

# **ASSIGNMENT 3:**

## **EVALUATION**

Group 20

# **Contents**

<b>SECTION 1: SUMMARY OF EVALUATION</b>	<b>3</b>
<b>SECTION 2: EVALUATION PROCESS</b>	<b>4</b>
<b>SECTION 3: EVALUATION FINDINGS</b>	<b>5</b>
<b>SECTION 4: PROPOSED IMPROVEMENTS</b>	<b>8</b>
<b>CONTRIBUTION</b>	<b>13</b>

## **SECTION 1: SUMMARY OF EVALUATION**

After conducting a comprehensive heuristic evaluation of our weather app targeted at business travellers, we have identified several key areas for improvement that will enhance the user experience and hopefully better ease the frustration caused to our primary stakeholder by weather-related delays.

Our evaluation process consisted of testing the features of the app against the 10 usability heuristics, of these we noted several key areas of focus. These being; the visibility of system status, error prevention measures, and assessing user control and freedom.

Having ranked the severity of these identified issues we have proposed 4 key improvements to address these. Our First and second improvement aims to solve issues with the recognition rather than recall heuristic. The first is to add flight information to the home screen to reduce user memory burden. The second improvement, Weather icons for time and for all unique conditions. Our third improvement is to add suggested locations to our search bar, this aims to tackle our issue with error prevention. The fourth and final improvement is to add options to change the units for temperature measurement. This aims to resolve issues with flexibility, and efficiency of use.

## **SECTION 2: EVALUATION PROCESS**

Our evaluation process consists of three steps. First, we used the app from the perspective of our primary stakeholder, business travellers, to understand how they perform tasks and the individual steps required for each task. Second, we identified usability issues and good points by analysing the step-by-step process of carrying out a task and checking if each of the 10 usability heuristics were met or not. Where they aren't met we noted down the heuristic that it breaks. Finally, we ranked the severity of the discovered issues on a scale of 0-4, with 0 being minor and 4 being a clear violation of the heuristic. As a group, we noted down usability heuristics that weren't met using a series of evaluation techniques to assess the usability of our weather app.

The 10 usability heuristics are:

1. Visibility of system status
2. Match between system and real world
3. User control and freedom
4. Consistency and Standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize and recover from errors
10. Help and documentation

To assess whether each heuristic is met we used a series of questions. For example, take the heuristic of visibility of system status. This can be checked by asking questions such as; is it clear which page the user is on? or if the system is loading is a loader shown? By asking these questions we can check what severity to rank these heuristics.

By combining these steps, we were able to get a comprehensive understanding of the usability of our weather app and identify areas for improvement. This evaluation process allowed us to make informed decisions on how to improve the app's design and functionality to meet the needs of our primary stakeholders and ensure a better user experience.

### SECTION 3: EVALUATION FINDINGS

After conducting an evaluation of our weather app, we found several issues that violate various usability heuristics and negatively impact user experience. We used the severity rating scale of 0-4, where 0 means no usability problem and 4 means the problem is critical.

The following table summarises the problems found during the evaluation, along with the heuristic violated and its severity rating:

Problem	Heuristic Violated	Severity Rating
CORS error on some browsers	Visibility of system status	3
Confusing Icons for weather information + missing flight info	Recognition rather than recall	2
Weather Information not updated in real time	Match between system and real world	2
No option to switch temperature units	Flexibility and efficiency of use	1
Blank tiles created with invalid city inputs	Error Prevention	3

During the evaluation, we also discovered that some users experienced a CORS error when using certain browsers to access the flight details feature. The CORS error violated the system's status visibility heuristic since it prevented users from accessing the app's flight features. As this is one of the main features for our stakeholders we had to give this a severity of 3. To address this issue, we had to install an extension to bypass the error. While the extension did solve the issue, it is not a sustainable solution and may deter users from using the app altogether. It is important to note that this issue was not related to the app's design or functionality but rather an external factor that affected the app's usability. However, it is still essential to address these issues to ensure that users can access the app's features without any obstacles or barriers.

