Resilient Families Project Web Application

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Santa Clara University
DEPARTMENT of COMPUTER ENGINEERING

Date: May 20, 2014

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

Stephanie Cervi and Patrick Neill

ENTITLED

Resilient Families Project Web Application

BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREES OF

BACHELOR OF SCIENCE IN WEB DESIGN AND ENGINEERING

AND

BACHELOR OF SCIENCE IN COMPUTER ENGINEERING

[Signature]

THESIS ADVISOR

[Signature]

DEPARTMENT CHAIR
RESILIENT FAMILIES PROJECT WEB APPLICATION

by

Stephanie Cervi and Patrick Neill

SENIOR DESIGN PROJECT REPORT

Submitted in partial fulfillment of the requirements for the degrees of Bachelor of Science in Web Design and Engineering and Bachelor of Science in Computer Engineering School of Engineering Santa Clara University

Santa Clara, California

May 20, 2014
Resilient Families Project
Web Application

STEPHANIE CERVI AND PATRICK NEILL

DEPARTMENT OF COMPUTER ENGINEERING
SANTA CLARA UNIVERSITY
2014

ABSTRACT

In order to help The Resilient Families Project, a stress management course for at-risk families, we have created an online application to allow users to take stress examinations more frequently, and to record their thoughts and interactions pertaining to the project. In this paper, we document our thought process, design rationale and any other relevant information to the web application for the Resilient Families Project.
# Table of Contents

1. Problem Statement ................................................................. 1

2. Resilient Families Project Overview ........................................... 3
   2.1 Our integration with the Resilient Families Project ................... 3

3. Requirements ........................................................................... 4
   3.1 Critical Requirements .......................................................... 4
       3.1.1 Functional ................................................................. 4
       3.1.2 Non-functional .......................................................... 4
   3.2 Design Constraints ............................................................. 4

4. System Design ......................................................................... 5
   4.1 Visual Design Overview ....................................................... 5
       4.1.1 Color ................................................................. 5
       4.1.2 Functionality .......................................................... 5
   4.2 Technologies Used ............................................................. 6
       4.2.1 Development Tools ................................................. 6
   4.3 Design Rationale .............................................................. 6

5. Stress Tools, Metrics, and Analytics ........................................... 7
   5.1 User-entry forms ............................................................... 7
   5.2 Analytics ........................................................................... 7

6. Web Component Design ........................................................... 8
   6.1 Landing page .................................................................... 8
   6.2 Login page ...................................................................... 9
   6.3 Creating an account .......................................................... 10
   6.4 The Dashboard ............................................................... 11
   6.5 Writing a journal entry ..................................................... 12
   6.6 Filling out a survey ........................................................... 13
   6.7 Settings .......................................................................... 14
   6.8 Administrator Panel .......................................................... 15
7. Use Cases .................................................................................................................. 16
   7.1 Users ...................................................................................................................... 16
      7.1.1 Completing surveys ....................................................................................... 16
      7.1.2 Writing journal entries .................................................................................. 16
      7.1.3 Changing settings ......................................................................................... 17
   7.2 Administrators ...................................................................................................... 17
      7.2.1 Accessing information ................................................................................... 17
      7.1.2 Editing surveys .............................................................................................. 18

8. User Testing Plan ....................................................................................................... 19
   8.1 Individual Component Testing .............................................................................. 19
   8.2 Application Testing .............................................................................................. 19
      8.2.1 Alpha Testing ................................................................................................ 19
      8.2.2 Beta Testing .................................................................................................. 19

9. Project Risks ............................................................................................................. 20

10. Development Timeline ............................................................................................ 22
   10.1 Gantt Chart ...................................................................................................... 22

11. Future Features ....................................................................................................... 23
   11.1 Features for clinical use .................................................................................... 23
   11.2 Features for casual use .................................................................................... 24

12. Conclusion ............................................................................................................... 25
# List of Figures and Tables

