Analysis and Test Planning Report

NPCs

(Jennifer Duarte, Shambhawi Sharma, Inika Singh, Bridget Torres)

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A] Analysis

1. An overall summary

We're developing an app called BuddyZen to help students organize their schedules. It features a planner with a calendar, displaying classes with start and end times, and assignment due dates. Students can prioritize and mark assignments for efficient time management. BuddyZen sends reminder notifications for upcoming due dates. Additionally, it allows grouping different activities like club events in separate categories for easy organization.

1. User Categories

Based on our initial market research, we have identified four primary user categories that would significantly benefit from our app, BuddyZen:

* **Students (Primary User Category):** Targeting students across educational levels, from elementary to higher education and beyond, BuddyZen serves as a comprehensive tool to effectively manage academic schedules, assignments, and priorities.
* **Educators/Teachers:** Encompassing educators at all academic levels, including homeschooling parents and remote learning coordinators, BuddyZen offers valuable support in maintaining organized schedules, managing class assignments, and noting important dates.
* **Administrators:** This user category, comprising managers, business owners, and executives, can leverage BuddyZen to enhance productivity by efficiently managing work schedules, meetings, and essential tasks through an intuitive and streamlined interface.
* **General Users (All-Inclusive):** In addition to specialized user categories, BuddyZen extends its utility to a broader audience, enabling them to organize their daily tasks and goals effectively. This functionality empowers users to optimize their time for both routine responsibilities and leisure activities.

1. Requirements

We have identified some key functional and non-functional requirements for the app that would not only meet user expectations but also enhance their experience and streamline the actions that they may perform using the application that would make the process intuitive, enjoyable, and reliable.

* **Functional Requirements**
  + User Authentication and Profiles: Users of the app should be able to create accounts and log in securely. The app should allow users to create and manage their profiles.
  + Calendar and Schedule Management: Users of BuddyZen are able to view and manage their schedules in a calendar format (somewhat similar to Google Calendar, except with more customization options). The calendar should display classes, assignments, due dates, and other events clearly and intuitively.
  + Task and Assignment Tracking: Users should be able to add, edit, and delete tasks, assignments, and activities. Tasks and assignments should have options to set priorities, due dates, and categories, along with an option to add miscellaneous notes regarding key points that the user needs to remember regarding the particular task. Notes can also have an option for various attachments, and for this purpose, it is necessary to ensure that the notes section is compatible with various types of attachments.
  + Notification and Reminders: The app will send timely notifications and reminders for upcoming assignments and events depending on the individual notification setting for each task.
  + Category and Grouping Functionality: Users of BuddyZen can create custom categories or groups to organize their tasks and activities. The app allows users to assign tasks and events to specific categories for better organization.
  + Collaboration and Sharing: Users can even share schedules, events, or tasks with others, especially for group activities or study sessions. Collaborative editing features for shared events or assignments will also be available to further enhance user experience.
  + Search and Filter Capabilities: Users will be able to search for specific events, assignments, or tasks easily. Filtering options based on categories, due dates, and priorities will be available.
  + Offline Functionality: It is necessary that the app have offline capabilities, allowing users to access and update their schedules even without an internet connection. Changes made offline should sync seamlessly and automatically when the device reconnects to the internet.
  + Settings and Preferences: Customization is a key part of our app. Users will be able to customize app settings, including themes, notification preferences, and default views. The app also allows users to set their time zone and preferred date/time formats.
  + Accessibility and Usability: We aim to design the app such that it adheres to accessibility standards, ensuring it is usable by individuals with disabilities. Hence, intuitive design and user-friendly interfaces to enhance user experience across different devices will be effectively employed (such as options for different themes for color-blind users, and options for voice recognition for users with blindness/near-blindness).
* **Non-Functional Requirements**
  + Performance: This is a key component of our app. It should load quickly and respond promptly to user actions, even during peak usage times. The calendar should be able to render events and data smoothly, providing a seamless user experience. The page loading time should not be more than a few milliseconds to a second.
  + Scalability: The application should be designed to handle a growing number of users and increased data without compromising performance. It should be easily scalable by adding more servers or resources as needed.
  + Security: The app should adhere to strong data encryption standards to ensure the security and privacy of user data. Proper user authentication mechanisms and secure login processes should be in place to protect user accounts.
  + Compatibility: BuddyZen should be compatible with a wide range of devices, operating systems, and web browsers to reach a broader user base. It should function consistently and optimally across various platforms.
  + Maintainability: The application should be designed with clean, modular code that is easy to understand, modify, and maintain. Regular updates, bug fixes, and improvements should be feasible without significant disruptions. BuddyZen should also have high uptime and availability, with minimal downtime for maintenance or updates.
  + Data Backup and Recovery: The app should implement automated and regular data backups to prevent data loss in case of system failures or errors. Overall, it should be resilient to server failures and able to recover gracefully without data loss. It should have a robust data recovery mechanism to restore the system to a consistent and operational state.
  + Compliance: The app should comply with all relevant legal and regulatory requirements, including data protection laws and privacy policies (such as HIPAA). It should adhere to industry standards and best practices in education and app development.

