

Application Concept

Introduction

GameDB is a game info app developed in the IOS platform that aims to provide latest industry news and help gamers build their own virtual game library in order to organise all their games and progression in both local and cloud.

Main focus

The main focus of this application is to integrate news function and game collection function together to allow users to manage their game virtually and read the game articles in one single application. This saves users time on switching between different applications and thus improves the overall user experience.

More importantly, Gamedb introduces cloud servers to keep users' data which allows them to manage their virtual library from any device without synchronisation issues. It also provides local storage for people who did not want to register an account with the application. This provides flexibility with different user groups as people who only use news functions will not be forced to register an account for using the application.

Target Audience

The intended target audience of this application includes gamer and game industry practitioners. Since the app provides general information and news regarding games, any people who could comprehend English can access this application without any issues.

A major issue addressed in this application is to provide an integrated solution for users to manage their virtual game library and read game articles at the same time. This saves time and phone storage for users as they no longer need to switch between different applications for reading articles and managing game libraries.

As mentioned at the beginning, the application provides game related info to any people who have interest in games. Thus, the user interface focuses on UX experience and provides simple navigation logic which allows users to get start on the app very quickly.

Key Functionality

The app contains the following key functionalities which brings better user experience to targeted users.

- News

The news section of the app provides the latest news about the game industry. Users can read the article and add the interested one into their bookmark for future reading.

- Gesture handling

In order to provide intuitive user experience, gesture handling is added in the game library management section and gallery section. Users can swipe the gallery to view related videos and screenshots of the game. The swipe function in the game library/ wish list allows the user to remove the game from the existing list.

- Cloud Library

The cloud service ensures users never lose their personal game library if they register the account. Users can view their library item from any device without importing and exporting manually using itunes. It greatly reduces the hassles of the manual process.

- Notification system

For hardcore player who want to get their game at release date, the app implement local notification system which notice users for their chosen game at release date.

- Popular Game List/ Video page

In order to give simple guidance to casual players who do not spend a long time on researching game news. The ranking system lists popular games released in recent time with video and short description. This saves time for casual users to find their desired game on the internet.

- Search functionality

Since there are many games that exist in the market. We provide keyword search functionality for users who want to add their desired game into wishlist/favourite list.

Innovation

Although there are many game apps already published in the current app market, this project provides an integrated solution for both news feeder and game library. The following points outline the innovative functions of this app compared to others existing in the market.

- This app integrates game news and game collection in one app which saves users effort on managing different apps.
- The ability to use gesture handling for managing game libraries reduces the learning curve and improves the user experience.
- Each game is provided with its video footage and screenshot which gives users an indication of the game experience and saves their time on searching related information online.
- The popular game list provides general information for casual players who want to find a new game to play.
- Since the app has a cloud server running background, users can retrieve their game library info on any device they have without manual process. These features minimize the hassle people encounter during manual migrating their game library.

Competition

There are two competitor apps currently published in the app store that pose a threat to GameDB. They are respectively Video Games Database scanner and CLZ games.

Video Games Database scanner Key Functionality:

- Provides virtual game library for user to add game via searching at online database
- Users can add games via scan/manual input barcode.
- Inside game page, users can perform following action:
 1. check current price on ebay
 2. Add last played date
 3. Leave custom comment to the game(This more like a local notes)
 4. Check game details(genre,IGN scores etc) and platform details(Players,graphics)
 5. Adding purchase price/date, completed date, storage location for personal record.(All these data are stored locally not remotely)
- Users can add upcoming games into their wish list and manually set the release date on it. After game is released user can move game from wish list to library

Video Games Database scanner Strength:

- Provides users a locally stored virtual library that allows them to organise their games in one place.
- Allow users to check the latest price of the desired game at any time.
- Allow users to add game progression detail so that they can track it along game playing.
- Save users time for building the virtual game library by allowing to add games via manually input/scan barcodes.

