CO2104 Coursework 1: Design Portfolio & Heuristic Evaluation of a Web-Based Task Manager

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CO2104 User Interfaces

Part 1: Design Portfolio

Introduction

This design portfolio & heuristic evaluation concerns a web-based task manager.

A large percentage of the population has to organise their time around a multitude of common tasks – grocery shopping, attending work, taking children to school, exercising, etc. According to Miller (1956), humans can remember seven items at once, plus or minus two (through size of said items is irrelevant). Consequently, when a person's ongoing tasks start to accumulate, they tend to have memory failures and risk stress. This affects people from all facets of life, from students to chief executive officers – a task manager can mitigate this problem.

This task manager aims to support control of a person's time and responsibilities, allowing the user to free up their memory regarding the tasks that are ongoing and for when they must be complete. The user can view a clean, minimalist dashboard that acts as a menu for a person's task management, allowing easy navigation of all functionalities involved. It has several key user requirements:

- Have quick access to snippets of important information on the homepage, including the task list, weather, time, date, screen-time, reminders, mail, and a calendar view of the month
- Create, view, and edit reminders for upcoming deadlines and responsibilities
- Organise tasks of varied periodicity (daily, weekly, etc) using a scheduler system on a dedicated task list page
- Create, view, and edit a calendar containing the dates and times for tasks a user has placed in the system on a dedicated page
- Create, view, and edit a tasks list, removing items off upon completion, on a dedicated page
- Create, view, and edit mail filtered by work, education, and personal mail on a dedicated page
- Create, view, and edit notes on a dedicated page
- Sign up and login to an account, enabling the user to save data

Wireframe Walkthrough

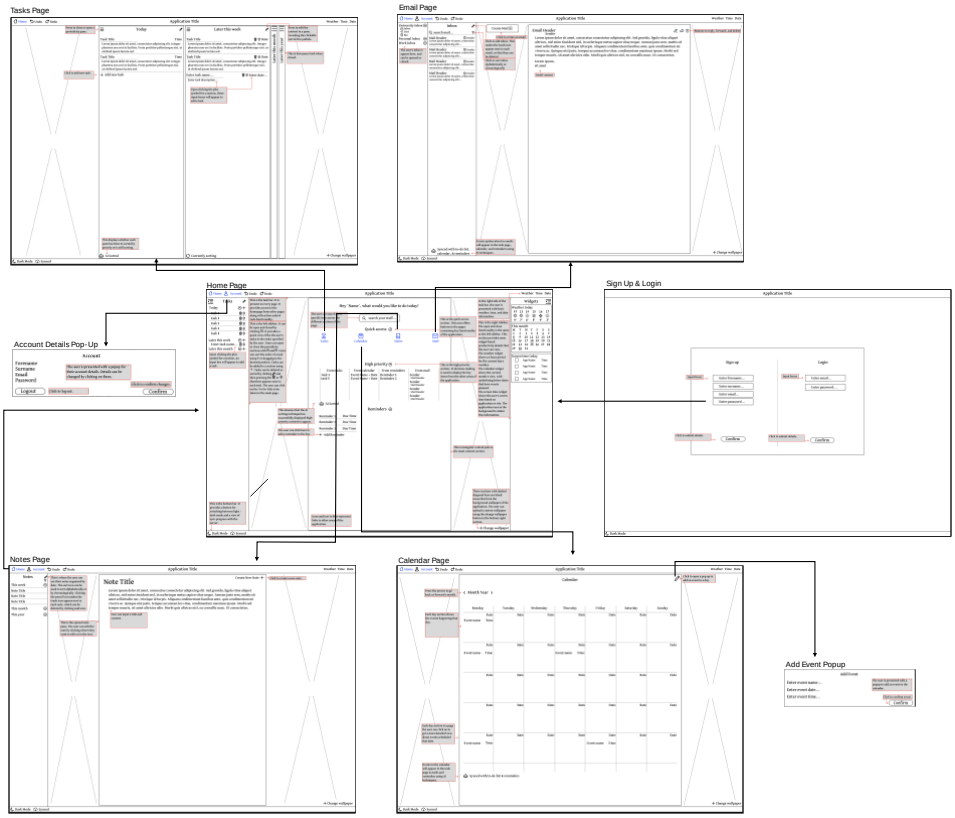


Figure 1 – holistic wireframe.[1]

Figure 1 shows the holistic view of the task manager user interface. Upon opening the application, the user is greeted with the sign-up & login page seen in figure 2.

