Year 2

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CO2104 User Interface and Evaluation
Homework 1: Medium-Fidelity wireframes and evaluation

University Of Leicester

Part A: Creating medium-fidelity wireframes for your project:

City: Edinburgh, Scotland

Hobby: Historical Literature

Project Description: The project is a bespoke tourism website for historical literature enthusiasts visiting Edinburgh, entitled "Literary Time Travel." It features an interactive map that highlights significant literary locations across different historical periods, enriched with a timeline slider for temporal navigation. Key elements include a dynamic event calendar, personalized literary lists for users to track their 'must-visit' spots. This platform aims to merge Edinburgh's rich literary heritage with modern-day exploration, providing an immersive cultural journey through the city's storied past.

Unique Feature: "Literary Time Travel" A unique feature for the website; is an interactive map enhanced by a historical timeline slider that allows users to traverse Edinburgh's literary landscape through different time periods. This feature enables users to visualize the city's evolution and explore the rich tapestry of its literary heritage. As users slide through time, the map updates to reflect the literary hotspots and significant events of each era, bringing history to life. Clickable markers reveal detailed information about historical figures, bookshops, and literary events, enriching the user's journey with context and depth and it incorporates several user-centered functionalities: Save to Calendar, save to 'Must Visit' List, Detailed Information and Direct Website Access. This novel tool invites a deep dive into the chronicles of Edinburgh's storied past, making it an exceptional resource for tourists and literature aficionados alike.
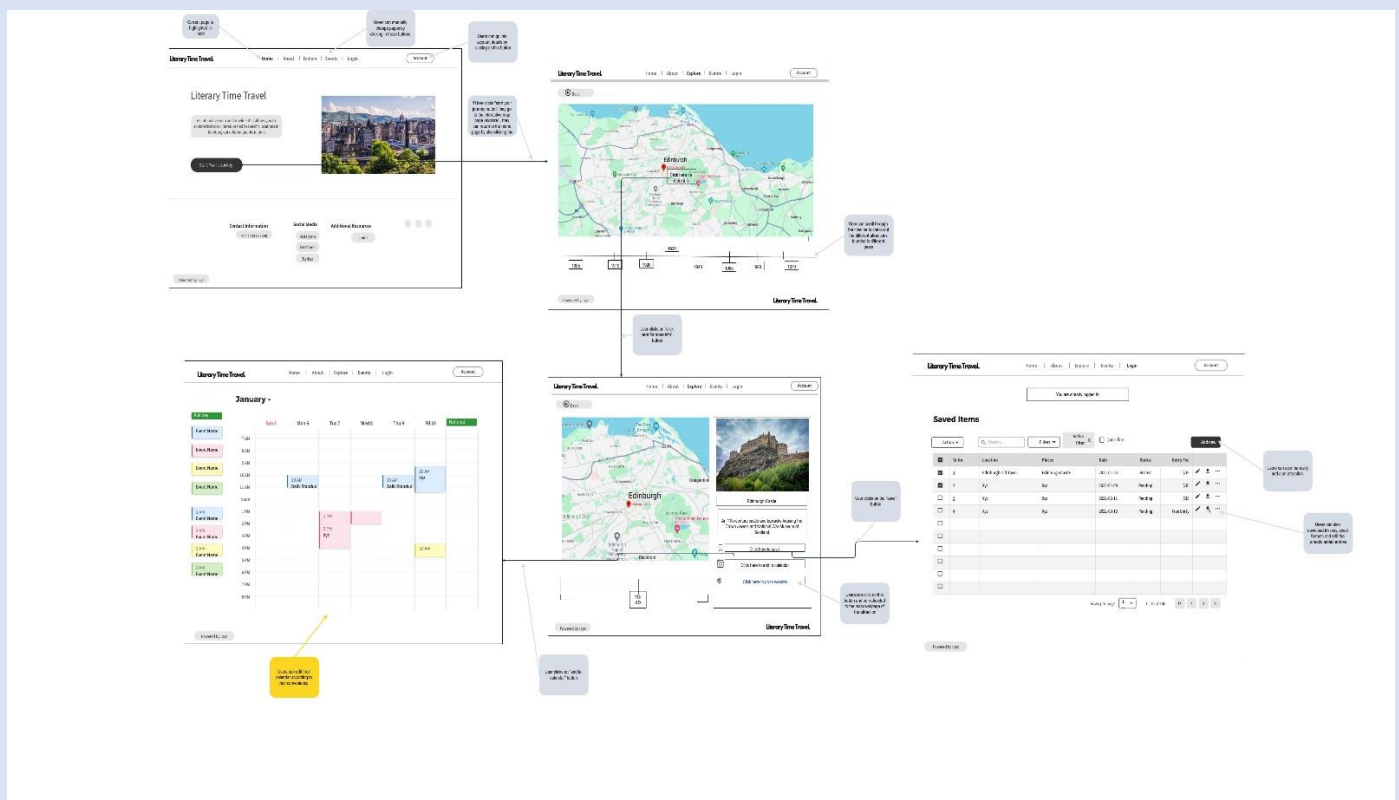
Part B: Evaluating project examples:

Question 1:

An annotated bibliography should include the following:

- A proper citation of the paper in IEEE format.
- A summary of the paper's purpose, research question, main argument, findings, and conclusions.
- An evaluation discussing the content, the intended audience, strengths, and weaknesses.
- A reflection on what the reader has gained from the paper, how it contributes to the research community, and how it can be used.