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 6.1</td>
<td>Screenshot: landing page</td>
<td>8</td>
</tr>
<tr>
<td>Fig. 6.2</td>
<td>Screenshot: login page</td>
<td>9</td>
</tr>
<tr>
<td>Fig. 6.3</td>
<td>Screenshot: creating an account</td>
<td>10</td>
</tr>
<tr>
<td>Fig. 6.4</td>
<td>Screenshot: dashboard</td>
<td>11</td>
</tr>
<tr>
<td>Fig. 6.5</td>
<td>Screenshot: writing a journal entry</td>
<td>12</td>
</tr>
<tr>
<td>Fig. 6.6</td>
<td>Screenshot: example survey elements</td>
<td>13</td>
</tr>
<tr>
<td>Fig. 6.6</td>
<td>Screenshot: settings page (submit button not yet implemented)</td>
<td>14</td>
</tr>
<tr>
<td>Fig. 7.1</td>
<td>Use case: completing surveys</td>
<td>16</td>
</tr>
<tr>
<td>Fig. 7.2</td>
<td>Use case: writing journal entries</td>
<td>16</td>
</tr>
<tr>
<td>Fig. 7.3</td>
<td>Use case: changing user account settings</td>
<td>17</td>
</tr>
<tr>
<td>Fig. 7.4</td>
<td>Use case: accessing information</td>
<td>17</td>
</tr>
<tr>
<td>Fig. 7.5</td>
<td>Use case: editing surveys</td>
<td>18</td>
</tr>
<tr>
<td>Fig. 9.1</td>
<td>Project risks and details</td>
<td>20</td>
</tr>
<tr>
<td>Fig. 10.1</td>
<td>Gantt chart illustrating development timeline</td>
<td>22</td>
</tr>
</tbody>
</table>
1. Problem Statement

Stress management is a common issue in modern culture across demographics, incomes, and cultural and religious lines. However, particularly in families that are lower income and/or labeled “at risk,” it can be difficult to find and properly utilize stress management resources. The Resilient Families Project (RFP), headed by Dr. Barbara Burns, Ph.D., at Santa Clara University, aims to provide low-cost, user-friendly tools to these families. Their main clientele are mothers of preschoolers who are looking to better manage their stress, and therefore be able to help their children perform better socially and academically. While their current methods of meeting every week for six weeks work, the RFP is looking for a more effective, engaging toolkit that allows them to gather data daily rather than weekly.

The RFP fulfills a large need in lower income and at-risk families by providing mothers with tools to help them manage their stress in productive ways that benefit them and their children. However, monitoring day-to-day progress outside of organized meeting sessions can be difficult, meaning that participants may not be realizing the full potential of the tools that they are given access to. By meeting only weekly throughout the six-week program, participants and staff are limited in how much progress they can make before the program ends. A web or mobile application for use outside of the workshops would be invaluable because it would allow participants to take further ownership of their own progress as well as track their progress more effectively and concretely.

Dr. Burns asked us for help building a digital tool, through a web or mobile interface, to allow better monitoring and tracking of the day-to-day progress of the participants in her six-week program. A mobile application is not an ideal solution, as the majority of participants do not own or have easy access to a smart device (iPhone, Android phone, Android tablet, iPad, etc.). A web-based solution, while better suited to this purpose than a mobile application, presents its own challenges as well, such as ease of use, ease of training, and ease of access. We identified the most effective solution to the problem to be a web application, for ease of use with participants in the program. To satisfy the requirements of the RFP, our web application must have:

- User profiles where mothers can add their name and picture as well as name(s) and picture(s) of their child or children
- Dashboard where users can quickly and easily access the main features of the application:
  - Questions about the mother (stress levels, stress management)
  - Questions about the child (overall behavior and health, social-emotional and self-regulatory behavior)
• Questions about the mother and child (play activities focused on attachment and self-regulation)
• Back-end for workers to monitor participants
  • Summary of each category
  • Change in each category from week to week
  • Indication of peak time for select categories on ratings of days
  • A summary feedback for individuals
  • Aggregate data across the 6 weeks.

