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Use Case ID:	UC1
Use Case Name:	Fill in Personal Information

Created By:	Soo Yong	Last Updated By:	Soo Yong
Date Created:	11/02/2019	Date Last Updated:	18/02/2019

Actor:	User
Description:	When the user first runs the application, the system will request user input for personal and partner (if exist) information. The application will then save this information and process it for recommending public housing developments to the user after requesting for more information.
Preconditions:	1. Splash screen must have successfully loaded.
Postconditions:	1. The system proceeds to UC 1.1 Fill in Optional Personal Information.
Priority:	High
Frequency of Use:	1. Once each time the user starts up the application. 2. Once each time the user executes UC7 Modify Personal Information.

Flow of Events:	1. Required data has been loaded after splash screen. 2. The system displays a new screen to prompt the user to select their marital status. 3. User selects their marital status. 4. The system prompts the user to enter total number of household members. 5. User enters the total number of household members. 6. The system prompts the user to enter their personal information, such as whether they are first time buyers, their citizenship, age, gross monthly income. 7. User enters their personal information. 8. The system prompts the user to enter their partner's information, such as whether they are first time buyers, their citizenship, age, gross monthly income. 9. User enters their partner's personal information. 10. User taps next to confirm the input from Step 5, 7 and 9. 11. The system transits to the included use case UC1.1 Fill in Optional Personal Information for the user to enter additional information.
Alternative Flows:	AF-S8: If user selects 'Single' in Step 3 1. The segment for Partner's Information will be greyed out and accepts no input. 2. User taps next to confirm input from Step 5 and 7. 3. Goes to step 11.
Exceptions:	-
Includes:	-
Special Requirements:	1. All user input must be stored locally on the device during the session. 2. All user input must be destroyed upon exiting the session.

Assumptions:	1. The system requires input from the user to estimate the financial capability of the user and subsequently display recommended housing options.
Notes and Issues:	-

Use Case ID:	UC1.1		
Use Case Name :	Fill in Optional Personal Information		
Created By:	Soo Yong	Last Updated By:	Soo Yong
Date Created:	11/02/19	Date Last Updated:	18/02/2019

Actor:	User
Description:	After the user has input the compulsory personal information, the system would prompt the user for optional personal information which would allow the system to make a more accurate assessment of the user's financial capability.
Preconditions:	1. The user has filled in their personal information in UC1 Fill in Personal Information.
Postconditions:	1. The system proceeds to UC 2.
Priority:	Low
Frequency of Use:	1. Once each time the user starts up the application. 2. Once each time the user executes UC7 Modify Personal Information.

Flow of Events:	1. The system displays a new screen to prompt the user for their monthly financial commitments (monthly car loan, monthly credit card debt, monthly study loan, and other monthly commitments), Central Provident Fund Ordinary Account balance and the number of additional household members to be living together. 2. The user will input their monthly financial commitments, Central Provident Fund Ordinary Account balance and the number of additional household members to be living together. 3. The user press the next button to confirm the inputs from Step 2 4. The system displays a new screen to prompt the user to enter gross monthly salary for each additional household member. 5. The user will input gross monthly salary for each of the household members. 6. The user will press the next button to confirm the input from Step 5. 7. The system saves all user input and processes them using the included use case UC8 Calculate Data to recommend public housing developments to the user. 8. The system transits to the use case UC2 View Recommended Public Housing Development.
Alternative Flows:	AF-S4: If user press skip button instead of the next button from Step 3 1. The system will not display the next screen to prompt the user to enter gross monthly salary for each additional household member as it is default 0. 2. The system skips to Step 9. AF-S6: If number of additional household members is unfilled or has input of '0' in Step 4 1. The system will not display the next screen to prompt the user to enter gross monthly salary for each additional household member. 2. The system skips to Step 9.
Exceptions:	-
Includes:	-

Special Requirements:	1. All user input must be stored locally on the device during the session.
	2. All user input must be destroyed upon exiting the session.
Assumptions:	1. The system requires additional input from the user to make an accurate assessment on the financial capability of the user and subsequently display recommended housing options. In other words, assumes that there will be user who would want accurate and detailed affordability report.
Notes and Issues:	-

Use Case ID:	UC2		
Use Case Name:	View Recommended Public Housing Developments		
Created By:	HaoJie	Last Updated By:	HaoJie
Date Created:	11/02/19	Date Last Updated:	18/02/19

Actor:	User
Description:	The user is allowed to view a list of public housing estate with recommended flat types available for sale. Estates that the user cannot afford will not appear.
Preconditions:	The user must at least complete the required personal information in UC1 Fill in Personal Information.
Postconditions:	-
Priority:	High
Frequency of Use:	1. Once each time the user wants to view the recommended public housing developments.

