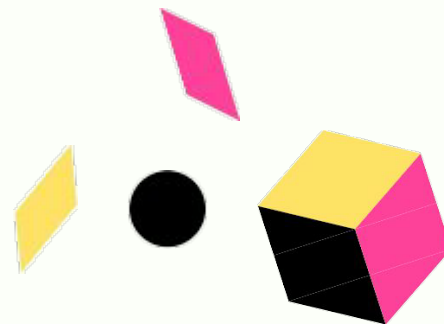


Group 4
Richard Bent
Luisa Cardona
Samantha Perez
Christopher Polynice
Cody Traywick

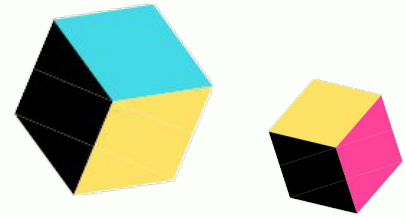


Sponsors
Margarita Azbel



Introductions

- Richard Bent – Backend Testing, Backend Developer
- Luisa Cardona – Project Manager, Frontend Designer
- Samantha Perez – Lead Frontend Designer
- Christopher Polynice – Lead Tester, Backend Developer
- Cody Traywick – QA, Lead Backend Developer



Who is Orlando Math Circle (OMC)?

Orlando Math Circle aims to demystify mathematics for students of all ages through playful, joyous problem solving

- **Mission** — Create a diverse and inclusive community of student mathematicians
- **Strategy** — Provide engaging and fun opportunities to do mathematics outside of school
- **Vision** — Equitable access and greater student participation in mathematics
- 501(C)(3) non-profit organization



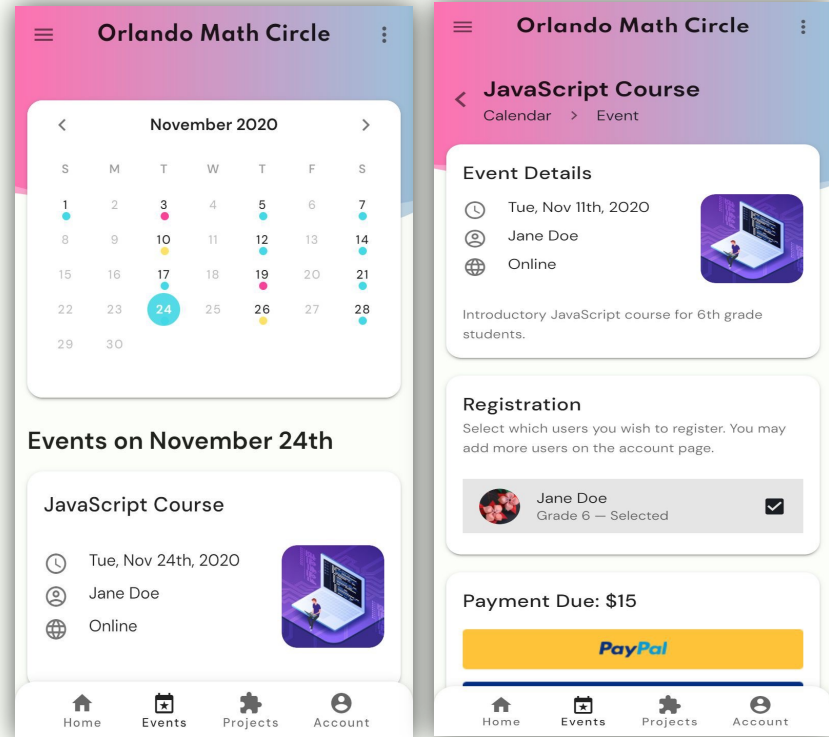
Broader Impacts

- Increasing engagement and inclusivity among K-12 students in STEM
- Extending access to enriching opportunities for under-represented students, specifically low-income and female students
- Creating a unique web application that can be outsourced to STEM centers looking to adapt a similar system

Existing Solution

An event calendar system with an app-like experience on a mobile browser.

