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Database Design Assignment Part A

A.1. Case Study Overview

SteamPowered.com is an online platform that allows users to play and discuss games. Registered users can simply sign in with their username and password. The platform requires new users to sign up with their personal details, including email address, country of residence and agreeing to the terms and conditions, which ensure all users are over 13. **(See Figure Below)**

The screenshot shows the 'CREATE YOUR ACCOUNT' form on a dark-themed website. At the top right is the Steam logo. The form fields include 'Email Address' (redacted), 'Confirm your Address' (redacted), 'Country of Residence' (set to 'Australia'), and a reCAPTCHA section with a checkbox labeled 'I'm not a robot'. Below this is a terms and conditions checkbox labeled 'I am 13 years of age or older and agree to the terms of the Steam Subscriber Agreement and the Valve Privacy Policy.' A large blue 'Continue' button is at the bottom.

CREATE YOUR ACCOUNT

Email Address

Confirm your Address

Country of Residence

Australia

I'm not a robot

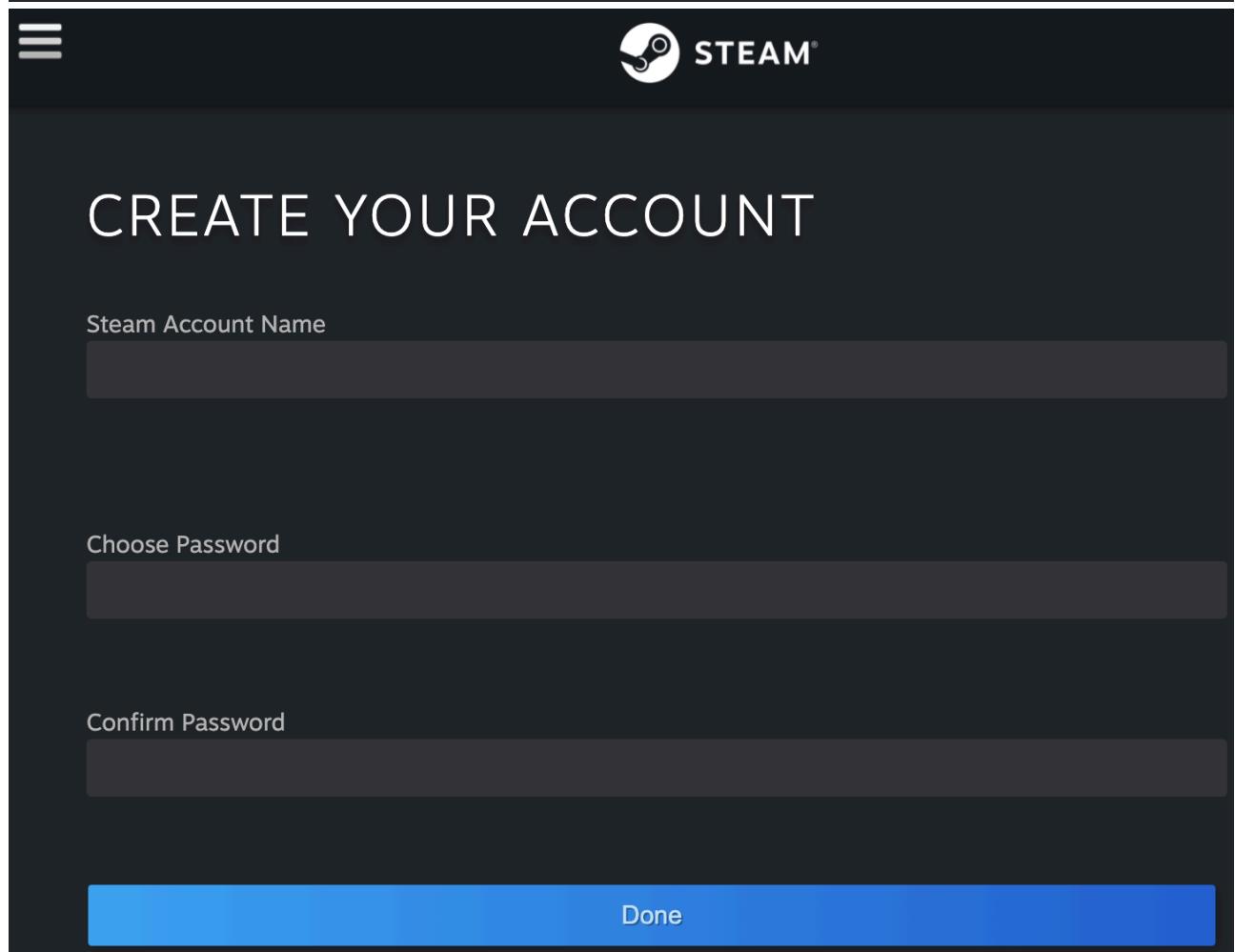
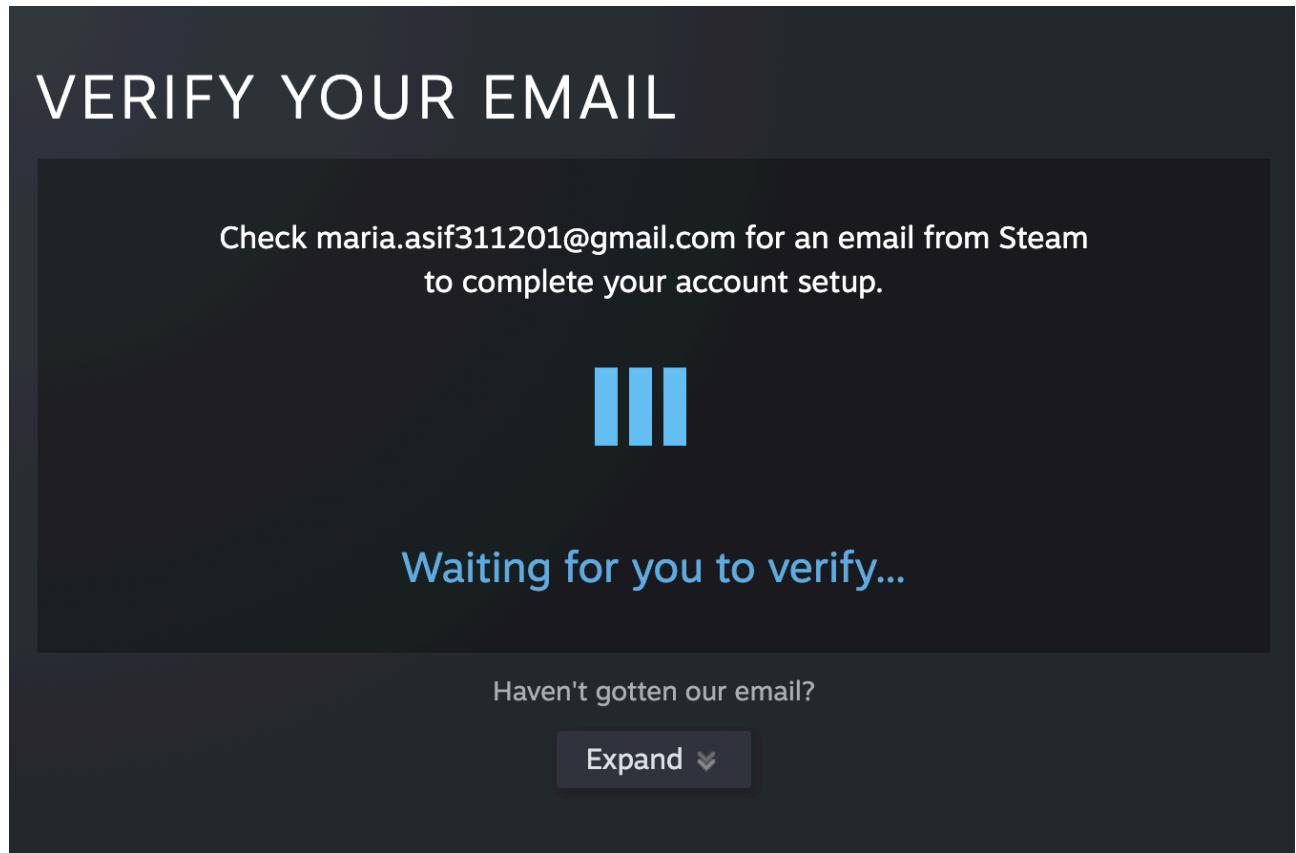
reCAPTCHA

