Lab 2 - Kiddy-Up Product Specification

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3 Specific Requirements

3.1 Functional Requirements

3.1.1 User Interfaces (O: Underwood M: Underwood)

The Kiddy-Up system will contain interfaces for both the parent and the child. The parent and the child will both have a login interface and an interface that displays information. The parents will also have a home page and an account creation page.

3.1.1.1 Home Page (O: Soehnlin M: Underwood).

Kiddy-Up will have a homepage that directs visitors to information about Kiddy-Up and links to account registration and login. Authentication is not required for access to this page.

The home page shall have the following:

1. Kiddy-Up logo
2. Link to About Us page
3. Link to Contact Us page
4. Link to the Login Page (3.1.1.2.3)
5. Link to the Register Page (3.1.1.2.1)
6. Information about the Kiddy-Up product

The About Us Page link shall redirect users to the About Us page.
The Contact Us Page link shall redirect to the users to the Contact Us Page.
The Login Page link for account link shall redirect users to the Login page (3.1.1.2.3).
The Register for account link shall redirect users to the Registration page (3.1.1.2.1).

3.1.1.2 Registration/Authentication (O: Soehnlin M: Underwood).

Kiddy-Up will require the parents to register themselves and their children into the
Kiddy-Up system before they can use the system. Once an account is created, both parents and children will be required to authenticate themselves before they can access their accounts.

3.1.1.2.1 Register (O: Soehnlin M: Underwood).

The Register page shall contain a username field, email address field, password field, confirm password field, and a submit button.

Once the user enters a username, email address, a password, and has confirmed their password, Kiddy-Up shall confirm the following:

1. The username entered shall be unique from any existing usernames.
2. The email address shall be a valid email address.
3. The password shall match the confirmed password
4. The password shall be meet the following complexity requirements (Based on NIST standards):
   a. Must be 8 characters or more
   b. Must not contain the username
   c. Minimum of 1 uppercase letter, 1 lowercase letter, 1 digit, and 1 special character.

Once the above fields are confirmed by Kiddy-Up, the user shall be logged in with the credentials entered and redirected to the Parent Dashboard page (3.1.1.3.1).

The Register page shall contain a link to the Login page (3.1.1.2.3).
3.1.1.2.2  Account Setup (O: Soehnlin M: Underwood).

Authenticated users that have not added children or rewards and have not linked to source events will be presented with an Account Setup page to input child profiles and calendar event source. The parent can manage children, rewards, sources, and tasks from the Settings page.

The Account Setup page shall contain the following links:

1. Add Child link
2. Add Reward link
3. Add Source link

The Account Setup Page shall list all added children below the Add Child link once the child has been added

Each child shall include:

1. Child Name
2. Age
3. Comprehension Level
4. Current Points
5. Target Reward

The Account Setup Page shall list all added sources above the Add Source link once a source has been added

Each source shall include:
1. source name - To track where an unfamiliar event originated
2. source type - To provide information for an unfamiliar source
3. source URL
4. Edit Source Button

3.1.1.2.3 Login (O: Soehnlin M: Underwood).

The Login Page shall contain a username field, password field, login button, Lost Password link (3.1.1.2.4), and Register link (3.1.1.2.1).

Once a valid username and password have been entered and the login button clicked, the user shall be authenticated and redirected to the Parent Dashboard page (3.1.1.3.1).

3.1.1.2.4 Forgot Password (O: Soehnlin M: Underwood).

The Forgot Password link from the Login page (3.1.1.2.3) will display a password reset page, which shall contain an email address field and Reset Password button.

Once the user enters an email address and presses the Reset Password link, the Kiddy-Up system will determine if the email address is for a valid Kiddy-Up user.

If the email address is for a valid Kiddy-Up user, the user shall be redirected to a confirmation page with the following message presented to the user, "Password reset request complete. Check your email for password reset instructions". An email shall be sent to the user with password reset instructions.

If the email is not an email address for a valid Kiddy-Up user, the following message
shall be displayed, “incorrect email address” and no email will be sent.

