ECS522U Weather Application

Group 3

Assignment 3

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Part 1: Summary of our Evaluation

The evaluation was carried out so we could check how successful this application was in regards to our initial design plan and think of potential improvements which could either add more functionality or make the existing app more appealing for our intended stakeholders. The evaluation method our group decided to follow was a heuristic evaluation where we compared our application to heuristic principles and based on the results, we were able to come up with potential improvements which included the likes of:

- Implementing weather warnings to promote a minimalist design.
- Scanning in tickets via camera which would improve efficiency in the use of the app.
- Setting flights rather than locations helps with the flexibility and efficiency of our app.
- Presenting stored location reminders to allow users to recognise the locations they have already set rather than having to recall the information as well as helping the visibility of the system status.

From collating the evaluations we found that we had several minor issues with a few heuristic principles. The ideas portrayed above were targeted to tackle usability issues, derived from the violated heuristic principles, which exist in our application at this current moment in time.

Part 2: Evaluation Process

The method we followed to start the evaluation process had the group identify ten heuristic principles the application would be judged against. These heuristics help evaluate our application to find usability problems which could be improved.

We gave each heuristic principle a subjective severity rating, between 0-4. The severity rating assigned to each violated heuristic was based upon the *frequency, impact and persistence* of the problems. This ranged from no violation to a catastrophic violation which meant that the application would not be allowed to be released until fixed.

For each violated principle, we explained the violation and how it caused an issue whilst keeping our primary stakeholders in mind. This highlighted potential usability problems of the application and identified weaknesses within our application.

The steps taken above were split between four evaluators, which consisted of group members. This gathered unique perspectives from each member on what we could improve on. Following this, we came up with individual heuristic principle violations and found the biggest issues upon collation.

After collating the findings, we narrowed down the violated principles to the most important ones and to support these violated heuristics, we added screenshots of our application to justify our issues.

After completing our findings we were able to find heuristics which were violated and suggest solutions which would assist in resolving these violations. We started by explaining our initial idea, followed by the heuristic issues these would fix and ended by explaining how this can be implemented into our application. Screenshots of our application alongside the new features added can be seen to visualise improvements.

Carrying out this evaluation process uncovered key weaknesses within our application and ways to cater our app towards our primary stakeholder in a more appealing way. This allowed us to find improvements which can be implemented.

Part 3: Findings

Visibility of System Status

Severity Rating: 1

The user might struggle to remember what locations are set while using the app, as the locations are not shown other than on the main menu, and in select situations. The location selection screen specifically (see top-right) could benefit from telling the user the already selected location, so they can make sure that they really need to select a new one This leads to a lack of awareness of the modes of an app, which causes the user to have to remember or go back and check information which should be readily available. Nevertheless, loading messages are shown when applicable, and buttons are highlighted when selected or held down, with settings being highlighted on the settings screen when enabled.
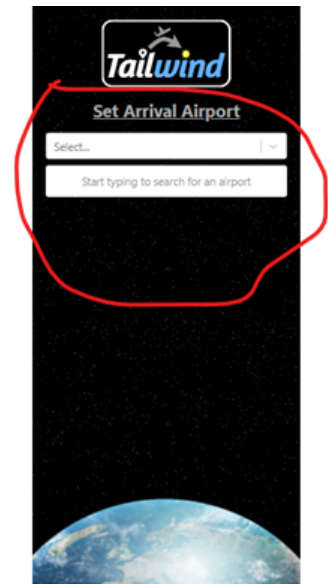
Match between System and Real World

Severity Rating: 0

Common words and phrases are used only with clear icons. No violation shown here.

User Control and Freedom

Severity Rating: 1

The app is very simple in its logical order and flow, so it's unlikely a user will become stuck. That said, knowledge that the logo takes you back to the main menu is needed in some instances, like when cancelling a location change (see top-right). The function of the logo is not explicitly told to the user, but as users have device-specific back buttons, it isn't a major problem.

