Empathy Pen: Design and Schema

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CS6460 OMSCS - Intermediate Milestone #1

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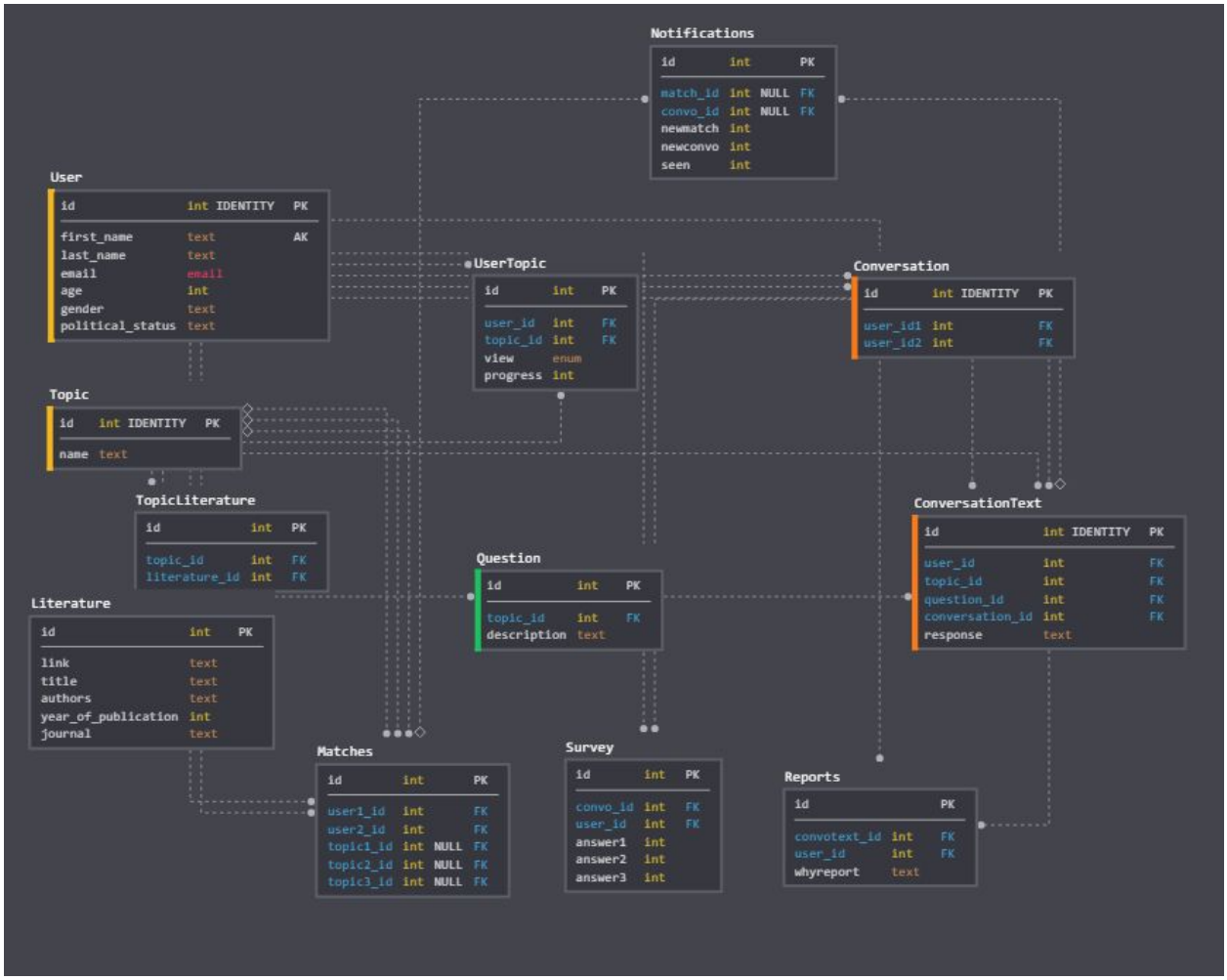
Overview of App

EmpathyPen is a social media application which helps people connect with people with opposite viewpoints. Users will have a chance to interact with others who have different views in a guided, respectful conversation. The app will have several scaffolds which will help the two pen pals communicate -- including icebreaker questions, targeted discussion topics, and a resource library. The goal of this app is the bridge the growing gap between liberals and conservatives in the United States by teaching empathy for the other side.

Database Structure

Link to Model that creates this diagram.



Introduction Page

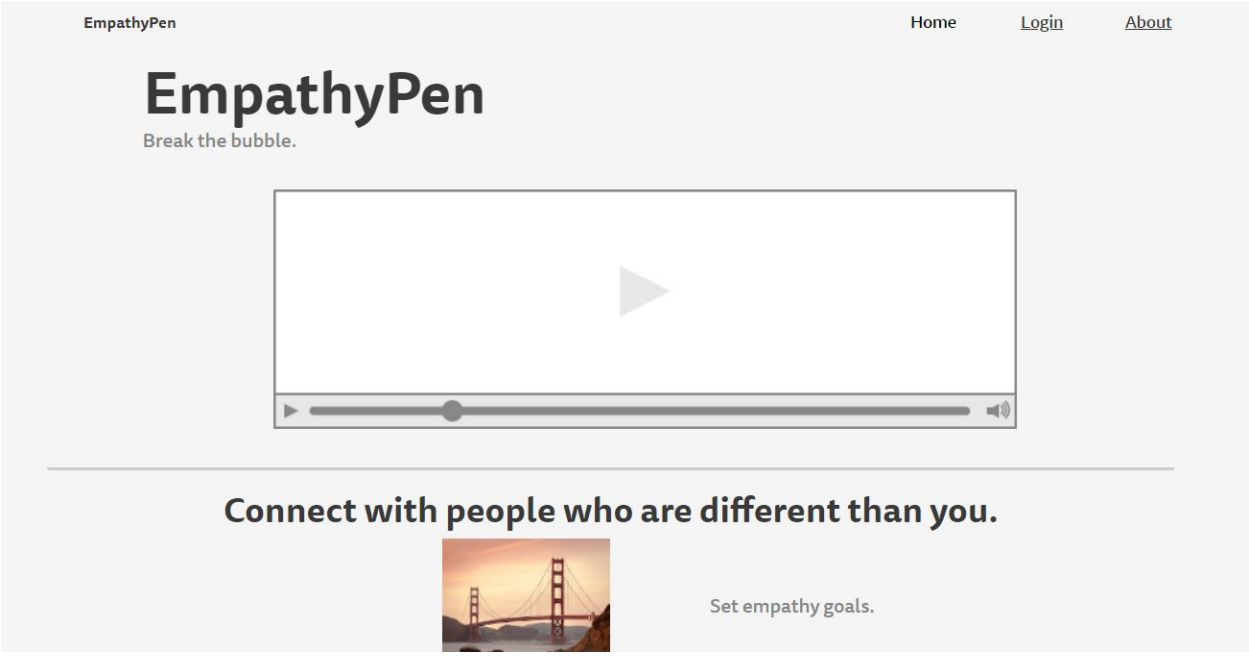


Figure 1: Introduction page.