Video Game Database scanner Weakness:

- The UI design did not follow current apple human interface guidelines. It is extremely outdated and difficult to navigate for new ios users.

- The app requires in-app purchase to unlock all functionality including edit game detail, unlimited scanning, bulk scanning, offline viewing etc.
- The wish list and game library are stored only locally which is very insecure since the data will be lost if the app is deleted.
- Game database does not provide sufficient detail on new release games. It requires the user to manually input the release date for the wish list item.
- App did not receive any update for one year, some functionalities are buggy.
- Navigation is not intuitive, the hierarchy logic is poorly designed.

CLZ Key functionality:

- Provides virtual game library for user to add game via searching at online database
- Users can add games via scan/manual input barcode
- Inside each game page, user can view/perform following action
 1. Checking the current price of selected game for different condition(second hand or brand new)
 2. Users can give score to game
 3. Each game description page provide short description and game trailer
 4. Given information on game rating
 5. Adding purchase price/date, completed date, storage location for personal record.
 6. Adding sort title for each game to for easier sorting
 7. Game information, contains genre, platform, publisher, author.
- Allow users to synchronize their library to the cloud, preventing data loss upon app corruption or uninstallation.
- Calculate the value of all games in the library based on live price data. Total prices are divided into several categories, separate by platform.
- Users can add upcoming games into their wish list and manually set the release date on it. After game is released user can move game from wish list to library

- Users can create multiple game collections

CLZ Strength:

- Allow cloud backup for game library
- Provide game trailer in each game description page
- Users can easily calculate the value of their games without searching each game independently
- Users can check the current price of selected game in different condition
- Have the ability to create multiple game collections. Giving more control on game collection management.

CLZ Weakness:

- CLZ requires a subscription to use their service. Free account could not use any function.
- The UI design of CLZ is complicated. It is difficult for new IOS users to perform their desired action.

Gamedb has the following features improving the existing functionality of CLZ and Video Game Database scanner. In addition to the improvements over existing functions in the above two apps, GameDB introduces its unique functionalities.

1. Game description page provides much more detail compared to CLZ and Video Game Database scanner. Each page provides detailed information about the game as well as video trailer and screenshot.
2. Users can view the latest news related to the game industry.
3. Users have the ability to store data in the cloud or locally.
4. The app is completely free and requires no subscription or in-app purchase.
5. A much user-friendly UI design which follows latest apple HIG

6. Games are categorized in more human-centric ways so that users can find games more easily.

Feasibility and Technology

Persistent Storage

The design of this app requires use of core data to store users' game library locally if they do not choose to create an account for cloud saving. The app creates a data model to organise entities relationships and configurations.

Web services

This app heavily relies on the IGDB api and gamespot to fetch required game/news information from the database/internet. The fetched data is returned as json format which is then converted into swift collection type(array,dictionary,etc). Both api require authentication, but they are free for noncommercial use. For IGDB api, the authentication key is embedded in the header file while gamespot api authentication is embedded in parameters.

Firebase Cloud platforms

Firebase is used to store user's game library data into cloud drive. By doing so, users can access their store data on any device with their account logged in.

Firebase also supports google authentication to provide better data security. The implementation of Firebase cloud platforms would be very similar to persistence storage as they both serve as data storage for user information.

Firebase requires additional authentication checks since the database requires fetching data based on corresponding user details.

Local notification

Gamedb sends local notifications to users when items in the wishlist are about to be released. Users could also set a date for sending notification on items in the wishlist

list before its release. In addition to wishlist item notification, apps will push news feeds in the notification area, the pushed news are generated based on popularity and news will push in the time interval chosen by users.

Audio/Video Framework:

This app uses the youtube ios helper package from iframe player api to embed a youtube video player into the app. The package uses youtube video id to identify which video to play, it is more high level compared to low level video framework from the foundation.