Privacy - Terms

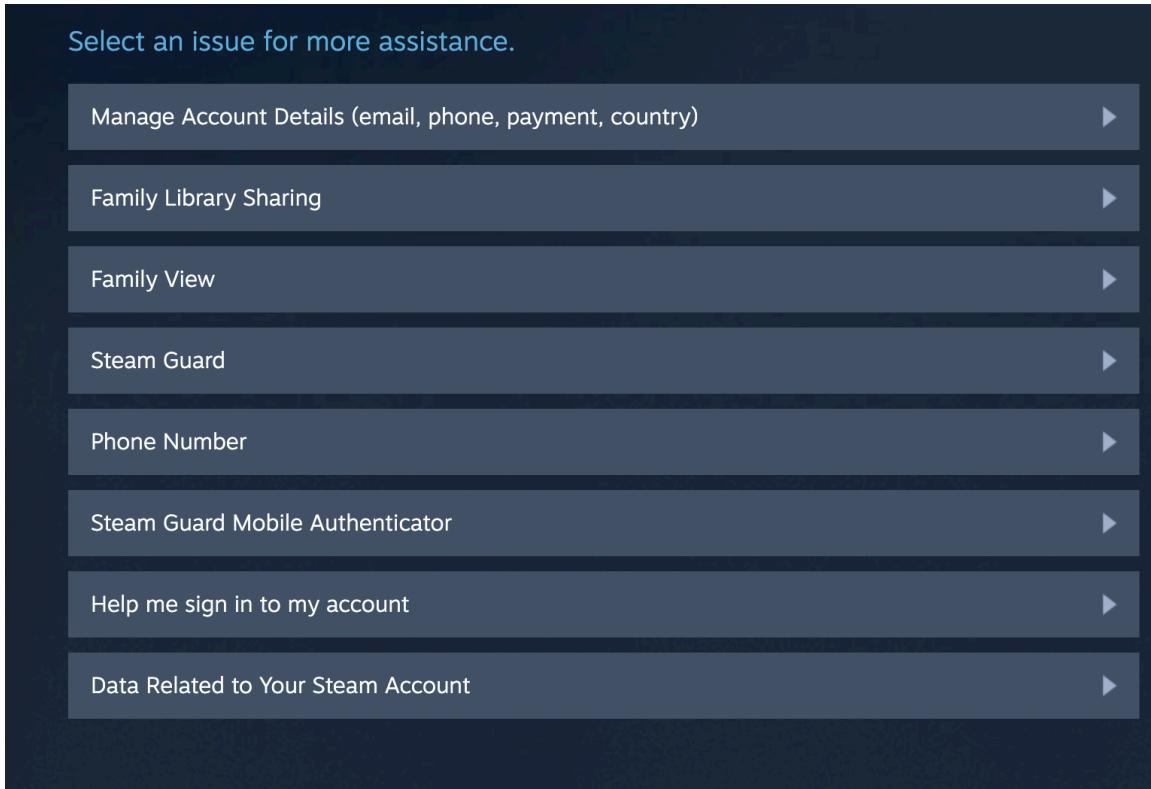
I am 13 years of age or older and agree to the terms of the Steam Subscriber Agreement and the Valve Privacy Policy.