- Event management and check-in system
- Volunteer management
- Email notifications for events and newsletters
- Extended usability through admin panel
- Open source, documented, and extensible

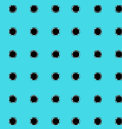


Goals

- Improve an existing application for OMC to be self-sufficient
- Include volunteers and high schoolers in the process
- Improve the UX for users (volunteers especially)

Objectives

- Collaborate with volunteers and users to find solutions to their issues
- Add features such as swapping shifts and updating accounts on an annual basis
- Build a testing suite to conduct unit testing for the app
- Fix issues with the UI that could potentially cause confusion



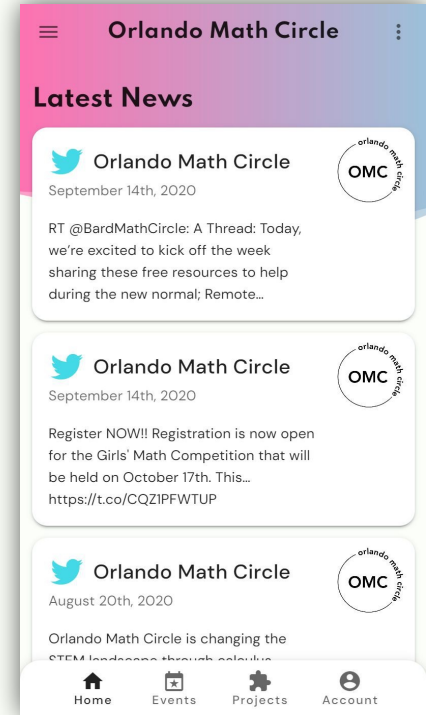
Requirements

Functional Requirements

- Streamline volunteer signature process within app (not DocuSign)
- Prompt parent accounts to update student information on yearly basis
- Allow swapping of volunteer shifts
- Unit testing/user feedback
- PayPal payment support
- Fix time modification for events
- Automatically update members accounts every academic year
- Automated email notifications for events
- Volunteer point/award system based on collective hours

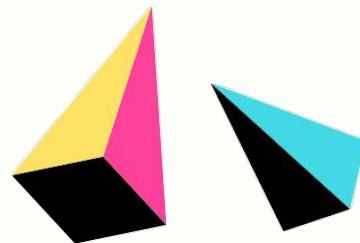
Design Requirements

- Fix issues with UX (scroll to login/other visual inconsistencies)
- Display social media feed from OMC Facebook
- Display notifications for time modifications and upcoming events
- Volunteer dashboard to display the user's hours and upcoming shifts
- (Homerun) Admin dashboard to allow admin to create math-challenging questions for students



Documentation Requirements

- Update documentation with new features and modifications
- Make basic exercises/tutorials for high schoolers to complete
- (Homerun) Containerize the whole application with Docker



Infrastructure Decisions

Most of these decisions were made by the previous Senior Design team and we will continue to abide by the current standards.