Consistency and Standards

Severity Rating: 2

Several aspects of the app deviate from the majority of weather apps, missing certain features which might improve user experience when switching apps from another to ours. Weather warnings, displayed when weather reaches a point in which it might pose a risk to health, are not displayed here - users might find analysing the weather statistics here without such simplified warnings more difficult as a result. The app's buttons are also centralised and text-based (see bottom-right), which deviate from the more icon-based and animation rich guidelines set out in Google's 'Material Design' guidelines. This makes our app visually striking, but much less intuitive off-the-bat, especially on Android devices whose apps will often follow these guidelines.
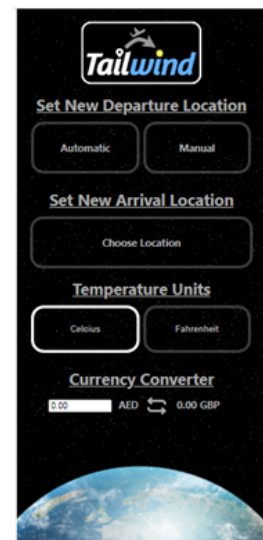
Error Prevention

Severity Rating: 2

4

When inputting a location for the first time, there is no timeout for denying the "use location" feature. Errors like these are not announced, and this might cause a user to wait a while for something that will not resolve itself. On the other hand, APIs that are not functioning, for example the currency converter, give an error message. The system has very few bugs and is perfectly usable, from our testing.

Recognition rather than Recall

Severity Rating: 1

All buttons are clearly labelled, using text rather than icons. Icons selected are clearly white rather than grey, so it is easy to understand how to manipulate the UI at a single glance.

Flexibility and Efficiency of Use

Severity Rating: 1

On the whole, it is an efficient design, with every action only a couple of clicks away. It is quick to pick up, and even quicker for experienced users. Some actions, such as inputting locations (see right), take a little longer, and could benefit from some streamlining - they require the appearance of an on-screen keyboard, typing in a location and waiting for the API to return an airport (and even then, searching the list to find the airport desired), which halts the momentum of the users' actions.

Aesthetic and Minimalist Design
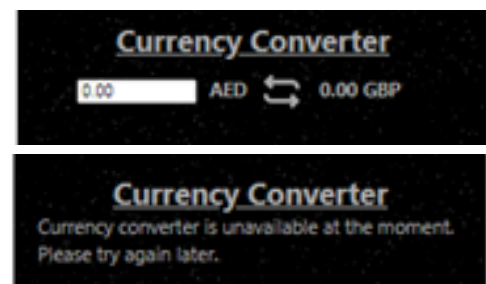
Severity Rating: 0

Only necessary information is shown, and if the user needs more they can easily access it away from a cluster-free main page. The app is already in a sort of dark mode, making it easier on the eyes, and colours are complementary yet stand out. No violation shown here.
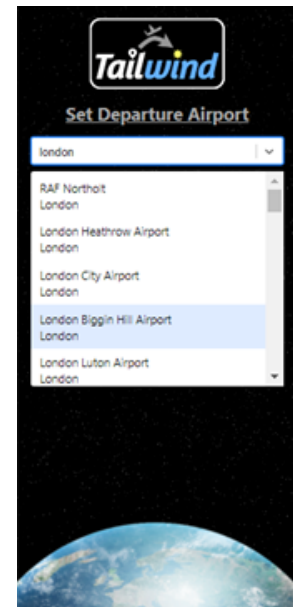
Help users recognise and recover from Errors

Severity Rating: 0

With a universal icon to take the user back to the main page, there is an easy way to avoid any errors the user may encounter. When errors do appear, a message appears in place of the normal component (see currency converter right). No violation shown here.

Help and Documentation

Severity Rating: 1

There isn't easily accessible documentation, but with how simple the app is, this is really not an issue. Most use cases are self explanatory thanks to text written on buttons (and icons where appropriate), and so a help menu would only be reiterating what is already there on the screen.

Part 4: Proposed Improvements

After conducting the heuristic testing, we have come up with proposed improvements which will hopefully tackle the issues we highlighted with high severity ratings and can be beneficial to the stakeholder simultaneously.

Weather Warnings

One feature we decided to implement was the idea of weather warnings as we feel that our primary stakeholder could find this feature useful which would help them make more informed decisions and tackle any issues related to delays as we have identified that time/punctuality as well as organisation is very crucial for the target market of this application.

The weather warning will be added to the application in the pre-existing departure conditions and arrival forecast pages under a new button called additional information. Here, the user will find important information which will summarise the weather conditions if the user base does not understand the statistics and so they can gain an easy overview. Our weather warning system will be created on the basis of a traffic-light system with different colours representing different information which can be seen in the illustrations below.