B] Test Planning

1. Summary of Proposed Strategy

The app we are creating is called BuddyZen and is designed to assist students in effectively managing their time. The app offers a planner with a calendar that showcases the timings for each class and the due dates for their assignments. To test the effectiveness of BuddyZen we can take the following approaches:

* **Unit Testing:** Once certain features of the app have been established we can check each section to make sure it accurately reflects the idea of the app. Once the code for adding the schedule is established or inserting the due dates is performed we can test it by running the program and reviewing if the requirements of Calendar and Schedule Management and Task and Assignment Tracking are met. These include testing to see if one can add and edit their schedules while also adding their tasks and seeing alerts for them.
* **Prototype Review:** Once the app is developed, the app can be provided to some users or stakeholders to test its functionality and gather feedback from the users. With their experience, users can provide remarks on the app’s user interface as well as the navigation process and whether the experience was user-friendly or not.
* **Integration Testing:** Since many parts of the calendar may overlap we can test to make sure the assignments are coordinated with the corresponding classes. Furthermore, we can also test to see if the tasks are being organized and are not deleting events if they overlap.
* **Security Testing:** Since we are expecting some sort of user authentication in our app, we can implement cases to see if accounts are secured and the user’s data and privacy are protected. Also, security assessments can be performed to see if any breaches in the system pose a vulnerability within the app.
* **Performance Testing:** The app can be tested on its performance by noting down the response time for each action in the app and how long it takes for the app to respond back to the adjustment made on the calendar. Further, the app can also be tested for its resource allocation in this case to make sure it runs smoothly even if the app is under heavy usage by the user such as the addition of multiple tasks at the same time.
* **Compatibility Testing:** The app can be tested to make sure that it works on different platforms and is accessible to everyone depending on if the users are utilizing a variety of Android and iOS devices with different screen sizes and operating systems.
* **Error Handling Testing:** This can be performed on the app to test its capability to handle errors within the system. We can verify if it updates the user about the error and restarts the system while fixing the issue or updating the needed software or if it crashes. This in turn can be used to optimize the way the app functions if it encounters errors.

1. Test Cases

* **Test Case A:** The user sets up their class times in the schedule, including the starting and the ending times for each class they have in the week.
  + Start State: The user signs into BuddyZen through their account login → The user navigates to the calendar → No classes are added to the calendar yet, the calendar is empty.
  + Execution Steps: The user selects the ‘Add event’ tab and it creates a new event on the calendar → The user is prompted to enter the ‘Class Name’, ‘Location’, ‘Start Time’, ‘End Time’, ‘Repetition’ and ‘Reminder Time’ → The user adds ‘Math251’, ‘PS 311’, ‘3:15 PM’, ‘4:30 PM’, ‘Monday and Wednesday’ and ‘30 minutes’ respectively for each field → The user then presses ‘Add’ to save the information on the calendar.
  + Expected Final State: The user is able to see the class being added to the calendar with the name ‘Math 251’. The user is also able to click on the task and see the location and time of the class. In addition, as the user views the calendar for the rest of the weeks, the user can see the class is added for each Monday and Wednesday at the time given (3:15 PM - 4:30 PM). The user is also given a notification 30 minutes before their class begins each Monday and Wednesday.
* **Test Case B:** The user sets up their assignments in the calendar, including the due date for each assignment.
  + Start State: The user signs into BuddyZen through their account login → The user navigates to the calendar → No assignments have been added to the calendar yet.
  + Execution Steps: The user selects the ‘Add task’ tab and it creates a new task on the calendar → The user is prompted to enter the ‘Assignment Name’, ‘Class Name’, ‘Due Date’ and ‘Reminder’ for the assignment → The user adds ‘HW 3’, ‘CS487’, ‘Saturday 11:59 PM’ and ‘One day Before’ for each of the fields → The user then presses ‘Add’ to save the information on the calendar.
  + Expected Final State: The app is able to save all the information the user added and display it. The user is able to see the assignment being added to the calendar with the name ‘HW 3’. The user is also able to click on the task and see what class the assignment is for and when the assignment is due. The user is also given a notification one day before their assignment is due which would be Friday to remind them of the assignment.
* **Test Case C:** The user shares the calendar with another user on the app, making it possible for the user to view 2 schedules at the same time.
  + Start State: User 1 signs into BuddyZen through their account login → User 1 navigates to the calendar → Only their own schedule is visible to them in the calendar.
  + Execution Steps: User 1 selects the ‘Share Calendar’ tab and it creates pops up a box → User 1 is prompted to enter the ‘Login name’ of User 2 with whom they want to share the calendar → User 1 is then asked if they want their assignments shared as well and they choose between yes or no → The User 1, in this case, presses ‘yes’ → The app notifies the User 1 that the calendar is shared → User 2 receives a notification of the shared calendar and the User 1’s name is visible → User 2 clicks on ‘Add calendar’ to save User 1’s schedule → User 2 is prompted to name this calendar and they write ‘James’ and press ‘Save’ to save the new calendar.
  + Expected Final State: The app is able to allow User 2 to view two sets of calendars. User 2 is also able to view the assignments of User 1 along with their class schedule. User 2 can press on the calendar name ‘James’ to only view their calendar or press it again to view both of them. The events and tasks of each calendar have different colors so User 2 can distinguish between the 2 calendars.