Description

The introduction page of the app will display the logo for the app and a tagline, along with a video cartoon introduction and a short description of how the app works. On the upper right hand corner of the page is a navigation bar which gives the user options to “Login/Register” or learn more about the app on the “About” page.

Going to the web address for the app will direct the page to the “Introduction Page,” unless the user is already signed in. If the user is already signed in, then going to the web address for the app will direct the page to the “Home Screen.”

Abstract Code

User Action	**Web App Response**
User goes to the page.	All necessary elements are loaded. No database reading is required.
User clicks on the video.	Video plays.
User clicks on	Go to “Login/Register” screen.

the Login/Register button.	
User clicks on the About button.*	Go to the “About” screen.
User clicks on the EmpathyPen logo.*	Refresh the page.

* Note: since we’re using a common structure on each page, these two user actions will be repeated across the web app. For the sake of brevity, we won’t include these details in the following pages’ abstract code.

Login Page

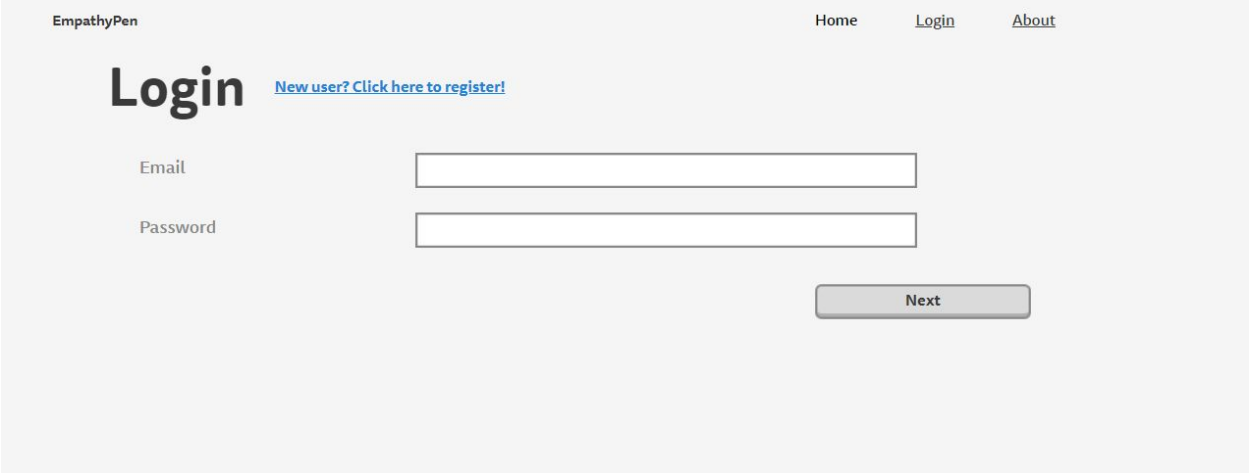


Figure 2: Login page.

Description

The Login page allows the user to login or register. If already registered, it requires the user to type in his or her email and password. If the email/password combination is validated, then the app will proceed to the “Home Screen.”

If not registered, then there is a registration link which directs users to the “Registration” page.

Abstract Code

User Action	**Web App Response**
User goes to the page.	All necessary elements are loaded. No database reading is required.
User types into the text input fields.	N/A
User clicks on the Login button.	Read from the Users database, and check if the email/password combination exists. If it does, proceed to the “Home Screen.” If not, then show an error message and prompt the user to re-enter the username and password.
User clicks on the Registration button.	Go to “Registration - General Registration” screen.

