Presented by Team E = MC Awesome

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Introduction

“I don’t want to get out of bed today.”
Contrary to what our upbeat team name may suggest, every member of our team has felt this sentiment at some point in the past 8 months. We also know that many of you reading this can relate. Limited to the tight confines of our homes, we struggle to muster the motivation to live our best lives each and every day.

We made the fairly straight-forward observation that exercise improved our mood, whether it was going for a morning walk or run, playing individual sports, or practicing martial arts. Our observation is backed by science. Exercise releases endorphins, chemicals that make you feel exhilarated and happy. Exercises also release dopamine and serotonin, two hormones that activate the pleasure center of the brain and encourage clear thinking. That’s great, but why aren’t more people exercising over the quarantine? The problem is the lack of motivation we mentioned earlier.

One remedy for a lack of motivation is to see others doing the things you want to do. Over millions of years human beings have evolved into highly social creatures. Social interaction and engagement release similar hormones to those released during and after exercise. This concept is why gyms have proven to be effective. When you see others exercising and work out with friends, it significantly increases your motivation to exercise.

Dear Pressure is a website which primarily allows users to schedule workouts with their friends. The website will also provide exercise recommendations based on the user’s fitness goals. To achieve this, the user will provide data through an initial questionnaire.

Purpose and Motivation

The purpose and motivation for our website was to create a platform for friends to be able to connect and find times to workout together. We believe that working out with friends gives one motivation to actually workout instead of just saying that they will exercise. It is designed to be both a motivational website and an exercise calendar website.

This website was also created to combat isolation related depression as a result of being quarantined at home for such a long period of time. Our website does not encourage social gathering, but rather virtual events such as having friends work out at the same time, but remain socially distanced. The idea is for a friend group to set a fitness goal together and work toward that goal together. The motivation for people to actually workout is achieved through various group members pushing each other to get through the workout, to progress, and eventually reach the goal.

Timeline

From project proposal (Weeks 3-4):
We have come up with ideas of what we want to do and some ways we could implement them. We've also divided up into different roles such as web developers, graphic designers, and software developers.

Milestone report #1 (Week 5):
Since the project proposal, our group has met a few times to discuss the layout of the website and we have done some brainstorming on what pages we want to include in the website and what we want to include on each page. We have also collected resources that we may need to complete this project.

Milestone report #2 (Week 7):
We have worked on creating a basic backbone for the website, the button, the calendar, and the fitness recommendation formulas. We have begun looking into how to implement the backend code that will be required to store login usernames and passwords, amongst other things.

Milestone report #3 (Week 9):
Since we submitted the second Milestone Report two weeks ago, we created our team GitHub repository and stored a majority of our source code in the repository. Additionally, we developed our code files for all the features of our website: the button, calendar, and the fitness recommender system.

Final Week
We finalized the writeup, website, and added some of the backend portion so that the website runs better. Our team also got together to go over how to use the website and to discuss how we plan on presenting it.

How to Use

- The first step for using our website is navigating to its URL
    - Since we did not have the means to publish our site, we couldn't show this step in the demonstration video
- To login, the user needs to click on the green button on the top-left of the webpage. Subsequent to doing so, they need to fill in the boxes with their personal login information. To sign in, they should press the green 'Login' button. To exit the box, they should press the 'Cancel' button.
- To learn more about the website and its developers, the user can scroll down and they will find the content there.
- If the user scrolls down more, they will find a short snippet of fitness news.
- To get a recommended workout, the user should scroll down a bit more, and they will be met with a Python program that delivers such a routine. The user needs to enter an input based on each question asked in the program. At the end, they will receive a personalized workout.
- To navigate to the calendar page, the user needs to scroll to the top or bottom of the current webpage and press 'Calendar.' When they do so, they will arrive at a webpage with an embedded Google Calendar that will have the workouts of their friends.
- To contact the company, the user needs to scroll to the top or bottom of the current webpage and press 'Contact.' There, they will find an email address that they need to either click or copy and paste the email address, and use it to contact us.

Teammate Contribution

Everyone

As a team we all worked on the milestone reports and the documentation. We also helped each other brainstorm to come up with the idea for the website itself.

Anne Lin

I completed a calendar template using HTML and CSS. I also worked on the logistics, backend and database portion of the website. This included setting up the GitHub and creating the FireBase project and implementing the data storage code into the pages created by the other team members. Most of the backend related tasks included adding chunks of Javascript code to existing HTML code that was made by other group members.

Arnav Tayal

I developed our exercise recommender page primarily using Python. This is a content-based filtering system, meaning that various exercises are stored in the website and the exercises are filtered based on the user data. I devised relatively straight-forward methods to assign scores to each category of exercises. Then the program presents the exercises with the highest scores. I also used HTML and CSS to develop the webpage for this recommender.

Khanh Nguyen

I worked on the About page for the website. I wrote the reason why we decided to create the website and the idea behind it. Everyone contributed to the About page by writing introductions of themselves so it wasn't just me.

Pranav Maddireddy

I mainly worked with Anne to set up and connect the firebase database with our website. I don't have a lot of experience with databases so it was really hard to start. I had to do a lot of research to figure it out. After some research we decided to use Firebase because it was free and easily accessible. I implemented the necessary function to grab and record user data in our JavaScript files. I also helped write up parts of the documentation. I mostly worked on parts that talked about our back-end/database experience.

