





# Genshin Impact

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Goals



APIs



Visualizations



Calculations



Database



Limitations

# Goals

- Understand how many characters are added and remain unique in gameplay
- Look at banner and weapon information to understand player experience
- Capture data about artifacts & weapons and their relationships





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# APIs

We used two APIs and a Website

1. GSImpact- Used for Character and Banner Data
2. GenshinDev – Used for Weapon Data
3. Genshin Impact Fandom Artifact Sets - Data on Artifacts





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Code Approach

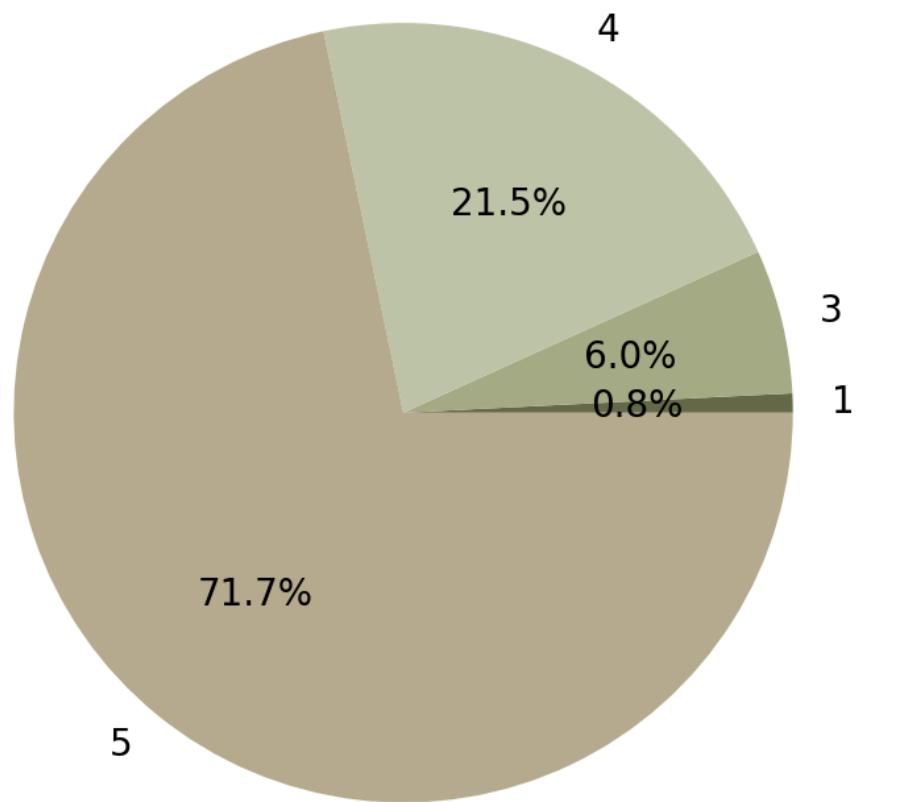
Limitations

# Visualizations

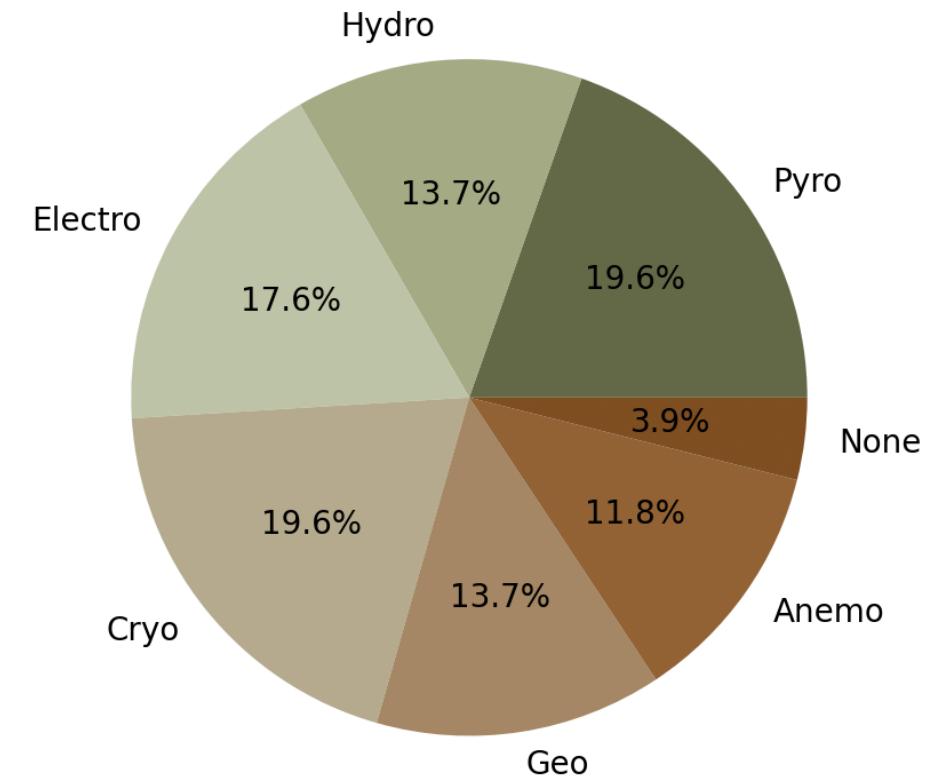
Being presented today are the following

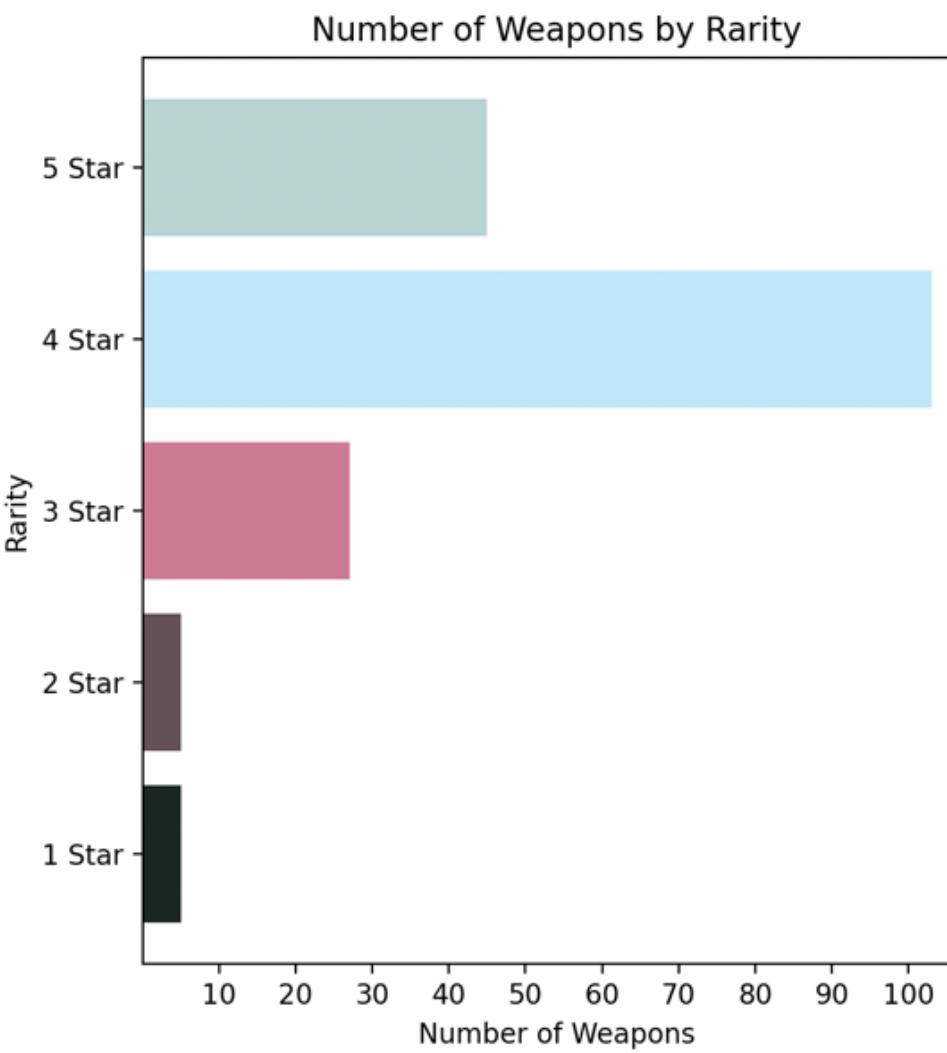
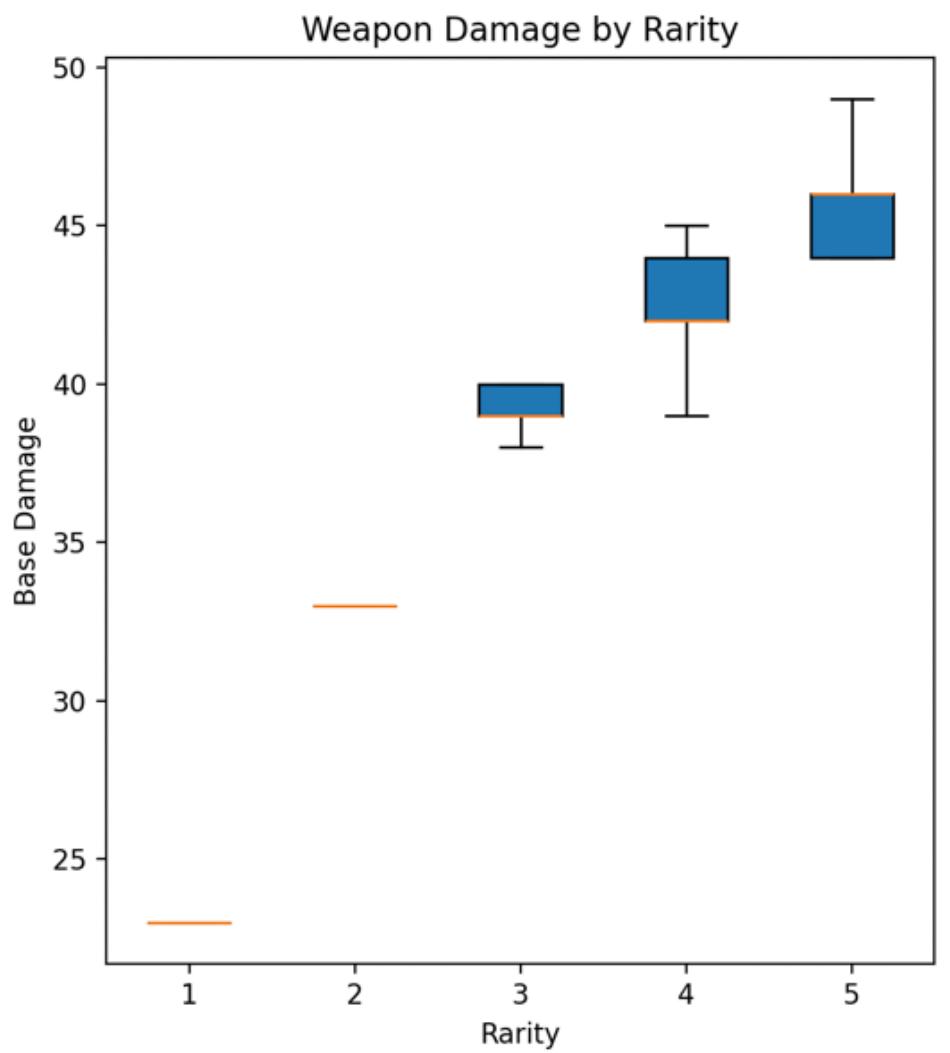
1. Pie Chart of Elements of all Characters
2. Weapons v.s Rarity
3. Weapon Choice vs Element

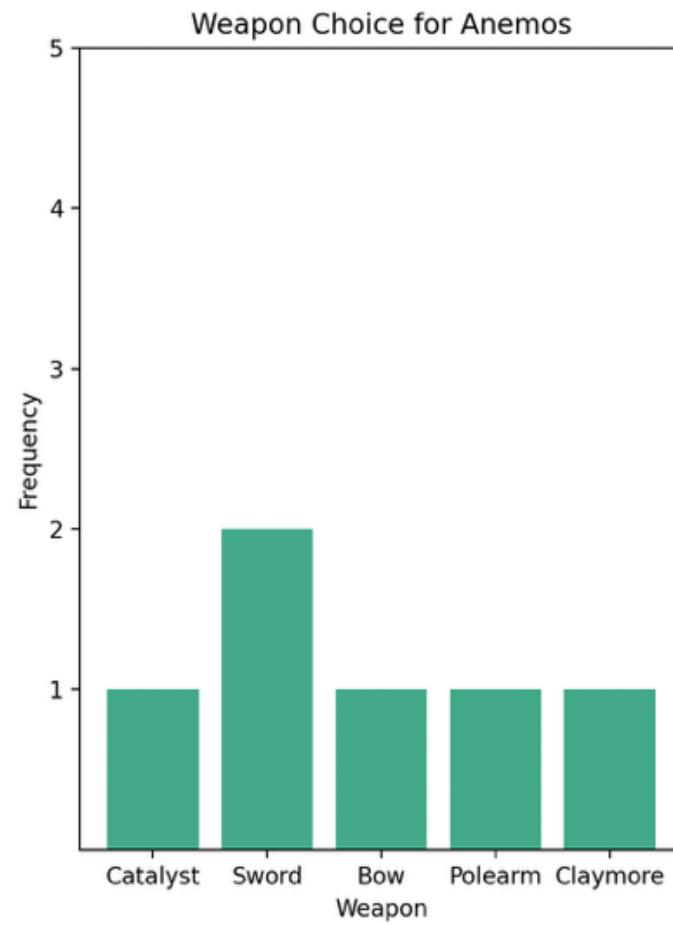
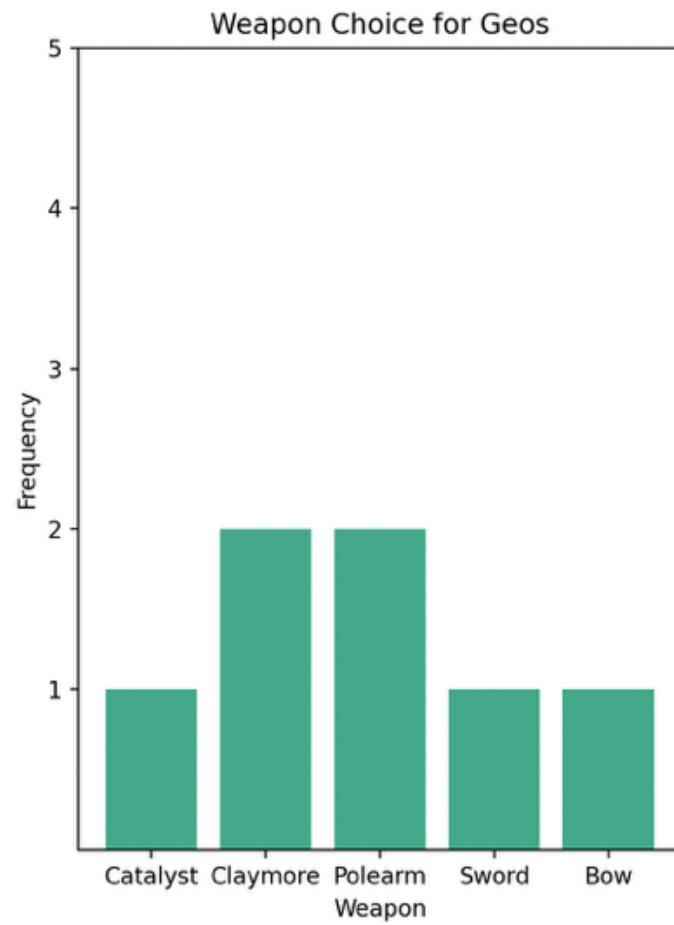
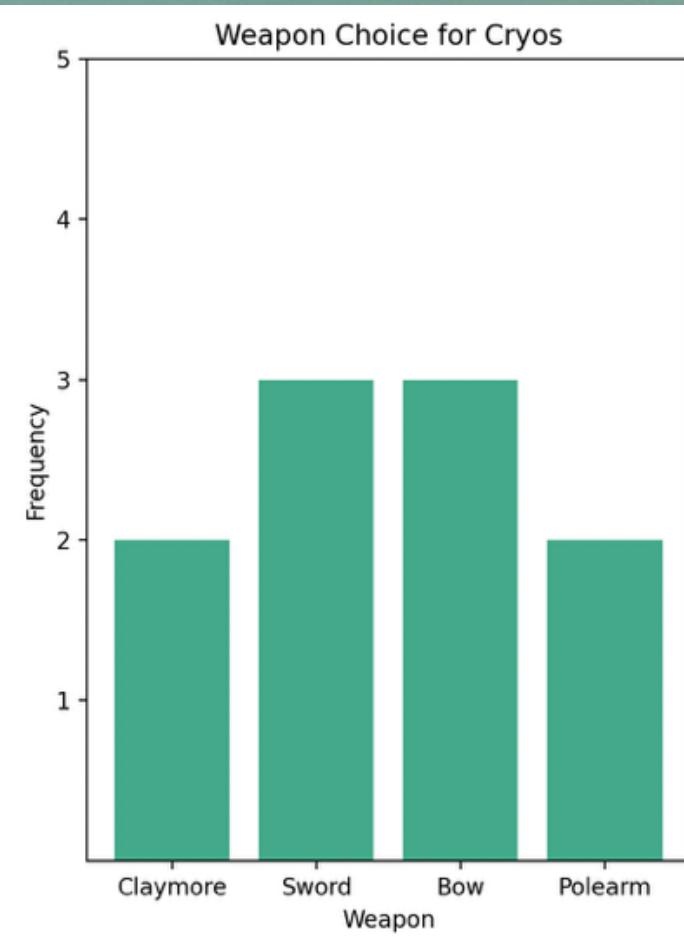
### Max Set Quality Distribution for Artifacts