Gesture Handling:

To reduce the learning curve on using the app, gesture handling is introduced to manage the game library in an efficient way. Users can swipe on the selected game item to remove from the library without further interaction. Gesture handling uses gesture recognizer from UIKit to handle the swipe and tap events in the table view. Continuous gesture recognizer will be implemented in the app due to users may repeatedly delete games from their list.

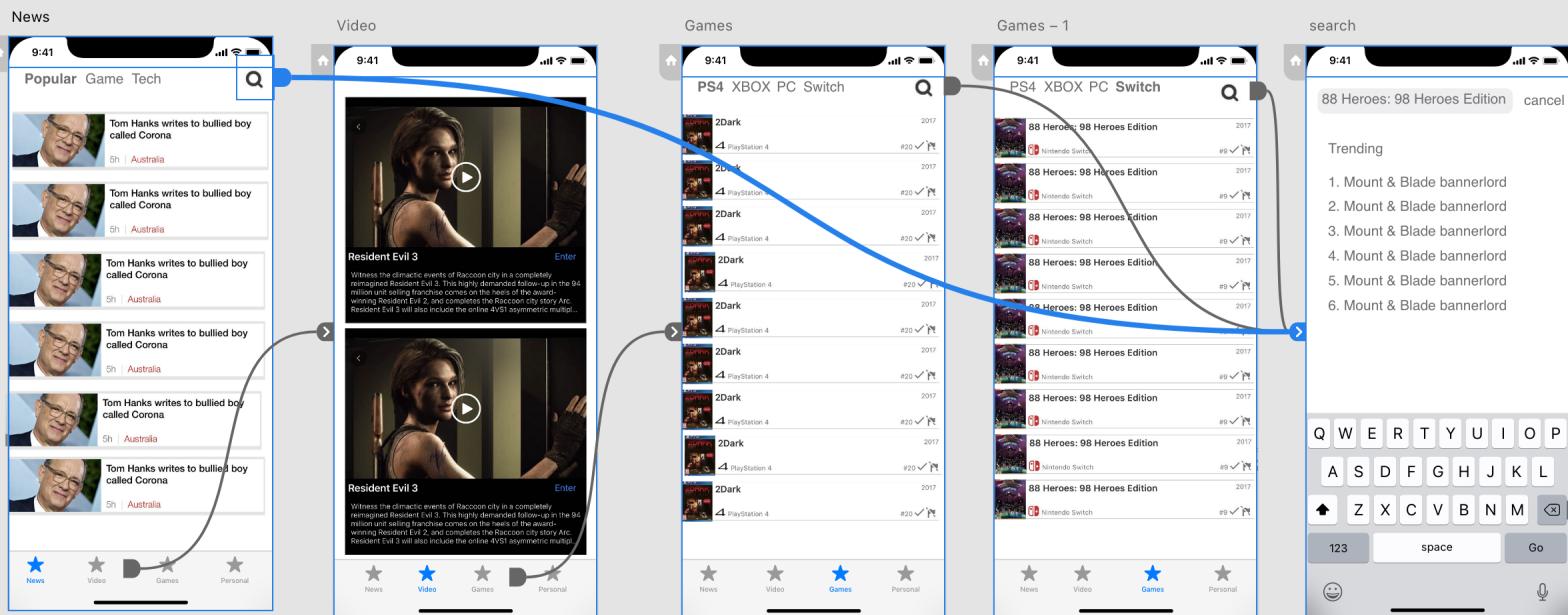
Overall, Gamedb uses several Apple built-in frameworks to perform foundation functionality. This includes Foundation Framework, UIKit and SwiftUI. It also uses some external tech stack to perform data fetching and cloud saving. This includes fire database, IGDB API and youtube ios helper.

Interface Design and Storyboard

According to the project requirement and HIG guidelines, the app is designed to have flat navigation which allows users to switch between multiple content categories using page view controller and tab bar. The use of tab view and page view enables a reuse of UI design for each page, this improves the consistency between different categories pages and thus reduces the learning curve for users to use the app. The app will have the following screens as MVP products.