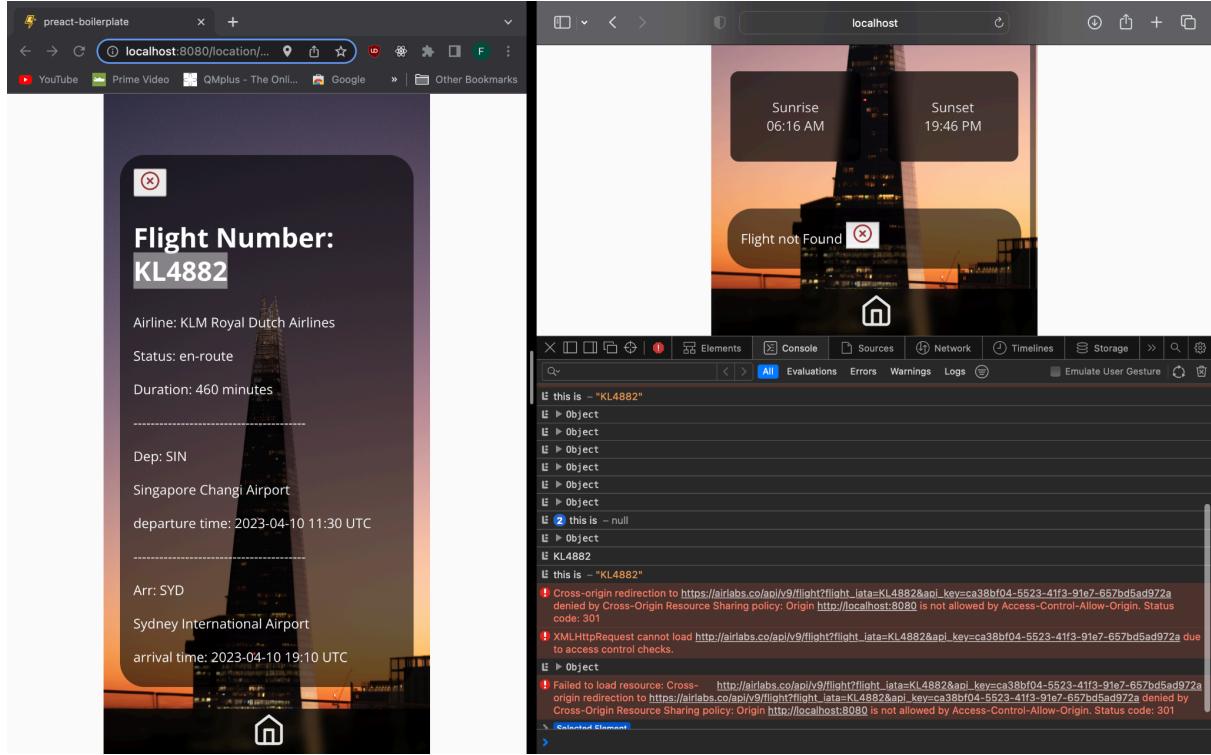


Figure 1: Screenshots of flight tracking feature with extension (left), without extension (right)

Additionally, it was found that some icons used to display weather information were confusing to users. The icons violated the recognition rather than recall heuristic since users were not able to easily recognize what they represented. Specifically, some icons were misleading, such as showing a sun icon during night-time or when the weather was cloudy, making it a severity of 2. This inconsistency can create confusion for users and impact the usability of the app.

