Entities:

Shop

Product

Manufacturer

Category

Employee

User

Order

RefundRequest

Review

Reply

Coupon

Complaint

ProductComplaint

ShopComplaint

CommentComplaint

Relationships:

Shop - (total participation) Sells - Product

**Product - (key and total participation) Belongs** - Category

Manufacturer - **Produces (key and total participation) - Product**

Category (parent) - IsParentOf - Category (child, itself)

**Order (weak) - (key and total participation) Involves** - Product

User - **Places (key and total participation) - Order**

**RefundRequest - (key and total participation) Associates** - Order

Employee - **Handles (key and total participation) - RefundRequest**

**Review - (key and total participation) Regarding (key)** - Order

User - **WritesReview (key and total participation) - Regarding (aggregation between Review and Order)**

**Reply - (key and total participation) RepliesTo** - Review

User - **WritesReply (key and total participation) - RepliesTo (aggregation between Review and Reply)**

**Coupon - (key) AppliedTo (key)** - Order

User - **Uses (key and total participation) - AppliedTo (aggregation between Coupon and Order)**

User - **Files (key and total participation) - Complaint**

Employee - **PicksUp (key) - Complaint**

Complaint - ISA - ProductComplaint, ShopComplaint, CommentComplaint (satisfy cover constraint, do not satisfy overlap constraint, bold arrow) -> meaning:

1. A complaint must be either product complaint, shop complaint, or comment complaint
2. A complaint cannot be a product complaint, shop complaint, or comment complaint at the same time. -> In summary, must be one and can be only one

**ProductComplaint - (key and total participation) ConcerningProduct** (key) - Order

**ShopComplaint - (key and total participation) ConcerningShop** - Shop

**CommentComplaint - (key and total participation) ConcerningComment** - Review

**ERD code:**

[Shop](shop\_id\*, shop\_name);

[Product](product\_id\*, product\_name, description);

[Manufacturer](manufacturer\_id\*, manufacturer\_name, country);

[Category](category\_id\*, category\_name);

[Employee](employee\_id\*, employee\_name, monthly\_salary);

[Customer](user\_id\*, user\_name, address, account\_status);

[[Order\_item]](order\_id\*, ordered\_product\_quantity, shipping\_cost, shipping\_address, total\_cost, order\_status, estimated\_delivery\_date, actual\_delivery\_date);

[Refund\_request](refund\_request\_id\*, numer\_of\_instances, date\_of\_request, request\_status, date\_of\_acceptance\_or\_rejection, reason\_of\_rejection);

[Review](review\_id\*, rate, comment, comment\_status);

[Reply](reply\_id\*, reply\_content, reply\_status);

[Coupon](coupon\_id\*, batch\_id, validity\_period, reward, min\_order\_value);

[Complaint](complaint\_id\*, complaint\_content, complaint\_status);

[Product\_complaint]();

[Shop\_complaint]();

[Comment\_complaint](category);

<Sells>(price, quantity);

<Belongs>();

<Produces>();

<Is\_parent\_of>();

<<Involves>>();

<Places>();

<Associates>();

<Handles>();

[<Regarding>]();

<Writes\_review>();

<Writes\_reply>();

[<Replies\_to>]();

[<Applies\_to>]();

<Uses>();

<Files>();

<Picks\_up>();

<Concerning\_product>();

<Concerning\_shop>();

<Concerning\_comment>();

Complaint ==> {Product\_complaint, Shop\_complaint, Comment\_complaint};

Shop === Sells;

Product --- Sells;

Product ==> Belongs;

Category --- Belongs;

Manufacturer --- Produces;

Product ==> Produces;

Category --- Is\_parent\_of [parent];

Category --- Is\_parent\_of [child];

Order\_item ==> Involves;

Product --- Involves;

Customer --- Places;

Order\_item ==> Places;

Refund\_request ==> Associates;

Order\_item --- Associates;

Employee --- Handles;

Refund\_request ==> Handles;

Review ==> Regarding;

Order\_item --> Regarding;

Customer--- Writes\_review;

Regarding ==> Writes\_review;

Reply ==> Replies\_to;

Review --- Replies\_to;

Customer--- Writes\_reply;

Replies\_to ==> Writes\_reply;

Coupon --> Applies\_to;

Order\_item --> Applies\_to;

Customer--- Uses;

Applies\_to ==> Uses;

Customer--- Files;

Complaint ==> Files;

Employee --- Picks\_up;

Complaint --> Picks\_up;

Product\_complaint ==> Concerning\_product;

Order\_item --> Concerning\_product;

Shop\_complaint ==> Concerning\_shop;

Shop --- Concerning\_shop;

Comment\_complaint ==> Concerning\_comment;

Review --- Concerning\_comment;

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**ERD (simplified) code:**

[Shop](shop\_id\*);

[Product](product\_id\*);

[Manufacturer](manufacturer\_id\*);

[Category](category\_id\*);

[Employee](employee\_id\*);

[Customer](user\_id\*);

[[Order\_item]](order\_id\*);

[Refund\_request](refund\_request\_id\*);

[Review](review\_id\*);

[Reply](reply\_id\*);

[Coupon](coupon\_id\*);

[Complaint](complaint\_id\*);

[Product\_complaint]();

[Shop\_complaint]();

[Comment\_complaint]();

<Sells>();

<Belongs>();

<Produces>();

<Is\_parent\_of>();

<<Involves>>();

<Places>();

<Associates>();

<Handles>();

[<Regarding>]();

<Writes\_review>();

<Writes\_reply>();

[<Replies\_to>]();

[<Applies\_to>]();

<Uses>();

<Files>();

<Picks\_up>();

<Concerning\_product>();

<Concerning\_shop>();

<Concerning\_comment>();

Complaint ==> {Product\_complaint, Shop\_complaint, Comment\_complaint};

Shop === Sells;

Product --- Sells;

Product ==> Belongs;

Category --- Belongs;

Manufacturer --- Produces;

Product ==> Produces;

Category --- Is\_parent\_of [parent];

Category --- Is\_parent\_of [child];

Order\_item ==> Involves;

Product --- Involves;

Customer --- Places;

Order\_item ==> Places;

Refund\_request ==> Associates;

Order\_item --- Associates;

Employee --- Handles;

Refund\_request ==> Handles;

Review ==> Regarding;

Order\_item --> Regarding;

Customer--- Writes\_review;

Regarding ==> Writes\_review;

Reply ==> Replies\_to;

Review --- Replies\_to;

Customer--- Writes\_reply;

Replies\_to ==> Writes\_reply;

Coupon --> Applies\_to;

Order\_item --> Applies\_to;

Customer--- Uses;

Applies\_to ==> Uses;

Customer--- Files;

Complaint ==> Files;

Employee --- Picks\_up;

Complaint --> Picks\_up;

Product\_complaint ==> Concerning\_product;

Order\_item --> Concerning\_product;

Shop\_complaint ==> Concerning\_shop;

Shop --- Concerning\_shop;

Comment\_complaint ==> Concerning\_comment;

Review --- Concerning\_comment;

https://www.comp.nus.edu.sg/~cs2102/ERD/