- News(UITableView, pageView)
- Video
- Games
 - Game info page
- Search
- Authentication page
 - Favourite List
 - WishList

Below is the overview of the visual storyboard for the transition between each page view and tab view.

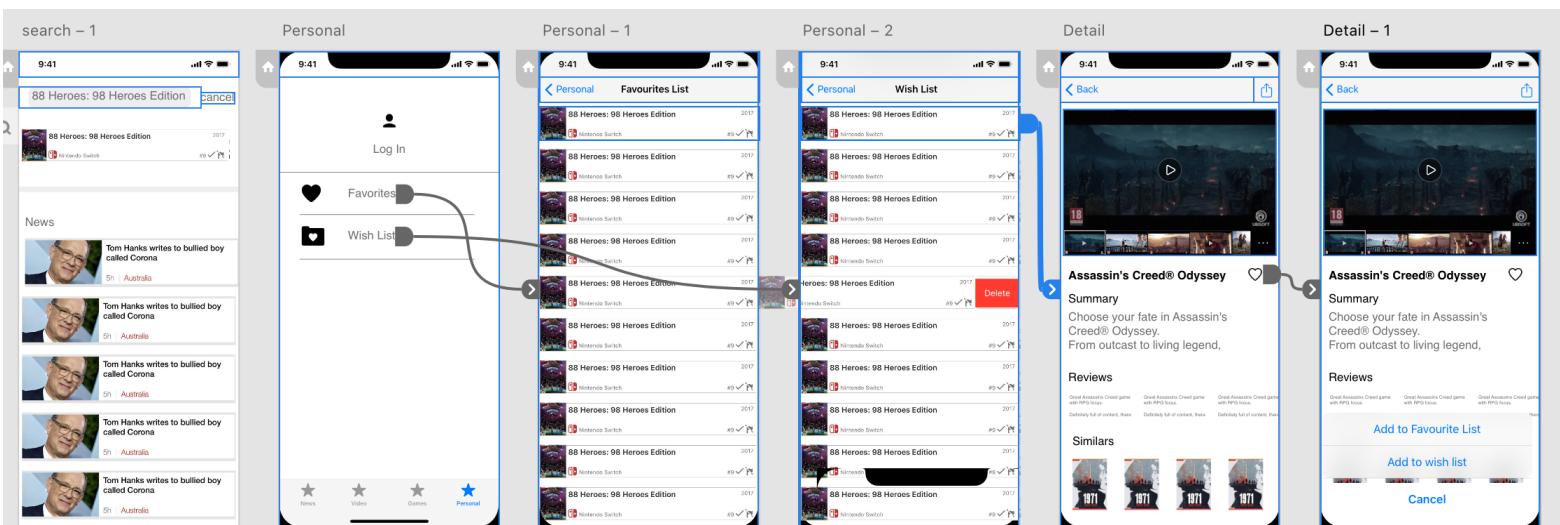


The above storyboard demonstrates the transition between news, video, game(ps4 game and switch game) and search tab. Flat navigation in the design removes the hierarchy order between each view which makes use of application become initiative and low learning curve. Users can switch

between each view with simple navigation from the tab bar or page button on the top. The search button also allows the user to initiate a search from either game tab or news tab. The page control is used here because there are multiple pages of the same type content(eg, different types of news). It follows the guidelines since all three pages implemented here do not have any hierarchical relationship. In addition, only 3 pages used on this page controller also meets the requirement of not displaying too many pages.

The tab bars used at bottom are strictly used for navigation purposes. The tab bar is implemented here to present peer categories of content or functionality. It flattened the information hierarchy and provided access to several peer information categories at once. Four tabs are used to ease the useability of the app since it did not cause truncation nor disconnected for the interface.

Zoomed view for each transition between each tab view will be attached in appendix for reference and formatting purpose.



