Database Design Assignment Part B

## B.1. Overview of the case study in at most five sentences (From part A)

Steampowered.com is an online gaming network which allows users to play games, individually and as a multiplayer game, once they register and login. The products available for purchase are games, music and downloadable content. Products need to be purchased from one of the valid payment methods in order to be accessed and the user can choose to purchase the game for another user as a gift. Additionally to that function, products can also be refunded through a single transaction at a time.

B.2. Revised Business Rules & Assumptions

Revised Business Rules (Edit after asking marker for which ones to change) :

1. An account is created when the user submits their email address, address and country of residence and uses the CAPTCHA checkbox.
2. Every User is differentiated by their User_Name, and have the attributes of UserFirstName, UserLastName, UserEmailAddress, UserPassword, UserCountry and UserPhoneNumber.
3. Settings for the user to update for our security and privacy reasons include payment details, phone number, and family settings.
4. Payment of any items can only be proceeded after the user re-enters their passwords and by using ONE of the valid payment methods available.
5. A customer can add as many items as they want into cart.
6. A game can have many subcategories for the customer to filter.
7. Every HomePage is uniquely identified by its HomePage_Name, and has the attributes Game_Name and About_Text.
8. Every Transaction is uniquely identified by its Confirmation_Code, and has the attributes purchaser_ID, recipient ID and Total_Cost. It also has the FK of Product_Name.
9. Every Product is uniquely identified by its Product_Name, and has the attributes ProductDescription, ProductDeveloperName, ProductFranchiseName, ProductPublisherName.
10. The different Game are differentiated by their Product_Name and have the attributes of Languages and SystemRequirements.
11. The different Downloadable Content(DLC) are differentiated by their Product_Name.
12. The different Music are differentiated by their Product_Name, and have the attributes of Artist_Name, Composer_Name, Label_Name and Track_List.
13. Every User can access many HomePages, but every HomePage can have only one user.
14. Every User can have many transactions, but every transaction must have at least one User as purchasing a gift would involve two or more users.

15. Every Transaction must only have one product, but every product can be in many transactions.
16. Game, Downloadable Content(DLC), and music are all subtypes of Product.

17. Refund is uniquely identified by Transaction's FK, Confirmation_Code, and it's own unique Refund_ID. It also has the attributes of the FK of User, User_Name, the FK of User, Recipient ID, the Total_Cost of the transaction, and the FK of product, Product_Name.
18. A single transaction can be refunded at a time, but each refund must have one and only one an associated transaction.
19. Every User can own many Products, and each product can be owned by many users, so the relation is stored in the Date_Owned entity.
20. Date_Owned has the FK of User and Product, User_Name and Product_Name, and the date of ownership as the entire unique identifier.

B.3. ERD
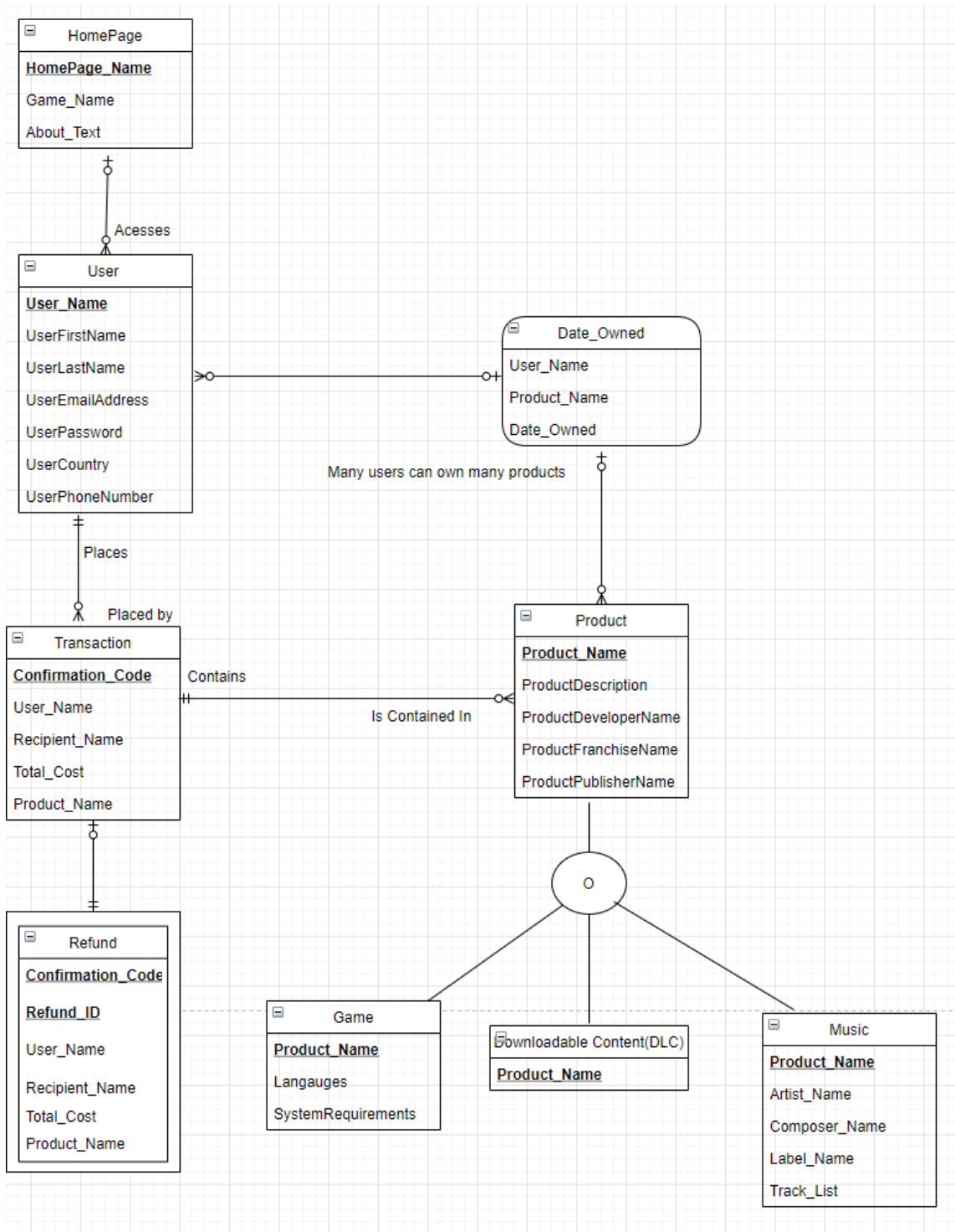
B.4. Justifications of the ERD based on the business rules and/or assumptions.