The heuristic principles this feature will help improve are consistency/standards as well as aesthetics/minimalist design. The warning icons and its colors which are being used are generally used among other weather software and mean the same thing so the user would not get confused. It also promotes a minimalist design as the user is not obliged to make an informed decision on weather conditions via the statistics we provide them. Overall this feature promotes ease of use and assists in application learnability.
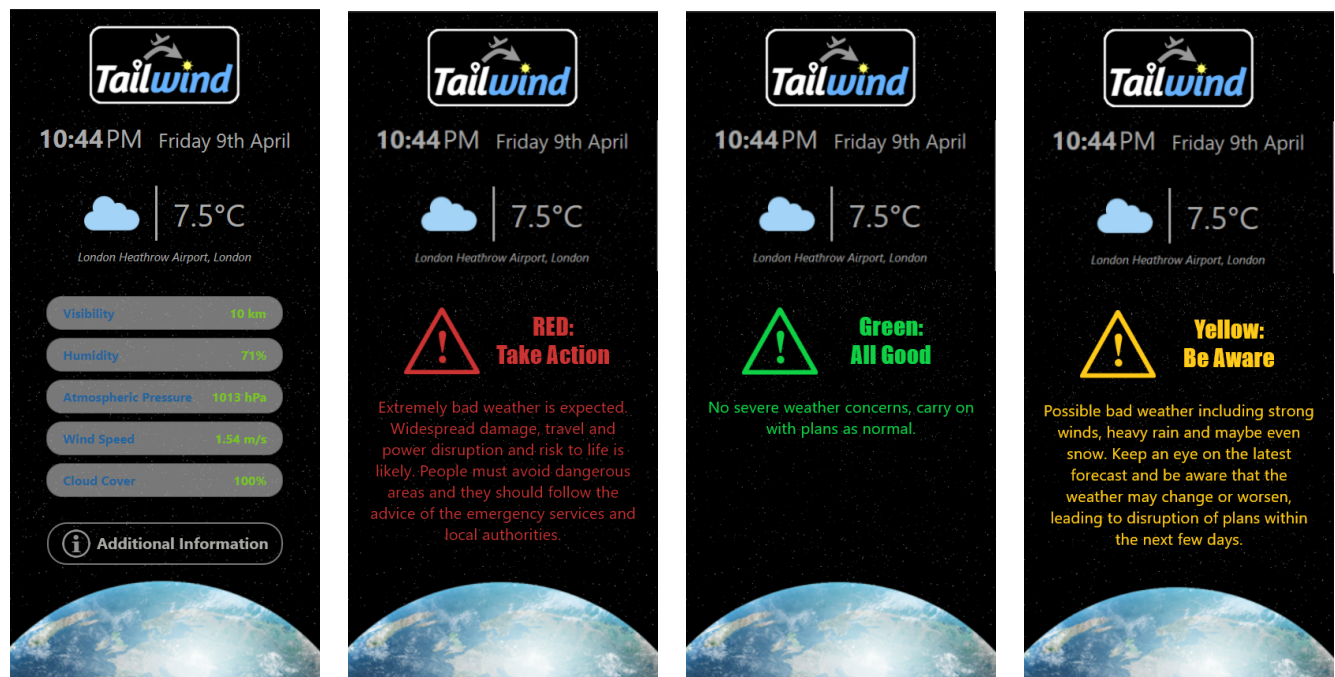
Scanning Tickets Via Camera

Another feature we think would be useful to add into our system is the option to scan tickets via the use of a camera. This was our initial proposal but due to time management and complexity issues, it could not be incorporated in the given time frame. This would be extremely helpful for our primary stakeholders as this speeds up the process of having to put information into the system. This is in comparison to the user needing to add information manually which is time-costly and not efficient.

To access this feature, the user would have to navigate to the settings page where they would then have an option available to them which says 'scan ticket'. Pressing this button will prompt the user to allow camera access where they then will be directed to a camera scanner screen. Whilst here, the user would have to either scan the QR code or barcode of their boarding pass. The barcode of a boarding pass has important information and mirrors what is written on a boarding ticket but allows a computer to interpret it more effectively. This would then preload the information of locations and their respective weather which would speed up the process hugely.

