

Section 1: Summary

This document outlines how we conducted the evaluation process and recommendations for improvement. We began our evaluation process by evaluating our website as evaluators. Evaluators will have to mark 10 usability heuristics on a 0-4 scale. By averaging/discussing the ratings provided by the evaluators, we obtained a reliable severity score. Based on the severity, we precisely identified those user-interface design aspects that are unsatisfactory for common users. In this case only 4 heuristics were violated, including 'User Control & Freedom', 'Error Prevention'.

We developed 4 possible improvements:

1. **Recent Locations Menu:** When users want to check their previous locations, instead of typing the location name in the search bar again, they can easily find access to it through a specialised menu.
2. **Icon Description:** By adding a pop-up window with the weather name that appears when users click on the weather icon will be a useful feature for allowing users to easily interpret the meaning of the weather icon.
3. **Help Menu:** Users will be able to check support information and documentation on how to use the weather app and all about the features.
4. **Location previews:** Instead of only showing the location name, more weather data could be displayed on the search screen to distinguish locations.

Section 2: Evaluation Process

We carried out the evaluation process by looking at the interface we made, as 4 evaluators instead of developers. We began by getting a better understanding of the ten usability heuristics which are:

- Visibility of system status: meaning the system should keep users informed about what is going on.
- Match between system and the real world: meaning the system should use the users language
- User control and freedom: meaning there is clear ways to undo and redo mistakes
- Consistency and standards: meaning the system should follow the platform convention
- Error prevention: meaning the system should prevent error or at least have clear error message
- Recognition rather than recall: meaning the user shouldn't need to remember how to use the system one part of the system to use another
- Flexibility and efficiency of use: meaning the system should be efficient to use by experienced users
- Aesthetic and minimalist design: meaning there should be no extraneous information or text
- Helps users recognise, diagnose, and recover from errors
- Help and documentation: meaning the system should allow user to easily find help and documentation

We then independently judged our system against the 10 heuristics, with each heuristic we gave a severity score from 0-4 with:

- 0 : meaning there is no violation or that it doesn't apply
- 1 : meaning the problem is cosmetic and has no real impact on the usability
- 2 : meaning minor violation which is a low priority problem
- 3 : meaning major violation which should be fixed right away
- 4 : meaning a catastrophic violation which means that the system cannot be released without it being fixed

We then came back together with our evaluation and averaged out or discussed our scores for each heuristic so that we could give a final assessment.

Section 3: Evaluation Findings

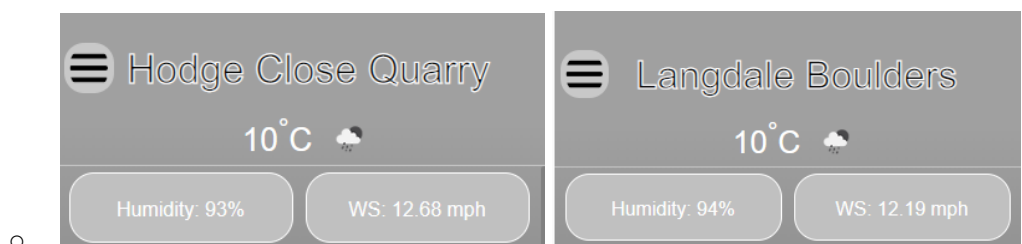
Table of Severity Scores

Heuristic	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Final Severity
Visibility of System Status	1	0	0	0	<u>0</u>
Match between system & real world	1	0	1	0	<u>1</u>
User Control & Freedom	0	1	2	2	<u>2</u>
Consistency & Standards	0	0	0	0	<u>0</u>
Error Prevention	2	2	1	1	<u>2</u>
Recognition rather than recall	0	1	0	0	<u>0</u>
Flexibility & Efficiency of use	0	0	1	0	<u>0</u>
Aesthetic & Minimalist Design	1	0	0	0	<u>0</u>
Help users recognise and recover from errors	0	0	0	1	<u>0</u>
Help & Documentation	0	1	1	1	<u>1</u>

In the table above are the collated results of our heuristic evaluation (carried out as described in section 2) with the final agreed severity rating in an additional column. In general, the interface for our app is well-built and usable with no severity exceeding 2; scores of two and below can only indicate possible minor usability issues that don't majorly impact the system.