Registration

General Registration

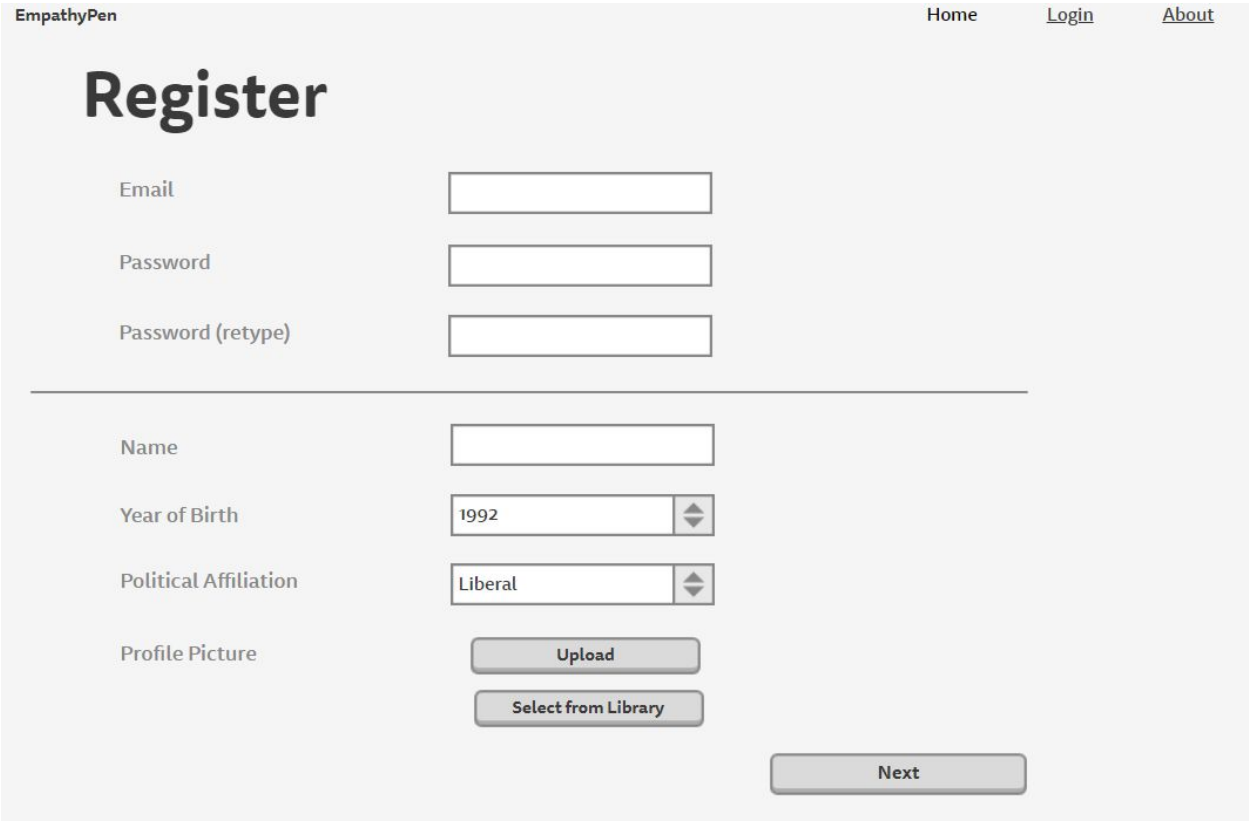


Figure 3: Registration, part 1.

Description

This is the first page of a two part registration process. The first page asks for basic details from the user, such as email, password, name, year of birth, political affiliation, and an avatar.

- The email must have a standard email format.
- The password must be at least 8 characters.
- The options for political affiliation include: Liberal, Conservative, Libertarian, Green Party and Other.
- For safety purposes, users must be at least 13 or older. This will be checked automatically from the year of birth.
- Users are asked to select an avatar. They can either select from a library of avatars or provide a link to a picture that they want to have as their profile picture.

Abstract Code

User Action	Web App Response
User goes to the page	All necessary elements are loaded. No database reading is required.
User fills out the input fields.	N/A
User clicks on the “Next” button	If all fields are filled out correctly (check logic, as explained above), then this data should be written to the User table. Proceed to the “Create/Modify Profile” page. If not, show an error message and stay on the “Registration” page.

Create/Modify Profile

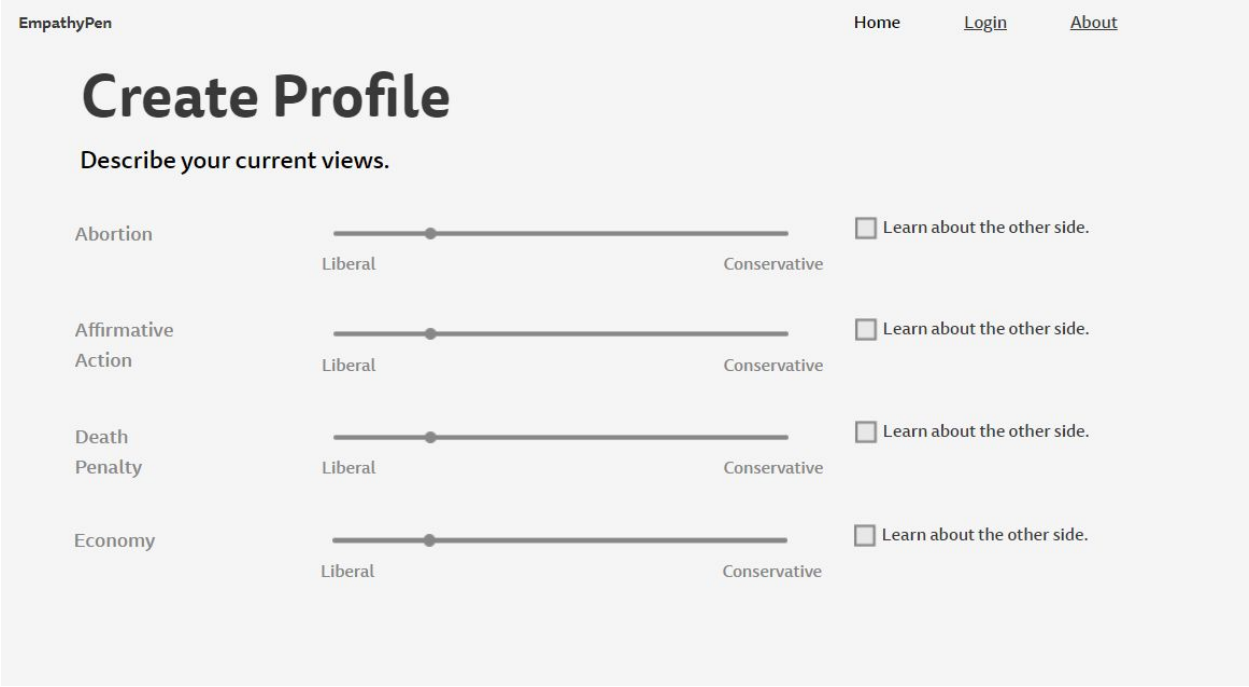


Figure 4: Registration, part 2.

Description

The “Create/Modify Profile” page proceeds directly after the “General Registration” page. Note that this same page will be used if users want to modify their interests. If the user already has preferences

indicated in the database, then the page will be titled “Modify Profile,” and the previously indicated preferences will be pre-populated on the screen.

On this page, users will select their views on various issues using a five point scale:

1. Strong Agree with Liberal View
2. Leaning towards Liberal View
3. Neutral
4. Leaning towards Conservative View
5. Strongly Agree with Conservative View

We will default each user to the middle or “3. Neutral”. The issues and the corresponding Liberal and Conservative View are in the table below.