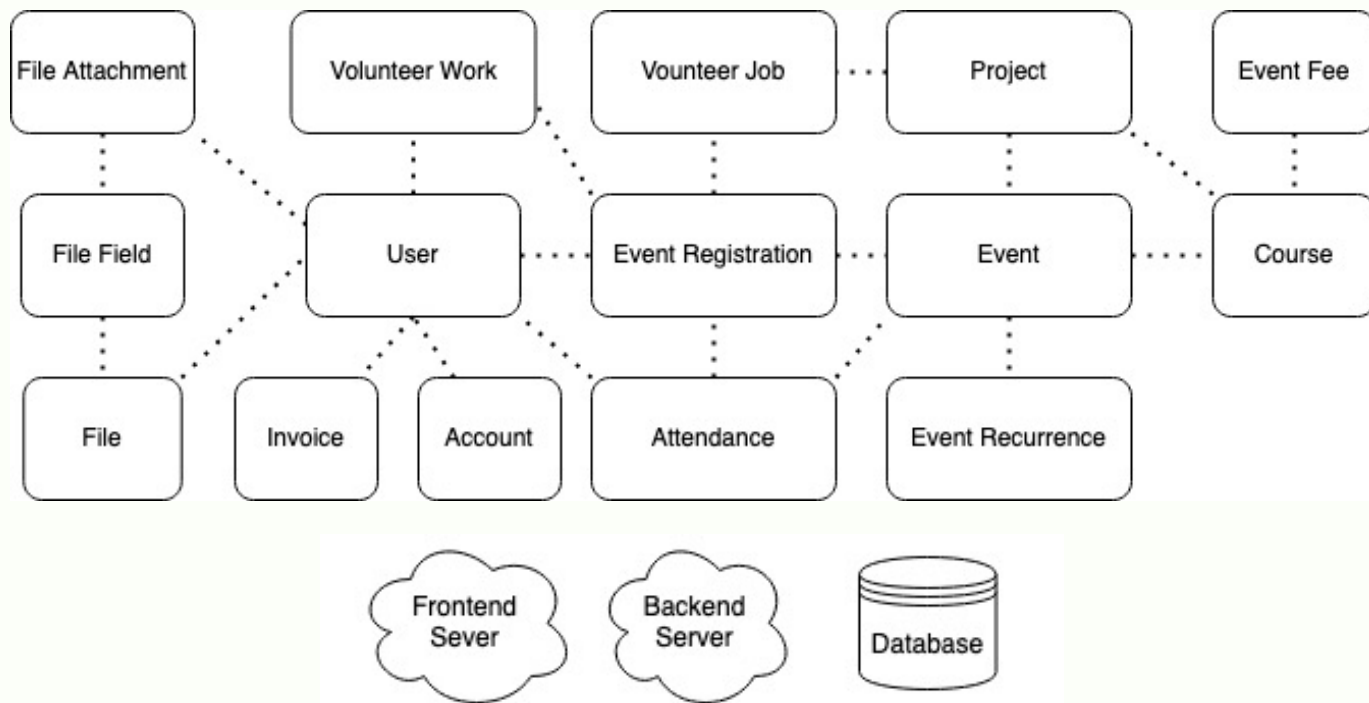
- Frontend: Nuxt.js (based on Vue.js)
- Backend: NestJS (based on Express.js)
- Runtime Environment: Node.js
- Database: PostgreSQL
- Hosting: Azure





Backend

System Design



Point System

- Currently a point system is being implemented so students can be rewarded for task such as volunteering and going to events
- Points will be given automatically for students who have recorded attendance for the events
- Admins can manually give students points
- Leader board to highlight students that accumulated the most points

```
public async update(
  id: number,
  dto: UpdateUserDto | UpdateOwnUserDto,
  author?: User,
) {
  let user: User | undefined;

  if (author) {
    user = author.account.users.getItems().find((u) => u.id === id);

    if (!user) {
      throw new NotFoundException();
    }
  } else {
    user = await this.userRepository.findOneOrFail(id);
  }

  if (dto.avatar && Object.keys(this.avatars).includes(dto.avatar)) {
    dto.avatar = this.avatars[dto.avatar];
  }

  if (dto.industry) {
    dto.industry = classToPlain(dto.industry);
  }

  if ('password' in dto) {
```

Attendance

- Both volunteers and students attend events
- Add hours from volunteer job to volunteer's account by creating a work entity from the job
- Transition from manual attendance checking and hour counts to automated calculating
- Admins can verify work/attendance through the admin panel