The use of this tool will allow workers to more effectively and accurately track their participants' progress, as well as allow participants more ownership over their progress in the workshops. By increasing the functionality of the tools that participants and workers have available to them, we also increase the potential for improvement in the participants' lives.
2. Resilient Families Project Overview

The Resilient Families Project (RFP) was created by Dr. Barbara Burns and Dr. Lora Haynes to help children and their mothers in socioeconomically disadvantaged homes learn how to better manage stress and more effectively communicate as a family. The methods involved target parents by teaching them stress management techniques as well as encouraging parents to interact with their children in positive and healthy situations, such as playing and reading. By teaching parents to manage their own stress in healthy and productive ways, RFP is able to improve the children’s ability to function at home, among peers socially, and in the classroom as well. The final goal of RFP is to help children grow and develop in a healthy environment through reduced stress in their household and increased interaction with their parents.

2.1 Our integration with the Resilient Families Project

By providing RFP with a web application designed to be easy to use for all levels of computer users, we aim to give them a paperless tool that allows simpler tracking of day-to-day progress, more complete data collection, and back-end database management to allow for more complete data analysis. Our front-end visual user interface is intended to be visually simple and intuitive, allowing RFP participants to manage their stress without creating more stress due to difficulties using our application.

Weekly or bi-weekly meetings with an instructor are an essential component of RFP and similar psychological assistance programs, but by using a web application, data can be monitored much more frequently, and as such will be a more accurate measure of a participant’s progress. By using the web to host this service, we can mitigate data loss as well as reduce the amount of paper needed by RFP to complete their goals.
3. Requirements

In order to solve these problems, the following requirements needed to be implemented.

3.1 Critical Requirements

Critical requirements had to be addressed and successfully implemented for the project to be successful. These requirements, if not met, would have meant that our solution did not meet the goals of the Resilient Families Project.

3.1.1 Functional

- Effectively track and monitor participants' progress
- Send results of participant data analysis to the administrator of the program
- Allow participants to create text-based journal entries
- Allow participants to fill out comprehensive questionnaires containing questions about stress

3.1.2 Non-functional

- The web application must be simple to use for users of all technical backgrounds and capabilities
- The web application should be fun for participants to use
- The web application should not contribute to the participants’ stress
- The web application should be simple to maintain and update
- Participants’ privacy and confidentiality must be safeguarded and carefully managed
- The web application should be compatible with all current mass-market browsers, including:
  - Google Chrome
  - Mozilla Firefox
  - Internet Explorer
  - Mac OS X Safari

3.2 Design Constraints

Designing a web application to be compatible with all mainstream browsers was very important in this context, and meant that we needed to satisfy a very specific set of software
requirements for each browser. For example, Internet Explorer does not natively support some of the CSS styles that work seamlessly in Chrome and Firefox. Therefore, we had to test each revision to the app on all major browsers before approving it for use.
4. System Design

Given our requirements, we needed to take a number of considerations into account in order to make sure that our application was both aesthetically and functionally effective.

4.1 Visual Design Overview

The RFP serves a wide variety of demographics, but Dr. Burns made a point of telling us that not every participant is fully fluent in English. As a result, we decided to create an interface that is as icon-driven as possible, using universally known icons so that a user's success or failure with our system is minimally dependent on their command of the English language. We have also translated the web application into Spanish for participants that speak no English at all, with the help of one of Dr Burns’s other student workers.

Regardless of which version of the site a user is accessing, the two main visual elements in the design are color and cleanliness.

4.1.1 Color

We used mainly greens and “cool” blues. A “cool” blue is one closer to turquoise, rather than purple. The reason for using a cool blue rather than a warm royal blue is so that we stay more tightly within the same color family and avoid contrasting colors. In order to present the most visually soothing environment to our users, we will attempt to keep “color energy” to a minimum.

Color energy is visual energy caused by bright and/or contrasting colors; a red, orange, or otherwise brightly colored interface will have more color energy than a blue, green, or more subdued interface. Additionally, an interface with more colors or colors spread between different color families will have more color energy than one with less colors. Therefore, we used calmer, cooler colors that are analogous, or within the same color family.

4.1.2 Functionality

While functionality is important, form still precedes it in this case. Our web application may contain all the science and psychology that it needs to, but if it does not appeal visually to our users and provide them with a soothing, stress-free interface, they simply will not use it. Therefore, the functionality of the application is highly dependent on the look and feel.

