

HW2 Data and Applications

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Database Requirements Review

Are the requirements complete?

We believe the following additions would make the database requirements more comprehensive:

- **Identities:** Adding attributes to store their position, skills, experience, etc., could be very useful to accomplish the purposes mentioned of analysis and insight.
- **Cases:** There is no information on the case except its status. Attributes for year(or some timeframe), classification level, and a description attribute should be added to make it more realistic.
- **Location :** The attribute PlaceName has type given as Simple, as opposed to composite considering any location has multiple components to it realistically
- **Relationship(Criminal Organisation and Cases):** Add a relationship called Conducted by(of degree 2), with cardinality N:N

Other Suggestions

Make criminals and agents as two subclasses of the entity type Identities to add relevant attributes to both, making them more specific, and useful, considering that queries for looking up a criminal will not want to know about agents of the same name, and while querying to assign an agent to a case or Operation, it would not be relevant to get information on criminals.

Are requirements correct?

1. Attribute *Affiliation* in Identities is not well defined. If it means between Identity and Organisation, then Relationship Type 'EMPLOYED BY' sufficiently handles it and this attribute is redundant. If affiliations are in between identities, it should be as a recursive relationship instead

of an attribute, so that deletions do not break referential integrity. Similarly for attribute *Affiliations* in Organisations, if its among organisations, it should be a recursive relationship ,and individuals are already done through 'EMPLOYED BY' and 'HEADED BY' relationship types.

2. Weak attributes are incorrectly identified as they are merely attributes of other entities.
3. Relations for weak entities are not defined.

Corrections

- Change *Chain of Custody* to a relationship between evidence and organization with the attribute *locationID*.
- Modify the 'Role' attribute of the *Roles* entity type to include more role types of any kind of person of interest, however applicable. This also makes *role* a partial key for *roles*.

How easy is it to draw an ER diagram?

Several changes had to be made to accommodate the weak entities mentioned in the requirements. Otherwise, the process was simple and straightforward.

ER diagram

The ER Diagram is on the next page, Draw.io link is also attached. Draw.io link: [Link](#)