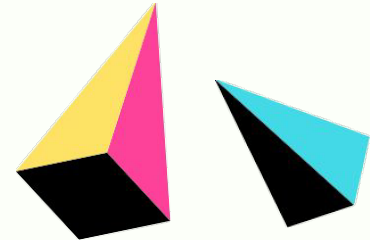
```
public async create({ userId, eventId, ...data }: MarkAttendanceDto) {  
  const attendance = this.attendanceRepository.create({  
    ...data,  
    user: userId,  
    event: eventId,  
  });  
  
  const event = await this.eventService.findOneOrFail(eventId);  
  
  const user = await this.userService.findOneOrFail(userId, [  
    'work',  
    'registrations',  
  ]);  
  
  // Check for user, registration, and permissions  
  
  if (event.isEnded) {  
    attendance.user = user;  
  
    if (!event.hasPermission(user)) {  
      throw new ForbiddenException();  
    }  
  }  
}
```

Volunteer Shift Swapping

- Currently, events are created by the OMC Admin - volunteers of OMC can register for any event.
 - Events can accept an unlimited amount of registrants
 - Volunteers can register for the same event
- The current system does not support transfer of event ownership
 - ... there is no "ownership relationship" currently in place
- The solution in place:
 - Event jobs will store information about the registered volunteer
 - If seeking swap, a dropdown will appear with a list of names that are qualified to take over the event

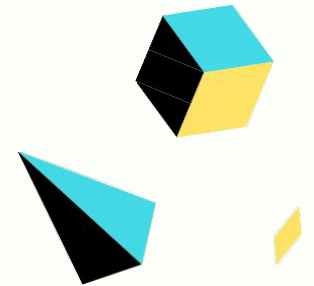
Support of Additional Time to Events

- As it stands, the OMC application, when creating an event, demands a start and end time
- Cases exist where an event may run longer or shorter than the allotted time
 - Problematic for the algorithm in place that calculates hours earned
 - Incorrect time may be recorded for attendees
 - Disincentivizes volunteers who work additional time on an event job
- The solution in place:
 - Working closely with the Attendance system, as already explained, events will be flagged when time exceeds the hours specified



Memberships

- \$55 – High School
 - Includes learning resources and workshops
 - Event registration
 - Must volunteer
- \$25 – Middle School and Below
 - Event registration
 - May upgrade to top membership for benefits
- Parent account is responsible for annual membership payments
- Must track the grade levels of students to prompt renewal



Emailing Service & Notifications

- Azure credits did not apply to SendGrid (\$10/month)
- MailerSend provides a free plan for organizations (12,000 emails/month)
- Event notifications are sent out based on the user's desired frequency
- Application checks every 15 minutes for new notifications
- Admins can send emails to users when needed

```
// @Timeout(5000)
@Cron('*/15 * * * *')
@UseRequestContext()
public async sendEmailReminders() {
    const events = await this.getEvents();
    const map: Map<Event, { freq: ReminderFreq; users: User[] }> = new Map();

    for (const event of events) {
        // No registrations, no emails.
        if (!event.registrations.length) continue;

        const freq: ReminderFreq = this.eventToFrequency(event);

        // If an event has been notified for this type, abort.
        if (event.notified.includes(freq)) continue;

        for (const registration of event.registrations) {
            const user = registration.user;

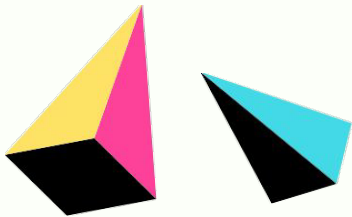
            // User doesn't want, or can't receive emails.
            if (!user.reminders || !user.email || !user.emailVerified) continue;

            // User didn't want this type of notification.
            if (!user.reminders.includes(freq)) continue;
```

Backend Successes/Concerns

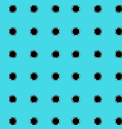
Successes

- Fleshed out logic that will encompass the swapping of event jobs within volunteers and additional hours added
- Because all the job information only needed manipulation, saved the need to create entries/entities throughout the Database