That being said, a beautiful but useless application is still nothing more than a useless application. In addition to reducing the number of tasks available to a user on any given
screen, we will also attempt to limit the number of steps a user has to take to complete each task.

Our goal was to have only three tasks available to a user at any given time, with the exception of going back one level in the task hierarchy. Of those three tasks, each task has a maximum of five steps needed to complete it. This should allow the user experience to be as streamlined as possible, both visually and functionally.

4.2 Technologies Used

The technologies we used include the web programming languages HTML, PHP, and JavaScript, using a standard web setup that is recognized by all major browsers. For database storage and retrieval, we used MySQL.

4.2.1 Development Tools

Development tools included the Twitter Bootstrap framework (HTML, CSS, and Javascript templates) for the front-end design, and Notepad for the back-end design and coding. All major browsers (Google Chrome, Internet Explorer, Mozilla Firefox, Safari) were used for testing while developing this application.

4.3 Design Rationale

As an alternative to the current paper system, the web application allows users to work at their own pace and have a more hands-on approach to their answers than is currently given for the survey. It also allows users to input and access information from any computer, giving them more freedom than the current system, which requires them to come on campus to do the survey.
5. Stress Tools, Metrics, and Analytics

When designing an application to read stress levels in users, there are a number of ways that these measurements can be done, and each of them should be taken into account during development.

5.1 User-entry forms

Currently, the RFP uses a number of surveys to measure the stress levels of one of their subjects. Our goal was to put these surveys online, not only to make the surveys more accessible from outside of the program, but to make them a more interactive experience. We also gave subjects a journal system, which allows them to write down their thoughts and scenes of their home life to allow a more constant look into the progress of the subject by the administrator.

5.2 Analytics

As a future feature, users and administrators will be able to view data analytics including overarching summaries of data input by participants, weekly summaries, and graphs allowing users to track cyclical patterns.

The intention of pattern tracking is to allow users to easily read any recurring patterns within their stress data, allowing them to better anticipate any recurring stressful situations. Possible patterns may include stress related to female hormone cycles or stress related to the time lapse between pay periods.
6. Web Component Design

With all of the previously mentioned information in mind, the design for the pages should not only reflect the requirements and design criteria, but should also include all of the metrics analyses related to the project.

6.1 Landing page

Users going to our root URL will be directed to a main landing page on which they select the language they wish to access the site in: English or Spanish. Each link will direct them to the login page of each site.

![Screenshot: landing page](image)

Fig. 6.1 Screenshot: landing page
6.2 Login page

The login page has the logo of the RFP at the top of the page with buttons to log in or create an account. The content of the page is a brief overview of what the website is for, with a link to create an account or log in to an existing account.

![Screenshot: login page](image)

Fig. 6.2 Screenshot: login page
6.3 Creating an account

Since we do not need a large amount of personal information from our users, we only ask for their first name, last name, desired username, and password. Demographic information may be added later, but is not required by the current scope of the project.

Participants are also asked to enter their child’s name. Participants may add additional children if desired through the Settings page.

Fig. 6.3  Screenshot: creating an account
6.4 The Dashboard

The Dashboard is where the majority of the work happens on the website. There is a visual calendar displaying the current month with the current day highlighted, as well as a progress bar displaying participants’ progress through the RFP program. The Dashboard also has a list of tasks for participants to complete for each day they log in, as well as a Meditations section with a mindfulness exercise accessible at any time.

Below the date, progress bar, and task list are sections for the surveys and the journal. The survey section lists recently completed surveys, as well as surveys for users to complete next. Sequential surveys are not available for users to complete until the preceding survey is complete. The journal section displays the time and date of the last journal entry that the user wrote, with a button to write a new entry.
6.5 Writing a journal entry

The journal entry page allows users to select icons and use a drop-down list to indicate their current mood and stress levels. At the top is a text box for users to enter any additional information.

![Screenshot: writing a journal entry](image)

**Fig. 6.5** Screenshot: writing a journal entry
6.6 Filling out a survey

Users are asked to use a set of buttons to indicate their or their child’s stress level, moods, and general demeanor since the last survey was taken. They use these radio buttons to indicate whether their child spoke about certain topics, including schoolwork and friends. Users indicate here whether they had positive play experiences with their children since the last survey was taken.

