

## Final project, ER Conversion/normalization

1. Handle all entities
  - a. strong entities that are not subtypes

**CUSTOMER** (Customer\_ID, Customer\_Name)

**ORDER** (Order\_ID, Date, CC\_Num, Shipping\_Address, Tracking\_Num, Order\_Status, Total\_Cost, Notes)

**PRODUCT** (Product\_ID, Product\_Name, Product\_in\_Stock, Product\_Cost)

- b. no subtypes
  - c. no weak entities
  - d. Customer\_ID†, Product\_ID†
2. Handle all the relationships
  - a. Binary one-to-one relationships
    - i. There are none in the ER diagram.
  - b. Binary one-to-many relationships
    - i. **pays for** is a binary one-to-many relationship between **CUSTOMER** and **ORDER**  
  
**ORDER** (Order\_ID, Date, CC\_Num, Shipping\_Address, Tracking\_Num, Order\_Status, Total\_Cost, Notes, Customer\_ID†)  
  
Customer\_ID† is the foreign key that connects Order to Customer.
  - c. Binary many-to-many relationships
    - i. **has** is a binary many-to-many relationship between **PRODUCT** and **ORDER**  
  
**ORDER\_HAS\_PRODUCTS** (Order\_ID†, Product\_ID†, quantity)  
Order\_ID†, Product\_ID† are the foreign keys that point to **ORDER** and **PRODUCT** respectively.
  - d. No recursive relationships

### 3. RELATIONAL SCHEMA- COMPLETED

**CUSTOMER** (Customer\_ID, Customer\_Name)

**PRODUCT** (Product\_ID, Product\_Name, Product\_in\_Stock, Product\_Cost)

**ORDER** (Order\_ID, Date, CC\_Num, Shipping\_Address, Tracking\_Num, Order\_Status, Total\_Cost, Notes, Customer\_ID<sup>+</sup>)

**ORDER\_HAS\_PRODUCTS** (Order\_ID<sup>+</sup>, Product\_ID<sup>+</sup>, quantity)