Concerns

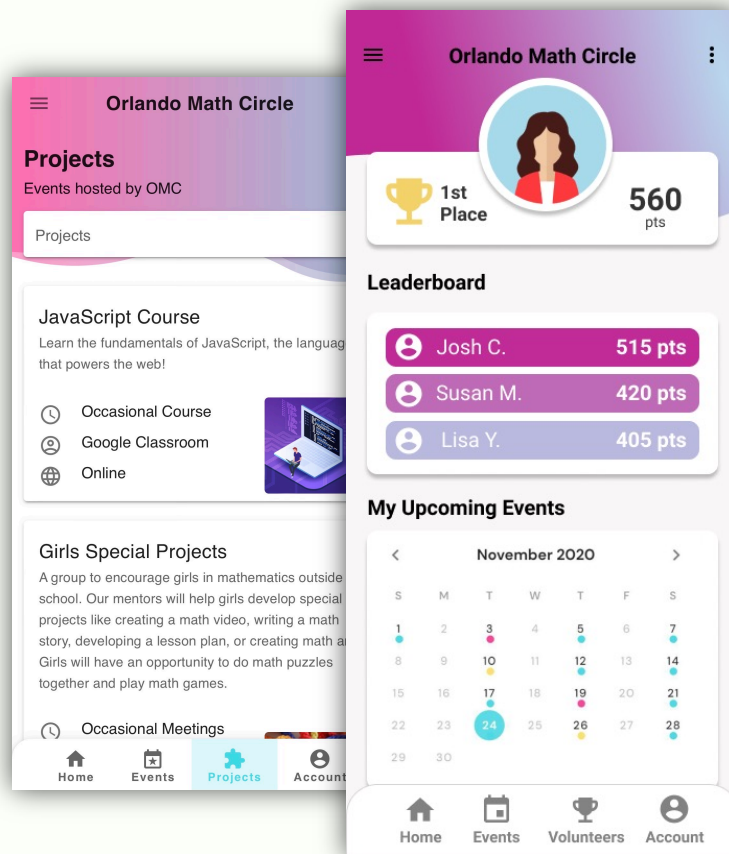
- If additional time were to be added to events that could be open-ended (in the future), could complicate automated calculations of hours down the line
- The task of swapping event jobs could rise in difficulty should OMC present the needs for multiple volunteers needing to swap an event with other volunteers
 - More entities to manage = more dependencies that must be managed



Frontend



Volunteer Dashboard

- Reengineered the existing Projects page into a more functional space for OMC
- Proposed by the Senior Design team
- Increase user engagement in the mobile app through friendly competition
- Potential to expand in the future





Volunteer Dashboard

- Leaderboard standing and accrued points
- View personal upcoming events
- Navigate available projects
- Request to swap a shift if a volunteer can no longer attend an event, subject to admin approval
- Point/Award system discussions in progress with sponsor

 Orlando Math Circle 

My Upcoming Events

 November 2020 


S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					


Projects


Series of events hosted by OMC.


JavaScript Course




Learn the fundamentals of JavaScript, the language that powers the web!