Examining Aidan's annotated bibliography against these criteria:

- **Citation**: Aidan has cited the paper, but the citation does not follow a standard format strictly. It is missing elements like the conference or journal name, volume, issue, pages, DOI (while a URL is given, the DOI is a more stable and preferred link for academic citations. If a DOI is available, it should be included.), Access Date, which are typically required in academic citations.
- **Summary**: Aidan's annotation does provide a brief summary of the paper's content, including its purpose, the research questions, and the paper's overall focus. However, it lacks detail on the specific findings and conclusions of the paper.
- **Evaluation**: Aidan offers an evaluation by mentioning that the paper's focus on books and text can be applied to digitalization of photos and that it combines many resources. However, he does not discuss the strengths and weaknesses in detail, nor does he consider the credibility of the source or the accuracy of the citations.
- **Reflection**: Aidan reflects on how the paper could be more useful for his research with a user study and mentions what he learned from the paper. Nevertheless, he does not detail how this paper's contributions can aid the research community or how he plans to use it beyond seeking more detailed metadata.
- **Objectivity and Tone**: The language ("I think that, whilst the paper...") is somewhat informal and subjective for an academic annotated bibliography. A more objective tone should be used.

Question 2:

For the first part of her study where participants are asked to fill in postcards about their interaction with their kitchen and how they shop for groceries over the month, **Probes** would be a suitable method.

- **Remote Accessibility:** Probes can be conducted remotely, which is suitable for Freya's participants who have limited mobility and may not be able to travel. This method allows participants to provide insights into their own environments without the presence of researchers, which aligns with the study's remote nature and the longitudinal collection of data.
- **Diverse Formats:** Probes can take on various formats, such as postcards, maps, or photo albums, allowing participants to provide data in a way that's accessible and easy for them. This flexibility is particularly advantageous for engaging elderly participants in a manner that is comfortable and familiar to them.

For the second part, where Freya wants to get additional feedback and understand how participants interact with each other and discuss the topic, a **Focus Group** would be appropriate.

- **Rich Interaction:** Focus groups enable direct interaction among participants, which is valuable for Freya to observe and understand how participants discuss and interact with each other regarding the topic.
- **Time-Efficiency:** Given that Freya has limited time to collect data, focus groups are relatively quick and can provide a lot of qualitative data in a short amount of time, as they are designed to gather a wide range of information in a single session with multiple participants.

Question 3:

There are several potential ethical issues that Charlotte's company should be aware of when creating smart glasses:

1. Privacy Concerns: With features like facial recognition and photo tagging, there could be significant privacy implications. The glasses could record and identify individuals without their consent, leading to potential misuse of personal data. It's important that the company establishes strict privacy policies and complies with regulations like GDPR.
2. Data Security: The capability to collect data for advertisements and log errors can pose risks if the data is not properly secured. There is a risk of sensitive information, such as patient data in a healthcare setting, being accessed by unauthorized parties.
3. Attention and Distraction: While the glasses are designed to not negatively affect vision or interaction with the real world, the features such as emails, news, and communication could potentially distract users from their surroundings, leading to accidents or reduced social interaction.
4. Inequality and Accessibility: The technology could widen the digital divide if not made accessible to people with varying levels of income or disabilities. There's also a concern that features like detecting hazards for people with visual impairments could be a premium feature rather than a standard for all, which would be ethically questionable.
5. Dependence and Addiction: If the glasses are designed to work 24/7 and offer constant communication and updates, there is a risk of users becoming overly dependent or addicted to the device, which could affect their mental health and well-being.
6. Bias and Discrimination: Algorithms for features like facial recognition may have inherent biases, which could lead to discrimination. It's essential that these algorithms are trained on diverse data sets and regularly audited for fairness.
7. Consent for Monitoring: The use of the glasses for monitoring employees raises questions about consent and the extent to which employers can surveil their staff. The company should ensure that there are clear policies in place that protect employees' rights.
8. Advertising and Manipulation: Collecting data for advertisements raises ethical questions about the manipulation of users' behaviour and preferences. There is a need for transparency on how data is used and an opt-out option for users who do not wish to receive targeted advertisements.
9. Impact on Children: As part of the audience, special considerations need to be made for children in terms of content filtering, screen time management, and protecting their privacy and development.
10. Misuse and Harassment: Features that allow the identification or tracking of individuals could be misused for stalking or harassment. The company must consider safeguards to prevent such misuse.