Continue

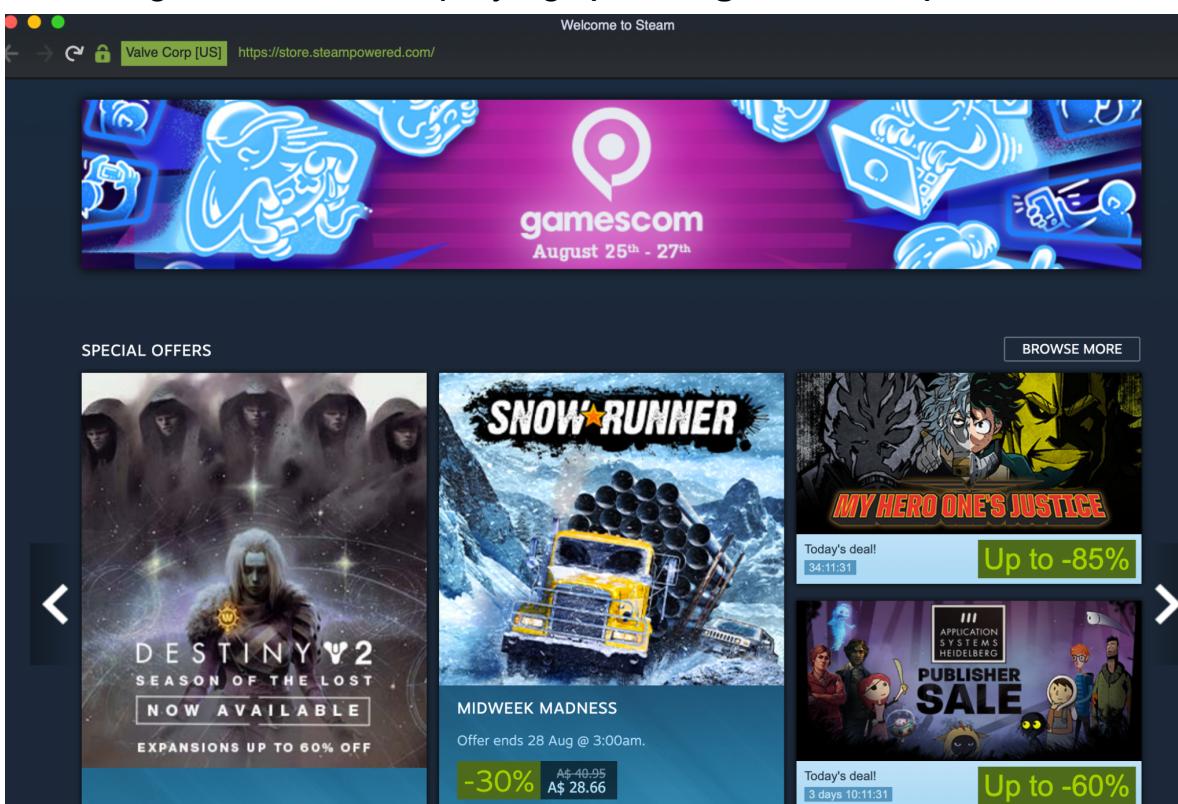
After signing up, users are asked to verify their email to complete their account setup. Then, users must select a unique username and a password for their account. **(See Figures Below)**



Following this, Steam requires users to install the application. It also provides users with information about how many users are online and how many users are playing. After users have installed the application, they must sign in and are encouraged to update their account details to start buying and playing games. These details include payment methods, phone number for security purposes, family settings, which authorises other members of a user's family to play. (**See Figure Below**)



Users have access to the Steam store, which lists the various games that can be purchased. As an incentive Steam lists special offers at the top, to encourage users to start playing. (**See Figure Below**)



Prices are shown clearly to users and when a user wishes to purchase the game, they can easily click ‘Add to Cart’. Then, they have the option to either keep shopping for games or checkout. When users view their shopping cart, they are given the option to ‘Purchase for Myself’ OR ‘Purchase as a Gift.’ (**See Figure Below**). Users are also informed that their digital goods will be available to them on Steam after their purchase.

All Products > Your Shopping Cart

YOUR SHOPPING CART

YOUR ITEM'S BEEN ADDED!

	Totally Accurate Battle Simulator	Windows	Mac	A\$ 28.95	Remove
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Estimated total¹ A\$ 28.95

Is this a purchase for yourself or is it a gift? Select one to continue to checkout.

[Purchase for myself](#) [Purchase as a gift](#)

¹ All prices include VAT where applicable

[Remove all items](#)

[Continue Shopping](#)

If customers choose to purchase the game for themselves or for someone else, they are directed to re-enter their password on their account. If customers are purchasing for themselves, they can simply select their payment method and proceed to download their purchase. (**See Figure Below**)

PAYMENT METHOD

Please select a payment method

PayPal

If your billing address is not in Australia, please [set your store region preference](#)

Save my payment information so checkout is easy next time

You'll have a chance to review your order before it's placed.

[Continue](#)

PAYMENT METHODS

We accept the following secure payment methods:

When you submit your payment information your data is protected by Secure Socket Layer (SSL) technology certified by a digital certificate.

If customers choose to ‘Purchase as a Gift,’ they must select the friend they would like to gift the game to. They must also enter the recipient’s email to ensure they are notified of the gift, as well as a message and the digital delivery time. After this, the user can select a payment method and review their purchase before it is finalised.