The user will receive a reset password email sent from the Forgot Password page. The email shall have a link redirecting the user to the Change Password page (3.1.1.2.5).

3.1.1.2.5 Change Password (O: Soehnlin M: Underwood).

Upon clicking the reset password link from the reset password email, the user will be redirected to the Change Password page which shall have a password field, confirm password field, and a change password button.

Once the user has entered a valid password and clicked the change password button, the page shall display a message "Your password was reset successfully."

The page shall have a link to the Login page (3.1.1.2.3).

3.1.1.2.6 Public Pages Template (O: Soehnlin M: Underwood).

The application will have a common public template for all public pages for consistent page design and fixed navigation. Public pages do not require authentication.

The template for the public pages shall have a navigation bar that contains links to the following pages:

1. Home (3.1.1.1)
2. Login/Register (3.1.1.2.3)
3. About Us
4. Contact Us

The application shall apply the common public template for all public pages which are:

1. Home (3.1.1.1)
2. Login (3.1.1.2.3)

3. Register (3.1.1.2.1)

4. Account Setup (3.1.1.2.2)

5. Forgot Password (3.1.1.2.4)

6. Change Password (3.1.1.2.7)

3.1.1.2.7 Child Login (O: Soehnlin M: Underwood).

The Child Login page shall display the child name and avatar from each child's profile.

The Child Login page shall allow children to select the proper avatar or name to enter the child's dashboard.

The Child Login page shall contain a link to the Parent Dashboard (3.1.1.3.1) which requires the parent's password to access.

3.1.1.3 Parent User Interface (O: Soehnlin M: Underwood).

The Parent User Interface provides the parents with the ability to view and manage their account, and view their children's profiles and reward status, Task lists and Sources.

3.1.1.3.1 Parent Dashboard (O: Soehnlin M: Underwood).

The Parent Dashboard page shall contain a list of tasks, a list of children.

The Parent Dashboard shall have a menu which links to the following pages:

1. Profile

2. View Tasks (3.1.1.3.2)

3. View Children (3.1.1.3.4)

4. View Rewards (3.1.1.3.6)

5. View Sources (3.1.1.3.12)

6. Settings (3.1.1.3.10)
7. Child Login (3.1.1.2.7)

The Parent Dashboard page shall display a list of up to ten of the most recent tasks that have been imported.

The Task list on the Parent Dashboard page shall contain a running list of all tasks with a forward and backward arrow. These buttons show previous and future tasks respectively with no more than ten tasks presented at one time. Each row will contain a single task and contain the following:

1. task name
2. task activity
3. task location
4. task start time
5. task start date
6. who is involved in the task
7. an Edit Task Button

Each line shall link to the View Task page (3.1.1.3.3) for the specific task on that line. The Parent Dashboard page shall display a list of up to ten of the most recently added children.

The child list on the Parent Dashboard page shall contain forward and backward arrow buttons to scroll through other children in groups of no more than ten.

Each row will contain a single child and contain the following:

1. child name
2. child age
3. child reward points
4. child's next task

5. an Edit Child Button

Each line shall link to the View Child page (3.1.1.3.5) for the specific child on that line.

3.1.1.3.2 View Tasks (O: Soehnlind M: Underwood).

The View Tasks page shall display the ten most recent tasks.

The View Task page shall contain forward and backward arrow buttons to show previous and future tasks respectively in up to ten tasks.

Each line in the list shall contain a task with the following detail:

1. task name
2. task activity
3. task location
4. task start time
5. task start date
6. who is involved in the task
7. an Edit Task Button

Each line shall link to the View Task page (3.1.1.3.3) for the specific task on that line.

3.1.1.3.3 View Task (O: Soehnlind M: Underwood).

The View Task screen shall display a task with the following detail:

1. name
2. activity
3. location
4. time
5. date
6. children involved

The View Task Screen shall contain an Edit Task Button

### 3.1.1.3.4 View Children (O: Soehnlin M: Underwood).

The View Children page shall display a list of the ten or less most recently added children.