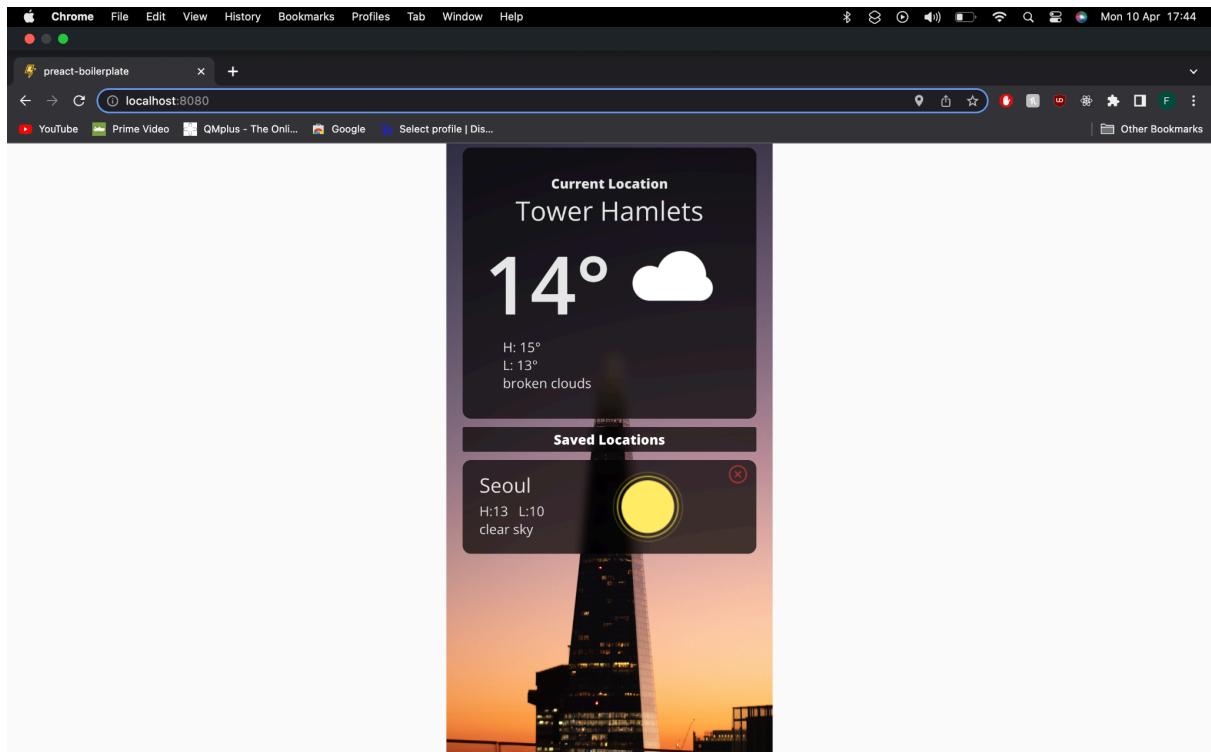
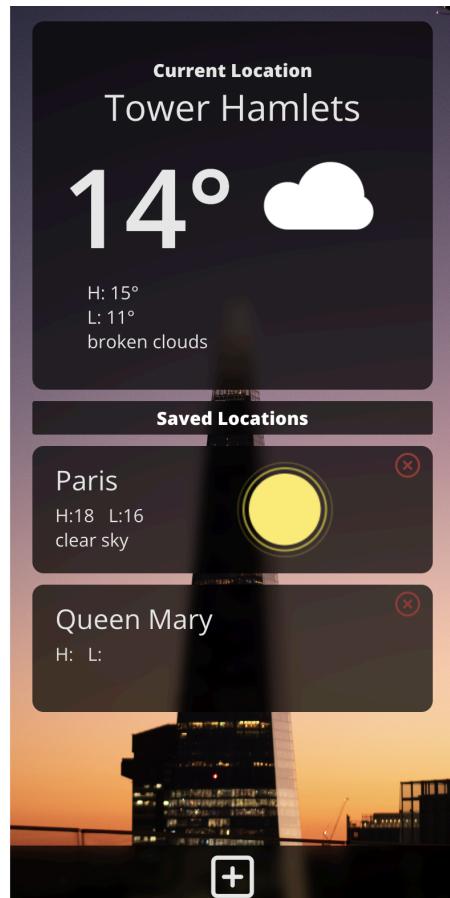


Figure 2: A screenshot of the home screen at GMT: 17:44, KST(Korea Standard Time): 01:44

It was also observed that the app did not provide adequate error prevention measures for users. Specifically, when a user entered an invalid city name, the app still created a blank tile with no information on it. This violated the error prevention heuristic since the app did not provide any feedback to the user on the invalid input or prevent the creation of the empty tile. To improve the app's error prevention, we recommend that the developers implement measures such as input validation and error messages. By providing users with clear feedback on their inputs and preventing the creation of empty tiles, the app can help prevent errors and improve the user experience. In that case we gave it a severity of 3 as it would confuse users as to why there is a blank tile.



