HomeWork-2

Team ID: 5

Krishak Aneja	Nidhish Jain	Saiyam Jain	Varun Gupta
2023101106	2023101071	2023101135	2023101108

Analysis of Requirements Document

(Green -> Inconsistencies corrected, Blue-> Proposed structural changes)

1. Are the requirements complete?

- Certain Weak Entity types lack an explicit identifying relationship with a strong entity type. We have added the *Moved_In* identifying relationship type between the *Artefact* (strong) and *Artefact Movement* (weak) entity types.
The *Reported* relationship type is the identifying relationship type for weak entity type *Security Incident* dependent on strong entity *Security Personnel*

- The Participation constraint for each entity in a relationship has not been specified and thus we have added appropriate min constraint for each entity in a relationship and modified the max constraint as best fit.

- The *Event Coordinator* and *Catering Staff* entity types don't participate in any relationship and thus are disconnected from the rest of the database.

2. Are any requirements incorrect?

- The *Food Order* entity type and *Order* relationship type are redundant. We have retained the *Order* relationship between *Guest* and *Menu Item* and removed the Food Order entity.

- Whilst yes, you may choose to identify entities of type *Security Incident* via the personnel who report them, it might be worth considering keeping *Security Incident* as an independent strong entity type that partakes in relationships with *Security Personnel*, *Guest* and *Artefacts*. It can also be represented as a degree-3 relationship. The point being, security incidents aren't necessarily dependents of any other entity.

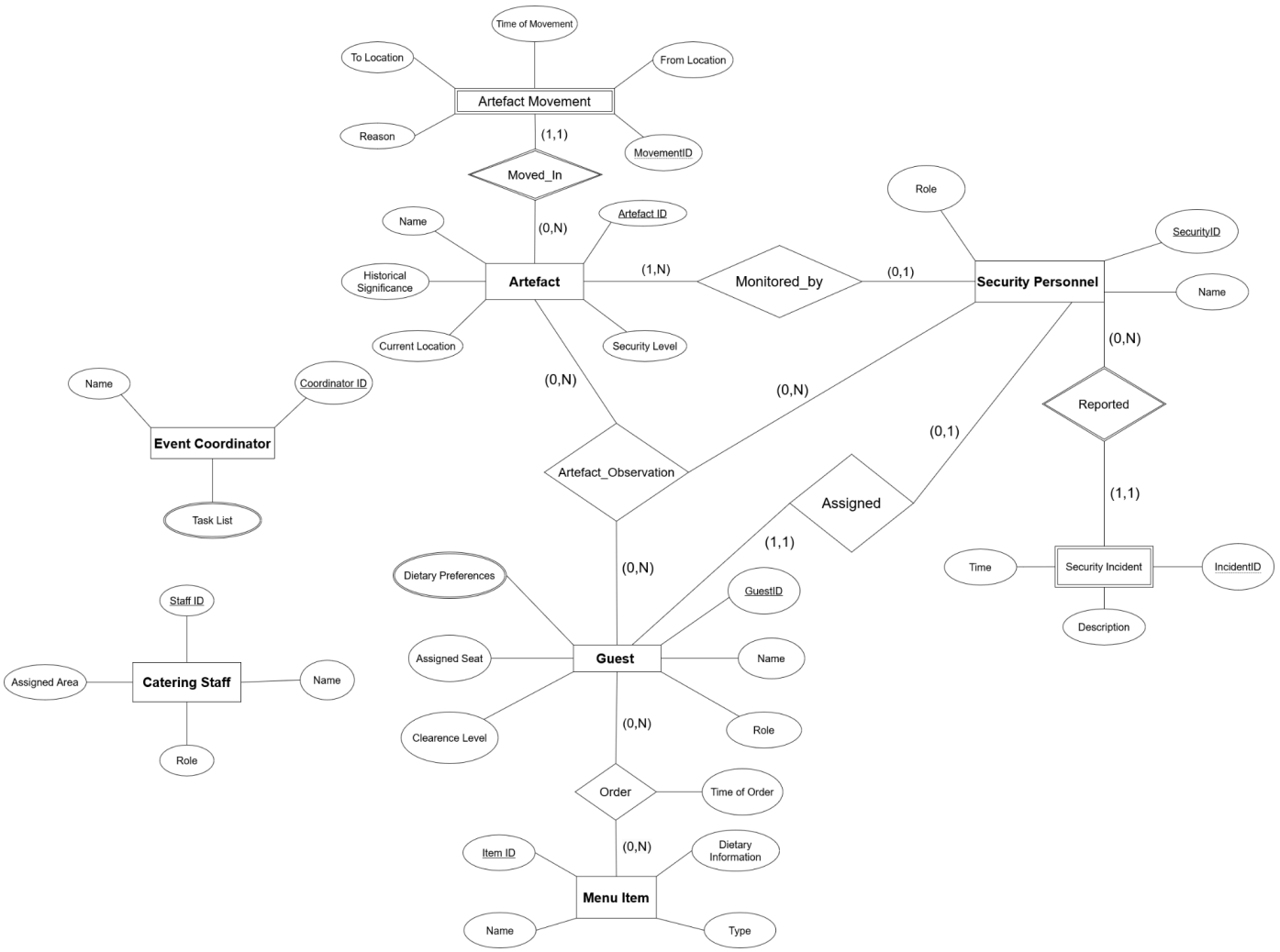
- The Observe-Supervised (which we have dubbed Artefact Observation) degree - 3 relationship between *Artefact, Guest* and *Security Personnel* is not very meaningful and feasible to monitor in real time. (The Monitor relationship already exists between Artefact and Personnel). A better alternative for a degree - 3 relationship would be to extend the *Order* relationship to be between *Guest* (who places the order), *Menu Item* (the item in the order) and *Catering staff* (who handle the order).

3. How easy is it to model the mini-world with these requirements?

- The main difficulty whilst modelling the mini-world with these requirements is that the *Food Order* and *Security Incident* weak entity types mentioned have two foreign keys and thus are associated with two strong entity types each which complicates the model. It is better to convey such constructs via relationships connecting the entities. Thus the *Food Order* entity type has been removed in favour of the *Order* relationship and the *Security Incident* entity type has been limited to be a dependent of *Security personnel* only.

Besides this, the mini-world is relatively simple to model. All aspects of the Chinese Art Exhibition at the end of *Rush Hour* have been covered.

The ER diagram for the mini-world is as follows: (with inconsistencies corrected)



Further structural changes can be made to produce the following model:

Now, the Catering Staff and Event Coordinator entity types have also been related to the other parts of the model, ensuring that the mini-world is linked.