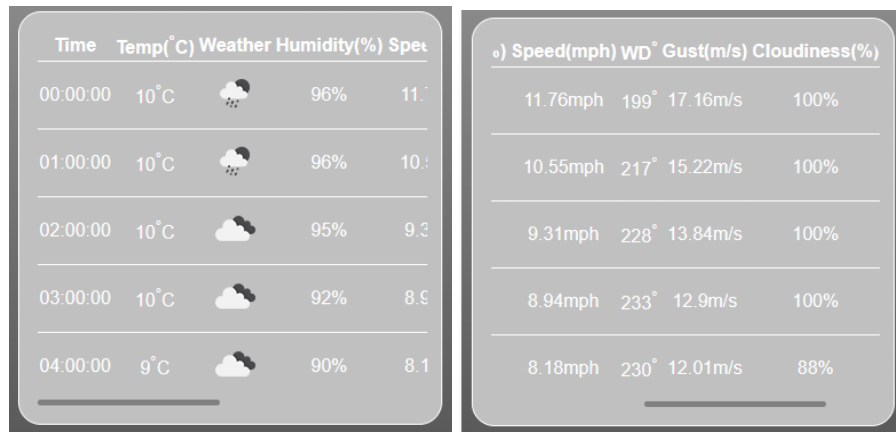
From our final results, we discovered most heuristics are not violated or do not apply, as shown by the heuristics with a severity of 0 which comprise:

- **Visibility of System Status:** A lack of modes, operations requiring a few seconds, and explicit reflections of changes to the system state (location) lead to a severity of 0.



- *Screenshots show clear indication of change in location state from location name.*

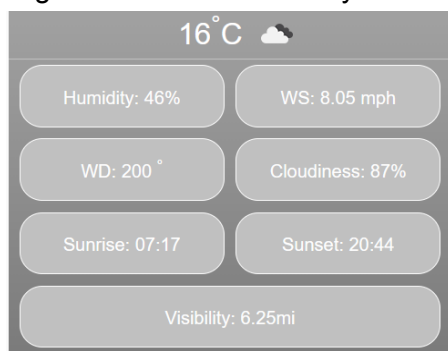
- **Consistency & Standards:** Our adoption of widespread standards regarding data presentation and intuitive (concerning weather apps) functionality means this heuristic is abided by.



Time	Temp(°C)	Weather	Humidity(%)	Speed
00:00:00	10°C		96%	11.7
01:00:00	10°C		96%	10.5
02:00:00	10°C		95%	9.3
03:00:00	10°C		92%	8.9
04:00:00	9°C		90%	8.1

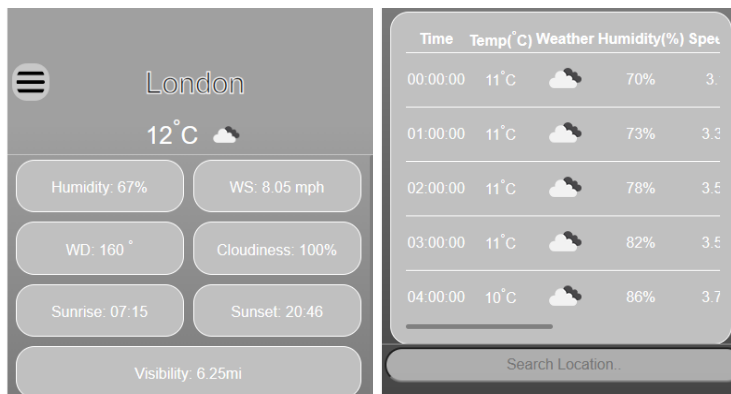
Speed(mph)	WD°	Gust(m/s)	Cloudiness(%)
11.76mph	199°	17.16m/s	100%
10.55mph	217°	15.22m/s	100%
9.31mph	228°	13.84m/s	100%
8.94mph	233°	12.9m/s	100%
8.18mph	230°	12.01m/s	88%

- Screenshots show wide widgets as an example of consistent weather app standards. Data provided, icons used and scroll functionality is as expected.
- **Recognition Rather than Recall:** No part of our interface requires memory of another section. Separating weather conditions into 7-8 "chunks" fits within the 5-9 chunk range of short-term memory. This heuristic has a severity of 0.