[1] Grey boxes with red outer layers represent annotations that are not part of the user interface. Black arrows represent the connections between pages.

Sign-Up & Login

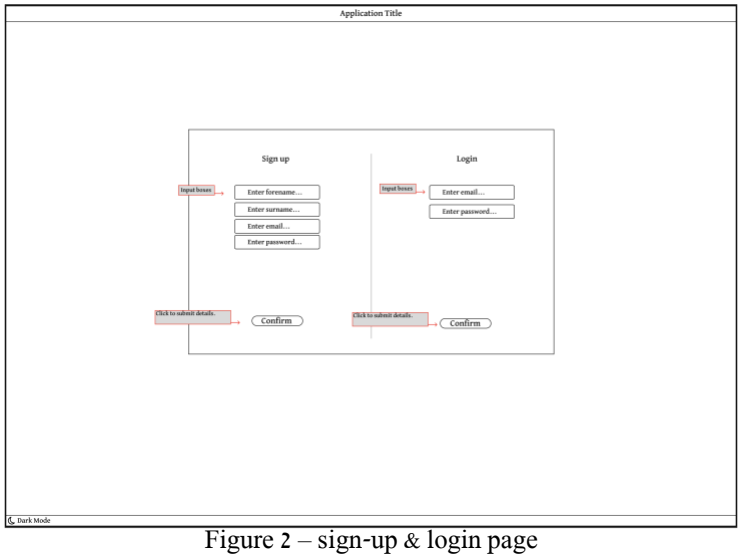


Figure 2 – sign-up & login page

The sign-up & login page serves to let the user create an account or login to their pre-existing one using the details of their choice. From here, the user is redirected to the homepage upon clicking 'confirm'.

Homepage

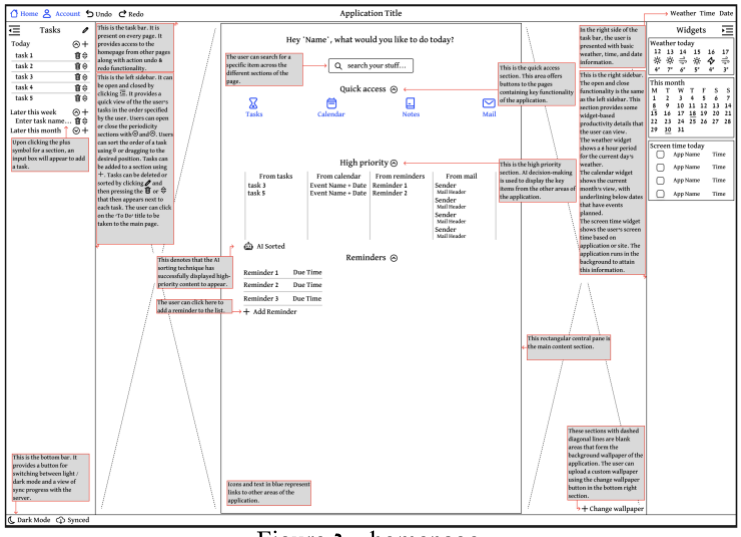


Figure 3 – homepage.

The homepage servers as the main dashboard for the application. The user is presented with a holistic view of the functionalities that the application provides, including links & buttons (highlighted in blue) to the dedicated pages for these functionalities. The general aesthetic of the application is minimalistic but not simplistic. Lotteridge et al. (2015) found that where there are multiple sources of information, as long as they are relevant, the productivity of a person is not affected. The homepage uses these findings by presenting only what is likely to be relevant at the time.