The heuristic principle this feature will help improve is flexibility and efficiency in use of the app. From our data gathering earlier in the project, we had identified that many people do not use a weather application for long so they would be looking for efficiency whenever possible which this feature provides. Furthermore, more pleasurable interactions will result in higher returnability rates and an increase in productivity.
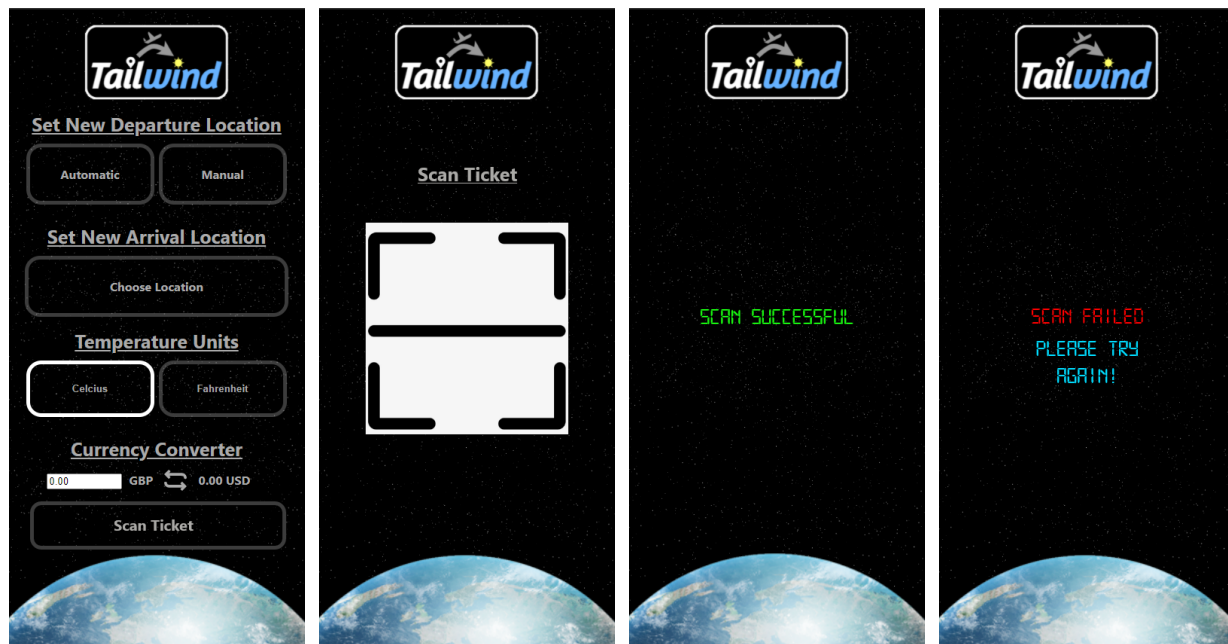
Set Flights rather than Locations

A major feature we identified was the idea of allowing the user to set flights rather than departure/arrival locations which would be better catered for our primary stakeholders. By following through with this, the user would have less to do in terms of inputting data. This would apply more pressure on system/API uptime however, it will also provide the user with vital information which is better suited for them as it moves the application from the ideology of making informed decisions to more solid information which the user would then have to read in order to understand.

This feature would require the use of additional API's which would extract all the ongoing/current flights with their flight codes, departure locations and arrival locations. There are APIs which are available for this (Flight Track powered by Flightradar24) and would be implemented as a list as can be seen below in the illustration. It will also provide us with information on whether flights will be on time, possible delays and whether the flight gets cancelled.

