
CREATE TRIGGER ValidAbility
BEFORE INSERT OR UPDATE ON Abilities
FOR EACH ROW
EXECUTE PROCEDURE ValidAbility();
```

Inputting New Abilities with NULL values

```
(09, 'Death Dance', NULL, NULL);
```

Output

```
ERROR:  record "new" has no field "effects"
CONTEXT:  SQL statement "SELECT NEW.Effects IS NULL"
PL/pgSQL function validability() line 6 at IF
********** Error **********
```

Security - Developers

-- creates a developer role to add and manipulate tables as they see fit --
CREATE ROLE Developers;
GRANT SELECT, UPDATE ON Units, Abilities, Items, Weapons, Support,
CopyUnit
TO Developer;

Security - Players

-- creates a player role who only should have access to changing teams, units, items and weapons --
CREATE ROLE Player;
GRANT SELECT ON Teams, Units, Items, Weapons
TO Player;

Implementation Notes

- Copying information from .sql file to pgadmin has occasionally caused quotes to be entered incorrectly. This would cause all the text inputs to misfire and cause many error messages.
- This database only looks at a small sample set of units, weapons and items from the game, but is capable of adding additional units if desired.

Future Enhancements

- Allowing Units to have additional weapon specializations would allow for a more diverse and versatile team composition.
- Creating team captains as unique individuals set to only one team may make it easier to locate and personalize one team set. This was not possible from this small database because of the smaller amount of units available.

Known Problems

- Adding Units is a long and strenuous process so adding additional functionalities to separate the different portions of the unit's attributes may be useful.
- Trigger for ValidAbility does not not properly fetch the correct error message, even though it does return as an error.