The centre panel is the main content section. The user is met with a personalised greeting, followed by an input bar that allows the user to search for a specific page, event, or other item of content; a dropdown menu will appear displaying the content matching what has been searched for. The search bar aims to accelerate the user's productivity by providing an easy means of access to specific content they require.
Below the search bar is the quick-access section which provides buttons that link to the other pages of the application. The buttons are spaced out evenly so that they are visually distinct and avoid information overload (Gross, 1964). The user can also add up to 5 of their own quick-access links – this is to provide customisation to the user. Below the quick-access section is the high priority section which provides quick insights into items the user may find important. This section uses AI decision-making to choose the most urgent items from the different areas of the page. Below the high-priority section is the reminders section which provides a list of reminders that the user has set or that has been set automatically by the application using information from the different application sections. In summary, the central pane acts to present the user with easy access to functionality and provide small chunks of important information that are of likely importance to user productivity.

On the left side of the page is the to-do sidebar, presenting the user with a summary view of the tasks list from the main tasks list page. The user can open and close sections of periodicity, thus allowing as much or as little information as the they deem necessary. The user can quickly view and edit their tasks list without having to navigate to the dedicated page. On the right side of the page is the widget sidebar, presenting the user with small chunks of information about the weather, month, and their screen time. The user can open and close both sidebars using the hamburger menu icons

The navigation bar (existing on all pages) provides access to the homepage, account details and functionality to undo and redo any action, such as creating a task or deleting a reminder. On the right side, there is information about the time, date, and weather. Clicking 'account' displays the following pop-up, detailing all information the user could need about their account.

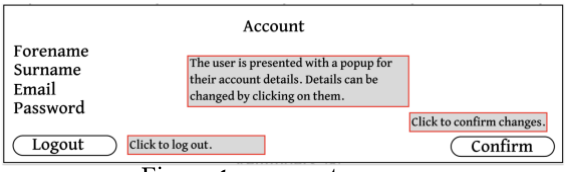


Figure 4 – account pop-up.

The bottom bar has the option to switch to dark or light mode, and it shows the user whether the application is synced with the database or not – this is to avoid errors.

The background can be personalised to contain any photo the user desires, as personalisation can help an application feel more welcoming – this background stays consistent between pages.

The user can navigate to any page from the homepage.

Tasks Page

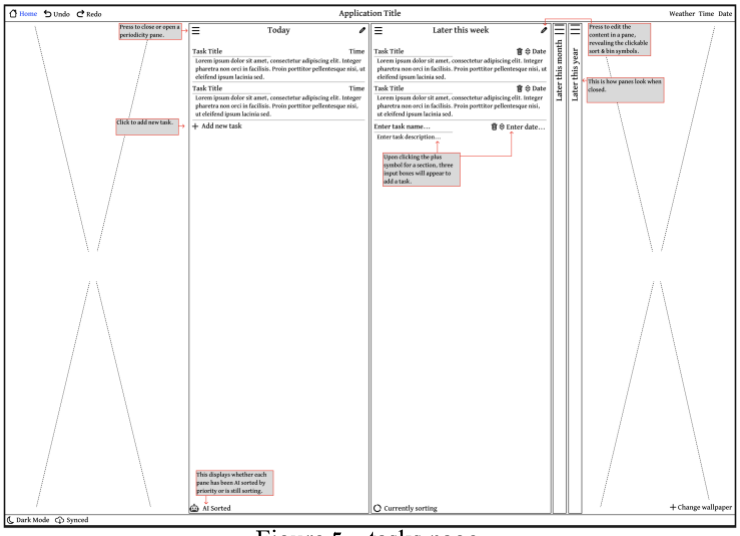


Figure 5 – tasks page.

On the tasks page, the user is able to view, create, and manage tasks. Tasks are arranged into panels based on periodicity, which in-turn are arranged internally based on time urgency and other factors that the AI decision-making accounts for when sorting the list. Users can add or delete items from the lists. The panels can be closed or opened, allowing focus on as much or as little as the user desires.
The panels system provides a clean and minimalist display of information to the user, which aims to avoid underload & overload and prevent the user from getting distracted. The panels are presented at the same eye level to keep the user engaged with the relevant content by guiding their vision, as per the law of continuation (Koffka, 1935).

The user can navigate to the homepage using the top-left 'home' button, and they can choose a new page from there.