The screenshot shows the Steam gift delivery process. At the top, there are four tabs: 'Gift Delivery' (which is highlighted in blue), 'Gift Note', 'Payment Info', and 'Review + Purchase'. In the top right corner, the Steam logo is visible. Below the tabs, a yellow banner displays the text: 'Please select a friend to deliver your gift directly through Steam.' To the right of this banner, a section titled 'YOUR GIFT'S ARRIVAL' contains the text: 'Your gift will be delivered digitally using the method you choose.' On the left side of the main area, there is a heading 'SEND IT NOW:' followed by the instruction 'Select a friend to receive your gift.' Below this, a note states: 'Note: This option also sends an email message, to be sure your friend sees your gift as soon as possible.' A large rectangular box labeled 'Your friends' is present, with a smaller orange-bordered rectangle overlaid on it. At the bottom of the screen, there is a dark button labeled 'Schedule delivery...'. The overall background is dark blue.

A.2. Database Functions

For a customer to get access to their account - A customer should “register”, “verify” and “login”

For a customer to access to a game or to provide another use access to a game - A customer should “login”, “add items to cart”, and “pay”

For a customer to play a game - A customer should “login”, “select game” and “play”

For a customer who forgot password - A customer should “select forgot password” and “verify”

For a customer to deactivate their account - A customer should “login” and “delete account”

For a customer to find their item - A customer should “search”, “filter sort by”, “filter price”, “filter tag”, “filter type”, “filter number of players”, “filter feature”, “filter VR support”, “filter OS”, and “filter language”.

For a customer to add to wishlist - A customer should “add items to wishlist”

For a customer to delete item from wishlist - A customer should “delete item from wishlist”

For the system to add account - It should “check details”, “confirm verification” and “provide access”

For the system to identify user - It should “locate username” and “locate email”

For the system to proceed a payment - It should “calculate total items”, “calculate items costs” and “verify payment”

For the system to reveal search results - It should “filter” and “show”

A.3. Data Requirements

User: A user is the account that a customer uses to purchase, download, modify or play games on. Whilst both email_address and account_name have to both be unique, account_name is used as a Primary Key as email can be changed.

- User Attributes: account_name (NOT NULL), email_address (NOT NULL), (hashed/salt_n_peppered)_password (NOT NULL), country_of_residence (NOT NULL), Phone number

Transaction: A transaction refers to the purchasing of a Game/DLC/Sound-track by a user. It contains a confirmation_code which is used as a primary key, the account_name which is the foreign key from the User database and the total_cost of the purchase

- Purchase Attributes: confirmation_code, account_name, total_cost

Homepages: Homepages are a new data type that refers to a page created by a developer team, publisher team or team that manages a franchise. They contain information and allow users to receive updates about the page. The page can also be linked to a youtube/twitch channel. It uses a homepage_name as a PK which can be associated with Games and Tags as a FK

- Homepage Attributes: homepage_name (NOT_NULL), game_name, about_text

Product: A product refers to something a user can purchase in the steam store. It is the supertype of games, DLC and music. It uses the product_name as the PK. developer_name, franchise_name and publisher_name are all FKS from either tag_name or hompage_name

- Product Attributes: product_name (NOT_NULL), description, developer_name (NOT NULL), franchise_name, publisher_name

Game: A game refers to a downloadable game that a user purchases and has attributes describing the physical properties of the game. product_name is used as a PK.

- Unique Game Attributes (not including supertype attributes): languages (NOT NULL), system_requirements (NOT NULL)

DLC: DLC stands for downloadable content. It is a subtype of product, so product_name is used as a PK

- Unique DLC Attributes (not including supertype attributes): (has no unique attributes)

Music: Music is a product that usually refers to the soundtrack of a game. Users can purchase music to download and listen to. Music is a subtype of product, so uses the product_name as a PK.

- Unique Music Attributes (not including supertype attributes): artist_name, composer_name, label_name, track_list

A.4. Business Rules

1. An account is created when the user submits their email address, address and country of residence and uses the CAPTCHA checkbox.
2. The account is only verified after the user verifies it through the automated email
3. Users are uniquely identified by their email address, account names and password
4. It is mandatory for the user to install the application in order to access the features.
5. Settings for the user to update for our security and privacy reasons include payment details, phone number, and family settings.
6. 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
7. The games are differentiated by their title, system requirements, genre, developer, publisher, release dates and price
8. A game can have multiple features
9. A customer can add as many items as they want on their wish-list
10. A customer can add as many items as they want into cart
11. A game can have many subcategories for the customer to filter