

Data and Applications Monsoon 2022 – HW2

Team – 7

September 2022

Critical Evaluation -

1. **Database Requirements -> Assumptions -> *occurred prior to Infinity War are assumed*** --- We think this assumption should be more clearly stated as all events in till Infinity war are considered.
2. **Database Requirements -> Strong Entity Types -> Infinity Stone -> *Held_by (derived attribute)*** --- Clearly, Held_by is not a derived attribute because it can't be derived from any of existing attributes in Entity Type Infinity Stone.
3. **Database Requirements -> Weak Entity Types -> Planets -> *Name (Partial key)*** --- Didn't mention assumption, assuming different galaxies can have planets with same name. This is needed as all planets have distinct names in Marvel Cinematic Universe.
4. **Database Requirements -> Weak Entity Types -> Weapon/Armor/Item -> *Weapon Name (Partial key)*** --- Didn't mention assumption, names aren't unique e just for generic weapons.
5. **Database Requirements -> Weak Entity Types -> Weapon/Armor/Item -> *Owner (Derived attribute)*** --- Clearly, Owner is not a derived attribute because it can't be derived from any of existing attributes in Entity Type Infinity Stone.
6. **Database Requirements -> Relationships -> *Infinity stone – “located on” – planet -> min/max ratio*** --- (0, N) - (1, 1), There can be planet with no infinity stone.
7. **Database Requirements -> Relationships -> *Avengers and their allies – “control, own” – Weapon/Armor/Item -> min/max ratio*** --- (0, N) - (1, M).
Some avengers such as Black Widow don't use any weapons.
8. **Database Requirements -> Relationships -> *Avengers/Antagonist – “posses” – Infinity Stone -> Participating entities*** --- Ideally Avengers and Antagonist will have different relationships called “possesses”
-> ***min/max ratio*** --- (0, 6) - (0, 1), An avenger might not have any infinity stone, some infinity stones are not possessed by either.

9. **Database Requirements -> Relationships -> Antagonist – “kill” – Avengers/allies – “using” - Infinity Stone -> min/max ratio** --- (0, N) - (0, N) - (0, N).

An antagonist may or may not kill an avenger using an infinity stone. An infinity stone may be used to kill multiple avengers by different antagonists.

10. **Database Requirements -> Relationships -> Avengers/allies – “give” – Infinity Stone – “to” - Antagonist -> min/max ratio** --- (0, 6) - (0, 1) - (0, 6).

An antagonist may or may not be given an infinity stone. An infinity may or may not be given by an avenger and vice versa. *Assumption* – an infinity stone exchanges hands only once.

11. **Database Requirements -> Relationships -> Avengers and their allies – “live on” – planet -> min/max ratio** --- (0, N) – (0, 1) -> some planets may not house any avengers and some avengers may not live on any planet (ex – Guardians of the Galaxy)

12. **The given document didn’t list the *Identifying Relationships* for the weak entities. None of the listed relationships suffice as they do not guarantee *complete participation* for the weak entity “Planet”. The relationship type “Controls, owns” can be an identifying relationship for “Weapon/Armor/Item”. (However, this hasn’t been shown in the ER diagram)**