The second half storyboard demonstrates the transition between personal tab, favorite list, wish list, game detail view and searched result. The Search result will display the game and news related to the input string, the placeholder news image is just used for demo purposes. In addition, wish list and favorite list uses table view with custom cell setup to display game pictures accompanied by name and platform. In wishlist and favorite list gesture control is used here for convenience, users can delete items via swiping. The game description page provides two scroll views to store screenshot and footage trailer of the game together and similar game in the

bottom. The favorite button brings up an action sheet to let the user choose the list they want to add.

Overall the design of the application is to provide non-hierarchy navigation and adopts HIG practice from Apple to best fit the needs of users and requirements from the Apple store. The symbol used in the ui is from the sf symbol for consistency and removes the need for the user to relearn the meaning of each symbol.

Scope and Limitations

GameDB aims to provide integrated and advanced solutions to people who are interested in the game industry and game. To achieve this goal, a four tab page with its corresponding functionality is the minimum requirement. The following list indicates the minimal viable product of this project.

Key Functionality(MVP):

- Authentication
 - Use firebase to store user detail
 - Authentication with email address
- Search functionality
 - Ability to query data using api for both games and news
- Game detail page
 - Using scroll view to demonstrate video and photo
 - Description is fetched from api
- News
 - The app populate news from gamestop api and sort it via date and popularity to serve as news feeder to users
 - Users able to search news using keywords in search bar
- Game Storage Library
 - Users able to store their interested game into wishlist/favorite list in local or cloud
 - The app sends notifications on items included in wishlist when the release date arrives.
- Video
 - User should be able to watch video at both description page and video tab with youtube integrated player

Although the project strives to deliver good user experience and functionality, the time constraints remain some improvements in future. Following is some limitation the current design of the project had.

Limitation

- News
 - The current news section only uses gamespot as the only source, it could provide biased opinion to users. In future iteration, more news resources will be included using web crawlers.
- Social media
 - There is a limited option for users to share their game library and opinion at the current stage. Post function similar to instagram is planned in future updates when there is more time and resources provided.
- Authentication
 - The current version of the app does not support login via other social media accounts for security purposes(google/facebook/twitter account) Future updates will address this limitation.

Estimated Project Timeline and Potential setback

Potential setbacks

Setbacks	Possibilities
Api failure due to api provider stop service/upgrade their break point	low
Source code lose	low
Inaccurate estimation on development time frame	Medium

Major failure on app functionalities	low
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Timeline

MileStone	Tasks
Milestone 1 - Week9	Completion on core data for temporary user - favorite list/wish list
	News tab implement with full api support
	Games tab implement with full api support
	Game detail page implemented with only text description and video player(testing purpose).
	Gesture handling in favorite list/ wish list implemented
	Implementation of firebase to support account creation(No game data at this stage)
Milestone 2 - Week12	Search function/tab implement and connect with game and news tab
	Integrate core data into firebase
	Implement scroll view inside game detail page
	Video tab implement with full functionality as show in storyboard
Final delivery - week14	Debugging the application
	Optional - adding more news source for news tab (candidate news api)
	Optional - support media account login (google account/facebook/twitter)