Issue	**Liberal View**	**Conservative View**
Abortion	A woman has the right to decide what happens with her body. A fetus is not a human life, so it does not have separate individual rights. The government should provide taxpayer funded abortions for women who cannot afford them. The decision to have an abortion is a personal choice of a woman regarding her own body and the government must protect this right. Women have the right to affordable, safe and legal abortions, including partial birth abortion.	Human life begins at conception. Abortion is the murder of a human being. An unborn baby, as a living human being, has separate rights from those of the mother. Oppose taxpayer-funded abortion. Taxpayer dollars should not be used for the government to provide abortions.
Affirmative Action	Due to prevalent racism in the past, minorities were deprived of the same education and employment opportunities as whites. The government must work to make up for that. America is still a racist society, therefore a federal affirmative action law is necessary. Due to unequal opportunity, minorities still lag behind whites in all statistical measurements of success.	Individuals should be admitted to schools and hired for jobs based on their ability. It is unfair to use race as a factor in the selection process. Reverse-discrimination is not a solution for racism. Some individuals in society are racist, but American society as a whole is not. Preferential treatment of certain races through affirmative action is wrong.
Education	Public schools are the best way to educate students. Vouchers take money away from public schools. Government should focus additional funds on existing public schools, raising teacher salaries and reducing	School vouchers create competition and therefore encourage schools to improve performance. Vouchers will give all parents the right to choose good schools for their children, not just those who can afford private

	class size.	schools.
Healthcare	Support free or low-cost government controlled health care. There are millions of Americans who can't afford health care and are deprived of this basic right. Every American has a right to affordable health care. The government should provide equal health care benefits for all, regardless of their ability to pay.	Support competitive, free market health care system. All Americans have access to health care. The debate is about who should pay for it. Free and low-cost government-run programs (socialized medicine) result in higher costs and everyone receiving the same poor-quality health care. Health care should remain privatized. The problem of uninsured individuals should be addressed and solved within the free market healthcare system – the government should not control healthcare.
Immigration	Support legal immigration. Support amnesty for those who enter the U.S. illegally (undocumented immigrants). Also believe that undocumented immigrants have a right to: — all educational and health benefits that citizens receive (financial aid, welfare, social security and medicaid), regardless of legal status. — the same rights as American citizens. It is unfair to arrest millions of undocumented immigrants.	Support legal immigration only. Oppose amnesty for those who enter the U.S. illegally (illegal immigrants). Those who break the law by entering the U.S. illegally do not have the same rights as those who obey the law and enter legally. The borders should be secured before addressing the problem of the illegal immigrants currently in the country. The Federal Government should secure the borders and enforce current immigration law.

*Source: https://www.studentnewsdaily.com/conservative-vs-liberal-beliefs/

They will also have a chance to indicate whether they want to "Learn about the other side." Selecting this option allows the user to be eventually matched with someone with a differing viewpoint to talk about the issue.

For each one of the issues, if the user scrolls on the "Liberal" or "Conservative" text, then a helper scroll-over "pop-up" will appear which describes how each side views the issue.

After selecting their views on these issues, the user can click the "Finish Registration" button. The app will then proceed to the "Home Screen."

Abstract Code

User Action	**Web App Response**
User goes to the page	If the user already appears in the User table with their “Current Views” populated, then have the title read “Modify Profile” and populate the screen with the previously indicated preferences, as shown in the database. Otherwise, have the title read “Create Profile” and default all slider inputs to the middle (level 3). All necessary elements will then be loaded.
User fills out the input fields.	N/A
User hovers over “Liberal” or “Conservative” text.	A scroll-over “pop-up” will appear which explains how each side views the given issue.
User clicks on the “Finish Registration” button	The data will first be inserted into the User table in the database. Then the app will proceed to the “Home Screen.”

Matching Algorithm - No Screenshot (Scheduled Backend Task)

Description

At 9 am and 9 pm everyday, a scheduled task which runs the matching algorithm will be automatically run. This algorithm will attempt to match people who have different views on issues and who indicate in their profile that they want to learn more about the respective issue. The algorithm will write to the Matches table in the database.

Abstract Code

Action	**Web App Response**
Time is 9 am or 9 pm	Matching algorithm will be run. The results will be written to a Matches table in the database.

Matching Algorithm

The purpose of the matching algorithm is to match users to other users that we think will provide the best experience for them in terms of discussing issues, teaching empathy, and learning about different

viewpoints. As an initial implementation, our matching algorithm will be based on more simple and concrete business rules. In particular, there will be a set of users which we will take out of additional matches if they indicate that they would not want any further matches. For example, perhaps the user already has matched with several people and no longer wants additional matches. Then, of the existing users in the eligible pool, we will match users based on their responses when creating or modifying their profiles according to the political beliefs outlined above. For example, if there is a user who marked Liberal for Education and another user that marked Conservative for Education and they both marked that “they want to learn about the other side” we would match these two users together.

While this is the first iteration of the Matching Algorithm, over time as our app gets used, we will collect feedback from users whether their conversation was fruitful and if the match was good. Based on this, we can start doing machine learning and derive how to improve our matches. For example, maybe matching based on different age ranges, gender, or other attributes in our profile would lead to more optimal matches. Once we start collecting data, we will be able to learn much more about our user behavior to inform more nuanced matching algorithms.

Home Screen

Figure 5: Home screen.

Description

The home page will have multiple sections. First, at the top right corner is a navigation bar, with options: Home, About, Notifications, and Logout. Clicking “Notifications” will direct the user to the “Notifications” page. Clicking logout will clear the credentials of the user in the app and re-direct the user to the “Introduction Page.”

The top of the page will show a welcome message, specific to the user who is logged in. Next will be a “New Pen Pals” section, which includes new “matches,” in which neither the user nor his or her match has started the conversation. Per the matching algorithm, we only allow a person to have at most 5 new

conversations. Immediately below that is a “Continue Conversations” section, which lists the four most recent conversations that the user had, plus an option to “View all conversations.” Clicking this will direct the app to proceed to the “All Conversations” page.

In order to show the pen pals in a more visually appealing way, the app will display the avatar for the match along with his or her first name. If the user scrolls over the avatar, a pop-up displaying which issues they’ve been matched on will appear.

Finally, the bottom of the page is the “Modify Progress” section. This is a way for the user to monitor his/her progress through progress bars. The default goal is to have 5 successful conversations with a person on the other side, though the user can click on the denominator in the fraction to the right of the progress bars to change the goal. Next to the “Monitor Progress” header will be a link which directs to the “Modify Profile” screen.