The child list on the View Children page shall contain forward and backward arrow buttons to scroll through other children in groups of ten.

Each row will contain a single child and contain the following:

1. child name
2. child age
3. child reward points
4. child's next task
5. an Edit Child Button

Each line shall link to the View Child page (3.1.1.3.5) for the specific child on that line.

This page shall display an add child button.

### 3.1.1.3.5 View Child (O: Soehnlin M: Underwood).

The View Child page shall contain the following for a single Child:

1. child name
2. child age

3. child comprehension level

4. child avatar

5. child password/pattern

6. child current reward points

7. child's next task

8. an Edit Child Button

9. a reset child password button

3.1.1.3.6 View Rewards (O: Soehnlin M: Underwood).

The View Rewards page shall display a list of the ten or less most recently added rewards in each child’s profile.

The reward list on the View Rewards page shall contain forward and backward arrow buttons to scroll through other rewards in groups of ten.

Each row will contain a single reward and contain the following:

1. reward name

2. reward value

3. a Reward Delivered Button

4. an Edit Reward Button

Each line shall link to the View Reward page (3.1.1.3.7) for the specific reward on that line.

The application shall delete the earned reward from the child’s earned rewards list when the Rewards Delivered Button is pushed.
This page shall display an add reward button.

3.1.1.3.7 **View Reward (O: Soehnlin M: Underwood).**

The View Reward page shall contain the following for a single reward:

1. reward name
2. reward value
3. a Reward Delivered Button
4. an Edit Reward Button

The application shall delete the earned reward from the child’s earned rewards list when the Rewards Delivered Button is pushed.

3.1.1.3.8 **View Weather (O: Soehnlin M: Underwood).**

The View Weather page shall display the current weather and the forecast for the day and the forecast for the next 3 days for the defined zip code.

The View Weather page’s current and forecasted weather shall contain the following:

1. current temperature (with set unit)
2. high temp
3. low temp
4. precipitation chance
5. condition

3.1.1.3.9 **Edit Task (O: Soehnlin M: Underwood).**

The Edit Task page shall contain the following editable fields of a single task:

1. name
2. activity
3. location
4. time
5. date
6. children involved

The Edit Task page shall contain a Save button and a Delete Task button. The Delete Task button will ask for confirmation before deleting the task.

3.1.1.3.10 Settings (O: Soehnlin M: Underwood).

The Settings page has a button to change the account password to users currently signed in. Otherwise it will link users to the Forgot Reset page (3.1.1.2.4).

The Settings page shall contain the following editable fields:

1. parent name
2. parent email address

The Settings page shall contain the following editable fields:

1. zip code
2. temp unit (F or C)
3. timezone

The Settings page shall contain a Save button

The Settings page shall contain a Delete Account button that asks for confirmation when clicked.

3.1.1.3.11 Edit Child (O: Soehnlin M: Underwood).

The Edit Child page shall contain the following editable fields of a single child:

1. child name
2. child age
3. child avatar
4. child password/pattern
5. child current reward points

The Edit Child page shall contain a Save button

The Edit Child page shall contain a Reset Child Password button

The Edit Child page shall contain a Delete Child button.

The Delete Child button will ask for confirmation before deleting the child.

3.1.1.3.12 View Sources (O: Soehnlin M: Underwood).

The View Sources page shall display a list of the ten or less most recently added sources. The sources list on the View sources page shall contain forward and backward arrow buttons to scroll through other sources in groups of ten. Each row will contain a single source and contain the following:

1. source name
2. source url
3. source type
4. an Edit Source Button

Each line shall link to the View Source page for the specific source on that line.

3.1.1.3.13 Edit Source (O: Soehnlin M: Underwood).

The Edit Source page shall contain the following editable fields of a single source:

1. source name
2. source url
3. source type

The Edit Source page shall contain a Save button

The Edit Source page shall contain a Delete Source button.

The Delete Source button will ask for confirmation before deleting the source.