Notes

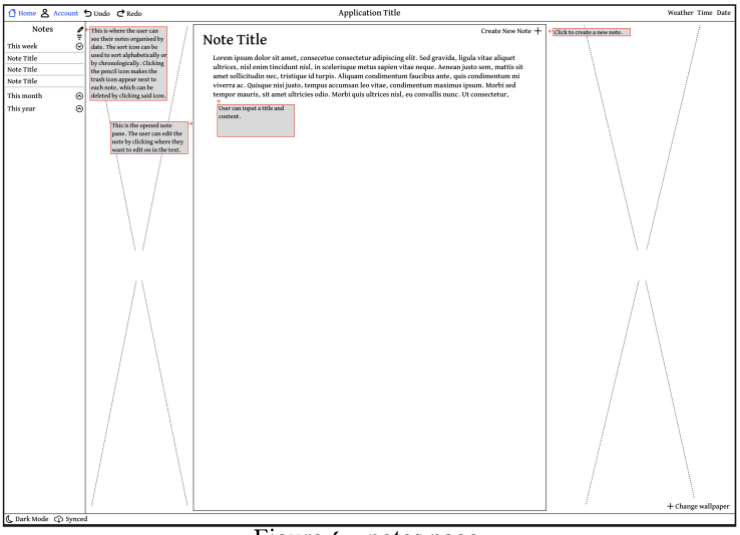


Figure 6 – notes page

The notes page provides opportunity for the user to keep a collection of notes organised by week, month, and year. A large pane is provided for the user to input note-based information of varied length. The page is minimal to enhance focus on the key aspects of the page: creating, viewing, editing, and sorting notes. This perspective is backed by studies such as Roto (2011), which found that minimalist interface design led to improved task performance.

Calendar Page

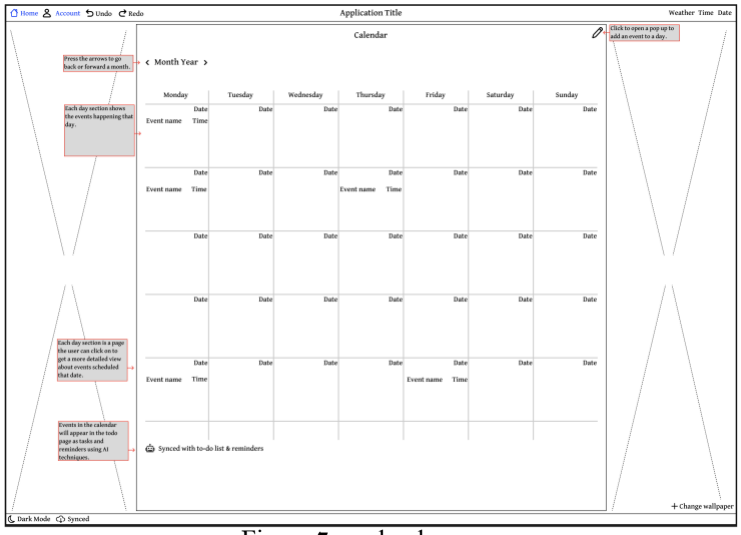


Figure 7 – calendar page

On the calendar page, the user is able to see a view of the current month along with any events they have added to a date. When the user clicks the button to add a new event, they are greeted with the following pop-up:

Figure 8 – add event pop-up

The user is also kept informed about the background AI sorting that is used to keep the user's obligations consistent between the calendar, tasks list, and reminders.