Abstract Code

User Action	**Web App Response**
User goes to the page	Read from the Matches and Conversation, and ConversationText tables in the database. If a given match has no corresponding row in the Conversation and ConversationText tables, then place the “match” in the “New Pen Pals” section. Out of all remaining matches, look up the four conversations that have happened most recently, and place these matches in the “Continue Conversation” section. For each pen pal that appear in the “New Pen Pals” and “Continue Conversation” sections, store as variables the matched issues with that pen pal. The app will need to know these issues if the user hovers over that pen pal’s avatar. If the person currently has either no pen pals nor ongoing conversations, then a message will display saying “No New Pen Pals” or “No Ongoing Conversation” under the respective section. Read from the User table and retrieve all issues in which the user is interested in learning about the other side. Then read from the *Conversation* table to determine how many successful conversations have been completed related to that issue. Populate these issues and include progress bars for each issue in the “Monitor Progress” section.
User hovers over an avatar.	Using the variables stored (as described above), a pop-up with a sentence describing the issues in which your pen pal differs in opinion will appear.
User clicks on “View all Conversations”	The web app will proceed to the “View all Conversations” screen.

User clicks on “View/Modify my profile”	The web app will proceed to the “Create/Modify profile” screen.
User clicks on the denominator on the fraction next to the progress bar and changes goal	The new goal will be written to the *UserTopic.Progress* field within the database.

Conversation

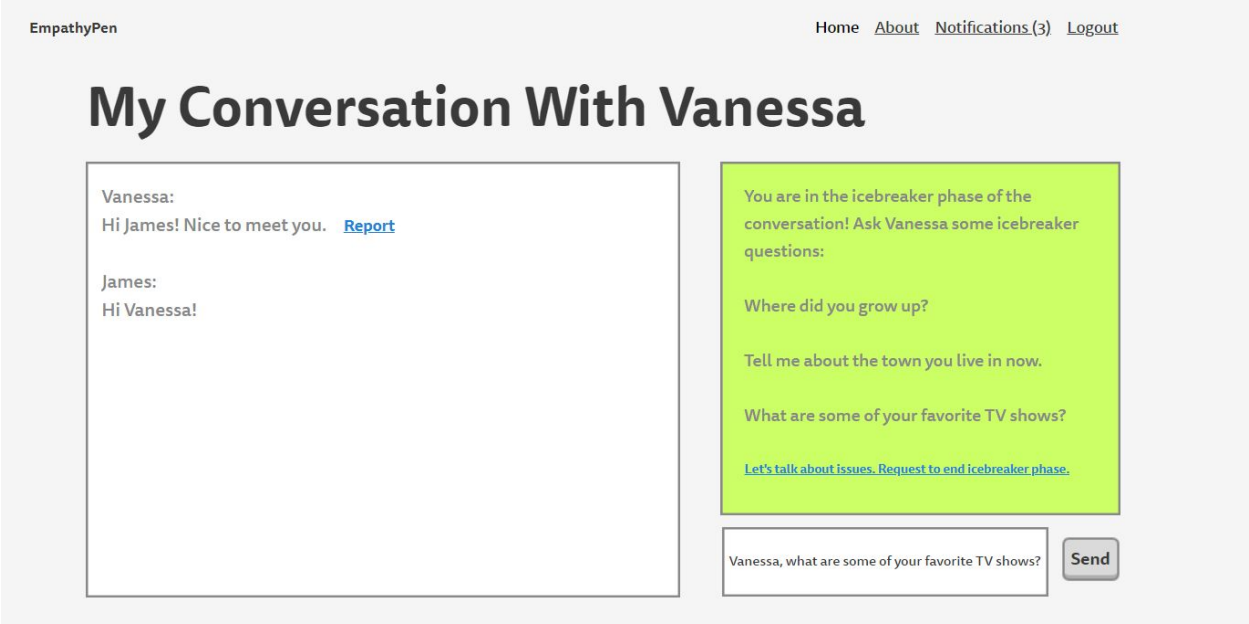


Figure 6: Conversation screen.

Description

The conversation screen will have three main sections:

- **Chat Display**: on the left side of the page will be a box showing the entirety of the conversation, with the most recent message displaying, and older message available with an upward scroll.
- **Helper Box**: On the right hand side will be a helper box, displaying information and scaffolds which help guide the conversation.
- **Send Message**: On the bottom right will be an input text box which allows the user to send a message to the pen pal.

The conversations will involved structured and unstructured components. It will have two phases:

- **Icebreaker Phase**: In this phase, pen pals will talk about their lives and issues unrelated to the issue at hand.
- **Issues Phase**: In this phase, participants will have debate and discuss the issues in which their viewpoints differ. This is a two-part phase.
    - **Part 1**: We will include a set of 3-5 structured questions, in which each pen pal will be allowed one thoughtful response. Pen pals should not get into a deep debate here; instead, this is a "listening" round during which both pen pals will have the opportunity to express their views on specific questions without expecting a response.
    - **Part 2**: In this phase, participants will engage in an unstructured debate. To help with the debate, a link to the resource library will be included in the "Helper Box."

The chat will have a "Report" feature, which allows the users to report comments from their pen pals that aren't appropriate. Finally, for the Conversation, we're considering an NLP feature which attempts to detect bullying or disrespectful comments. After submitting a message, an NLP algorithm will attempt to classify bullying and give relevant recommendations/suggestions. A mock-up of what this might look like is shown in Figure 6.

Abstract Code - Common Across All Conversations

User Action	**Web App Response**
User goes to the page	The *Conversation* table in the database will be queried and all messages in the conversation will be populated in the Chat Display. The app will also lookup in the *ConversationText* table within the Database for what the current phase of the conversation is and display the appropriate message.
User types into the Message box	N/A
User presses send	If the message is blank, show an error message saying "You can not submit a blank message" and remain on the page. If not, then write the message to the Conversations database and refresh the "Chat Display" so that the new message appears.
User presses "Report" button.	A pop-up window within the chat box will appear (see "Reported Comments" section below.)

Phase 1: Icebreakers

Description

During this phase, the helper box will include a message that says “You are in the Icebreaker Phase” and give a list of recommended questions.

It will also include an action link that says “Let’s talk about issues. Request to end Icebreaker Phase.” If that link is clicked, then a request will be sent to the pen pal asking to end the icebreaker phase. Once both pen pals agree, the conversation will proceed to the next phase.