### 3.1.1.3.14 Edit Reward (O: Soehnlin M: Underwood)

Each child’s profile will contain an Edit Rewards page shall contain the following editable fields of a single reward:

1. reward name
2. reward cost value

The Edit Reward page shall contain a Save button

The Edit Reward page shall contain a Delete Reward button.

The Delete Reward button will ask for confirmation before deleting the reward.

### 3.1.1.3.15 Parent Pages Template (O: Soehnlin M: Underwood)

The application will have a common parent template for all parent pages.

The template for the parent page shall have a navigation bar that contains links to the following pages:

1. Dashboard (3.1.1.3.1)
2. Tasks (3.1.1.3.2)
3. Children (3.1.1.3.4)
4. Rewards (3.1.1.3.6)
5. Settings (3.1.1.3.10)
The application shall apply the common parent template for all parent pages.

**3.1.1.4 Child User Interface (O: Soehnlin M: Underwood).**

The Kiddy-Up application will have multiple pages that the child can access once authenticated. The pages will allow the child to view and mark as complete tasks assigned to them.

**3.1.1.4.1 Child Dashboard (O: Chambers M: Soehnlin).**

The Child Dashboard page shall display a list of the ten or less most recent tasks that pertain to that child. On the child’s dashboard, there will be buttons for the following pages:

1. View Tasks (3.1.1.4.2)
2. View Rewards (3.1.1.4.4)
3. Edit profile (3.1.1.4.7)

The Task list on the child Dashboard page shall contain forward and backward arrow buttons to show previous and future tasks respectively in groups of ten tasks. Each row will contain a single task and contain the following:

1. Task name
2. Task activity
3. Task location
4. Task start time
5. Task start date
6. Task completion status

The Child Dashboard page shall display the following information about the child:

1. Child name
2. Child avatar
3. Child reward points toward selected reward
4. Child's next task

3.1.1.4.2 View Tasks (O: Chambers M: Soehnlin).

The View Tasks page shall display the ten most recent tasks assigned to the child. The View Tasks page shall contain forward and backward arrow buttons to show previous and future tasks respectively in ten task groupings.

Each line in the list shall contain a task with the following detail:

1. task name
2. task activity
3. task location
4. task start time
5. task start date
6. task due time and date
7. Completed Task button

Each line shall link to the View Task page (3.1.1.4.3) for the specific task on that line.

The application shall change the task’s status to “Complete” in the DB when the Completed Task button is pressed.

The application shall refresh all open pages when a task status is changed in the DB.

3.1.1.4.3 View Task (O: Chambers M: Soehnlin).

The View Task screen shall display a task with the following detail:

1. Name
2. Activity
3. Location

4. Time/date

5. Task value

The View Task Screen shall contain a Complete Task button.

Once clicked, the Complete Task button shall set the task as complete and the child’s point total is increased by the value of the completed task.

3.1.1.4.4 View Rewards (O: Chambers M: Soehnlin).

The View Rewards page shall display the current total of rewards points earned by the child.

The View Rewards page shall display the total points needed to redeem the currently set reward.

The application shall display all rewards previously earned by the child as a list.

3.1.1.4.5 View Reward (O: Chambers M: Soehnlin).

The View Reward page shall contain the following for a single reward:

1. reward name

2. reward value

3.1.1.4.6 Choose Reward (O: Chambers M: Soehnlin).

The Choose Reward page shall contain a list of available rewards.

The currently chosen reward shall have a red outline.

When a reward is selected to be worked towards, the red outline shall move to the selected reward.

The Choose Reward page shall have a Save button which assigns the chosen reward as
the child’s target reward in the database. The child’s reward total will be deducted by the chosen reward’s value.

The application will refresh all pages displaying the child’s reward progress whenever the child’s target reward has been changed in the database.

3.1.1.4.7 Profile Customization (O: Chambers M: Soehnlin).

The child will be able to select a background color from a list of options. The options shall include light blue, pink, and white.

3.1.1.4.8 Child Pages Template (O: Soehnlin).

The application will have a common child template for all child pages.