16°C	
Humidity: 46%	WS: 8.05 mph
WD: 200°	Cloudiness: 87%
Sunrise: 07:17	Sunset: 20:44
Visibility: 6.25mi	

- Weather conditions presented in 7-8 chunks
- **Flexibility & Efficiency of Use:** Lack of complex interaction results in rapid speeds for interface usage. No actions require accelerated paths; this criterion does not widely apply.
- **Aesthetic & Minimalist Design:** Our app was built with a minimalist design, as simplicity and speed were priorities; no heuristic violation.



Time	Temp(°C)	Weather	Humidity(%)	Speed
00:00:00	11°C		70%	3.5
01:00:00	11°C		73%	3.3
02:00:00	11°C		78%	3.5
03:00:00	11°C		82%	3.5
04:00:00	10°C		86%	3.7

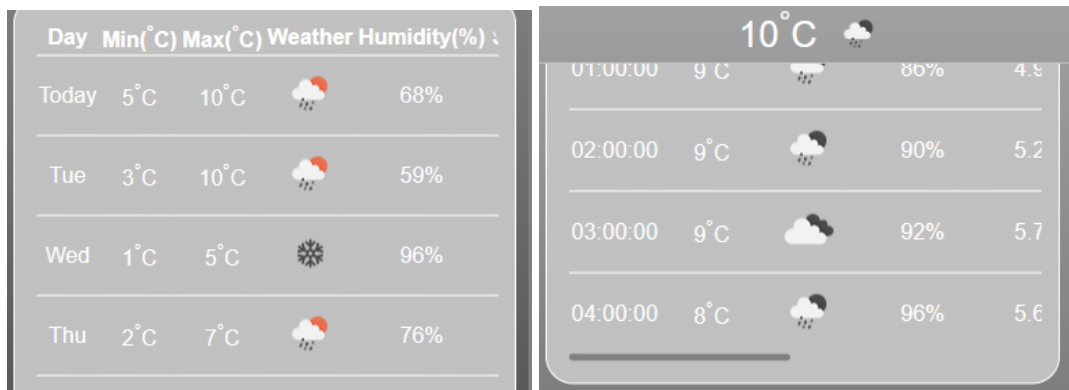
- Screenshots displaying the minimalist aesthetic of our app

- **Help users recognise and recover from errors:** Due to limited user input and app simplicity, there is no way for a user to break/compromise the system, so this heuristic does not apply.

Regarding the remaining heuristics, two had a severity of 1 and the others a severity of 2.

Help & Documentation has a severity of 1. Arguably with the current system, the severity can be 0 due to its size/simplicity; however, we concluded that the likelihood of future complex extensions and the need for assistance for novice users warrant access to some support documentation. The issue is purely cosmetic, thus the score.

The **Match between System & Real World** has a severity of 1. Icons and terminology denote current conditions assuming that most users understand their meaning from some baseline knowledge. A minority of users may not be familiar with our interpretation or find our mapping not logical/orderly, so an issue is present, but it's not a minor violation.



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- *Screenshots show the use of weather icons that require baseline knowledge to understand. Min and Max are examples of terms used to denote conditions that don't explicitly state their purpose.*

User Control & Freedom has a severity of 2. There is no method to undo/recover from slips/mistakes the user makes (like selecting the wrong location). On a small scale, the issue is purely cosmetic; however, regarding general use over time, a lack of a convenient method to recover from an error significantly impairs usability. The heuristic has a severity of 2 because the issue is more than superficial but not crippling to the system.