Fig. 6.6  Screenshot: example survey elements
6.7 Settings

The settings page is very basic, laid out as seen in Figure 6.6. At the bottom of the page is a button to submit changes. Changes will not be automatically saved, so users will need to submit any changes they wish to keep.

![Screenshot: settings page (submit button not yet implemented)](image)

Fig. 6.6   Screenshot: settings page (submit button not yet implemented)
6.8 Administrator Panel

The back-end admin panel allows the administrators to edit the survey modules and keep track of their patients in an easy, intuitive way. A list of the possible surveys, separated by type, is present on the panel, and clicking on any one of them pulls up an in-line editor. All of the questions are displayed, along with the possible answers. From there, admins are able to add and delete questions and change how a question is answered, and are also able to add and delete full surveys.

The panel also includes a list of current patients, and clicking on one allows the admin to see their journal entries and survey answers in order to see their progress within the program. It is important that the admin panel is as easy to use as the user panel.
7. Use Cases

A use case describes potential situations we expected the users to encounter while using our application, the steps needed to accomplish that goal, and potential exceptions to these situations. We identified a number of use cases for both the users and the administrators in our system.

7.1 Users

7.1.1 Completing surveys

<table>
<thead>
<tr>
<th>Actor</th>
<th>Attendee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Complete an online survey</td>
</tr>
<tr>
<td>Preconditions</td>
<td>User must have access to a computer and to the internet</td>
</tr>
<tr>
<td>Postconditions</td>
<td>User has completed a survey</td>
</tr>
</tbody>
</table>
| Scenario    | 1. User accesses the RFP website  
2. User clicks on a link to open the surveys in a pop-up modal window  
3. User completes the survey using radio buttons to answer a number of questions  
4. User answers last question and clicks “Submit” to send this data to the admin |
| Exceptions  | None identified            |

Fig. 7.1  Use case: completing surveys

7.1.2 Writing journal entries

<table>
<thead>
<tr>
<th>Actor</th>
<th>Attendee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Write and save a journal entry</td>
</tr>
<tr>
<td>Preconditions</td>
<td>User must have access to a computer and to the internet</td>
</tr>
<tr>
<td>Postconditions</td>
<td>User has written a journal entry</td>
</tr>
</tbody>
</table>
| Scenario    | 1. User accesses the RFP website  
2. User clicks on a link to open the journal modal  
3. User types their journal entry into a text box  
4. User clicks “Submit” to save their entry and send this data to the admin |
| Exceptions  | None identified            |

Fig. 7.2  Use case: writing journal entries
7.1.3 Changing settings

<table>
<thead>
<tr>
<th>Actor</th>
<th>Attendee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Change user account settings</td>
</tr>
<tr>
<td>Preconditions</td>
<td>User must have access to a computer and to the internet</td>
</tr>
<tr>
<td>Postconditions</td>
<td>User has successfully made changes and saved those changes</td>
</tr>
</tbody>
</table>

**Scenario**

1. User accesses the RFP website
2. User navigates to the Settings page
3. User makes one of the following changes:
   a. Change first name or last name
   a. Change username
   b. Change password
   c. Change child’s first name or last name
   d. Add a child
   e. Remove a child
4. User clicks “Submit” to save their changes

**Exceptions**
None identified

Fig. 7.3  Use case: changing user account settings

7.2 Administrators

7.2.1 Accessing information

<table>
<thead>
<tr>
<th>Actor</th>
<th>Administrator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Access a user's information from the website</td>
</tr>
<tr>
<td>Preconditions</td>
<td>Admin must have access to a computer and to the internet</td>
</tr>
<tr>
<td>Postconditions</td>
<td>Admin has accessed a user’s survey results and journal entries</td>
</tr>
</tbody>
</table>

**Scenario**

1. Admin accesses the RFP website
2. Admin logs on to the website to access extra privileges
3. Admin clicks on a link corresponding to the user’s name
4. Admin chooses to look at a single survey or journal entry
5. Website gives the admin a human-readable document containing the information