Yusuf Morsi

My contribution in this project included creating the main HTML, CSS, and JavaScript code for the site. I received my Front-End Web Development certification after a 9-month long program in September, so the knowledge of how to program in these languages was still fresh in my mind. Because of the fact that I am not highly experienced in back-end programming, a challenge that I had to face was getting the login button to store the inputted information. My contribution also included creating the graphic designs used on the website.

Real-world applications

As a result of the catastrophic COVID-19 pandemic and various other factors in their lives, many people across the world have been feeling worse than usual or aren't exercising as much. Our project's objective is to provide a tool that can be used to help elevate an individual's mental and physical health. Essentially our app serves to uplift the user by finding common workout times amongst friend groups. Also, we will provide suggestions tailored to the user for improving their physical health.

The concept of a shared calendar has many possible applications. Primarily, it can be used as a productivity tool in offices and companies across the globe. Time is a premium for everyone, oftentimes our busy schedules conflict with one another. The website can also help people such as students or employees stay on task by checking other's progress to reference where they should be.

In addition to the shared calendar, the exercise recommender system also has various promising applications. For instance, physical therapists could use our recommender system as a tool to provide their patients with targeted exercises to help their patients recover quickly and safely. Also similar techniques can be used to make recommendations in areas outside of fitness. One very pertinent area is nutrition. America is currently in a obesity crisis, nearly 40% of Americans are overweight or obese. Poor nutrition and large portions are major contributors to this. Essentially, the user could input their most frequently consumed foods, and the recommender would suggest foods to reduce, and healthier foods that complement the user's favorites.

Difficulties and Challenges

Learning:

- None of our team members have previously worked with any back-end programming for websites and data storage.
    - This meant we had to research, learn, and implement it during the duration of this project. It took us a while to choose which database service we should use and we ended up using firebase.
    - Setting up and linking our database to our website was quite difficult because we needed to collect a lot of data from our Firebase project. They were not all easy to find, but with the guidance of some tutorials, we were able to make it through! We were also able to set up signup and login functions using tutorials.
    - We knew that implementing a database would be difficult but we think it is important that we do so. Implementing a database that can store individual user data will enrich the experience that users get out of our project.
    - We also found that trying to retrieve the data store in the database to be challenging.
        - Storing the data into the database and retrieving the data from the database took a while to learn and then implement.
- Embedding Python code into an HTML file required using tags in HTML that we were unfamiliar at the beginning of this process.
- Some of us also needed to learn how to code with HTML, CSS, Javascript in addition to understanding how to combine the three to make a cohesive page.
- Learning how to use GitHub, creating repositories, git push, git pull, etc. was also a process.

We overcame our learning difficulties by using the resources we had at hand. We mainly used Google and youtube tutorials to aid our learning, but a majority of the learning was trial and error along with testing out different sections of code and then modifying it until we were able to achieve a desired look for our website. We also appreciate the help that all of the mentors provided. They were able to help us get started and help determine which method of approach would be the easiest to help us succeed.

Adjusting to college: our entire team is composed of first-year students so this is our first quarter taking all college courses. As such, we did need a bit of time adjusting to the fast pace of the college curriculum. In addition to that, asking for help from teachers and TAs is also tough when everything is online, especially for classes that involve a lot of hands on building.

Time management/communication: being online has definitely made it harder for all of us to meet. Some members have decided to stay at home and sometimes their family events overlap with our meeting times. Despite this, we were able to establish a consistent meeting time every week for the project.

Improvements/Enhancements

With more time, here are some of the improvements and enhancements we could have made to our project. First our website could also be an app for easy access on mobile phones. The way we could approach this is by using third-party app converters such as Buildfire, Onbile, or Ionic. Essentially, these app converters work by converting the HTML code used for the website into an appropriate language for app development.

Also, we could add more functions to our website such as the ability to view other people's calendars, and a social page so users can see their friends' data and progression. Implementing more backend code so that the website has a larger range of functionality would be a large contributor to being able to search/add friends and to be able to view their friend's status and progress. With a better understanding of how to properly use and implement a database we could collect more data and use it to provide a more personalized experience. Creating our own calendar would also be a nice touch. We currently have an embedded google calendar that allows people to add events to their calendar.

The recommendations can be more specific, for example, including the number of repetitions for specific exercises, or calisthenic alternatives in case the recommended exercises could only be performed at the gym. Eventually, the repetition and level of difficulty of these exercises could be scaled up with time as the user gets better and better. We can also include different types of recommendations, for example recommending nutrition and diets based on the user's fitness goals. A place to keep track and record these goals and progressions is also necessary to achieve the full functionality of our website.

Conclusion

Committing to and completing this project was a learning experience above all else. We were able to develop a useful website with most of the features that we wanted. Our website may even be useful after cases of coronavirus have subsided and quarantine has officially ended. Dear Pressure is not limited to only working out with friends, it has the capabilities to be used as a website to make scheduling in friend groups easier once social gatherings are allowed. There are many other ways (see the Real-World applications section) that our project could be applied.

Dear Pressure has plenty of room for improvement. As we continue our engineering journeys, we intend to also improve our knowledge of web development and software. Overall, this project was a remarkable learning experience for everyone who participated. We have all learned a lot throughout this project, but there is still much more to learn. This project was a good stepping stone to help us dive into the world of web design.

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