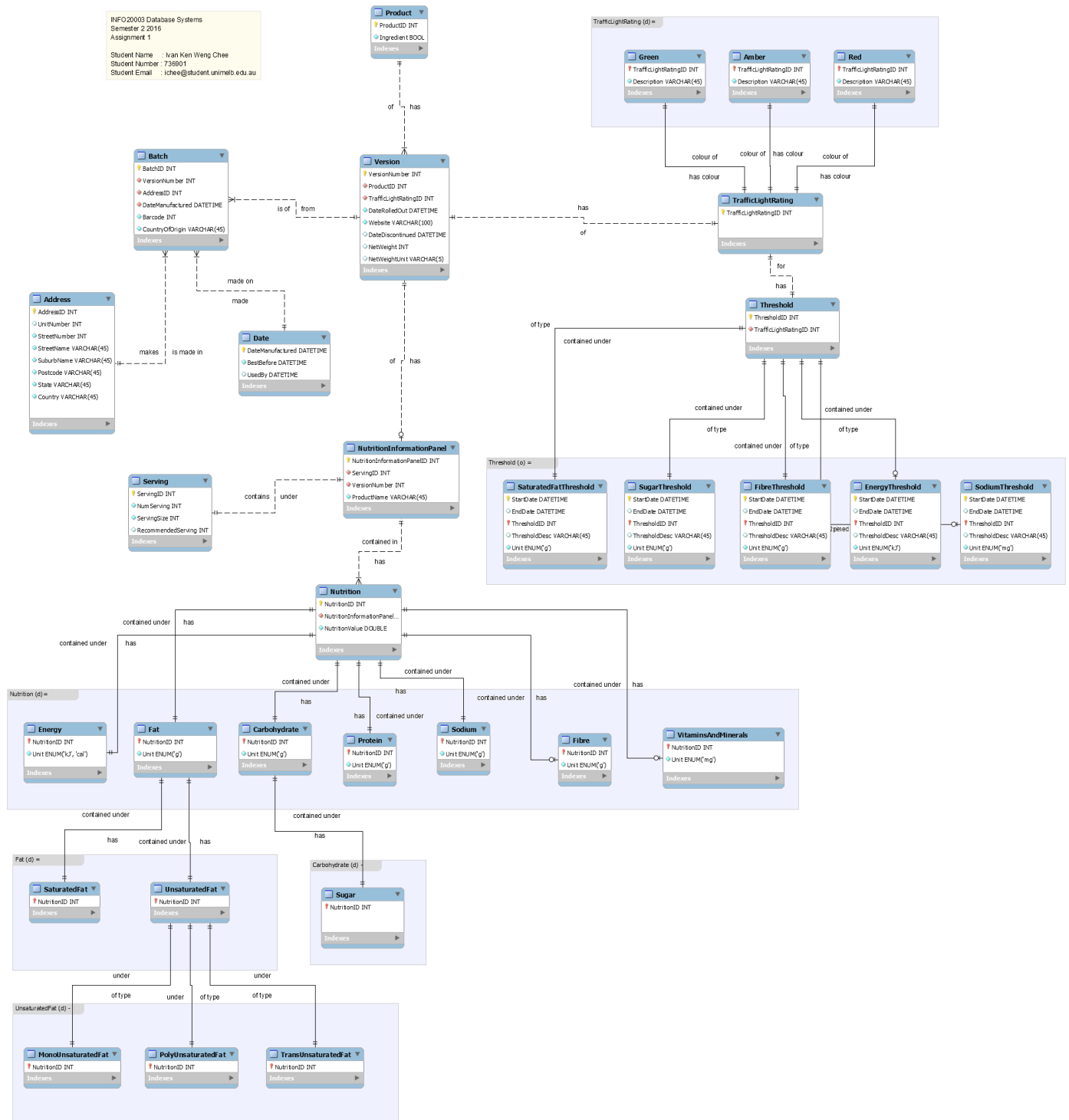


## A. Diagram



## B. Assumptions

### 1. Product-Version

- a. A product has many different versions, with the latest having a NULL discontinued date.
- b. Each product version can only be for a single product

### 2. Version-Batch

- a. Many batches of a product version can be produced
- b. A batch may only consist of products of the same version

### 3. Address-Batch

- a. Address is the address of a manufacturing plant of S.T.A.R. Manufacturers
- b. A batch is produced as a whole at a particular address
- c. An address can produce multiple batches, which may or may not be of the same version

### 4. Date-Batch

- a. A batch is produced on a particular date as a whole
- b. Multiple batches can be produced on the same date

### 5. TrafficLightRating-Version

- a. A version has a traffic light rating, which may change over time
- b. A traffic light rating may be applied across many different product versions

### 6. TrafficLightRating Supertype

- a. Consists of 3 colours – Green, Amber, and Red, which signifies the healthiness rating of a food product
- b. Derived from whether or not 3 of a product's nutrition (saturated fat, sugar, and fibre) exceeds stated nutrition thresholds

### 7. TrafficLightRating-Threshold

- a. A traffic light rating is defined by a collection of different nutrition thresholds
- b. A particular threshold is bounded to a particular traffic light rating

### 8. Threshold Supertype

- a. A collection of 5 different thresholds, each representing thresholds set by the government of Batmania
- b. 3 mandatory thresholds (SaturatedFatThreshold, SugarsThreshold, FibreThreshold) which define the traffic light rating given to a product
- c. 2 optional thresholds (EnergyThreshold, SodiumThreshold) which do not affect the traffic light rating
- d. Assumed that Energy and Sodium thresholds do not affect the traffic light rating
- e. All thresholds are recorded in grams (g) except EnergyThreshold which uses kilojoules (kJ), and SodiumThreshold which uses milligrams (mg)

### 9. Version-NutritionInformationPanel

- a. A product version may or may not have one nutrition information panel, depending if it is an ingredient or not
- b. A nutrition information panel is related to one particular version of a product

### 10. Serving-NutritionInformationPanel

- a. Serving information is related to a product's nutrition information panel
- b. A nutrition information panel has information of the respective product's serving

### 11. NutritionInformationPanel-Nutrition

- a. A nutrition information panel has nutrition information of a product on it
- b. Nutrition of a product is displayed on a single nutrition information panel

### 12. Nutrition Supertype

- a. Broken down into 7 subtypes, each of which represents a category of nutrition information displayed on a product's nutrition information panel
- b. 5 mandatory sub categories (Energy, Fat, Carbohydrate, Protein, Sodium)
- c. 2 optional sub categories (Fibre, VitaminsAndMinerals)
- d. All sub categories are stored as grams (g) except for Energy, which uses kilojoules (kJ) and Sodium, which uses milligrams (mg)
- e. Nutrition values are stored in standard quantifiable units, with values per serving being derived using a formula such as:

$$\text{Values per serving} = \frac{\left( \text{Values in units} * \left( \frac{\text{Net Weight}}{100g} \right) \right)}{\text{Number of servings}}$$

13. Fat Supertype

- a. Divided into two subtypes, SaturatedFat and UnsaturatedFat
- b. Mono, poly and trans fat are types of unsaturated fat

14. Carbohydrate Supertype

- a. Consists of a Sugar subtype, which is a type of carbohydrate