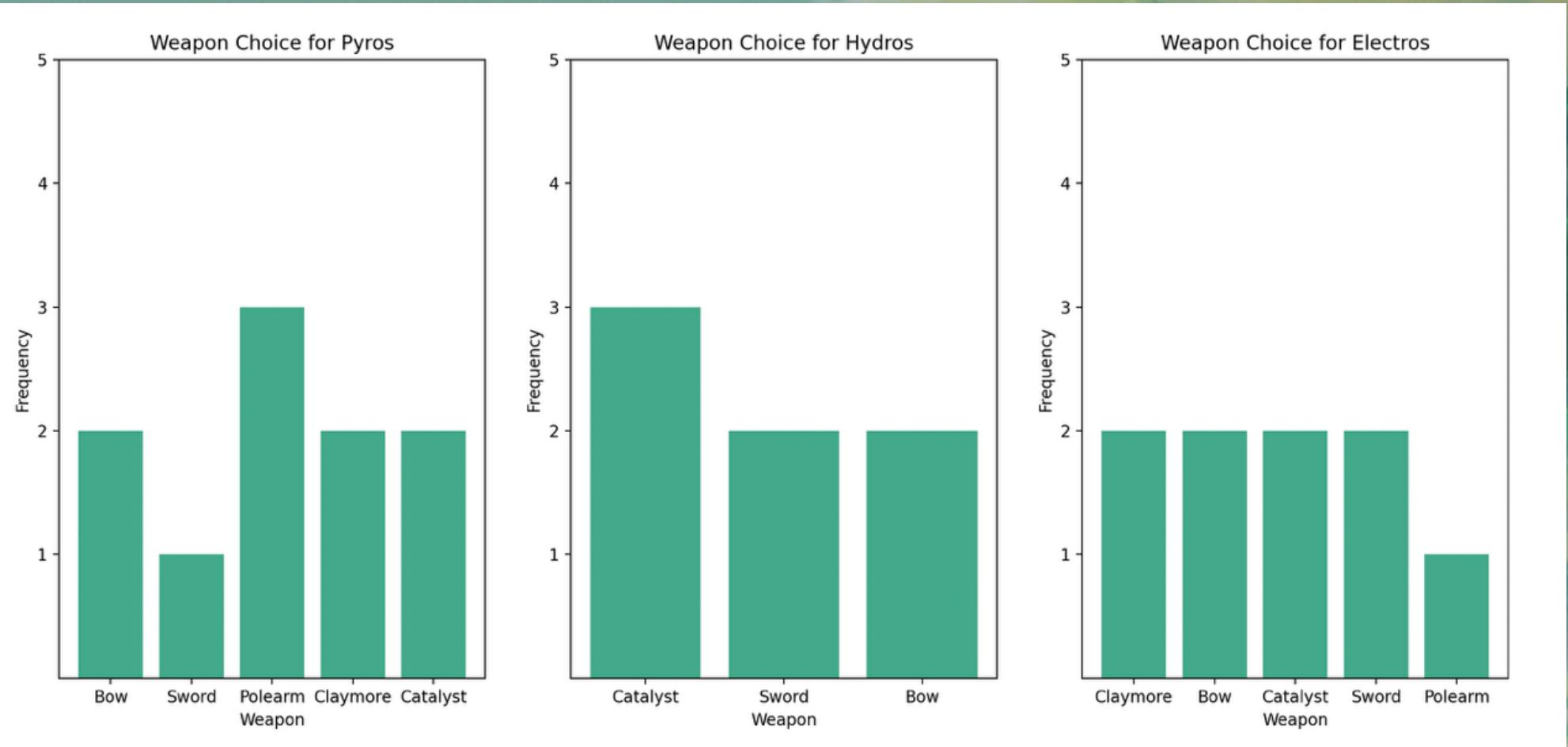


### Character Vision Distribution











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# Calculations

Things we wanted to calculate:

- Weapon damage per Type
- Weapons damage output based on Rarity
- Number of Artifacts per Quality

```
def calculate_average_weapon_damage_per_type(filepath):
    """
    ARGUMENTS:
        filepath: str representing filepath to weapon data (will be changed later)

    RETURNS:
        rarity_and_avg_attack: dict, with keys being integers representing weapon type and values being floats representing average damage
    """

    with open(filepath, "r") as weapon_data:
        weapons = json.load(weapon_data)
        # print(weapons)
        # print(len(weapons))

    weapon_types = ["Bow", "Catalyst", "Claymore", "Polearm", "Sword"]
    type_dict = {}
    for type in weapon_types:
        type_list = [i for i in weapons if i['type'] == type]
        type_dict[type] = type_list
```