Email Page

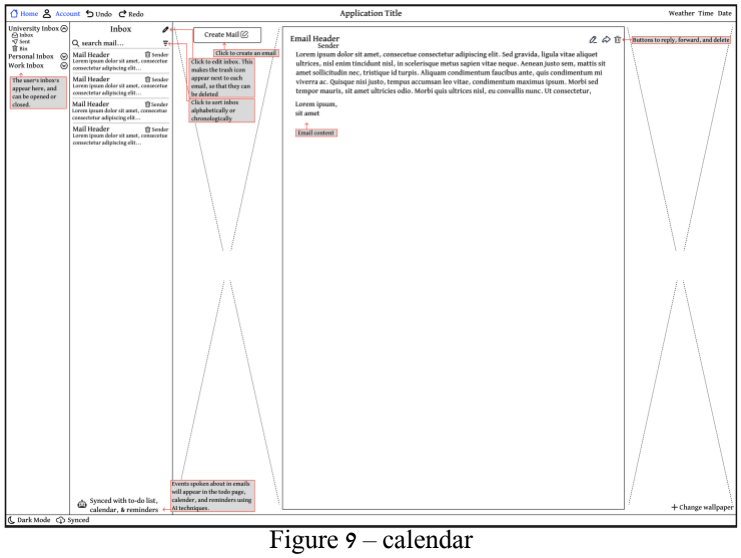


Figure 9 – calendar

The email page provides the option to add inboxes based on education, personal life, and work, enabling the user to sort emails in a sensible way that will boost productivity.

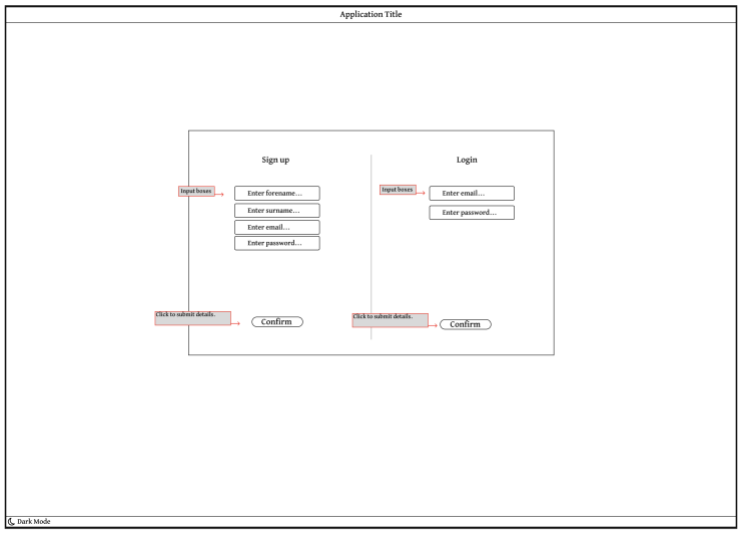
Part 2: Wireframes Evaluation

The metric system for this evaluation is as listed in the table below and uses Nielson's original 10 heuristics.

Severity Rating	Definition
0	There is no usability problem, and the heuristic is satisfied
1	There is a superficial or cosmetic usability problem; a fix is not required before the next release unless spare time is available
2	There is a minor usability problem – this affects usage inconsequentially but does exist; a fix should be given low priority for the next release
3	There is a large usability problem – this affects usage consequentially; a fix should be given high priority for the next release
4	There is an unavoidable and severely detrimental usability problem – there is a complete breakdown of usability; a fix should be given urgent priority for the next release