Reference

<https://icons8.com/>

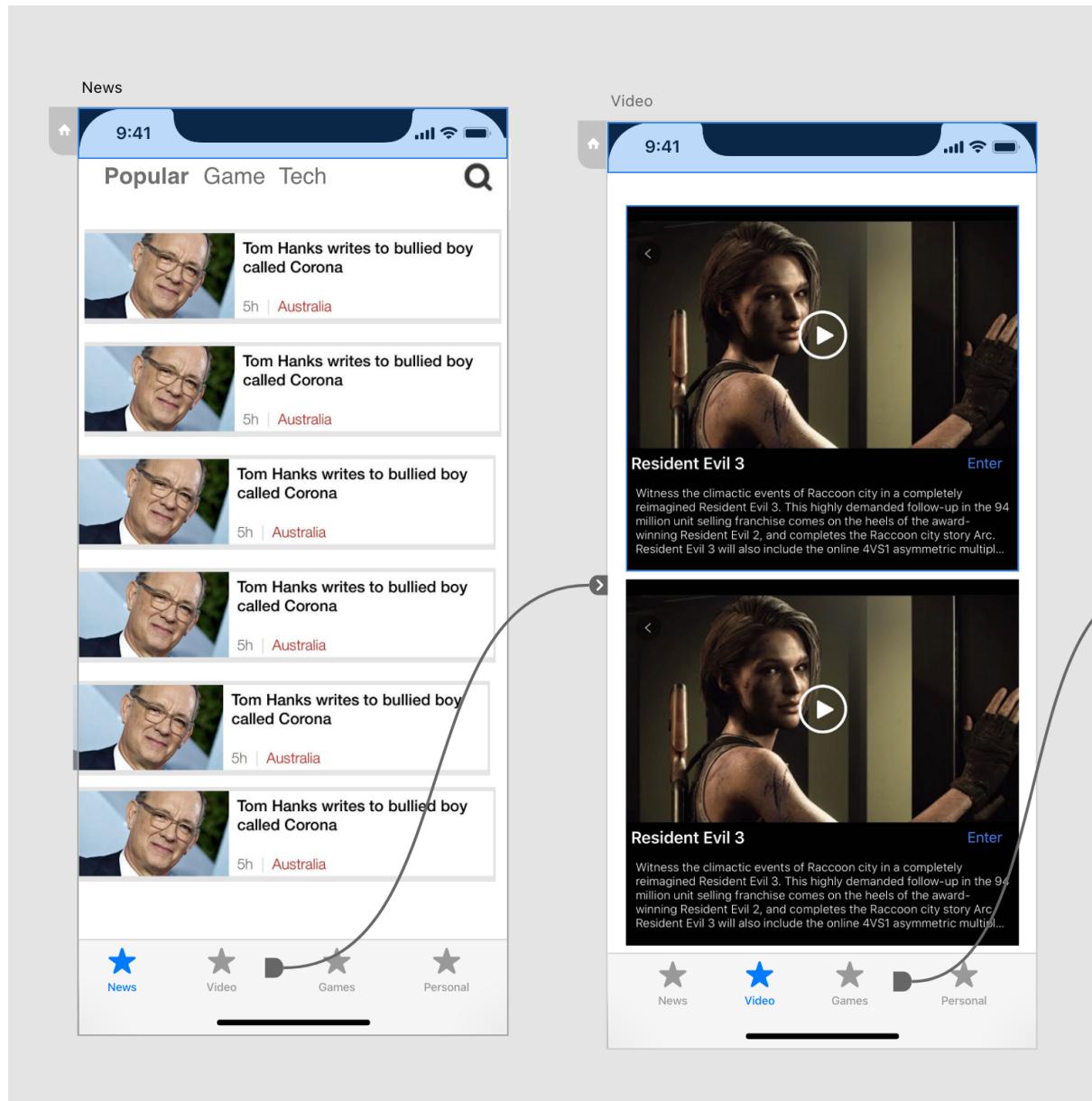
<https://developer.apple.com/design/human-interface-guidelines/>

<https://api-docs.igdb.com/#about>

<https://firebase.google.com/docs/reference/swift/firebasecore/api/reference/Classes>

https://developers.google.com/youtube/v3/guides/ios_youtube_helper

Appendix



Video Screen (Top Left):

- Shows a video thumbnail for "Resident Evil 3".
- Text below the thumbnail: "Witness the climactic events of Raccoon city in a completely remastered Resident Evil 3. This highly demanded follow-up to the 94 million unit selling franchise comes on the heels of the award-winning Resident Evil 2, and completes the Raccoon city story Arc. Resident Evil 3 will also include the online 4v1 asymmetric multipl..."
- Buttons at the bottom: News, Video (highlighted), Games, Personal.