Writes to a separate  
text file

```
calculations.txt
1 calculate_average_weapon_damage_per_rarity
2 -----
3 (JSON-and-old-cache-method/weapon-data.json) = {1: '23.00', 2: '33.00', 3: '39.15', 4: '42.41', 5: '45.91'}
4
5
6 calculate_difference_awdpr
7 -----
8 ({1: '23.00', 2: '33.00', 3: '39.15', 4: '42.41', 5: '45.91'}) = [{1: [{"5-1": "22.91"}, {"4-1": "19.41"}, {"3-1": "16.15"}, {"2-1": "10.00"}]}
9
10
11 calculate_average_weapon_damage_per_type
12 -----
13 (JSON-and-old-cache-method/weapon-data.json) = {'Bow': '41.71', 'Catalyst': '42.20', 'Claymore': '41.86', 'Polearm': '42.61', 'Sword': '41.86'}
14
15
16 calculate_difference_awdpt
17 -----
18 ({'Bow': '41.71', 'Catalyst': '42.20', 'Claymore': '41.86', 'Polearm': '42.61', 'Sword': '41.86'}) = [{"Bow": [{"Catalyst-Bow": "0.49"}}, {"Claymore": [{"Polearm-Claymore": "0.75"}]}, {"Sword": [{"Polearm-Sword": "0.25"}]}]}
19
20
21 calculate_num_artifacts_per_quality
22 -----
23 (JSON-and-old-cache-method/artifact-data.json) = {1: 2, 2: 0, 3: 15, 4: 54, 5: 180}
```