1. Priority Challenges

To achieve project success for the application BuddyZen various factors need to be taken into consideration. Prioritizing these cases will make them the focus and ensure that the most important aspects of the project are implemented accurately. Some priority challenges to assess for BuddyZen are as follows:

* **Functionality:** This will ensure that the schedule and tasks overlap without creating issues in the system. The schedule, assignment, and notifications are managed and are robust while working properly.
* **User Experience:** This guarantees the app’s user interface is user-friendly and convenient. Users are able to navigate through BuddyZen without hassle and in a straightforward manner.
* **Data Security:** The user login information is only accessible to the authorized user and there is no threat to the potential security vulnerabilities. BuddyZen is able to make regular checks in the system such as password updates to ensure the security of the data.
* **Performance:** BuddyZen is able to respond to user requests such as sharing calendars and adding new tasks efficiently. BuddyZen is also able to evaluate the app performance during prime time and showcase its response time.
* **Notification System:** BuddyZen certifies the reminder notifications are being sent on time based on the user’s preference on when they want them received. Missed reminders are also taken into account as they could impact user usage.
* **Localization and Accessibility:** The application is available to people in different regions and meets accessibility standards making it easier to access for individuals with disabilities.
* **User Feedback:** Creates a feedback loop within BuddyZen to provide users with a way to give feedback on their experience to make continuous user-driven improvements to the app.
* **Project Management, Recovery, and Resources:** Ensures the event deadlines are met and the resources are being allocated while following the constraints. Prioritizes that BuddyZen is able to accurately perform resource utilization and keep the data protected to avoid data loss.

C] Overview

We aim to build BuddyZen as an innovative application designed to revolutionize how students and educators manage their schedules and tasks. At its core, BuddyZen prioritizes seamless functionality, ensuring that schedules, assignments, and notifications cohesively align without system disruptions. Our app offers a user experience that's intuitive and convenient, enabling easy navigation and straightforward interaction. Equipped with a security-focused platform, BuddyZen guarantees that sensitive user login information remains accessible only to authorized users, implementing regular security checks and updates to mitigate potential threats. Its robust performance ensures efficient response times, even during peak usage, and facilitates smooth sharing of calendars and task additions. We aim to make the notification system finely tuned, ensuring timely reminders based on user preferences一a critical feature to enhance productivity.

BuddyZen goes the extra mile by considering missed reminders, a definite testament to our dedication to a seamless user experience. Accessibility and localization are integral aspects, ensuring the application adheres to standards and is accessible to a diverse user base, including those with disabilities. The inclusion of a feedback loop cultivates a collaborative environment, allowing users to provide insights, and driving continuous user-centric improvements. Lastly, BuddyZen emphasizes effective project management, resource allocation, and data protection, safeguarding against data loss and ensuring adherence to timelines and constraints, reinforcing our commitment to project success. Through these priorities, BuddyZen aims to redefine time management, productivity, and user satisfaction in educational and organizational settings.