Assessment Task 1: E-R Modelling

## Requirements

Task one of the coursework aims to facilitate analytical and design practice using case studies. Using a standard notation, you are required to produce a data model for Merrill Hand Tools Ltd -the case study document is available on the module's Blackboard site.

To produce a data model that satisfies the needs of Merrill Hand Tools Ltd. you are expected to:

* Analyse the case study in detail.
* Apply a Top-Down modelling approach to produce an Entity-Relationship (E-R) Diagram.
* Apply a Bottom-Up modelling approach to identify functional dependencies and proceed to data Normalisation.
* Finalise the data model by recombining the E-R Diagram and the normalised data structures.

You are expected to produce a report outlining the process followed including the outputs obtained at each stage. Assumptions should be clearly stated.

**Deadline: Thursday 17th March 2022 (3:00pm)**

## Marking Scheme

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|  | **Fail** | | **Marginal Fail** | **Pass** | **Merit** | **Distinctive** | |
|  | **0-19%** | **20-39%** | **40-49%** | **50-59%** | **60-69%** | **70-79%** | **80-100%** |
| **Top-Down modelling**.  E-R model derived from analysing the case study requirements. Essential Entities, Attributes and Relationships are identified.  **30%** | Entity-Relationship modelling has not been understood. Essential Entities, Attributes and/or Relationships are not represented in the model. Standard notation is not used. | Entity-Relationship modelling is very limited in understanding.  Many important Essential Entities, Attributes and/or Relationships are missing or poorly described in terms of attributes. Standard notation has very serious errors. | Entity-Relationship modelling is understood to some extent. However, essential Entities, Attributes and/or Relationships have not been identified or represented in the model. Standard notation is used but contains serious errors. | Most essential Entities, Attributes and Most Relationships are correctly identified and represented in the model. Most standard notation and assumptions are correct. | Demonstrates a full understanding of Entity-Relationship modelling.  The model contains some minor errors within the proposed context and constraints of the case study. Both sensible assumptions and standard notation have been stated well. | Demonstrates a full understanding of Entity-Relationship modelling.  A model is proposed within the context and constraints of the case study. Full assumptions are clearly stated. Some alternatives considered. Standard notation is applied to an excellent standard. | + A comprehensive evaluation which recognises the validity of alternative perspectives and solutions. |
| **Bottom-Up modelling**.  Sample forms and reports provided by the client are used to identify determinants. Data is normalised up to 3NF, clearly showing the process from UNF to 3NF for each of the forms.  **35%** | The data samples from the case study have not been considered. Data normalisation has not been done or has not been understood. | The data samples from the case study have been considered minimally. There are limited normalisation elements present. Evidenced with a minimal understanding of normalisation. | Data samples from the case study have been considered. The process for data normalisation has not been properly followed or has not been understood. The resulting model has serious semantic or notational errors. | Data samples from the case study have been mostly considered.  Most important attributes present. Dependencies  mostly correct and corresponding at a substantial degree to the logic of the problem.  Most PKs and FKs  indicated. | Data is normalised up to 3NF, process is shown. Minor errors in the model produced. | + Demonstrates a full understanding of data normalisation. Data has been properly normalised to 3NF. The process followed is shown. | + The data model produced considers alternatives, as well as context and constraints of the case study. |
| **Final E-R Diagram**. Identifies key Entities and their Attributes within the system. Valid relationships are identified between Entities and appropriate names are allocated to the relationships, indicating their correct Cardinality and Participation. Primary and Foreign Keys are clearly identified.  **35%** | The E-R model and normalised data structures have not been recombined. There is very little or no understanding at all in relation to both the final model and relational data modelling. | The E-R model and the normalised data structures have been recombined minimally. There are a number of very serious issues with the final model that evidence a clear lack of understanding of relational data modelling. | An attempt made at recombining the E-R model and the normalised data structures. The final solution has serious notational or semantic errors. | E-R model and the normalised data structures are recombined and a final model is presented.  The model is mostly correct (essential entities, attributes and relationships are present; relations are labelled and cardinality and participation are appropriate; primary and foreign keys are identified) and corresponding at a substantial degree to the logic of the scenario. | The model produced is complete and implementable.  However, the model has some minor discrepancies with its essential entities, attributes and relationships; relations are labelled and cardinality and participation are appropriate; primary and foreign keys are identified. | + Demonstrates a full understanding of relational data modelling. The model produced is complete and implementable. | + Extensive consideration of the context and constraints of the case study. The model produced is exemplar. |