 Occasional Course



 Google Classroom

 Online





 Home  Events  Volunteers  Account


 Orlando Math Circle 




JavaScript Lesson

 Mon, Mar 8, 2021
12:00 AM - 8:30 PM


 Online





 Event Fees
Late Fee - \$5.00 Per Person

 Undergraduate
Boys and Girls

Swap Shift

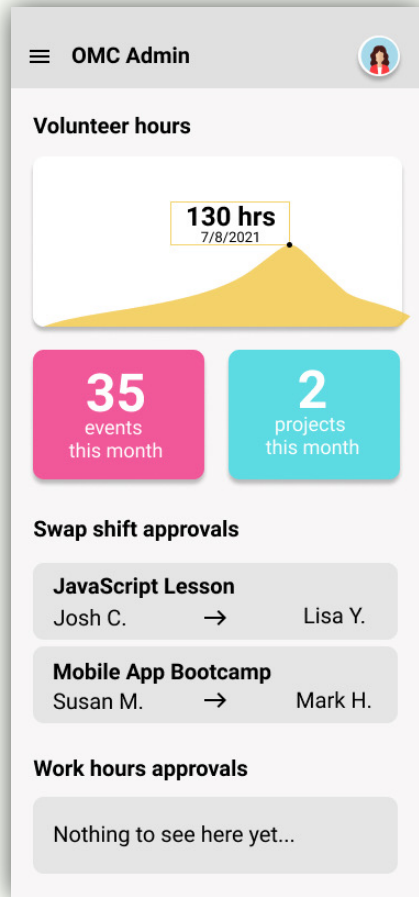
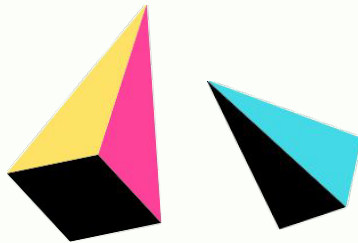
If you can no longer attend this event please make sure to find a replacement below.

select volunteer 

 Home  Events  Volunteers  Account

Volunteer Admin Panel

- Available only to users with an administrator role
- Easy access to pending request that require admin approval
- Admin statistics for tracking volunteer hours year to date as well as monthly events and projects completed



High Schooler Involvement

- OMC high school volunteers will be able to continue developing the app after SD2 concludes
- Summer curriculum plan divided into 2 phases
 - Utilize OMC documentation to introduce students to relevant technologies
 - Internship workshop at the end of July where students will be able to navigate the application's code and complete exercises
- Beneficial to future students interested in web/app development



Documentation Curriculum

- Initial google survey to determine the student's level of familiarity with web/app development
- Brief the students on GitHub, Visual Studio Code, and Markdown
- Pages dedicated to introducing the volunteers to web development and web stacks, gradually introducing them to the advanced technologies

Web Development

The basics of traditional web development.

Background Information

As its name implies, web development is the process of building and maintaining websites. Web development is typically divided up into frontend and backend development. Frontend development makes up the visual appeal of the website, handling the site's design, layout, and interactivity. Backend development handles the behind the scenes of the site where data and the server is stored. This subject will be further explored in a later section.

Beginners to web development typically become familiar with HTML and CSS (frontend languages) before delving into the more complex languages involved in web & mobile applications as simple static websites do not require any work from the backend.

Table of Contents

[Background Information](#)

[HTML](#)

[CSS](#)

[JavaScript](#)

[Websites vs. Web Applications](#)

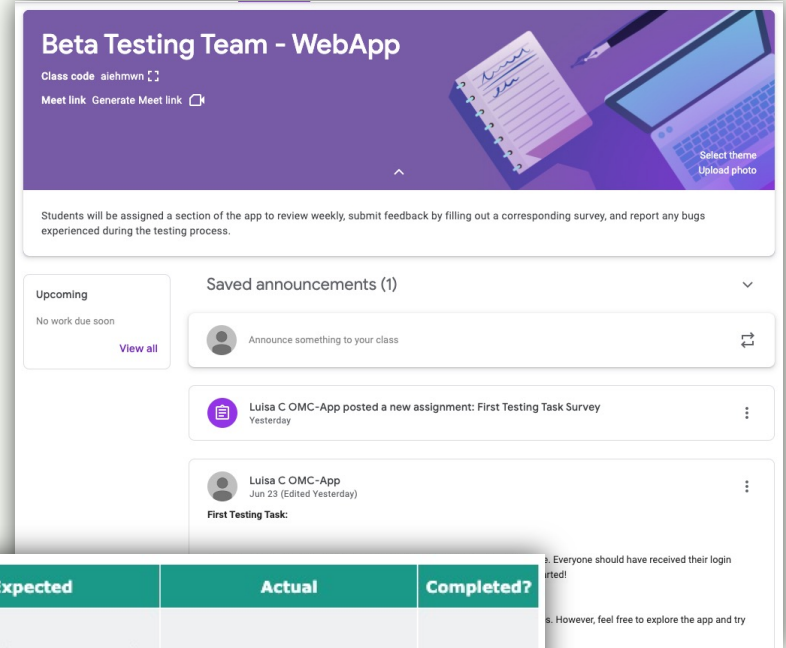
Documentation

For ease of reference, below are links to all relevant documentation covered in the following sections.