*Figure 3: A screenshot of the home screen with invalid location widget*

Lastly it was found that the weather information was not updated in real-time instead was updated after each refresh of the page, violating the match between system and real world heuristic. This issue could cause confusion for users, as the information displayed may not be accurate. The severity rating for this issue was determined to be 2, as it could lead to unfavourable outcomes for users.

In conclusion, the evaluation of our weather app identified several issues that violate various heuristics of user experience design such as: CORS errors, misleading icons, blank location tiles and manually refreshing to show real time data. Addressing these issues can help improve the user experience of the app and make it more user-friendly.

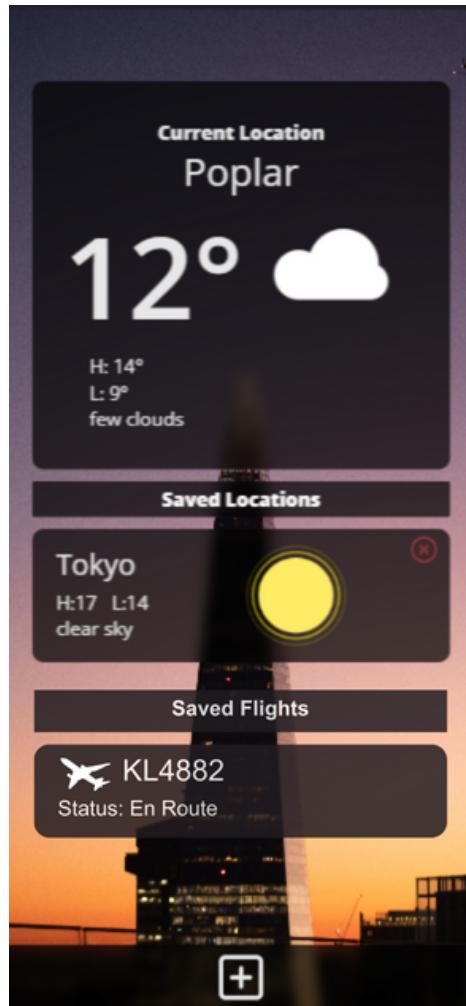
## SECTION 4: PROPOSED IMPROVEMENTS

### Improvement 1: Add Flight Information Widget On The Home Screen

As our target audience is business travellers, they are likely to be on the go frequently. Having quick access to flight information is crucial for planning and scheduling business meetings or conferences.

By having the widget directly on the home screen, users can easily view flight details without having to navigate to a separate page. This saves time and effort and provides them with immediate access to the information they need. It also allows the comparison of flight status' and weather forecasts on the same page.

Upon adding a new flight to their list, users will have the option to pin the flight details to their homepage.



*Figure 4: An edited screenshot of the app home screen with added flights widget as suggested*

## Improvement 2: Add a variety of weather icons

As stated in section 3, some of the icons might be confusing. For instance, the icon displayed for a clear sky in Abu Dhabi at night is the same one for daytime with the yellow sun (see *Figure 5* on the left). The reason for this is that the icons used in the app are insufficient with only five icons for five main weather descriptions: cloud, clear, drizzle, rain, and haze. Another similar problem related with the icons is that some of them did not appear on the screen for weather conditions like snow, thunderstorm, sand, and many more.

These problems can be solved by adding a variety of weather icons in the app. An example would be like in the figure below where another icon for clear sky at night with the moon is displayed instead of the sun.