**Exceptions**
None identified

Fig. 7.4  Use case: accessing information
### 7.1.2 Editing surveys

<table>
<thead>
<tr>
<th>Actor</th>
<th>Attendee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Edit an online survey</td>
</tr>
<tr>
<td>Preconditions</td>
<td>Admin must have access to a computer and to the internet</td>
</tr>
<tr>
<td>Postconditions</td>
<td>Admin has edited and updated a survey</td>
</tr>
</tbody>
</table>

**Scenario**

1. Admin accesses the RFP website
2. Admin logs on to the website to access extra privileges
3. Admin clicks on a link for editing surveys on the website
4. A form is given to either add a question or to delete a question from a list
   a. Admin fills out the form to add a question and submits the changes
   b. Admin selects the question to be deleted and removes it from the survey

**Exceptions** None identified

---

Fig. 7.5  Use case: editing surveys
8. User Testing Plan

8.1 Individual Component Testing

It was important to test individual pieces of the application before trying to put everything together, so that there was less to fix should something go wrong. Testing started with being able to answer a survey question and have it return a proper result. Finally, we tested the ability to enter a journal and produce a readable document after submitting.

8.2 Application Testing

With application testing, we tested as though a user were actually filling our application out. Here, we tested the ability for a full survey to not only be completed, but also be able to submit a results document that is readable and comprehensible by the administrators.

8.2.1 Alpha Testing

The alpha testing phase allowed us to catch bugs before we published the beta product for the next round of testing. While we could not predict every single use case, we tried to cover as many different scenarios as possible. We tested inputting a number of arbitrary values into the system and testing for any vulnerabilities and scripting errors.

8.2.2 Beta Testing

Once we identified and fixed all of the bugs in our system from our alpha testing, we then turned to beta testing. We asked some possible users as well as other outside sources to use our application, and they helped identify any issues still present in our application. Not only did we look for an easy-to-use interface, but also a design that was aesthetically pleasing and calming, so that the whole experience would be beneficial to its process. After this testing step, we had a completed product ready for release.
9. Project Risks

The following chart displays what we saw as the project risks, consequences, probability of occurrence (P), severity (S), level of impact (I), and mitigation strategies. By prioritizing mitigation strategies via their respective problem's level of impact, we could effectively ensure that any significant problems such as team member illness did not cause undue stress or delays.

- Probability is scaled from 0 to 1; Severity is scaled from 0 to 10
- \( I = P \times S \). This indicates how likely a problem is, and how much of a delay it would cause.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Consequence</th>
<th>P</th>
<th>S</th>
<th>I</th>
<th>Mitigation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Not finishing work</td>
<td>0.5</td>
<td>6</td>
<td>3</td>
<td>• Prioritize features depending on difficulty and importance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Effectively manage time</td>
</tr>
<tr>
<td>Unauthorized release of</td>
<td>Participant info. and privacy is compromised</td>
<td>0.1</td>
<td>9</td>
<td>0.9</td>
<td>• Anonymize information to prevent participant identification</td>
</tr>
<tr>
<td>information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design/interface is</td>
<td>Restart development of visual interface, delays in</td>
<td>0.1</td>
<td>9</td>
<td>0.9</td>
<td>• Create multiple design concepts</td>
</tr>
<tr>
<td>unsatisfactory</td>
<td>completion</td>
<td></td>
<td></td>
<td></td>
<td>• Include client in visual design from the beginning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Keep interface design flexible to modify easily</td>
</tr>
<tr>
<td>System bugs</td>
<td>Delays in completion</td>
<td>0.9</td>
<td>1</td>
<td>0.9</td>
<td>• Write code carefully</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Comment code to assist troubleshooting</td>
</tr>
<tr>
<td>Errors in browser testing</td>
<td>Delays in completion</td>
<td>0.9</td>
<td>1</td>
<td>0.9</td>
<td>• Research known browser “quirks”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Check documentation of any plug-ins used for any known compatibility issues</td>
</tr>
</tbody>
</table>
### Project Risks and Details