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```
calculations.txt
1 calculate_average_weapon_damage_per_rarity
2 -----
3 (JSON-and-old-cache-method/weapon-data.json) = {1: '23.00', 2: '33.00', 3: '39.15', 4: '42.41', 5: '45.91'}
4
5
6 calculate_difference_awdpr
7 -----
8 ({1: '23.00', 2: '33.00', 3: '39.15', 4: '42.41', 5: '45.91'}) = [{1: [{"5-1": "22.91"}, {"4-1": "19.41"}, {"3-1": "16.15"}, {"2-1": "10.00"}]}
9
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13 (JSON-and-old-cache-method/weapon-data.json) = {'Bow': '41.71', 'Catalyst': '42.20', 'Claymore': '41.86', 'Polearm': '42.61', 'Sword': '41.86'}
14
15
16 calculate_difference_awdpt
17 -----
18 ({'Bow': '41.71', 'Catalyst': '42.20', 'Claymore': '41.86', 'Polearm': '42.61', 'Sword': '41.86'}) = [{"Bow": [{"Catalyst-Bow": "0.49"}], "Claymore": [{"Polearm-Claymore": "0.75"}], "Polearm": [{"Sword-Polearm": "0.85"}], "Sword": [{"Catalyst-Sword": "0.39"}]}}
19
20
21 calculate_num_artifacts_per_quality
22 -----
23 (JSON-and-old-cache-method/artifact-data.json) = {1: 2, 2: 0, 3: 15, 4: 54, 5: 180}
24
```



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# Database

Here is what the current SQLite data base looks like for our information collected.



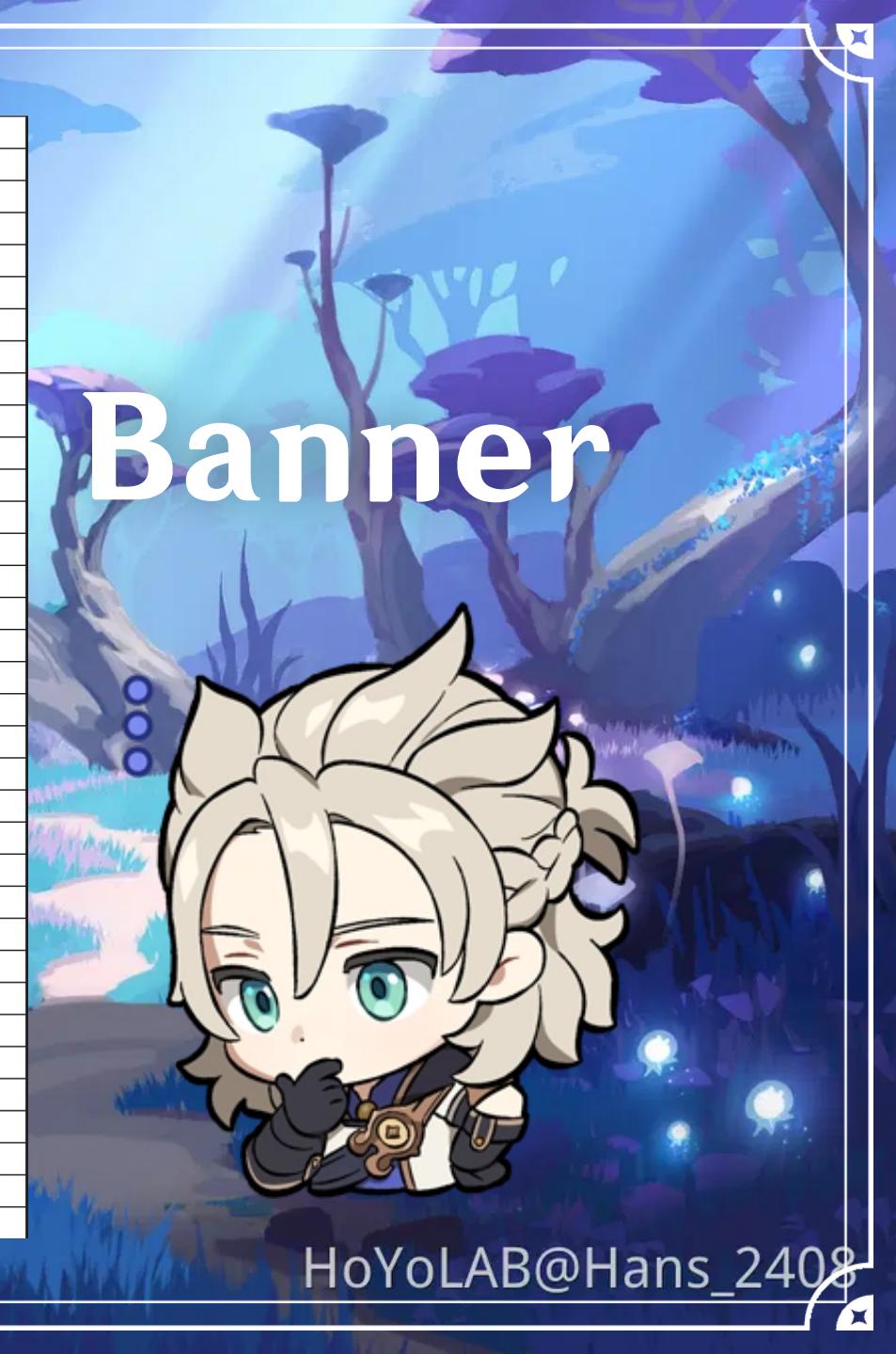
# Weapon



a-thousand-floating-dreams	A Thousand Floating Dreams	Catalyst	5	44	Elemental Mastery	A Thousand Nights' Dawnsong	Party members other than the equipping character gain 1 Successive Hit.
akuoumaru	Akuoumaru	Claymore	4	42	ATK	Watatsumi Wavewalker	For every point of the entire party's combined Normal ATK, the wielder gains 1 Successive Hit.
alley-hunter	Alley Hunter	Bow	4	41	Attack	Urban Guerrilla	Every 4s as a character is on the field, their ATK increases by 10%.
amber-catalyst	Amber Catalyst	Catalyst	3	40	Elemental Mastery	Elemental Mastery	Normal Attack hits increase all Elemental DMG by 10%.
amenoma-kageuchi	Amenoma Kageuchi	Sword	4	41	ATK	Iwakura Succession	After casting an Elemental Skill, gain 1 Successive Hit.
amos-bow	Amos' Bow	Bow	5	46	ATK	Strong-Willed	Increases Normal Attack and Aimed Shot DMG by 10%.
apprentice-s-notes	Apprentice's Notes	Catalyst	1	23	-	-	-
aqua-simulacra	Aqua Simulacra	Bow	5	44	CRIT DMG	The Cleansing Form	HP is increased by 16%. When there are opponents nearby, the wielder's Normal Attacks deal 10% more damage.
aquila-favonia	Aquila Favonia	Sword	5	48	Physical DMG Bonus	Falcon's Defiance	ATK is increased by 20/25/30/35/40%. Triggered by the wielder's Normal or Charged Attacks.
ballad-of-the-boundless-blue	Ballad of the Boundless Blue	Catalyst	4	44	Energy Recharge	Azure Skies	Within 6s after Normal or Charged Attacks hit an opponent, the wielder's next attack deals 10% more damage.
ballad-of-the-fjords	Ballad Of The Fjords	Polearm	4	42	CRIT Rate	Tales of the Tundra	When there are at least 3 different Elemental Types nearby, the wielder's Normal Attacks deal 10% more damage.
beacon-of-the-reed-sea	Beacon of the Reed Sea	Claymore	5	46	CRIT Rate	Desert Watch	After the character's Elemental Skill hits an opponent, the wielder's Normal Attacks deal 10% more damage.
beginner-s-protector	Beginner's Protector	Polearm	1	23	-	-	-
black-tassel	Black Tassel	Polearm	3	38	HP	Bane of the Soft	Increases DMG against slimes by 40/50/60/70/80%.
blackcliff-agate	Blackcliff Agate	Catalyst	4	42	CRIT DMG	Press the Advantage	After defeating an opponent, ATK is increased by 10%.
blackcliff-amulet	Blackcliff Agate	Catalyst	4	42	CRIT DMG	Press the Advantage	After defeating an enemy, ATK is increased by 10%.
blackcliff-longsword	Blackcliff Longsword	Sword	4	44	CRIT DMG	Press the Advantage	After defeating an enemy, ATK is increased by 10%.
blackcliff-pole	Blackcliff Pole	Polearm	4	42	CRIT DMG	Press the Advantage	After defeating an enemy, ATK is increased by 10%.
blackcliff-slasher	Blackcliff Slasher	Claymore	4	42	CRIT DMG	Press the Advantage	After defeating an enemy, ATK is increased by 10%.
blackcliff-warbow	Blackcliff Warbow	Bow	4	44	CRIT DMG	Press the Advantage	After defeating an enemy, ATK is increased by 10%.
bloodtainted-greatsword	Bloodtainted Greatsword	Claymore	3	38	Elemental Mastery	Bane of Fire and Thunder	Increases DMG against enemies affected by Pyro and Electro by 40/50/60/70/80%.
calamity-queller	Calamity Queller	Polearm	5	49	ATK	Extinguishing Precept	Gain 12/15/18/21/24% All Elemental DMG Bonus.
cashflow-supervision	Cashflow Supervision	Catalyst	5	48	CRIT Rate	Golden Blood-Tide	ATK is increased by 16/20/24/28/32%. When the wielder's Normal or Charged Attacks hit an opponent, the wielder's next attack deals 10% more damage.
cinnabar-spindle	Cinnabar Spindle	Sword	4	41	DEF	Spotless Heart	Elemental Skill DMG is increased by 40/50/60/70/80%.
compound-bow	Compound Bow	Bow	4	41	Physical DMG Bonus	Infusion Arrow	Normal Attack and Aimed Shot hits increase ATK by 10%.
cool-steel	Cool Steel	Sword	3	39	ATK	Bane of Water and Ice	Increases DMG against enemies affected by Hydro by 40/50/60/70/80%.
crane-s-echoing-call	Crane's Echoing Call	Catalyst	5	49	ATK	Cloudfall Axiom	After the equipping character hits an opponent, the wielder's next attack deals 10% more damage.
crescent-pike	Crescent Pike	Polearm	4	44	Physical DMG Bonus	Infusion Needle	After picking up an Elemental Orb/Particle, Normal Attacks deal 10% more damage.
crimson-moon-s-semblance	Crimson Moon's Semblance	Polearm	5	48	CRIT Rate	Ashen Sun's Shadow	Grants a Bond of Life equal to 25% of Max HP when the wielder's Normal or Charged Attacks hit an opponent.
dark-iron-sword	Dark Iron Sword	Sword	3	40	Elemental Mastery	Overloaded	Upon causing an Overloaded, Superconduct, Electro, or Pyro effect, the wielder's next attack deals 10% more damage.
deathmatch	Deathmatch	Polearm	4	41	CRIT Rate	Gladiator	If there are at least 2 opponents nearby, ATK is increased by 10%.
debate-club	Debate Club	Claymore	3	39	ATK	Blunt Conclusion	After using an Elemental Skill, Normal or Charged Attacks deal 10% more damage.
dialogues-of-the-desert-sages	Dialogues of the Desert Sages	Polearm	4	42	HP	Principle of Equilibrium	When the wielder performs healing, restore 8% HP.
dodoco-tales	Dodoco Tales	Catalyst	4	41	ATK	Dodoventure!	Normal Attack hits on opponents increase Charisma by 10%.
dragon-s-bane	Dragon's Bane	Polearm	4	41	Elemental Mastery	Bane of Flame and Water	Increases DMG against enemies affected by Hydro by 40/50/60/70/80%.
dragonspine-spear	Dragonspine Spear	Polearm	4	41	Physical DMG Bonus	Frost Burial	Hitting an opponent with Normal and Charged Attacks deals 10% more damage.

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1	Ballad in Goblets	Character	v1.0	2020-09-28T00:00:00.000Z	2020-10-18T00:00:00.000Z	Venti	Xiangling	Fischl	Barbara
2	Beginners' Wish	Permanent	v1.0	2020-09-28T00:00:00.000Z	NULL	Noelle	NULL	NULL	NULL
3	Wanderlust Invocation	Permanent	v1.0	2020-09-28T00:00:00.000Z	NULL	NULL	NULL	NULL	NULL
4	Sparkling Steps	Character	v1.0	2020-10-20T00:00:00.000Z	2020-11-10T00:00:00.000Z	Klee	Xingqiu	Noelle	Sucrose
5	Farewell of Snezhnaya	Character	v1.1	2020-11-11T00:00:00.000Z	2020-11-30T23:00:00.000Z	Tartaglia	Beidou	Ningguang	Diona
6	Gentry of Hermitage	Character	v1.1	2020-12-01T00:00:00.000Z	2020-12-22T00:00:00.000Z	Zhongli	Xinyan	Chongyun	Razor
7	Secretum Secretorum	Character	v1.2	2020-12-23T00:00:00.000Z	2021-01-11T23:00:00.000Z	Albedo	Fischl	Bennett	Sucrose
8	Adrift in the Harbor	Character	v1.2	2021-01-12T00:00:00.000Z	2021-02-01T23:00:00.000Z	Ganyu	Xiangling	Xingqiu	Noelle
9	Invitation to Mundane Life	Character	v1.3	2021-02-03T00:00:00.000Z	2021-02-16T23:00:00.000Z	Xiao	Xinyan	Beidou	Diona