- [GitHub](#)
- [Visual Studio Code](#)
- [Markdown](#)
- [HTML](#)
- [CSS](#)
- [JavaScript](#)
- [TypeScript](#)
- [Vue.js](#)
- [Nuxt.js](#)
- [Express.js](#)
- [Node.js](#)
- [Next.js](#)
- [PostgreSQL](#)

Beta Testing Team

- Weekly tasks focused on specific app functionalities
- Feedback surveys with targeted areas for review
- Additional Issue/bug reporting



Issue ID	Title	Steps to Reproduce (Alt + Enter for new line)	Expected	Actual	Completed?
1	Admin Panel Dark Mode Text	1. Once logged in, access admin pannel 2. Change view to Dark Mode 3. Navigate over the curve and you will notice the text is not inverted in the pop-up box	Texts needs to automatically invert when changing from light mode to dark mode and vice versa	Text is not visible in dark mode	Y

Beta Testing Goals & Objectives

- Real-time testing
- Gain insight on the applications' performance and functionality
- Better understand user experience
- Generate reports based on customer feedback surveys
- Increase app familiarity amongst future users



Project Budget

- Current \$3500 Yearly Credit with Microsoft Azure
- No monthly or set up fees associated with PayPal
- Standards transaction fee of 2.9% + \$0.30 for every processed payment through PayPal
- Free organization MailerSend for 12000 emails/month + \$1 per 1000 emails over the limit
- No designated budget for the development of the application
- No external costs to OMC



Current Progress

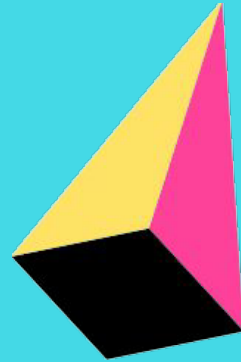
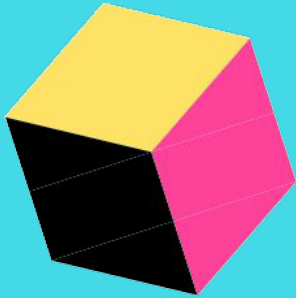
Backend

100%	Database
100%	Swap Email Service
80%	Attendance
70%	Volunteer Job Swapping
50%	Membership
30%	Point System
40%	Testing

Frontend & HS involvement

100%	High School Curriculum
90%	Documentation Updates
50%	Visual Bugs
30%	Volunteer Dashboard
30%	Volunteer Testing/Reporting
25%	Testing
0%	Workshop Exercises

Division of Labor



Division of Tasks

- Richard Bent
 - Point system
 - Membership account & payments
 - Backend testing (Insomnia)
- Luisa Cardona
 - Implement volunteer dashboard
 - Patch UI bugs & inconsistencies
 - Oversee beta testing team
 - Push weekly testing tasks and customer surveys
- Christopher Polynice
 - Volunteer job/event swapping
 - Support for open-ended events
 - Adding additional hours to events



Division of Tasks

- Cody Traywick
 - Event attendance system
 - Embed Facebook feed
 - PayPal payment support
- Samantha Perez
 - High school volunteer curriculum plan
 - Update documentation with internal changes
 - Assist with implementing volunteer dashboard
 - Patch UI bugs & inconsistencies

Immediate Plans for Completion

- This upcoming week we will finish clearing the ambiguity between job and work relationships in the backend
- Continue to collect feedback from the high schoolers to make UI improvements & update documentation
- Begin to construct exercises for the high school volunteers to complete during their internship with OMC the last week of July

Questions?

Three parallel teal diagonal lines are located in the bottom right corner of the slide, extending from the bottom edge towards the right edge.