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’tmention 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.

1. **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.
2. **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.
3. **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)
4. **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)