The heuristic principle violation this helps resolve is flexibility/efficiency of use. Multiple steps within our current system can be skipped and this feature will help provide a more tailored experience for our stakeholders which will in addition increase usability as the system will be more effective and efficient as it relies less on user input compared to currently. This, in turn, touches upon the idea of helping with the recognition rather than recall heuristic principle.
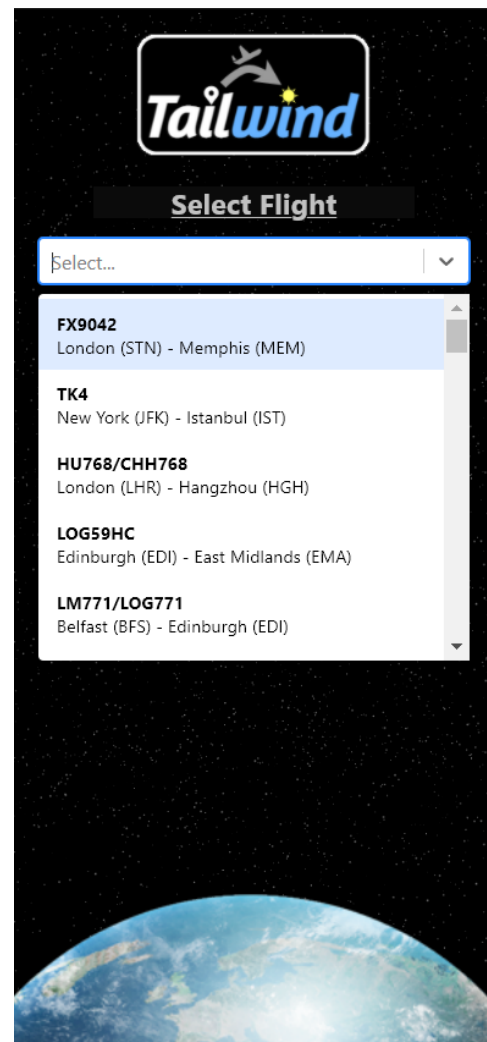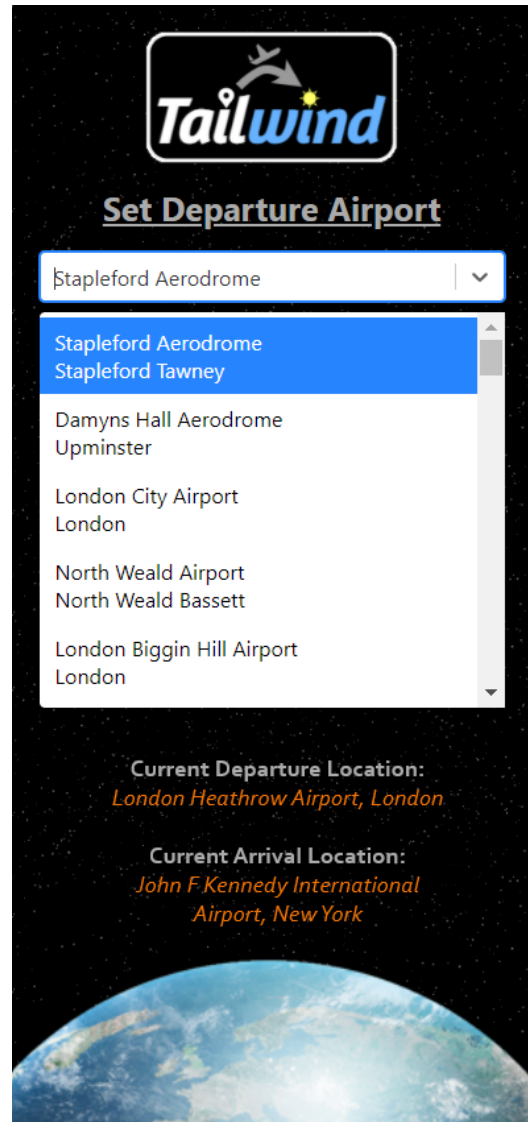
Always-present location reminders

In some circumstances, the user might be unable to remember what locations they've set for arrival and departure. To provide greater transparency as to the state of the app, a section on the UI should be reserved for providing a more context-sensitive location, visible to the user. Having this will be good for business class passengers - they are in a rush and it would be helpful to have locations selected at a glance regardless of screen.

This feature would need to remember the states of the locations which are already in use for the departure and arrival location. Whenever, a new location is being set, this information would be summarised to the user. An illustration can be seen below.

This tackles some violations with the visibility of the system status and helps improve the principle of recognition rather than recall primarily, within the app. This allows the user to be more aware of current system conditions which improves safety usability as it minimises the likelihood of an error occurring (slip) from the user's perspective whilst also making the use of the system seem more efficient/effective.

Group Contribution

Name	Sahir Ahmed	Mohamed Reda Bacha	Savio Fung	David Jones	Maximilian Vaughan
Tasks	Heuristic evaluation, process of evaluation section, improvements	Testing, improvements	Heuristic evaluation, introduction section	Heuristic evaluation	Heuristic evaluation, collation of heuristics, improvements
Percentage of work completed	100%	100%	100%	100%	100%
Meeting attendance	Excellent	Excellent	Excellent	Excellent	Excellent
Quality of work	Excellent	Excellent	Excellent	Excellent	Excellent
Punctuality of work	Excellent	Excellent	Excellent	Excellent	Excellent