List of Icebreakers
1. Where did you grow up? 2. Tell me about the town you live in now? 3. If a movie was made about you, who would you want to play it and what would the movie be about? 4. If you were famous, what would you want to be famous for? 5. If you have to sing karaoke, what song would you pick and why? 6. If you had to eat one meal for the rest of the day, what would you pick and why? 7. What’s the best piece of advice you’ve ever been given? 8. If you had to delete all but 3 apps on your smartphone which ones would you keep? 9. What sport would you compete in if you were in the Olympics? 10. What was the worst job you ever had?

*https://museumhack.com/list-icebreakers-questions/

Abstract Code

User Action	**Web App Response**
User goes to the page	Same as the described in the “Abstract Code - Common Across All Conversations” section. If the database query shows that the pen pals are in the icebreaker phase, the helper box in this case will include the list of icebreaker questions as listed above.
User types into the Message box	N/A
User presses send	Same as the described in the “Abstract Code - Common Across All Conversations” section.
User presses the	If the user was the first to submit this request, then a message will display in the

“Let’s talk about issues” button.	chat box saying that you requested to end the “Icebreaker Phase.” If you are the second to submit this request, then the conversation will proceed to “Phase 2 - Topics.”

Phase 2: Topics - Guided Discussion

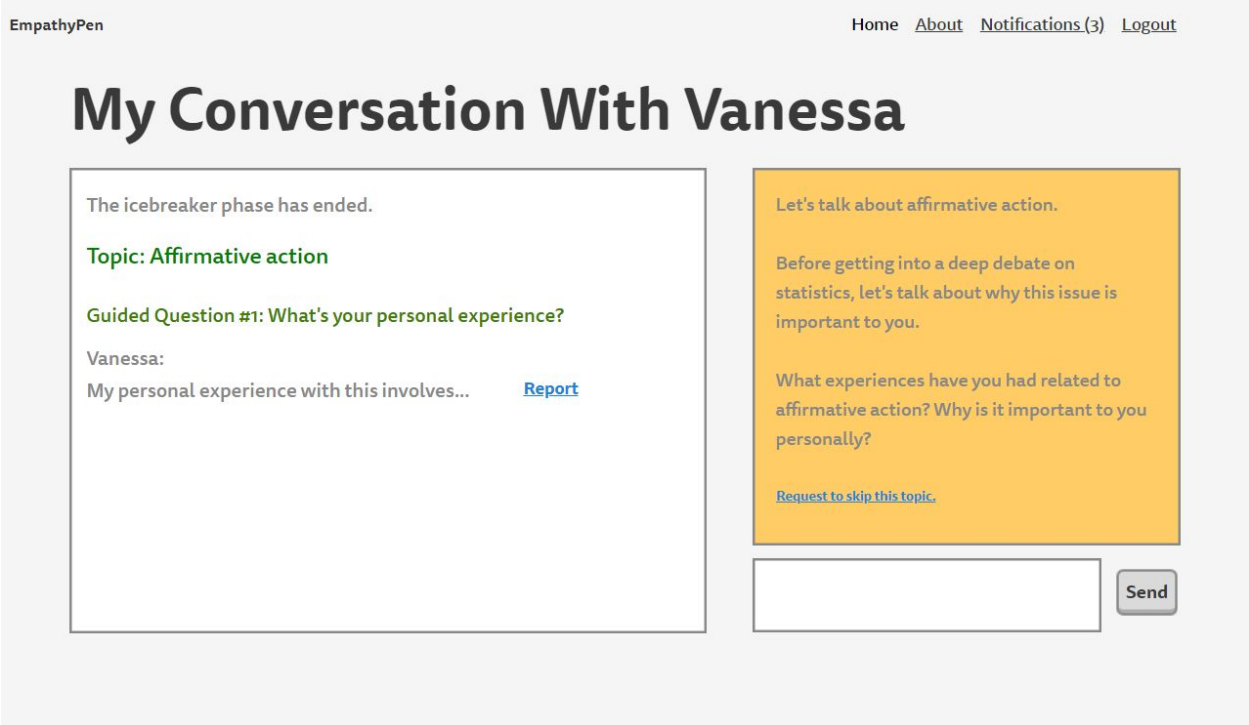


Figure 5: Conversation screen - guided questions on an issue.

Description

After finishing the first phase, the second phase will involve discussion on the issues.

The pen pals should discuss the issues one at a time. The first part of a discussion on a single issue will be guided. Each issue has 3-5 guided questions in which both pen pals should write out a single thoughtful response. There will be no method of responding to the answers that each pen pal gives during the guided portion. This is intentional, as this is intended to give both parties a chance to express their perspective without response or judgement. If both pen pals have answered the question, then the next question will be presented. If one user has given an answer and his or her pen pal has not, the Send Message box will be frozen until the other pen pal answers.

If both users want to end a topic discussion early, then they can click on the “Move on to the next topic” button.

A list of guided questions for each issue is displayed below. Note that there will be a set of questions that are common to all issues in addition to issue-specific guided questions.

Issue	**Guided Questions**
General (Applicable to All)	1. What is your personal experience with this issue?
Abortion	1. Do you believe that life starts at inception or at birth? 2. A big component of this issue is the rights of a woman to her own body vs the rights of the unborn child and whether that unborn child is considered a person. What are your thoughts? 3. Are there differences in your belief based on the circumstances? For example, what if carrying the pregnancy to term is higher risk for the woman, or if the child was conceived nonconsensual, such as cases of rape? 4. What do you think about the possibilities where if government makes abortions illegal, it drives the activity underground which puts women in even more of an unsafe and risky environment?
Affirmative Action	1. Do you believe that there is systemic racism that exists in our institutions today that unfairly penalize minorities and create uneven playing fields? 2. Should affirmative action not be based on race, as it commonly is, but on socioeconomic class? 3. Is affirmative action and meritocracy completely mutually exclusive? Or how can we encapsulate ideas from both? 4. Does diversity in it of itself create long term value for organizations? 5. Is affirmative action actually condescending to minorities (i.e. if race and achievement ability are in theory uncorrelated, is it offensive to minorities to only have to achieve lower standards?)
Education	1. Should education be viewed as a “market”; that is does a free market with healthy competition actually produce better outcomes or just inefficiencies? 2. The intention of vouchers is to promote school choice, but would this result harmfully in even more segregation and take taxpayer dollars to fund private schools? 3. Would school choice improve outcomes by promoting competition or take away money from schools that already are struggling (i.e. lead to strong polarization of outcomes as families who care more opt to go to better schools leave worse schools behind).
Healthcare	1. Is healthcare a *right* for people? 2. Does a free market system actually work in healthcare or does it introduce inefficiencies that would actually be solved by a single payer system? For example, a very pervasive problem unique to the United States that doesn’t exist in most other countries is the complete lack of