Error Prevention has a severity of 2. Similar to "User Control & Freedom", a lack of error prevention over time results in a suboptimal user experience which is more severe than a purely cosmetic issue. For instance, we found it easy to "slip" and select the wrong location, users must then tediously navigate to the desired location to retry.

Section 4: Proposed Improvements

Improvement 1: Recent Locations Menu

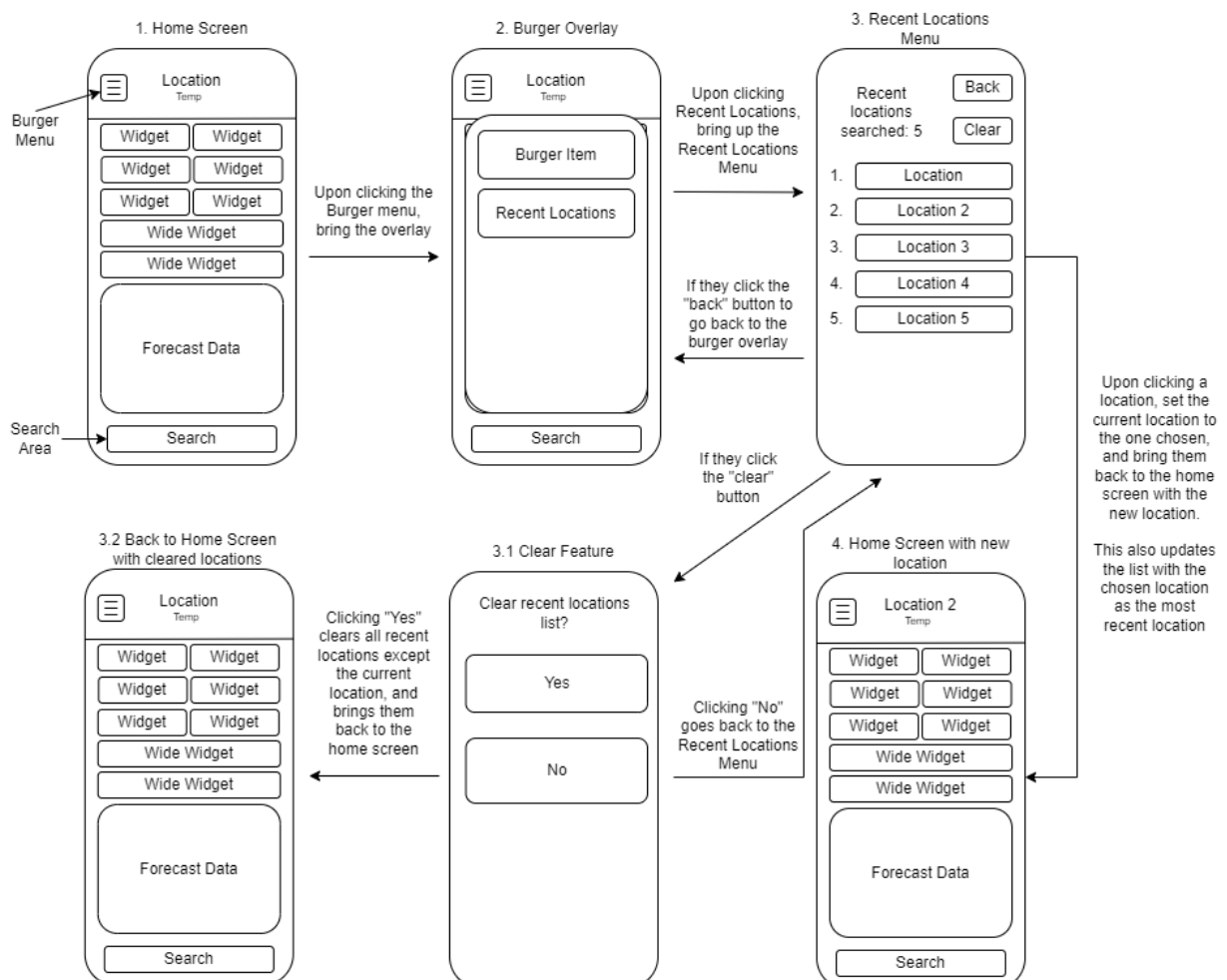
Some users may determine they don't want to see the current location they searched for, and wish to revert the change by going back to a previous location. A list of recently searched locations to set the current location to a previous location, would reduce the "User Control and Freedom" heuristic with a severity of 2, to 0, relieving the strain of remembering previous locations.