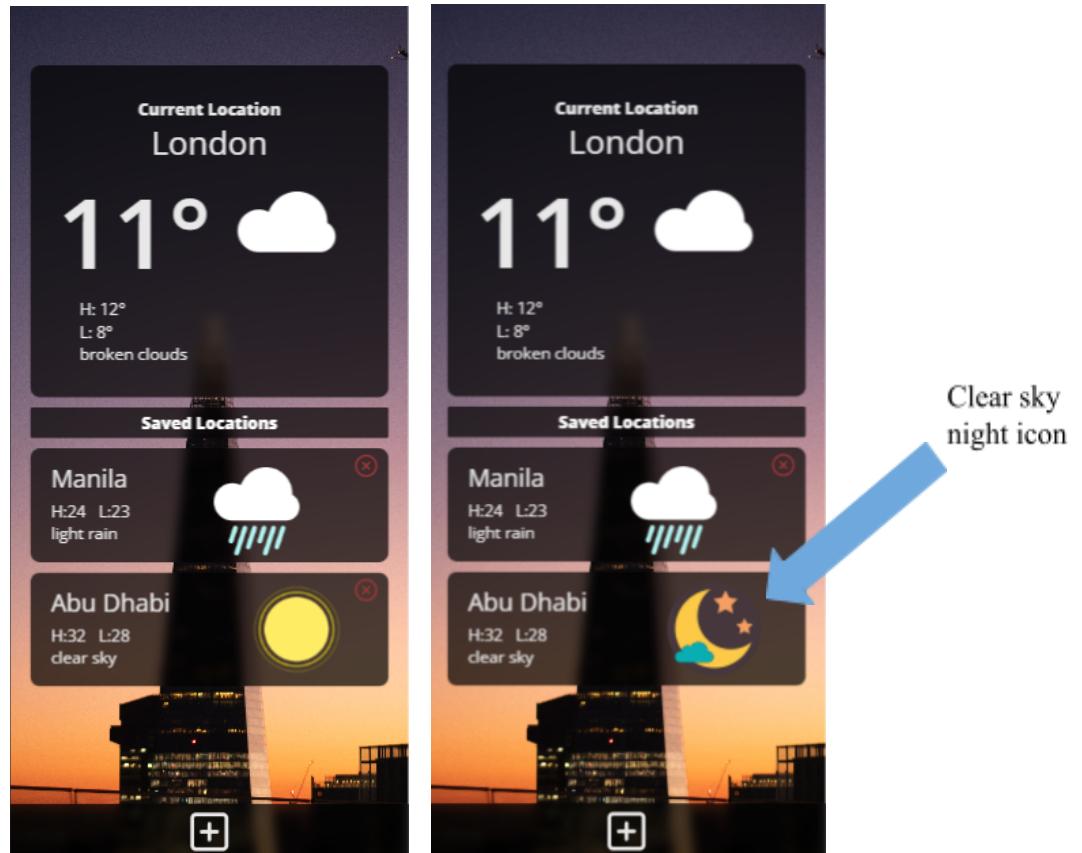


Figure 5: Screenshots of the home screen before improvement (left), edited with different icon (right)

Alternatively, we can add icons for each weather condition listed in the API that only differ by its colour. For example in *Figure 6*, the day and night icons differ by its colour where orange is used for day, and black for night. Also, make sure that each of them has a specific icon for it to be displayed on the app.

Day icon	Night icon	Description
01d.png 	01n.png 	clear sky
02d.png 	02n.png 	few clouds
03d.png 	03n.png 	scattered clouds
04d.png 	04n.png 	broken clouds
09d.png 	09n.png 	shower rain
10d.png 	10n.png 	rain
11d.png 	11n.png 	thunderstorm
13d.png 	13n.png 	snow
50d.png 	50n.png 	mist

*Figure 6: Icon list from <https://openweathermap.org/weather-conditions>*

By making this improvement, the users will be able to identify the weather easily through the differences in the icon rather than having to read a location's weather condition and checking its local time simultaneously.

### Improvement 3: Creating search list based on keyword

Since business travellers go to a lot of countries, they are likely to search and save all, if not, most of the locations on the app home screen. However, problems could occur when a user mistyped a location name, entered an invalid location, or inputs like numbers and symbols on the search bar. As a result, an unnecessary weather location widget with no information will be added to the saved locations (see *Figure 3* on page 7).

A way to improve this is by creating a search list based on the keyword. After a user writes either a few first characters or the full location name on the search bar, a list of valid cities will appear below it based on the keyword. Only then, the user will have the option to click on the available locations to save it to their app home screen. But, if an invalid location is typed on the search bar, it will display a “No Results” message instead of the search list. They should look like those on the default weather app for iPhone (see *Figure 4* below).