Flow of Events:	1. The system will display a list of public housing developments to the user, with flat type priced within the user's financial capabilities. 2. The user can scroll through the list of affordable estates he/she is interested in. 3. If the user taps on the public housing development they are interested in, then he/she transits to the included use case UC4 View Public Housing Development Details to view full details of the selected housing development. 4. If the user taps on Recalculate, he/she uses the included use case UC7 Modify Financial Capability to edit his/her profile.
Alternative Flows:	-
Exceptions:	EX2.1: If there is an network issue 1. The system must display an error message "Internet connection unavailable. Please try again". EX2.2: If there is no recommended public housing developments available 1. The system must display an error message "There are no recommended public housing developments. Please refine your financial details.". EX2.3: If there is no public housing developments for sale 1. The system must display an error message "There are no public housing developments for sale at the moment. Please try again at a later time.".
Includes:	1. UC4 View Public Housing Development Details. 2. UC7 Modify Financial Capability.
Special Requirements:	-
Assumptions:	1. The user needs to be presented a selection of recommended public housing estates with flat types that are priced within his/her budget.
Notes and Issues:	-

Use Case ID:	UC3		
Use Case Name:	Generate Affordability Report		
Created By:	Zachary	Last Updated By:	Zachary
Date Created:	12/02/2019	Date Last Updated:	18/02/2019

Actor:	User
Description:	The user generates the affordability report to obtain a summary of their highest purchase eligibility, eligible grants and the payment breakdown of the current public housing Development.
Preconditions:	1. The user must have completed use case UC1 Fill in Personal Information. 2. The flat type of the public housing development must be within the user's financial capability.
Postconditions:	-
Priority:	Medium
Frequency of Use:	1. Once each time the user wants to check the affordability of the preferred flat type.
Flow of Events:	1. The user views the table of flat types. 2. The user clicks on the "Generate" button on any of the flat types that is within the user's financial capability. 3. The system calculates the Highest Eligibility
Alternative Flows:	-
Exceptions:	-
Includes:	UC6 Provide Data from Application Programming Interface UC8 Calculated data

Special Requirements:	80% of first-time users must be able to generate an affordability report for a public housing unit within 5 minutes of entering their personal information.
Assumptions:	1. The user would like to view a detailed breakdown of the eligible grants and payment details of the currently-viewed flat type.
Notes and Issues:	-

Use Case ID:	UC4		
Use Case Name:	View Public Housing Development Details		
Created By:	Chong Yu	Last Updated By:	Chong Yu
Date Created:	12/02/2019	Date Last Updated:	18/02/2019

Actor:	User
Description:	For a specific Public Housing Development selected by the user, the system would display a picture of the estate, a description of the Public Housing Development, a map of the amenities within 1.5 kilometre of the Public Housing Development, the available flat type in the public housing development, the cost of the flat type and generate an affordability report for each flat type the user is eligible to purchase.
Preconditions:	1. The user must have chosen a public housing development detail from UC2 View Recommended public housing developments to view. 2. The system has obtain coordinates of estate and nearby amenities in UC6 Provide data through Application Programming Interface(API) and plot the locations on the map in UC5 View Map.

Postconditions:	
Priority:	High
Frequency of Use:	1. Once each time the user selects to view more details about a Public Housing Development.
Flow of Events:	1. The user selects the Public Housing Development to view more details. 2. The system will display in a new screen the full detail of the estate such as a picture of the estate, the description, the price, and the map of the estate and nearby amenities. 3. If the user taps on generate report, he/she transits to the use case UC3 Generate Affordability Report.
Alternative Flows:	
Exceptions:	<u>EX4.1: If the map is unavailable due to connectivity issues</u> 1. The system displays an error message "Map unavailable at this time. Please check your data connection.".
Includes:	UC6 Provide data through Application Programming Interface(API)
Special Requirements:	1. The system must provide up-to-date information regarding available property refreshed within 24 hours.
Assumptions:	1. User is interested to find out more about a specific Public Housing Development.
Notes and Issues:	