	transparency around prices. Patients cannot a priori get an accurate price of a medical procedure prior to it getting done. This is because of the private system where each insurance company negotiates separate prices with a medical provider. With a single payer system, it would be much easier to have, if not exactly one rate, a more transparent system 3. Would a right to healthcare actually improve the system or simply clog it with more people utilizing services? 4. Is a right to healthcare too expensive for our society?
Immigration	1. Should we only support legal immigration. That is, for immigrants who come illegally, should we provide no support for them or their families? 2. Is illegal immigration such a big problem that it is worth spending the billions of dollars or should we spend those dollars on potentially bigger issues like education and healthcare? 3. What exactly are the negative consequences of illegal immigration? How do you think it has affected society, if at all?

Abstract Code

User Action	**Web App Response**
User goes to the page	Same as the described in the "Abstract Code - Common Across All Conversations" section. The database will be queried to determine if the pen pals are in the Guided portion of the topic discussion. If that's the case, the result of the database query will provide information into what question the pen pals are on and populate the Helper Box accordingly. Also, the query to the database will determine whether either pen pal has responded to the question. If the user has not responded, then the Send Message box will be open for text inputs. Otherwise, if the user has already responded and the pen pal hasn't, then the Send Message box will be frozen with the message "You can not send a message until your pen pal sends a response."
User types into the Message box	N/A
User presses send	Same as the described in the "Abstract Code - Common Across All Conversations" section.
User clicks "Move on to the next topic."	If the user was the first to submit this request, then a message will display in the chat box saying that you requested to end the discussion of the topic. If you are the second to submit this request, then the conversation will proceed to

	the Exit Survey, before proceeding to the next issue.

Phase 2: Topics - Unstructured Discussion

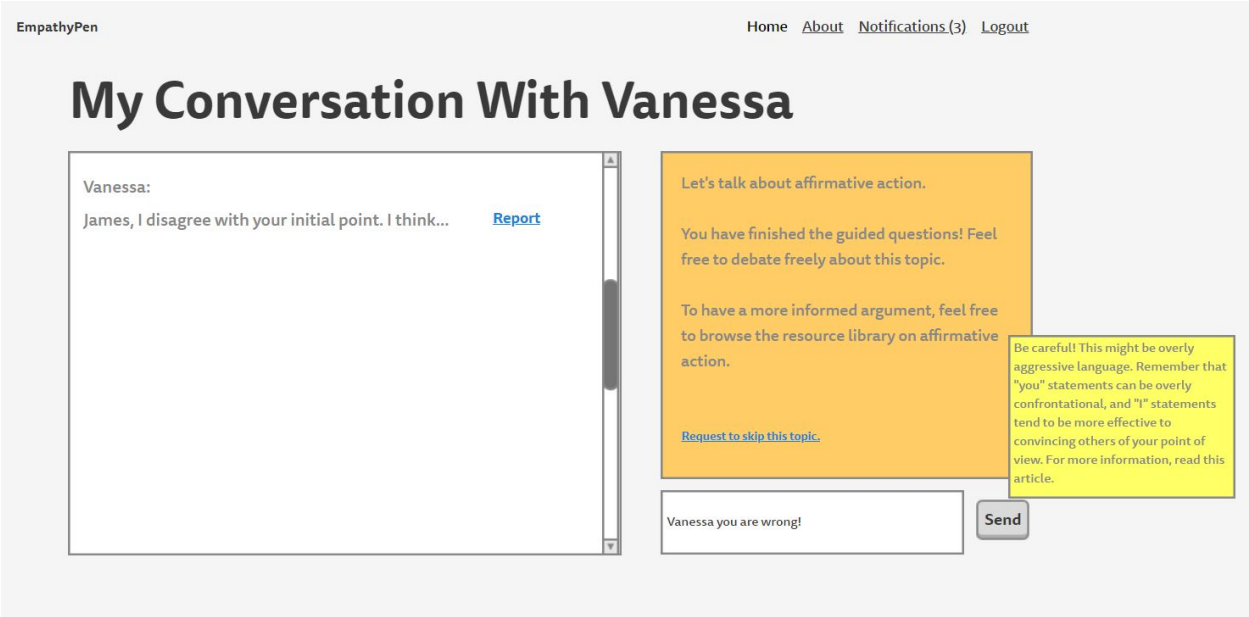


Figure 6: Conversation screen, unguided questions on an issue.

Description

The second part of the issue discussion will be unstructured. The two pen pals will have an opportunity to freely debate the issue. The helper box in this case will provide a link to a resource library, which shows articles showing “both sides” of the issue at hand. As with the previous section, there will be a “Move on to the next topic,” which allows the users to proceed to the next topic.

Abstract Code

User Action	**Web App Response**
User goes to the page	Same as the described in the “Abstract Code - Common to Both Phases” section. The database will be queried to determine if the pen pals are in the Unstructured portion of the topic discussion. If that’s the case, the result of the database query will provide information into what question the pen pals are on and populate the Helper Box with a link to the given topic’s resource library.
User types into the Message box	N/A

User clicks on the Resource Library link	The app will proceed to the “Resource Library” screen, and jump to the issue/topic that is being discussed.
User presses send	Same as described in the “Abstract Code - Common to Both Phases” section.
User clicks “Move on to the next topic.”	Same as described in the “Abstract Code - Guided Discussion” section.