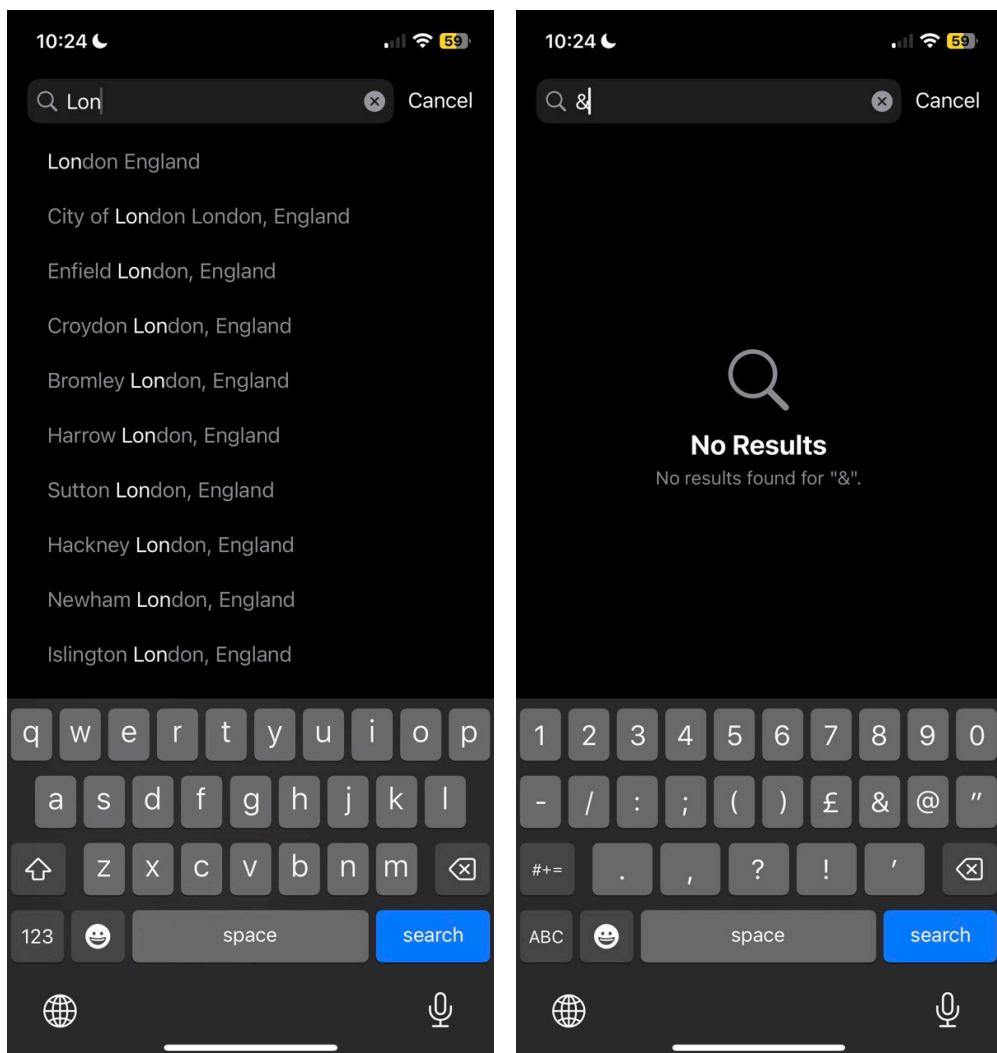


Figure 7: Screenshots of search list for valid location (left), error message for invalid input (right)

This helps the stakeholder by keeping the home screen neat without having unnecessary widgets on it. Besides, the search list facilitates travellers by saving time and avoiding misspellings since they don't have to write the location's full name as it might be foreign and confusing to them.

#### Improvement 4: Option to change temperature unit (Degrees or Fahrenheit)

Considering our stakeholders are from all over the world, some people are more comfortable and used to Fahrenheit instead of Degree when reading temperature units. In order to improve this is by adding a toggle switch using a button on the bottom navigation that allows the user to change the default temperature unit (Degree). After a user clicks on that thermometer icon (which is the toggle switch button), all the temperature units displayed are changed to Fahrenheit. If the user wants to change it to Degree again, they can just simply click the button since it works like an on and off switch.