Use Case ID:	UC5
Use Case Name:	View Map

Created By:	Ryan	Last Updated By:	Ryan
Date Created:	11/02/19	Date Last Updated:	18/02/19

Actor:	User (Initiating Actor), GoogleCloud (Participating Actor)
Description:	The user views the map, retrieved from GoogleCoud, which would show amenities within 1.5 kilometre of the public housing development.
Preconditions:	1. The user must have selected to view a public housing development detail from use case UC4 View Public Housing Development Details.
Postconditions:	1. The user is able to view the map with coordinates of the amenities within 1.5 kilometre of the public housing development.
Priority:	Highest
Frequency of Use:	1. Once each time the user enters the use case UC4 View Public Housing Development Details.
Flow of Events:	1. The user is in use case UC4 View Public Housing Development Details. 2. The system retrieves the map layout from GoogleCloud. 3. The system retrieves coordinates of the public housing development from Housing Development Board. 4. The system retrieves coordinates of amenities, within 1.5 kilometre of public housing development, from data.gov.sg Application Programme Interface. 5. The system plots the coordinate of the amenities on the map and displays the name of each amenity and distance from the Public Housing Development.
Alternative Flows:	

Exceptions:	<u>EX5.0.1:If there is an network issue.</u> 1. If there is an network issue, "Internet connection unavailable. Please try again" message will be displayed. <u>EX5.0.2: If there is no amenities available</u> 1. If there are no amenities within 1.5 kilometre of public housing development, "No amenities available" will be displayed.
Includes:	UC4 View Public Housing Development Details. UC5.1 Provide Public Housing Development Coordinates using API. UC6 Provide Data from Application Programming Interface.
Special Requirements:	
Assumptions:	1. The user would want to view the nearby amenities available for the public housing development to make an informed decision in choosing their first home.
Notes and Issues:	

Use Case ID:	UC5.1		
Use Case Name:	Provide Public Housing Development Coordinates using API		
Created By:	HaoJie	Last Updated By:	HaoJie
Date Created:	12/02/19	Date Last Updated:	18/02/19

Actor:	HDB

Description:	The Housing Development Board (HDB) provides the address of the Public Housing Development which will be parsed through Google Maps to get the coordinate. The use case UC5 View Map will use the coordinate to display the exact location of the Public Housing Development the user is interested in.
Preconditions:	1. The user must have selected to view a public housing development detail from use case UC4 View Public Housing Development Details.
Postconditions:	1. Marker pointing to the location of the Public Housing Development must be displayed on the map.
Priority:	Highest
Frequency of Use:	1. Once each time the user enters the use case UC4 View Public Housing Development Details.
Flow of Events:	1. The user is in use case UC4 View Public Housing Development Details. 2. The system retrieves from HDB the address of the Public Housing Development. 3. The system parses the address through Google Maps to get the coordinate of the Public Housing Development. 4. The system uses the coordinate to create a marker on the map in use case UC5 View Map.
Alternative Flows:	-
Exceptions:	EX5.1.1:If there is a network issue 1. The system will display an error message "Internet connection unavailable. Please try again.". 2. No markers will be created.
Includes:	-
Special Requirements:	-
Assumptions:	1. The location of the property must be available in both HDB and the map.
Notes and Issues:	-

Use Case ID:	UC6		
Use Case Name:	Provide Data through Application Programming Interface(API)		
Created By:	Xavier Tan	Last Updated By:	Xavier Tan
Date Created:	12/02/2019	Date Last Updated:	18/02/2019

Actor:	User (Initiating Actor), DataGov (Participating Actor)
Description:	The system would retrieve from required data from the Singapore government's one-stop portal for publicly available datasets from 70 public agencies via an Application Programming Interface (API).
Preconditions:	1. The user must trigger the use case from either UC3 Generate Affordability Report or UC5 View Map.
Postconditions:	1. The including (base) use case would retrieve the required data.
Priority:	Highest
Frequency of Use:	1. Once each time the user executes either UC3 Generate Affordability Report or UC5 View Map.
Flow of Events:	1. User triggers the use case from UC3 Generate Affordability Report. 2. DataGov provides property tax, personal tax and stamp duty rate. 3. The system will process the data and display it on the system.