10	Dance of Lanterns	Character	v1.3	2021-02-17T00:00:00.000Z	2021-03-01T23:00:00.000Z	Keqing	Ningguang	Barbara	Bennett
11	Moment of Bloom	Character	v1.3	2021-03-01T23:00:00.000Z	2021-03-15T23:00:00.000Z	Hu Tao	Xingqiu	Chongyun	Xiangling
12	Ballad in Goblets	Character	v1.4	2021-03-17T00:00:00.000Z	2021-04-05T22:00:00.000Z	Venti	Razor	Noelle	Sucrose
13	Farewell of Snezhnaya	Character	v1.4	2021-04-06T00:00:00.000Z	2021-04-26T22:00:00.000Z	Tartaglia	Rosaria	Fischl	Barbara
14	Gentry of Hermitage	Character	v1.5	2021-04-28T00:00:00.000Z	2021-05-17T22:00:00.000Z	Zhongli	Yanfei	Diona	Noelle
15	Born of Ocean Swell	Character	v1.5	2021-05-18T00:00:00.000Z	2021-06-07T22:00:00.000Z	Eula	Xingqiu	Beidou	Xinyan
16	Sparkling Steps	Character	v1.6	2021-06-09T00:00:00.000Z	2021-06-28T22:00:00.000Z	Klee	Fischl	Barbara	Sucrose
17	Leaves in the Wind	Character	v1.6	2021-06-29T00:00:00.000Z	2021-07-19T22:00:00.000Z	Kazuha	Rosaria	Razor	Bennett
18	The Heron's Court	Character	v2.0	2021-07-21T00:00:00.000Z	2021-08-09T22:00:00.000Z	Ayaka	Yanfei	Ningguang	Chongyun
19	Tapestry of Golden Flames	Character	v2.0	2021-08-10T00:00:00.000Z	2021-08-30T22:00:00.000Z	Yoimiya	Diona	Xinyan	Sayu
20	Reign of Serenity	Character	v2.1	2021-09-01T00:00:00.000Z	2021-09-20T22:00:00.000Z	Raiden Shogun	Sara	Sucrose	Xiangling
21	Drifting Luminescence	Character	v2.1	2021-09-21T00:00:00.000Z	2021-10-12T00:00:00.000Z	Kokomi	Rosaria	Xingqiu	Beidou
22	Farewell of Snezhnaya	Character	v2.2	2021-10-13T00:00:00.000Z	2021-11-01T23:00:00.000Z	Tartaglia	Ningguang	Yanfei	Chongyun
23	Moment of Bloom	Character	v2.2	2021-11-02T00:00:00.000Z	2021-11-23T00:00:00.000Z	Hu Tao	Diona	Sayu	Thoma
24	Secretum Secretorum	Character	v2.3	2021-11-24T00:00:00.000Z	2021-12-14T00:00:00.000Z	Albedo	Bennett	Rosaria	Noelle
25	Born of Ocean Swell	Character	v2.3	2021-11-24T00:00:00.000Z	2021-12-14T00:00:00.000Z	Eula	Bennett	Rosaria	Noelle
26	Oni's Royale	Character	v2.3	2021-12-14T00:00:00.000Z	2022-01-03T23:00:00.000Z	Itto	Gorou	Barbara	Xiangling
27	The Transcendent One Returns	Character	v2.4	2022-01-05T00:00:00.000Z	2022-01-24T23:00:00.000Z	Shenhe	Yun Jin	Ningguang	Chongyun
28	Invitation to Mundane Life	Character	v2.4	2022-01-05T00:00:00.000Z	2022-01-24T23:00:00.000Z	Xiao	Yun Jin	Ningguang	Chongyun
29	Gentry of Hermitage	Character	v2.4	2022-01-25T00:00:00.000Z	2022-02-14T23:00:00.000Z	Zhongli	Xingqiu	Beidou	Yanfei
30	Adrift in the Harbor	Character	v2.4	2022-01-25T00:00:00.000Z	2022-02-14T23:00:00.000Z	Ganyu	Xingqiu	Beidou	Yanfei
31	Everbloom Violet	Character	v2.5	2022-02-16T00:00:00.000Z	2022-03-07T23:00:00.000Z	Yae	Fischl	Diona	Thoma
32	Reign of Serenity	Character	v2.5	2022-03-07T23:00:00.000Z	2022-03-28T22:00:00.000Z	Raiden Shogun	Bennett	Sara	Xinyan
33	Drifting Luminescence	Character	v2.5	2022-03-07T23:00:00.000Z	2022-03-28T22:00:00.000Z	Kokomi	Bennett	Sara	Xinyan
34	Azure Excursion	Character	v2.6	2022-03-30T00:00:00.000Z	2022-04-18T22:00:00.000Z	Ayato	Sucrose	Xiangling	Yun Jin
35	Ballad in Goblets	Character	v2.6	2022-03-30T00:00:00.000Z	2022-04-18T22:00:00.000Z	Venti	Sucrose	Xiangling	Yun Jin



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1	Initiate's Flower	<a href="https://genshin-impact.fandom.com/wiki/Initiate's_Flower">https://genshin-impact.fandom.com/wiki/Initiate's_Flower</a>	Initiate	1	□
2	Initiate's Feather	<a href="https://genshin-impact.fandom.com/wiki/Initiate's_Feather">https://genshin-impact.fandom.com/wiki/Initiate's_Feather</a>	Initiate	1	□
3	Adventurer's Flower	<a href="https://genshin-impact.fandom.com/wiki/Adventurer's_Flower">https://genshin-impact.fandom.com/wiki/Adventurer's_Flower</a>	Adventurer	3	[{"pieces": 2, "bonus": "Max HP increased by 1%"}, {"pieces": 1, "bonus": "All Elemental RES increased by 1%"}]
4	Adventurer's Tail Feather	<a href="https://genshin-impact.fandom.com/wiki/Adventurer's_Tail_Feather">https://genshin-impact.fandom.com/wiki/Adventurer's_Tail_Feather</a>	Adventurer	3	[{"pieces": 2, "bonus": "Max HP increased by 1%"}, {"pieces": 1, "bonus": "All Elemental RES increased by 1%"}]
5	Adventurer's Pocket Watch	<a href="https://genshin-impact.fandom.com/wiki/Adventurer's_Pocket_Watch">https://genshin-impact.fandom.com/wiki/Adventurer's_Pocket_Watch</a>	Adventurer	3	[{"pieces": 2, "bonus": "Max HP increased by 1%"}, {"pieces": 1, "bonus": "All Elemental RES increased by 1%"}]
6	Adventurer's Golden Goblet	<a href="https://genshin-impact.fandom.com/wiki/Adventurer's_Golden_Goblet">https://genshin-impact.fandom.com/wiki/Adventurer's_Golden_Goblet</a>	Adventurer	3	[{"pieces": 2, "bonus": "Max HP increased by 1%"}, {"pieces": 1, "bonus": "All Elemental RES increased by 1%"}]
7	Adventurer's Bandana	<a href="https://genshin-impact.fandom.com/wiki/Adventurer's_Bandana">https://genshin-impact.fandom.com/wiki/Adventurer's_Bandana</a>	Adventurer	3	[{"pieces": 2, "bonus": "Max HP increased by 1%"}, {"pieces": 1, "bonus": "All Elemental RES increased by 1%"}]
8	Lucky Dog's Clover	<a href="https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Clover">https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Clover</a>	Lucky Dog	3	[{"pieces": 2, "bonus": "DEF increased by 100"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
9	Lucky Dog's Eagle Feather	<a href="https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Eagle_Feather">https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Eagle_Feather</a>	Lucky Dog	3	[{"pieces": 2, "bonus": "DEF increased by 100"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
10	Lucky Dog's Hourglass	<a href="https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Hourglass">https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Hourglass</a>	Lucky Dog	3	[{"pieces": 2, "bonus": "DEF increased by 100"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
11	Lucky Dog's Goblet	<a href="https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Goblet">https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Goblet</a>	Lucky Dog	3	[{"pieces": 2, "bonus": "DEF increased by 100"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
12	Lucky Dog's Silver Circlet	<a href="https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Silver_Circlet">https://genshin-impact.fandom.com/wiki/Lucky_Dog's_Silver_Circlet</a>	Lucky Dog	3	[{"pieces": 2, "bonus": "DEF increased by 100"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
13	Traveling Doctor's Silver Lotus	<a href="https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Silver_Lotus">https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Silver_Lotus</a>	Traveling Doctor	3	[{"pieces": 2, "bonus": "Increases incoming health by 10%"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
14	Traveling Doctor's Owl Feather	<a href="https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Owl_Feather">https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Owl_Feather</a>	Traveling Doctor	3	[{"pieces": 2, "bonus": "Increases incoming health by 10%"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
15	Traveling Doctor's Pocket Watch	<a href="https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Pocket_Watch">https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Pocket_Watch</a>	Traveling Doctor	3	[{"pieces": 2, "bonus": "Increases incoming health by 10%"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
16	Traveling Doctor's Medicine Pot	<a href="https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Medicine_Pot">https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Medicine_Pot</a>	Traveling Doctor	3	[{"pieces": 2, "bonus": "Increases incoming health by 10%"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