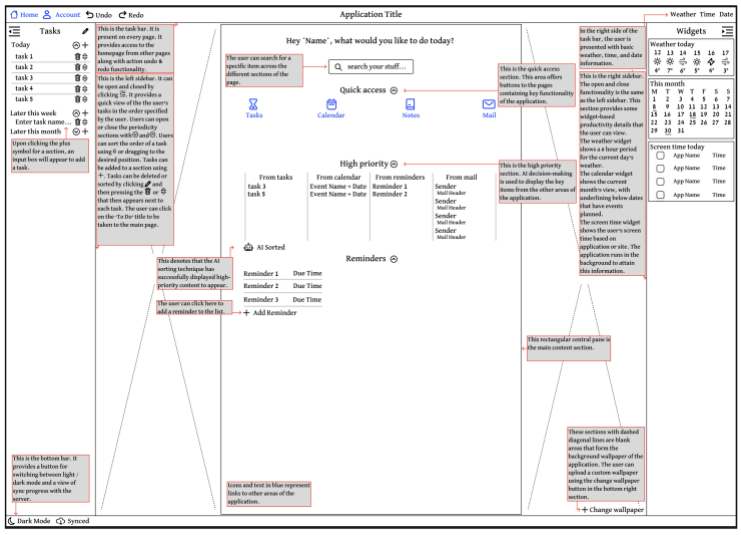
Heuristic Evaluation

Sign-Up & Login Page

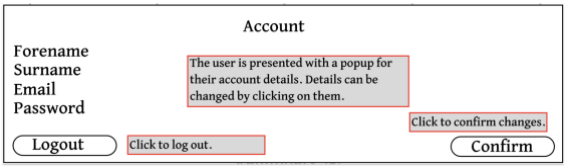


This page has a severity rating of 0. The design is consistent, evident by the text boxes and buttons. Language is consistent and the design is minimalist and aesthetically pleasing. If the user enters unacceptable or false details, they are advised to re-enter them, satisfying the error prevention & recovery heuristics. Heuristic 7 is technically not satisfied, though there is no realistic way for it to be implemented in the login page, meaning there is no heuristic violation there. There is a match between the system and real world as the buttons look like real-life buttons and input boxes look like those seen on paper forms.

Homepage



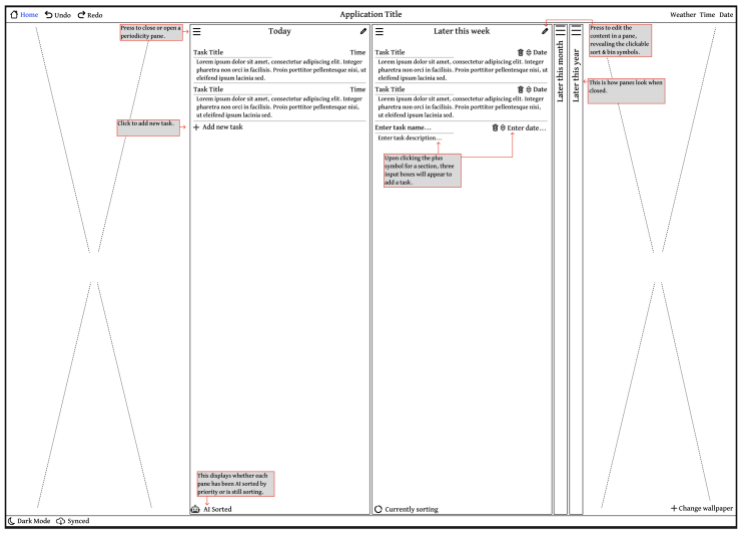
The homepage is simple and fulfils most heuristics. System status is visible in numerous ways – the 'synced' in the bottom bar tells users whether the application is currently up to date with the server, which also helps to prevent any errors derived from failures to sync. Relating to error prevention, there is functionality to undo and redo any action committed by the user (available in the navigation bar). The design is clean, minimal, and asymmetrical – only showing what is necessary is presented. However, it could be argued that screen time is rarely needed and consequently goes against heuristic eight, as per Nielsen and Molich (1990). However, this is only a small chunk of the screen and causes no real issue in terms of usability. It could be argued that, in the left sidebar, due to the fact users must click the pencil icon to be shown the option to delete a task, that this violates the heuristic 6 – recognition rather than recall – as the user must recall that to delete a task, they need to click the pencil icon first. With that said, the option to delete is still 'easily retrievable' (Sharp & Preece, 2002).



Regarding the pop-up, there is a lack of consistency between the input boxes here and those on the sign-up/login page – the ones here are not boxed like those on the login page, which possibly violates heuristic 4, 'consistency & standards'. To amend this, the input boxes should have a visible outline to make their nature clear.