Essentially, our experienced stakeholders might plan to go on many climbing expeditions on various dates, and must handle weather information critically, so this small tweak can help climbers plan expeditions better, without overlooking any details.

Each time the user taps a location in the search menu, that location is added to a list of recent locations as the most recent. These locations will be added as a feature accessible in the burger menu as "recent locations".

When accessed, a "back" button for exiting the menu, a button to clear the list with confirmation, and the total recent locations will be displayed at the top. The locations are numbered starting from 1 as the most recent (current) location, near the top for convenience, to n as the least recent, at the bottom of the menu. Simply tapping on any of these locations will set the current location to the respective location chosen, update the list, and bring them back to the home screen with the new location.

An example flow is given below, showing the menu location and functionality.



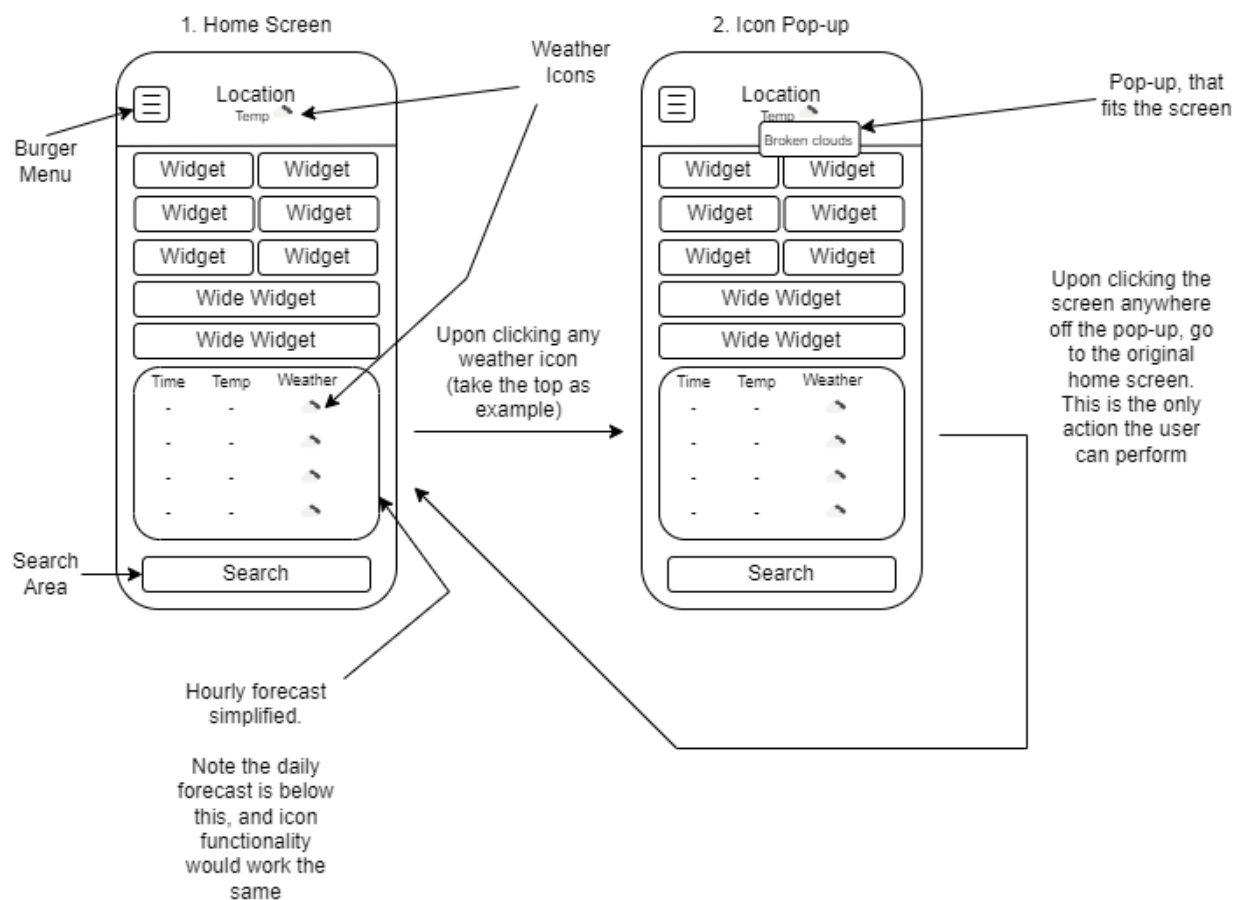
Improvement 2: Icon Description

While the weather icons in the forecast are semantically clear to the majority of users, some might still be confused about the meaning of the icons. With one click on the weather icon, you can see a simple description of its meaning, reducing the "Match Between System and The Real World" heuristic from a 1, to 0.

This feature supports all age groups, and assists people with poor literacy skills. It also supports beginners of climbing, who slowly learn the basics as they develop their skills in their climbing journey. Importantly, this feature is implemented to safeguard against any small misconceptions in the semantics of weather icons, such that no frustration is brought upon the user.

These weather icons can be found near the top, and under the hourly/daily forecast, where all these features are within the home screen. Clicking on any of these icons will pop-up a simple description of what it represents. These pop-ups will be directly beside the icons when clicked, and once the user clicks on the screen anywhere off the pop-up, the pop-up will disappear. Hence while the pop-up is open, the user cannot perform any other actions, such as scrolling, searching for a location, or going to the burger menu. The pop-up should be compact, and fit within the screen, so that readability is flawless.

An example flow is given below, showing the pop-up and its functionality.