17	Traveling Doctor's Handkerchief	<a href="https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Handkerchief">https://genshin-impact.fandom.com/wiki/Traveling_Doctor's_Handkerchief</a>	Traveling Doctor	3	[{"pieces": 2, "bonus": "Increases incoming health by 10%"}, {"pieces": 1, "bonus": "All Elemental DMG increased by 10%"}]
18	Heart of Comradeship	<a href="https://genshin-impact.fandom.com/wiki/Heart_of_Cradeship">https://genshin-impact.fandom.com/wiki/Heart_of_Cradeship</a>	Resolution of Sojourner	4	[{"pieces": 2, "bonus": "ATK +18%"}, {"pieces": 2, "bonus": "DEF +18%"}]
19	Feather of Homecoming	<a href="https://genshin-impact.fandom.com/wiki/Feather_of_Homecoming">https://genshin-impact.fandom.com/wiki/Feather_of_Homecoming</a>	Resolution of Sojourner	4	[{"pieces": 2, "bonus": "ATK +18%"}, {"pieces": 2, "bonus": "DEF +18%"}]
20	Sundial of the Sojourner	<a href="https://genshin-impact.fandom.com/wiki/Sundial_of_the_Sojourner">https://genshin-impact.fandom.com/wiki/Sundial_of_the_Sojourner</a>	Resolution of Sojourner	4	[{"pieces": 2, "bonus": "ATK +18%"}, {"pieces": 2, "bonus": "DEF +18%"}]
21	Goblet of the Sojourner	<a href="https://genshin-impact.fandom.com/wiki/Goblet_of_the_Sojourner">https://genshin-impact.fandom.com/wiki/Goblet_of_the_Sojourner</a>	Resolution of Sojourner	4	[{"pieces": 2, "bonus": "ATK +18%"}, {"pieces": 2, "bonus": "DEF +18%"}]
22	Crown of Parting	<a href="https://genshin-impact.fandom.com/wiki/Crown_of_Parting">https://genshin-impact.fandom.com/wiki/Crown_of_Parting</a>	Resolution of Sojourner	4	[{"pieces": 2, "bonus": "ATK -18%"}, {"pieces": 2, "bonus": "DEF -18%"}]
23	Tiny Miracle's Flower	<a href="https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Flower">https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Flower</a>	Tiny Miracle	4	[{"pieces": 2, "bonus": "All Elemental RES increased by 10%"}, {"pieces": 2, "bonus": "All Elemental DMG increased by 10%"}]
24	Tiny Miracle's Feather	<a href="https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Feather">https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Feather</a>	Tiny Miracle	4	[{"pieces": 2, "bonus": "All Elemental RES increased by 10%"}, {"pieces": 2, "bonus": "All Elemental DMG increased by 10%"}]
25	Tiny Miracle's Hourglass	<a href="https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Hourglass">https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Hourglass</a>	Tiny Miracle	4	[{"pieces": 2, "bonus": "All Elemental RES increased by 10%"}, {"pieces": 2, "bonus": "All Elemental DMG increased by 10%"}]
26	Tiny Miracle's Goblet	<a href="https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Goblet">https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Goblet</a>	Tiny Miracle	4	[{"pieces": 2, "bonus": "All Elemental RES increased by 10%"}, {"pieces": 2, "bonus": "All Elemental DMG increased by 10%"}]
27	Tiny Miracle's Earrings	<a href="https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Earrings">https://genshin-impact.fandom.com/wiki/Tiny_Miracle's_Earrings</a>	Tiny Miracle	4	[{"pieces": 2, "bonus": "All Elemental RES increased by 10%"}, {"pieces": 2, "bonus": "All Elemental DMG increased by 10%"}]
28	Berserker's Rose	<a href="https://genshin-impact.fandom.com/wiki/Berserker's_Rose">https://genshin-impact.fandom.com/wiki/Berserker's_Rose</a>	Berserker	4	[{"pieces": 2, "bonus": "CRIT Rate +12%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
29	Berserker's Indigo Feather	<a href="https://genshin-impact.fandom.com/wiki/Berserker's_Indigo_Feather">https://genshin-impact.fandom.com/wiki/Berserker's_Indigo_Feather</a>	Berserker	4	[{"pieces": 2, "bonus": "CRIT Rate +12%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
30	Berserker's Timepiece	<a href="https://genshin-impact.fandom.com/wiki/Berserker's_Timepiece">https://genshin-impact.fandom.com/wiki/Berserker's_Timepiece</a>	Berserker	4	[{"pieces": 2, "bonus": "CRIT Rate +12%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
31	Berserker's Bone Goblet	<a href="https://genshin-impact.fandom.com/wiki/Berserker's_Bone_Goblet">https://genshin-impact.fandom.com/wiki/Berserker's_Bone_Goblet</a>	Berserker	4	[{"pieces": 2, "bonus": "CRIT Rate +12%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
32	Berserker's Battle Mask	<a href="https://genshin-impact.fandom.com/wiki/Berserker's_Battle_Mask">https://genshin-impact.fandom.com/wiki/Berserker's_Battle_Mask</a>	Berserker	4	[{"pieces": 2, "bonus": "CRIT Rate +12%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
33	Instructor's Brooch	<a href="https://genshin-impact.fandom.com/wiki/Instructor's_Brooch">https://genshin-impact.fandom.com/wiki/Instructor's_Brooch</a>	Instructor	4	[{"pieces": 2, "bonus": "Increases Elemental Mastery by 10%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
34	Instructor's Feather Accessory	<a href="https://genshin-impact.fandom.com/wiki/Instructor's_Feather_Accessory">https://genshin-impact.fandom.com/wiki/Instructor's_Feather_Accessory</a>	Instructor	4	[{"pieces": 2, "bonus": "Increases Elemental Mastery by 10%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
35	Instructor's Pocket Watch	<a href="https://genshin-impact.fandom.com/wiki/Instructor's_Pocket_Watch">https://genshin-impact.fandom.com/wiki/Instructor's_Pocket_Watch</a>	Instructor	4	[{"pieces": 2, "bonus": "Increases Elemental Mastery by 10%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]
36	Instructor's Tea Cup	<a href="https://genshin-impact.fandom.com/wiki/Instructor's_Tea_Cup">https://genshin-impact.fandom.com/wiki/Instructor's_Tea_Cup</a>	Instructor	4	[{"pieces": 2, "bonus": "Increases Elemental Mastery by 10%"}, {"pieces": 2, "bonus": "DMG increased by 10%"}]

# Artifact



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1	Amber	4	Bow	Pyro
2	Barbara	4	Catalyst	Hydro
3	Beidou	4	Claymore	Electro
4	Bennett	4	Sword	Pyro
5	Chongyun	4	Claymore	Cryo
6	Fischl	4	Bow	Electro
7	Kaeya	4	Sword	Cryo
8	Lisa	4	Catalyst	Electro
9	Ningguang	4	Catalyst	Geo
10	Noelle	4	Claymore	Geo
11	Razor	4	Claymore	Electro
12	Sucrose	4	Catalyst	Anemo
13	Xiangling	4	Polearm	Pyro
14	Xingqiu	4	Sword	Hydro
15	Diluc	5	Claymore	Pyro
16	Jean	5	Sword	Anemo
17	Mona	5	Catalyst	Hydro
18	Keqing	5	Sword	Electro
19	Qiqi	5	Sword	Cryo
20	Traveller (male)	5	Sword	None
21	Traveller (female)	5	Sword	None
22	Venti	5	Bow	Anemo
23	Klee	5	Catalyst	Pyro
24	Xinyan	4	Claymore	Pyro
25	Zhongli	5	Polearm	Geo
26	Diona	4	Bow	Cryo
27	Tartaglia	5	Bow	Hydro
28	Ganyu	5	Bow	Cryo
29	Albedo	5	Sword	Geo
30	Hu Tao	5	Polearm	Pyro
31	Xiao	5	Polearm	Anemo
32	Rosaria	4	Polearm	Cryo
33	Eula	5	Claymore	Cryo
34	Yanfei	4	Catalyst	Pyro
35	Kazuha	5	Sword	Anemo
36	Ayaka	5	Sword	Cryo
37	Sayu	4	Claymore	Anemo
38	Yoimiya	5	Bow	Pyro
39	Sara	4	Bow	Electro
40	Raiden Shogun	5	Polearm	Electro
41	Kokomi	5	Catalyst	Hydro
42	Thoma	4	Polearm	Pyro
43	Gorou	4	Bow	Geo
44	Itto	5	Claymore	Geo
45	Yun Jin	4	Polearm	Geo
46	Shenhe	5	Polearm	Cryo
47	Yae	5	Catalyst	Electro
48	Ayato	5	Sword	Hydro
49	Yelan	5	Bow	Hydro
50	Aloy	5	Bow	Cryo
51	Kuki	4	Sword	Electro

16	Jean	5	Sword	Anemo
17	Mona	5	Catalyst	Hydro
18	Keqing	5	Sword	Electro
19	Qiqi	5	Sword	Cryo
20	Traveller (male)	5	Sword	None
21	Traveller (female)	5	Sword	None
22	Venti	5	Bow	Anemo
23	Klee	5	Catalyst	Pyro
24	Xinyan	4	Claymore	Pyro
25	Zhongli	5	Polearm	Geo
26	Diona	4	Bow	Cryo
27	Tartaglia	5	Bow	Hydro
28	Ganyu	5	Bow	Cryo
29	Albedo	5	Sword	Geo
30	Hu Tao	5	Polearm	Pyro
31	Xiao	5	Polearm	Anemo
32	Rosaria	4	Polearm	Cryo



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Goals



APIs



Visualizations



Calculations



Code Approach



Limitations

# Limitations

How did we limit the data to 25 per iteration?