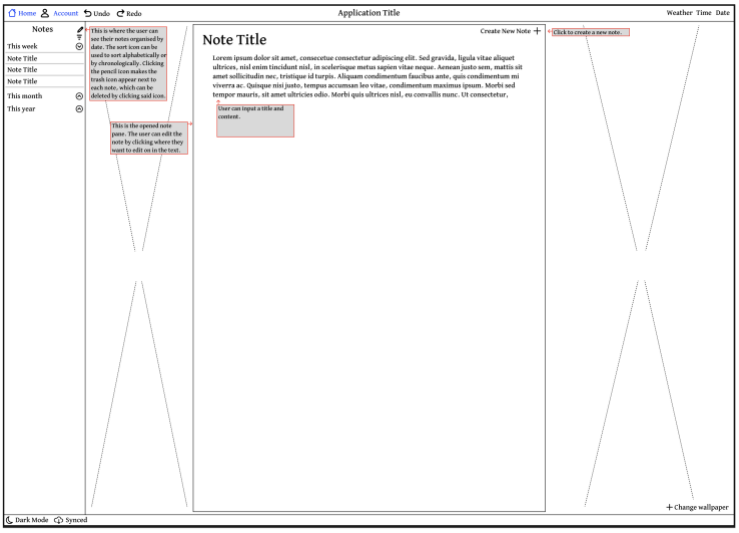
Ultimately, I believe this page deserves a severity rating of 2, as there are some issues which are mostly superficial – the inconsistency between input boxes brings the rating from a 1 to a 2.

Tasks Page



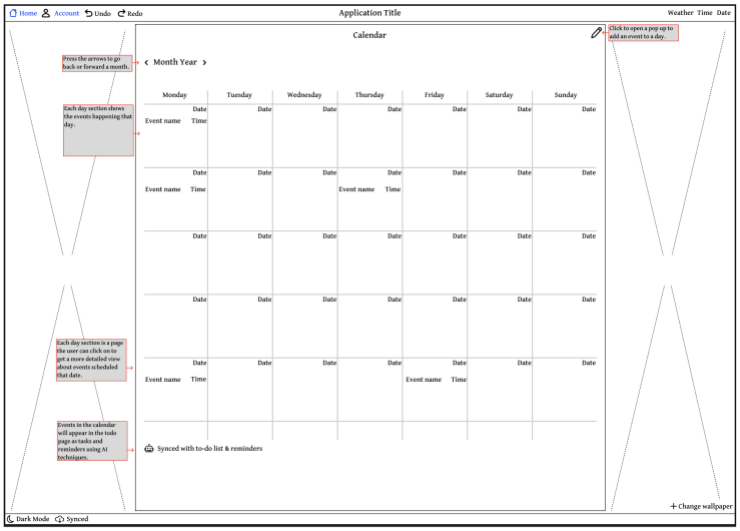
The tasks page has visibility of system status via the sorted / sorting message present on each panel that informs the user whether the tasks have been organised by the system. There is almost no recall needed except for recalling that the pencil icon provides the option to then delete and sort tasks. There is strong consistency between pages regarding iconography, as evidenced by the use of the pencil, bin, plus, and sort icons. The design is minimal, showing only what is necessary to work with tasks – creation, movement, organisation, deletion, etc. The severity rating is 0.

Notes

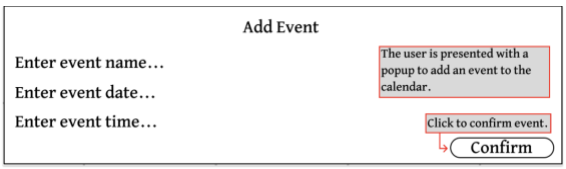


The notes page has strong match between system and the real world, as notes are organised in a standard filing cabinet structure and are presented as paper panes that are a similar size to A4 paper. There is no overly formal or system-oriented language. As with every page, the user can undo and redo actions, such as creating or deleting a note using the navigation bar's undo and redo functionality – this satisfies the heuristic regarding user control and freedom. There is consistency between other pages, as seen with the buttons used to edit and sort notes – however, the 'create new note +' button is not outlined like certain buttons on other pages ('create mail' and 'confirm', for example) which may cause confusion with what elements are clickable and what are not. This is a small usability problem, putting the severity rating for this functionality at 2.