Improvement 3: Help Menu

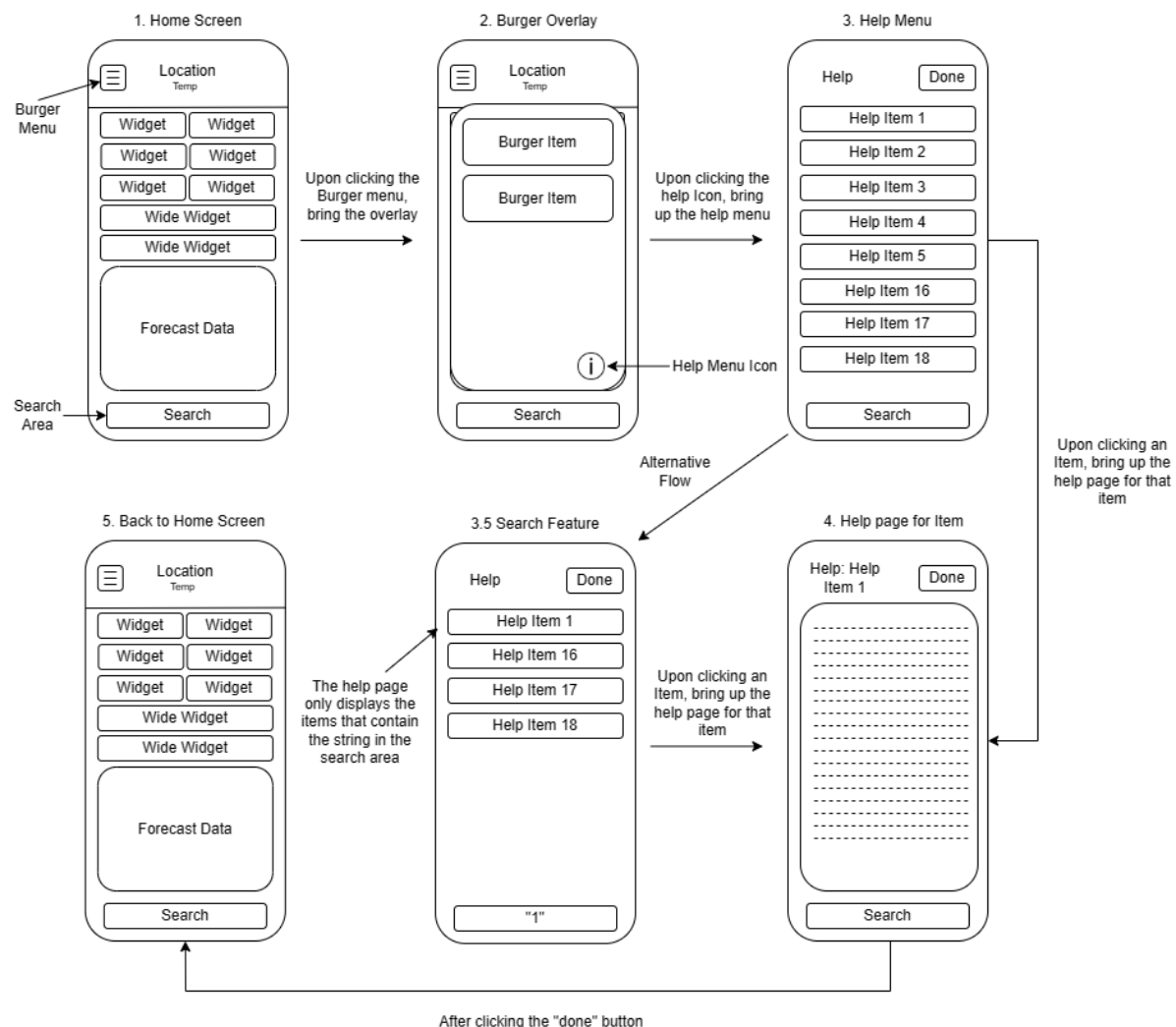
While the app itself is designed so users do not require assistance from documentation, a Help Menu would decrease the severity of the “Help and Documentation” heuristic from 1 to 0; it would also future-proof any complex extensions to the app as there would be a fixed place to provide support for any complicated additions. This help menu mainly improves the usability and accessibility for climbers who are less computer literate such as older users.

The help menu is a menu that provides documentation for any aspect of the app. The menu would be accessed through the burger menu, via an icon in the bottom right; clicking the icon would pull up the help menu page, where a “done” button at the top allows exiting the menu.

The menu would function similarly to the search menu, it holds a series of links/labels that when tapped, brings up the help page for the respective item. Help pages contain detailed information regarding the use and utility of its respective item. Within the help menu, there will also be search functionality via a search bar at the bottom of the page to allow users to quickly access specific pages.

Once again, the purpose of the help menu is to help climbers with less computer literacy as well as support the addition of complicated features which may require detailed information.

An example flow is given below, showing where the menu is located and how it is used.