Games Search Screen (Top Middle):

- Search bar: "PS4 XBOX PC Switch".
- Search results for "2Dark": 2Dark (PlayStation 4, 2017), 2Dark (PlayStation 4, 2017).
- Buttons at the bottom: News, Video, Games (highlighted), Personal.

Games Results Screen (Top Right):

- Search bar: "PS4 XBOX PC Switch".
- Search results for "88 Heroes: 98 Heroes Edition": 88 Heroes: 98 Heroes Edition (Nintendo Switch, 2017), 88 Heroes: 98 Heroes Edition (Nintendo Switch, 2017).
- Buttons at the bottom: News, Video, Games (highlighted), Personal.

Games Results Screen (Bottom Left):

- Search bar: "PS4 XBOX PC Switch".
- Search results for "88 Heroes: 98 Heroes Edition": 88 Heroes: 98 Heroes Edition (Nintendo Switch, 2017), 88 Heroes: 98 Heroes Edition (Nintendo Switch, 2017).
- Buttons at the bottom: News, Video, Games (highlighted), Personal.

Search Screen (Bottom Middle):

- Search bar: "88 Heroes: 98 Heroes Edition".
- Text below the search bar: "Trending".
- List: 1. Mount & Blade bannerlord, 2. Mount & Blade bannerlord, 3. Mount & Blade bannerlord, 4. Mount & Blade bannerlord, 5. Mount & Blade bannerlord, 6. Mount & Blade bannerlord.
- Keyboard at the bottom: Q W E R T Y U I O P, A S D F G H J K L, Z X C V B N M, 123, space, Go, emoji, microphone.

News Screen (Bottom Right):

- Search bar: "88 Heroes: 98 Heroes Edition".
- Section: "News".
- List: Tom Hanks writes to bullied boy called Corona (5h | Australia), Tom Hanks writes to bullied boy called Corona (5h | Australia), Tom Hanks writes to bullied boy called Corona (5h | Australia), Tom Hanks writes to bullied boy called Corona (5h | Australia), Tom Hanks writes to bullied boy called Corona (5h | Australia).

This user flow diagram illustrates the navigation and interaction within a mobile application's personal section, specifically focusing on the 'Favorites' and 'Wish List' features.

Personal Screen: The starting point shows a 'Log In' screen. Below it, two main sections are displayed: 'Favorites' (indicated by a heart icon) and 'Wish List' (indicated by a folder icon). A curved arrow points from the 'Wish List' section towards the 'Favourites List' screen.

Personal - 1: Favourites List: This screen lists multiple entries for '88 Heroes: 98 Heroes Edition' (2017, Nintendo Switch). Each entry includes a small thumbnail, the game title, release year, and platform. A red 'Delete' button is located at the bottom right of the list.

Personal - 2: Wish List: This screen also lists multiple entries for '88 Heroes: 98 Heroes Edition' (2017, Nintendo Switch). A red 'Delete' button is visible on the right side of the screen.

Personal - 2 (continued): Wish List: This screen shows the same list of items as Personal - 2, but with a red 'Delete' button placed over the first item in the list.

Personal - 2: Wish List Detail: This screen provides a detailed view of the first item in the list, 'Assassin's Creed® Odyssey'. It includes a large thumbnail image, a summary text: 'Choose your fate in Assassin's Creed® Odyssey. From outcast to living legend,', a 'Reviews' section, and a 'Similar' section showing four related game thumbnails.

Detail - 1: Assassin's Creed® Odyssey Detail: This screen shows the same detailed view of 'Assassin's Creed® Odyssey' as the previous screen, but with a red 'Delete' button placed over the 'Delete' button in the original list.

Detail - 2: Assassin's Creed® Odyssey Detail: This screen shows the same detailed view of 'Assassin's Creed® Odyssey', but with a red 'Delete' button placed over the red 'Delete' button in the previous screen.

Buttons and Labels: Throughout the screens, several buttons and labels are highlighted in red, indicating interactive elements or specific actions being performed.