The template for the child page shall have a navigation bar that contains links to the following pages:

1. Child Dashboard (3.1.1.4.1)
2. Child’s Tasks (3.1.1.4.2)
3. Child’s Rewards (3.1.1.4.4)
4. Child’s Profile Customization (3.1.1.4.7)

The application shall apply the common child template for all child pages.

3.1.2 Algorithms

Kiddy-Up will contain several algorithms that will manage the event information from collection to presentation.

3.1.2.1 Data Collection (O: Charles Seal M: Soehnlin).

Data collection involves taking events and tasks from a calendar that parents have assigned in their Kiddy-Up interface and extracting the information in the form of raw data.
When parents are selected to link a new source in the Edit Source page, the user will be redirected to the sources url site to login to the source site.

Once a successful source login, users will be redirected back to Kiddy-Up Edit Source page.

When successfully linked the application shall get all events and tasks from a linked source (pull Google Calendar/Task Data).

If the application encounters an error while gathering data from sources, a red exclamation mark will appear next to the source in the source list.

3.1.2.2 Entity Extraction (O:Charles Seal M: Soehnlin).

The application will use the spaCy Python natural language processing library to parse raw text strings for collected tasks and events and extract the data elements that make up a task including who, what, where, and when. The application will save the extracted data for both tasks and events into task objects within the Kiddy-Up system.

The application shall pass a raw text string to the spaCy library.

The application shall accept returned entities that were identified by the spaCy library from the raw text string.

The entities identified shall be one of the following categories:

1. Dates
2. Times
3. People’s Names
4. Locations

The following task information shall be parsed from the spaCy data extraction:

1. Name
2. Activity

3.1.2.3 Sync Tasks (O: Charles Seal M: Soehnlin).

Kiddy-Up will routinely determine if the events in the parent’s calendar have changed and if updates are required to the events already within the system.

The application shall perform an initial full synchronization with the parent’s calendar when the source is first added.

The application shall identify changes to the source’s tasks.

The application shall make changes to corresponding tasks stored within the Kiddy-Up database.

3.1.2.4 Present Data to User (O: Charles Seal M: Soehnlin).

The application will present relevant data to each user in a format that is suitable for their level of comprehension.

3.1.2.4.1 *Gather and present relevant tasks for the logged in child.* (O: Charles Seal M: Soehnlin).

The application will present only the tasks that have relevance to the child.

The application shall query the database and select tasks from the that are linked to the child and have a status of “Open”.

3.1.2.4.2 *Present tasks to the child in an age-appropriate format.* (O: Charles Seal M: Soehnlin).

The application will present tasks to each child in a format that is appropriate for their comprehension level.

The application shall retrieve the comprehension level of the child from the database.
If the comprehension level is level 1, the application will present tasks to the child with images to match the task activity.

If the comprehension level is level 2, the application will present tasks to the child with only the tasks text values.

3.1.2.4.3 Map activities to images (O: Charles Seal M: Soehnlin).

The application will contain an image table of common tasks linked to an image that represents that task.

When a task is added or updated, the application shall use the task’s activity to link an image to the task.

3.1.2.5 Reward System (O: Charles Seal M: Bethany DeMerchant, Soehnlin).

The reward system can be thought of as a currency system where the child earns one monetary unit for completing an event and can then return the currency once they have enough currency to obtain the event that they are working toward.

The completion of each event shall involve one point being added to the child’s reward total.

The points shall be continuously added. Once a reward is given, the amount of points needed to earn the reward shall be deducted from the child’s point total.

3.2 Performance Requirements (O: Sayoc, M: Charles Seal)

Performance requirements will involve SpaCy and its extraction processes.

3.2.1 SpaCy entity extraction performance (O: Sayoc)

Kiddy-Up shall finish extracting tasks within X seconds.

Entity extraction from user sources shall occur every 5 minutes or upon selection of a
new source.

3.2.2  **Page load time.**

The system must have reasonable and consistent page load times. Each page shall load in less than 10 seconds.