The only trouble we ran into according to our chart was not having enough time to have everything running for the demonstration, and our development was further pushed back by our live development server going down for a week. A couple of aesthetic designs had to be dropped in order to reach the deadline, but the functionality is there and formatted such that the website still retains all of the proposed features.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Consequence</th>
<th>P</th>
<th>S</th>
<th>I</th>
<th>Mitigation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team member ailment</td>
<td>Delays in completion of team member's components</td>
<td>0.2</td>
<td>3</td>
<td>0.6</td>
<td>• Overlap responsibilities to allow other member to complete unfinished work</td>
</tr>
</tbody>
</table>
| Change in requirements| Not finishing work or delays in completion                                   | 0.1| 5  | 0.5| • Carefully consider all requirements                                               
|                       |                                                                              |    |    |    | • Create system to be flexible if necessary                                        |
| Data loss             | Lost work delays completion during data recovery                             | 0.1| 4  | 0.4| • Have backups in multiple locations                                                |
|                       |                                                                              |    |    |    | • Use cloud-based storage                                                           |

**Fig. 9.1**  Project risks and details
10. Development Timeline

10.1 Gantt Chart

Below is a Gantt chart detailing what tasks must be completed by which team member, and the estimated timeline. We were able to adhere to our development timeline fairly well.

![Gantt chart illustrating development timeline](image)
11. Future Features

The scope of this project was defined to allow us to develop the best product possible for the Resilient Families Project while still maintaining a reasonable schedule and allowing us to easily meet deliverable deadlines. However, this web application’s functionalities can be expanded to cater to markets outside of the Resilient Families Project by adding new features and functionalities.

Below are the two main areas into which this project can expand.

11.1 Features for clinical use

Health care providers such as Kaiser Permanente make a point of keeping patient information accessible and up to date for all medical practitioners that a patient interacts with through the use of cloud storage and networking. Our project has a large potential benefit here, allowing mental health patients to share information with their mental health professionals (MHPs) more easily.

Patients meet with their MHP usually every week to two weeks, and sometimes more frequently if the care provided requires more frequent sessions. The main drawback to this approach is that patients are not always easily able to provide a day-by-day and sometimes hour-by-hour account of their mental health state since the last session. Our application can be used to help users track their mental health state in real time, as well as sharing their real-time data with their MHP.

Features that can be added to adapt our project for this application:

- Adapting user-admin interactions through the web application to better reflect a doctor-patient relationship by tailoring what information is shared
- Adding a wider range of mental health state options, so that the application addresses all possible mental health states rather than just stress or anxiety
- Adding the ability to monitor a patient through the MHP’s side of the app
- Adding the ability for an MHP to set alerts if a patient exhibits identified risk behaviors
- Adding a “big red panic button” for a patient to press if they need help that will contact identified emergency services and/or emergency contacts
- Adding biometrics integration for vital signs such as heart rate and skin temperature.

One potential tool we found was the Pip sensor developed by Galvanic, calculates stress based on the galvanic response of skin. For more information see http://galvanic.ie/
11.2 Features for casual use

Our application is also potentially valuable as a self-help tool for users seeking to manage their mental health state without seeking the help of an MHP. These user groups include students, parents, and professionals that feel they need to improve or more carefully track their mental health state at regular, frequent intervals.

Features that can be added to adapt our project for this application:

- Adding a wider range of mental health state options, so that the application addresses all possible mental health states rather than just stress or anxiety
- Adding a “big red panic button” for a user to press if they need help that will contact identified emergency services and/or emergency contacts
- Enabling future integration with an MHP account should the user seek the help of an MHP or wish to use our application as an MHP.
12. Conclusion

The final product allows the Resilient Families Project to gather more information on their subjects, and allows the subjects to give more frequent accounts of their mental health and stress levels to their leaders. It makes the process more personal and allows subjects to better express their thoughts, giving them plenty of time to figure out what they want to say and be confident in their responses. By keeping in close contact with Dr. Burns, we have made sure that the application fulfilled all of her requirements, in an effort to make the RFP an even stronger program than before.

While much of the implementation for the website is now completed, as is the front end for both the English and Spanish webpages, there is still more to be done to make the website better. We plan to pass off the current version of the website to the next year of senior design projects, in hopes that a dedicated mobile app can be created, and that many of the smaller design features that we were unable to get working could be implemented.
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