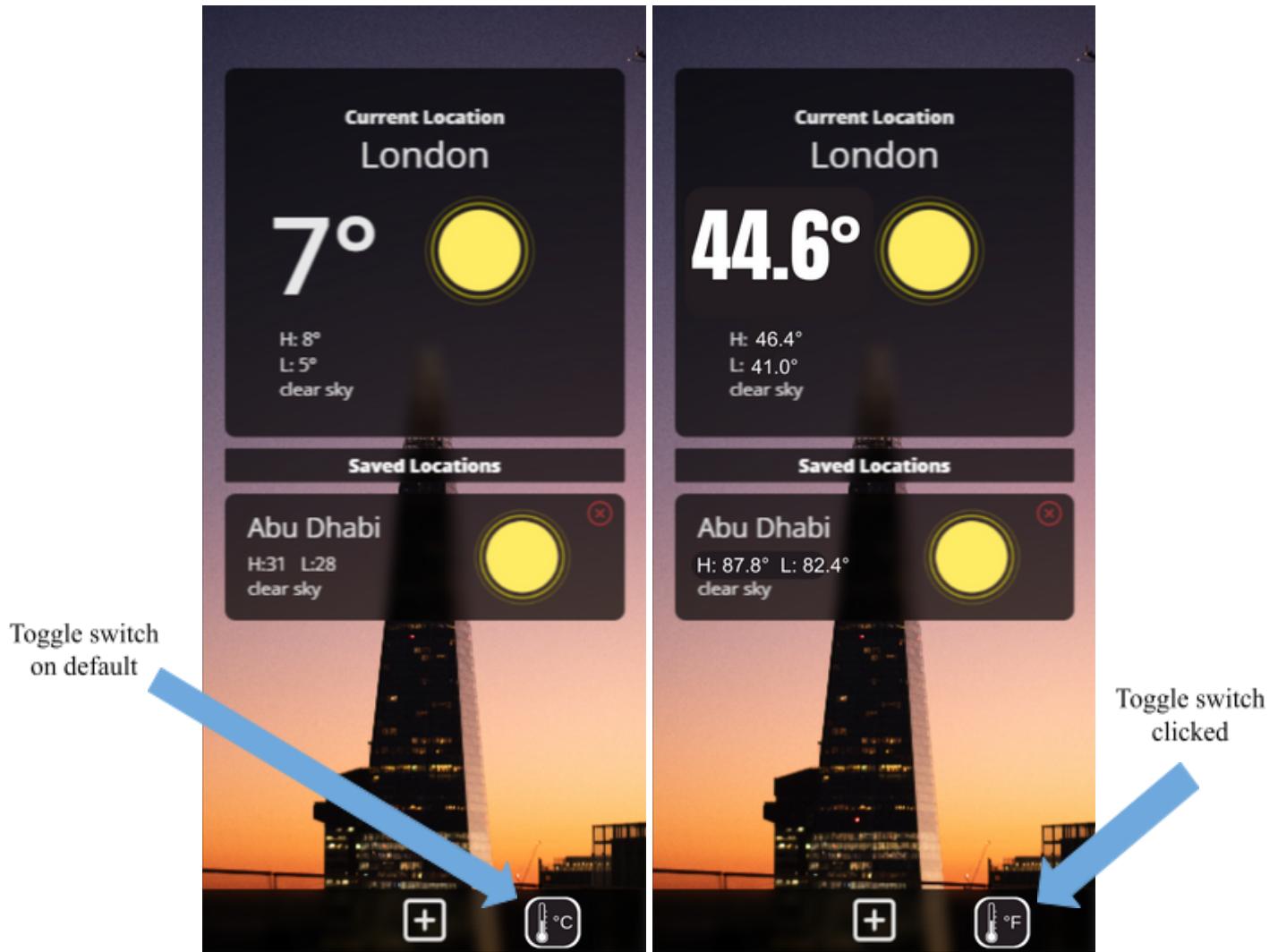


Figure 8: Edited screenshots with added toggle switch on bottom navigation bar on default (left), after being clicked (right)

This improvement is somehow important as it makes it convenient to the stakeholder to use the app. They no longer have to convert the temperature manually, instead they can do so just by clicking the temperature toggle switch button.

## **CONTRIBUTIONS**

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**Percentage Contribution:** 100

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