3.2.3  **Compatibility**

Kiddy-Up will be accessible from all major web browsers. The following performance requirements must be met:

1. The system shall operate in full capacity when viewed with standards-compliant web browsers
2. The system shall maintain a consistent layout across each standards-compliant web browser.

3.3  **Assumptions and Constraints  (O: Chambers, M: Charles Seal)**

1. The Natural Language Processing library spaCy may be limited in the entities it is able to detect and extract from text strings. The task and calendar information that spaCy will recognize is limited to locations, people, date, and time.
2. The prototype will only retrieve current or future events and tasks from the event and task source.
3. The prototype will extract entities from a maximum of 1 source.
4. The prototype will support a maximum of 2 child age-ranges.

3.4  **Non-Functional Requirements  (O: Underwood, M: Charles Seal)**

Kiddy-Up’s non-functional requirements will focus on the database, security aspects, and the maintainability.
3.4.1 Database (O: DeMerchant, M: Charles Seal)

The database will store information for the parents and children’s accounts, the events, and the rewards. Kiddy-Up shall be built using MySQL.

3.4.1.1 Parent Account (O: DeMerchant, M: Underwood).

The parent account database will store the information that the parents input into the system during the registration process as well as the calendars that Kiddy-Up will draw from.

A parent shall be identified within the system using a unique ID, called a PID.

An email address shall be identified with exactly one PID (ie, a parent shall be uniquely identifiable by an email address).

The database shall store a preferred display name for a parent as text.

The database shall store a set of source accounts to pull data from.

3.4.1.2 Child Account (O: DeMerchant).

The child account database will store the information input into the system for the child during the registration process. The database will also keep a reference to the relevant reward section.

The database shall store an identifying name for a child as text.

A child shall be uniquely identifiable by the combination of the child's name and the parent's PID.

The database shall store a child's comprehension level as an integer.

The database shall store the sub-password to access a child's interface.

The database shall store a child's age as an integer between 5 and 12, inclusive. The database shall store identification of the avatar/image connected with a child. The database shall store the number of points owned by a child as an integer. The database shall store an
identification of the reward a child is currently working towards.

The database shall store a record of the rewards owned by a child.

### 3.4.1.3 Task (O: DeMerchant).

The task section of the database will store the event information after it has been divided into fields such as date and name.

A task shall be identified within the system using a unique ID, called a TID. The system shall store a name/title for a task in text.

The system shall store a description for a task in text if given.

The system shall store the completion status of a task.

The completion status of a task shall be defined as follows:

1. OPEN: a task has not been reported as complete.
2. PENDING: a task has been reported as complete but not accepted.
3. COMPLETE: a task has been accepted as complete

The status of tasks which do not require completion shall be None.

The database shall store a reference to the image connected with a task.

The database shall store the number of points to be rewarded for completing a task as an integer.

The database shall store date/time data for a task.

The database shall store the name of the child who is assigned to the task. The database shall store the set of names of children who can see a given task.

### 3.4.1.4 Rewards (O: DeMerchant, M: Charles Seal).

The reward section of the database will store the information for the child’s progress
toward a goal.

A reward shall be identified within the system using a unique ID, called an RID. The system shall store a name/title for a reward as text.

The system shall store the number of points required to redeem a reward as an integer. The database shall store a reference to the image connected with a reward. The database shall store the set of names of children who can see a given reward.

The points shall be continuously added. Once a reward is given, the amount of points needed to earn the reward shall be deducted from the child’s point total.

3.4.2 Security (O: Chambers, M: Charles Seal)

Kiddy-Up will require users to enter a password to access their account.

To access an account, the user will be required to enter a password. The user’s password shall be encrypted.

Require strong passwords (complexity or length) - not “Password1”

3.4.3 Maintainability (O: Chambers, M: Charles Seal)

Kiddy-Up will use proven website development software to ensure that the Kiddy-Up is operational on a consistent basis.

Allow easy update and maintenance of system servers using Docker and Docker Compose scripted server deployment/management. Support updated internet security protocols and information security guidelines.
Appendix A - Site Map
Appendix B - Entity Relationship Diagram