Question 4:

- Naomi (Physiological Pleasure): Naomi is looking for comfort due to her long working hours as a nurse. Therefore, the smart watch that is most suitable for her is **Smart Watch A**, which is voted the most comfortable watch, compact, not bulky, and lightweight.
- Ross (Ideological Pleasure): Ross works in retail, wants to track his steps and sleep, and is eco-friendly. The smart watch that matches his ideology of sustainability would be **Smart Watch D**, which is the most sustainable watch, has a long battery life which recharges by movement, and components that are easy to replace with a recycling scheme.
- Jamil (Psychological Pleasure): Jamil is an amateur chef who needs a watch for timing his cooking and had a bad experience with his previous watch breaking. He would benefit from **Smart Watch C**, which is best for multitasking, is easy to use, waterproof, heatproof, and can set multiple timers with alerts, which is ideal for cooking.
- Ana (Sociological Pleasure): Ana is a teenager who wants the same smart watch as her friends to not feel left out, indicating the importance of social conformity. Since her friends use an in-built app in their smart watches to organize parties**, Smart Watch B** would likely be the most suitable for her as it is the "coolest" watch, suggesting that it is popular among her peers, and it also has the capability to send messages to others, which might include the app her friends are using.

Question 5:

- **Visibility of System Status (Severity: 2):**
  The system provides feedback through the confirmation page, which informs users that their action (booking a table) has been successful. However, it might be improved by including details like date, time, and the number of people for the booking directly on the confirmation message to reaffirm the user's actions.
- **Match between System and the Real World (Severity: 1):**
  The app uses familiar terms such as "Start Booking" and displays menu items in a clear, understandable format, which matches real-world conventions.
- **User Control and Freedom (Severity: 3):**
  Users can easily navigate back to the homepage or menu from different pages, but it's not clear if they can easily undo or modify actions during the booking process.
- **Consistency and Standards (Severity: 1):**
  The design appears consistent across the pages, and standard UI elements seem to be in use.
- **Error Prevention (Severity: 2):**
  An error message is shown when a time slot is full, which is good. However, preventing errors by greying out unavailable times would be more effective.
- **Recognition Rather Than Recall (Severity: 1):**
  The app design seems to keep options visible, with the current selection highlighted, reducing the user's memory load.
- **Flexibility and Efficiency of Use (Severity: 2):**
  The ability to book a table and navigate the menu appears straightforward, but it's unclear if there are shortcuts or customizable features for frequent users.
- **Aesthetic and Minimalist Design (Severity: 2):**
  The design is fairly minimalist, but some screens seem to have unnecessary information (e.g., the image of the café on the confirmation page might not be needed).
- **Help Users Recognize, Diagnose, and Recover from Errors (Severity: 2):**
  The error message for a sold-out time slot is clear, but the app could offer alternative suggestions or assistance to recover from the error.
- **Help and Documentation (Severity: 3):**
  There is no visible help or documentation feature in the wireframes for users who may need assistance, which could be critical for new users.

  The severity rankings are on a scale of 0-4, with 0 being not applicable and 4 being a catastrophic issue that could lead to severe problems.

Question 6:

Good Practices:

- **Welcoming and Introduction:**
  Molly's welcoming attitude helps establish a comfortable environment for Sharifa. The introduction provides a clear structure of what to expect in the study.
- **Consent and Clarity:**
  Molly ensures that Sharifa reads and signs the consent form before proceeding, which is a standard ethical procedure in usability studies.
- **Observation without Interference:**
  Molly observes Sharifa's interaction with the app without intervening, which allows for a natural user experience to be recorded.
- **Debriefing Questions:**
  Molly asks open-ended questions during the debriefing to gather qualitative feedback about the user's experience with the software.

Bad Practices:

- **Lack of Assistance:**

When Sharifa encounters difficulty with changing to paint mode, Molly does not provide immediate help, potentially affecting the user's experience and the study's outcome.

- **Dismissing User Concerns:**
  Molly dismisses Sharifa's concern about the undo and save buttons being too close, which could lead to overlooking a genuine usability issue.
- **Insufficient Explanation:**
  Molly does not explain the app's features or how to troubleshoot issues, assuming that the distance between buttons is adequate without considering the user's feedback.
- **Post-Task Support:**
  There is no indication that Molly offers assistance or an explanation after Sharifa skips the task, missing an opportunity for learning and improvement.

In terms of the usability study, Molly conducted a structured session with proper ethical considerations but could improve on addressing participant challenges and concerns during the tasks. It is important for the facilitator to acknowledge difficulties faced by users and provide support or guidance to help them overcome these challenges, without leading them to specific answers that could bias the study's results.

Question 7:

1. **Introduction:**
   "There is a gap in research regarding how immersion in Virtual Reality (VR) is affected by smells."

2. **Literature Review:**
   "Previous research has found that smells can have a positive [1] and negative [2] effect on user's emotions in VR."

3. **Methodology:**
   "Data was collected using Smith's immersion survey and through semi-structured interviews."
   "30 participants were recruited using the snowballing approach."
   "The study had a within-subjects design."

4. **Results:**
   "After statistical analysis, we found that participants were significantly more immersed with smells in VR than without (p-value = 0.001)."
   "Thematic analysis of the interviews found that 'freedom' was a frequent theme."

5. **Discussion:**
   "Our findings that smell in VR results in happier responses from participants match pre-existing literature [54] – [57]."

6. **Conclusion:**
   "Overall, our study found that smell in VR has a positive effect on immersion."