Alternative Flows:	<u>AF-S1: User triggers the use case from UC5 View Map.</u> 1. DataGov provides amenities within 1.5 kilometre of the public housing development such as Mass transit transport stations, educational institutes, polyclinics, markets and food centers. 2. The data points will be processed by the system to be plotted on the map. 3. Resume Step 3.
Exceptions:	<u>EX6.1 Data not available from data.gov.sg</u> 1. The system will display an error message "Data is currently not available from data.gov.sg. Please try again at a later time.". <u>EX6.2: If there is an network issue</u> 1. The system will display an error message "Unable to retrieve data. Please check your internet connection and try again.".
Includes:	-
Special Requirements:	1. All external data retrieved during the session must be stored locally on the device. 2. All external data retrieved during the session must be destroyed upon exiting the system.
Assumptions:	1. The system acts as an intermediary to retrieve information from Application Programming Interface from data.gov.sg that will be displayed to the user when requested.
Notes and Issues:	-

Use Case ID:	UC7		
Use Case Name:	Modify personal information		
Created By:	Xavier Tan	Last Updated By:	Xavier Tan

Date Created:	11/02/19	Date Last Updated:	18/02/19

Actor:	User
Description:	The user is allowed to add or modify the data that they had previously input. This changes their financial capability that was previously calculated and a revised Recommended Public Housing Developments can be displayed.
Preconditions:	1. The user must have completed the compulsory fields previously.
Postconditions:	1. The user must submit new additional input. 2. The user must complete the compulsory fields.
Priority:	Lowest
Frequency of Use:	1. Once each time the user wants to add more information or change personal information.
Flow of Events:	1. User clicks on the recalculate button. 2. The system will go to input field page from use case UC1 Fill in Personal Information. 3. The user changes the inputs from the compulsory fields 4. The system will prompt user for the optional inputs 5. The user changes the inputs from the optional fields 6. The system will recalculate user's financial capability using the modified data.
Alternative Flows:	AF-S3: User did not complete the compulsory fields. 1. The User did not complete compulsory input data fields 2. The system will not proceed to the next page until user complete the compulsory fields. 3. The system displays an error message "Please complete compulsory fields.". 4. Resume from Step 2.

Exceptions:	EX7.1: User key in wrong data type 1. User key in non-numerical data type for input fields which require numerical data type. 2. System will show an error message "Wrong input data.".
Includes:	-
Special Requirements:	-
Assumptions:	1. The user would have more financial details over timer 2. The user would want to refine their financial details to get more accurate reports.
Notes and Issues:	A back function when system brings the user back to the main input page.

Use Case ID:	UC8		
Use Case Name:	View All Public Housing Developments		
Created By:	Ryan	Last Updated By:	Ryan
Date Created:	11/02/19	Date Last Updated:	18/02/19

Actor:	User
Description:	The user is allowed to view a list of all public housing development available for sales, even if the user is unable to afford derived from his/her financial capability.
Preconditions:	The user must at least complete the required personal information in use case UC1 Fill in Personal Information.

Postconditions:	-
Priority:	Moderate
Frequency of Use:	1. Once each time the user wants to view the recommended public housing developments.
Flow of Events:	1. The system will display a list of affordable estates to the user, based on the user's financial capabilities. 2. The user can scroll through the list of affordable estates he/she is interested in. 3. If the user taps on the flat type the/she is interested in, then he/she uses the included use case UC4 View Public Housing Development Details to view full details of the selected housing development. 4. If the user taps on Modify, he/she uses the included use case UC7 Modify Financial Capability to edit his/her profile.
Alternative Flows:	
Exceptions:	EX8.1: If there is a network issue. 1. The system will show an error message "Internet connection unavailable. Please try again.". EX8.2: If there are no public housing developments for sale. 1. The system will show an error message "There are no public housing developments for sale now. Please try again at a later time.".
Includes:	1. UC4 View Public Housing Development Details. 2. UC7 Modify Financial Capability.
Special Requirements:	
Assumptions:	1. The user wants to view all available public housing developments even if they are priced beyond their financial capability.
Notes and Issues:	