```
def set_up_progress_table(cur, conn):
    """
    Sets up a Progress table to track the progress of data insertion for each resource.
    """
    cur.execute(
        """
        CREATE TABLE IF NOT EXISTS Progress (
            resource TEXT PRIMARY KEY,
            last_offset INTEGER NOT NULL
        )
        """
    )
    conn.commit()

def update_progress(cur, conn, resource, offset):
    """
    Updates the progress table with the latest offset for a given resource.
    """
    cur.execute(
        """
        INSERT OR REPLACE INTO Progress (resource, last_offset)
        VALUES (?, ?)
        """,
        (resource, offset)
    )
    conn.commit()
```

```
def get_last_offset(cur, resource):
    """
    Fetches the last offset for a given resource from the Progress table.
    """
    cur.execute("SELECT last_offset FROM Progress WHERE resource = ?", (resource,))
    result = cur.fetchone()
    return result[0] if result else 0

def get_character_ids(character_url, limit=25):
```

Created function  
that keeps track of  
whats been added  
using another data  
table in SQLite



1	Amber	4	Bow	Pyro
2	Barbara	4	Catalyst	Hydro
3	Beidou	4	Claymore	Electro
4	Bennett	4	Sword	Pyro
5	Chongyun	4	Claymore	Cryo
6	Fischl	4	Bow	Electro
7	Kaeya	4	Sword	Cryo
8	Lisa	4	Catalyst	Electro
9	Ningguang	4	Catalyst	Geo
10	Noelle	4	Claymore	Geo
11	Razor	4	Claymore	Electro
12	Sucrose	4	Catalyst	Anemo
13	Xiangling	4	Polearm	Pyro
14	Xingqiu	4	Sword	Hydro
15	Diluc	5	Claymore	Pyro
16	Jean	5	Sword	Anemo
17	Mona	5	Catalyst	Hydro
18	Keqing	5	Sword	Electro
19	Qiqi	5	Sword	Cryo
20	Traveller (male)	5	Sword	None
21	Traveller (female)	5	Sword	None
22	Venti	5	Bow	Anemo
23	Klee	5	Catalyst	Pyro
24	Xinyan	4	Claymore	Pyro
25	Zhongli	5	Polearm	Geo

## First Run

```
/usr/local/bin/python3 "/Users/evaprouty/206 Python Fo
● (base) evaprouty@Evas-Macbook SI206-final-project %
added 25 characters -- offset is now: 25
○ (base) evaprouty@Evas-Macbook SI206-final-project %
```

## Second Run

```
● (base) evaprouty@Evas-Macbook SI206-final-project %
added 25 characters -- offset is now: 25
● (base) evaprouty@Evas-Macbook SI206-final-project %
added 25 characters -- offset is now: 50
○ (base) evaprouty@Evas-Macbook SI206-final-project %
```



25	Zhongli	5	Polearm	Geo
26	Diona	4	Bow	Cryo
27	Tartaglia	5	Bow	Hydro
28	Ganyu	5	Bow	Cryo
29	Albedo	5	Sword	Geo
30	Hu Tao	5	Polearm	Pyro
31	Xiao	5	Polearm	Anemo
32	Rosaria	4	Polearm	Cryo
33	Eula	5	Claymore	Cryo
34	Yanfei	4	Catalyst	Pyro
35	Kazuha	5	Sword	Anemo
36	Ayaka	5	Sword	Cryo
37	Sayu	4	Claymore	Anemo
38	Yoimiya	5	Bow	Pyro
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41	Kokomi	5	Catalyst	Hydro
42	Thoma	4	Polearm	Pyro
43	Gorou	4	Bow	Geo
44	Itto	5	Claymore	Geo
45	Yun Jin	4	Polearm	Geo
46	Shenhe	5	Polearm	Cryo
47	Yae	5	Catalyst	Electro
48	Ayato	5	Sword	Hydro
49	Yelan	5	Bow	Hydro
50	Aloy	5	Bow	Cryo



Thank you