Justification related to User's attributes
- BR1: An account is created when the user submits their email address, address and country of residence and uses the CAPTCHA checkbox.
- BR2: Every User is differentiated by their User_Name, and have the attributes of UserFirstName, UserLastName, UserEmailAddress, UserPassword, UserCountry and UserPhoneNumber
- BR3: Settings for the user to update for our security and privacy reasons include payment details, phone number, and family settings

Justification related to HomePage's attributes
- BR7: Every HomePage is uniquely identified by its HomePage_Name, and has the attributes Game_Name and About_Text

Justification related to Transaction's attributes
- BR8: Every Transaction is uniquely identified by its Confirmation_Code, and has the attributes purchaser_ID, recipient ID and Total_Cost. It also has the FK of Product_Name

Justification related to Product's attributes
- BR9: Every Product is uniquely identified by its Product_Name, and has the attributes ProductDescription, ProductDeveloperName, ProductFranchiseName, ProductPublisherName

Justification related to Game's attributes
- BR10: The different Game are differentiated by their Product_Name and have the attributes of Languages and SystemRequirements

Justification related to Downloadable Content(DLC)'s attributes
- BR11: The different Downloadable Content(DLC) are differentiated by their Product_Name

Justification related to Music's attributes
- BR12: The different Music are differentiated by their Product_Name, and have the attributes of Artist_Name, Composer_Name, Label_Name and Track_List

Justification related to HomePage - User relations and cardinality
- BR13: Every User can access many HomePages, but every HomePage can have only one user

Justification related to User - Transaction relations and cardinality
- BR14: Every User can have many transactions, but every transaction must have at least one User as purchasing a gift would involve two or more users

Justification related to Transaction - Product relations and cardinality
- BR15: Every Transaction must only have one product, but every product can be in many transactions

Justification related to Product - Game relations and cardinality
- BR16: Game, Downloadable Content(DLC), and music are all subtypes of Product

Justification related to Product - Downloadable Content(DLC) relations and cardinality
- BR16: Game, Downloadable Content(DLC), and music are all subtypes of Product

Justification related to Product - Music relations and cardinality
- BR16: Game, Downloadable Content(DLC), and music are all subtypes of Product

Justification related to Refund's attributes
- BR17: Refund is uniquely identified by Transaction's FK, Confirmation_Code, and it's own unique Refund_ID. It also has the attributes of the FK of User, User_Name,

the FK of User, Recipient ID, the Total_Cost of the transaction, and the FK of product, Product_Name

Justification related to Transaction - Refund relations and cardinality

- BR18: a single transaction can be refunded at a time, but each refund must have one and only one an associated transaction

Justification for the relation between User and Product (and the associative entity, Date_Owned)

- BR19: Every User can own many Products, and each product can be owned by many users, so the relation is stored in the Date_Owned entity

Justification for the attributes of Date_Owned

- BR20: Date_Owned has the FK of User and Product, User_Name and Product_Name, and the date of ownership as the entire unique identifier.
- Assumption, since products can be refunded, the date of ownership is needed to uniquely identify each instance of ownership of a product by a user