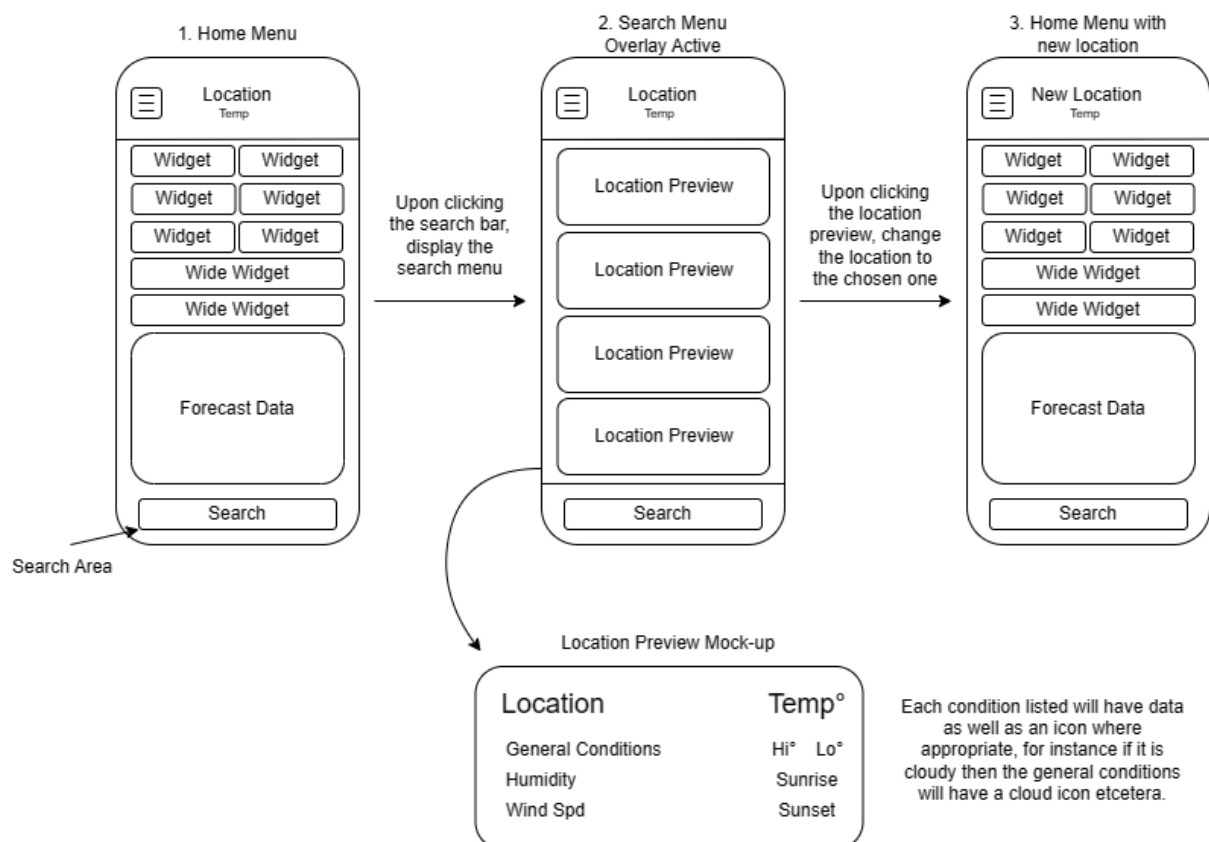
Improvement 4: Location Preview

The addition of a location temperature preview to the app would help alleviate the poor performance within the Error Prevention Heuristic [severity of 2]. On a small scale (as shown in the demonstration video), accidentally selecting the wrong location is a minor issue as it is effortless to reselect the correct one; however, if the locations overflowed and required scrolling or searching to find, each time the error/slip is made, the user would have to retype or re-scroll for the correct location, the aim of location previews is to decrease the frequency of "slips" which in turn prevents them from having any impact. This feature improves quality of life as well as adds convenience to the user.

The location preview feature will preview a portion of the weather data for a given location, prior to actively selecting it. Location previews will be located within the search menu and they would replace the location buttons/labels whilst retaining all their original functionality.

Location previews will consist of a location name alongside a few compact pieces of weather information such as temperature, general conditions, humidity, wind speed and sunrise/sunset times. The aim of location previews is to make data access more convenient as well as to distinguish the items within the search menu more such that the chance of making a slip and choosing the wrong location is decreased. In general, the feature is a quality of life improvement for the user and improves usability.

An example mockup is below.



Contributions

Leon [40%]:

- Section 4: Developed 2 Potential Improvements to the App, the “Help Menu” and “Location Preview”.
- Took on Changs Section 3 “Evaluation Findings”

John [20%]:

- Section 4: Developed 2 Potential Improvements to the App, the “Recent Locations Menu” and “Icon Description”.

Josh [20%]:

- Completed Section 2 on Evaluation Process

Chang [0%]:

- Failed to meet deadlines
- Failed to communicate status/progress of work on claimed section (section 3) and work had to be reassigned to another team member
- Generally uncooperative

Fang Shu [20%]:

- Completed Section 1 on Summary