Calendar Page

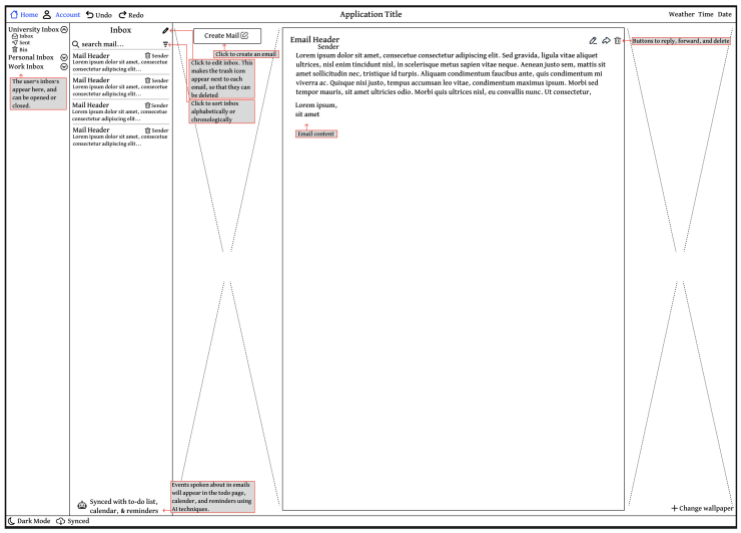


The calendar page is presented like real-world calendars, providing a good match between system and real-world. Users are able to see if the calendar has synced with other areas of the application which satisfies the 'visibility of system status' heuristic. The pencil icon allows the other to create a new event – this is slightly different from the pencil button in other pages (which is used to edit existing content), and thus causes problems regarding the heuristic of consistency and standards. This is only a superficial problem, as it can be easily adapted to, putting the severity rating at 1.



When the pencil is clicked, the pop-up to add an event is shown. The lack of outline surrounding the input boxes may cause confusion as they do not match other input boxes in the application – this concerns the heuristic regarding consistency and standards. Like the pencil problem, this is easily adapted to, but still constitutes a minor usability problem so the severity rating is 2.

Email Page



The email page has no major issues concerning heuristics. Buttons are clear and system status is visible via the 'synced with…' message in the bottom left. No substantial recall is required as all functionality is clearly apparent and there is consistency between pages in terms of buttons. The design is aesthetic and minimalist, as only the functionality required to work with emails is present.
The few minor problems include no help & documentation. However, the email functionality is very similar to existing email clients, and thus it would be difficult to justify documentation for the basic functionality. Users should perhaps be able to close a draft email by clicking off of it. There seems to be no opportunity to accelerate the interactions, as per the heuristic 'flexibility & efficiency of use'. Perhaps uses should be able to create template emails so that they can speed up the email sending process. These problems put the severity rating at 2.

Discussion on Heuristic Evaluation Findings

The heuristic violations addressed are as follows:

- Heuristic 4: Consistency & Standards:
  - Input boxes are not consistently designed
  - Certain buttons not outlined where others are outlined
  - Pencil button has different uses between pages
- Heuristic 7: Flexibility and Efficiency of Use :
  - No option to accelerate interactions in the creation of emails

The issue surrounding consistency can be addressed in the following ways. Input boxes should be all clearly outlined, allowing the user to understand where input is expected and where it is not. Similarly, all buttons should be outlined with a consistent shape, and should be clearly visible and distinct from non-clickable features – this could be helped with the use of colour and hover effects. To resolve the pencil issue, a different icon should be used for creating new events on the calendar page, like a plus symbol, which would make it consistent with the notes page and other 'add' functionality.

The issues surrounding flexibility & efficiency of use can be addressed in the following ways. There should be functionality to enable template emails, allowing the user to avoid rewriting repetitive content, like email footers and headers. Suggestions in responses should be given based on the content of the email received – examples include 'Thanks', 'I look forward to it', 'Thanks for the email', etc. This would allow advanced users to make their workflow much more efficient, and in turn resolves the heuristic.

Conclusion

In conclusion, I have produced a modern task manager web-application that serves to work for people of all demographics and occupational background. The rationale behind it is to boost productivity for all people who have large workloads and could use a system to help ease their informational overload and allow them to divert energy from remembering their tasks to handling their tasks one at a time. The heuristic evaluation found that there are some small-scale problems with the user interface – inconsistency and lack of acceleration options were the largest offenders. These should be addressed in the end application. However, the application was quite

strong in terms of satisfying Nielson's 10 original heuristics and should make for a generally pleasant user experience.

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