Exit Survey

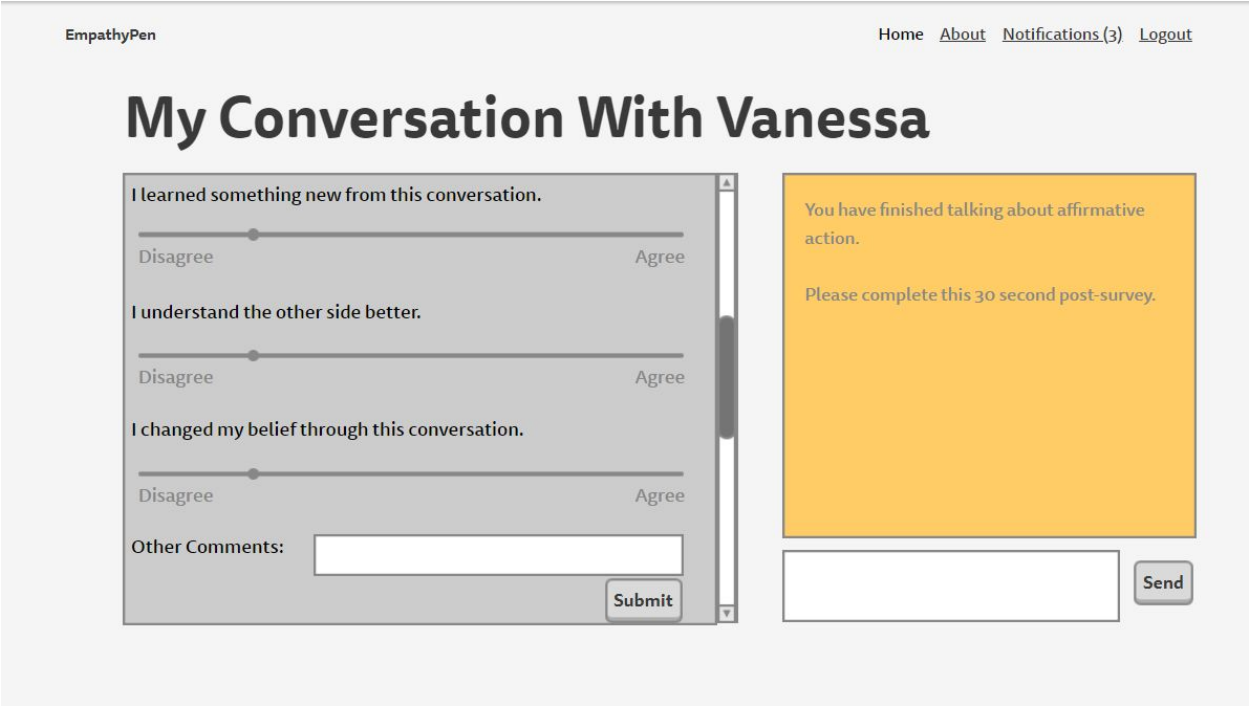


Figure 7: Conversation screen, post-discussion survey.

Description

After the pen pals complete a discussion on an issue, the app will ask the pen pals to proceed to the 30-second Exit Survey. The survey asks users to evaluate their experience with three statements answered on a 5 point sliding scale (from disagree to agree):

1) I learned something new from this conversation.
2) I understand the other side better.
3) I changed my belief through this conversation.

When the submit button is pushed, the conversation proceeds to the next topic. If all topics have already been covered, then the conversation is marked as “Complete.” Users are still able to converse freely in the chat, but the conversation will no longer appear on the home screen, and the Helper Box will have a blank or generic message.

Abstract Code

User Action	**Web App Response**
Both users indicate completion of the discussion of the issue.	The survey appears in the chat box. No database reading is necessary; the same survey appears no matter what the discussion was about.
The user “submits” the survey.	The data writes to the Survey table in the database.

Reported Comments

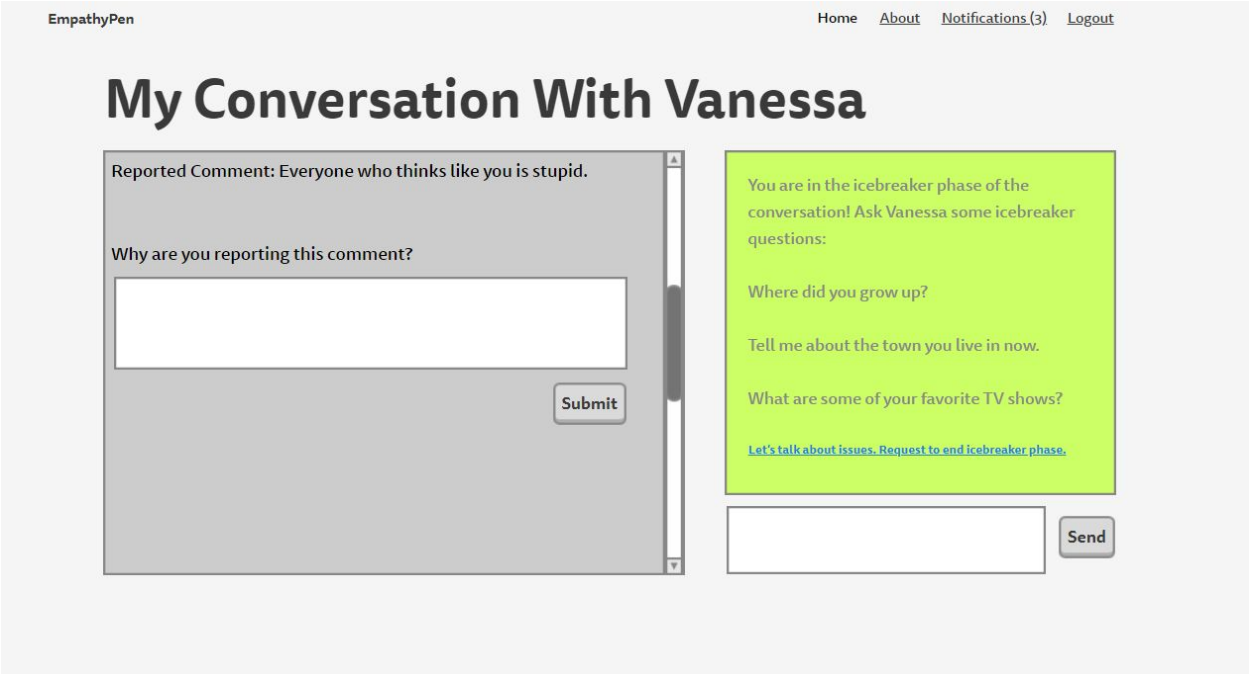


Figure 8: Report a comment.

Description

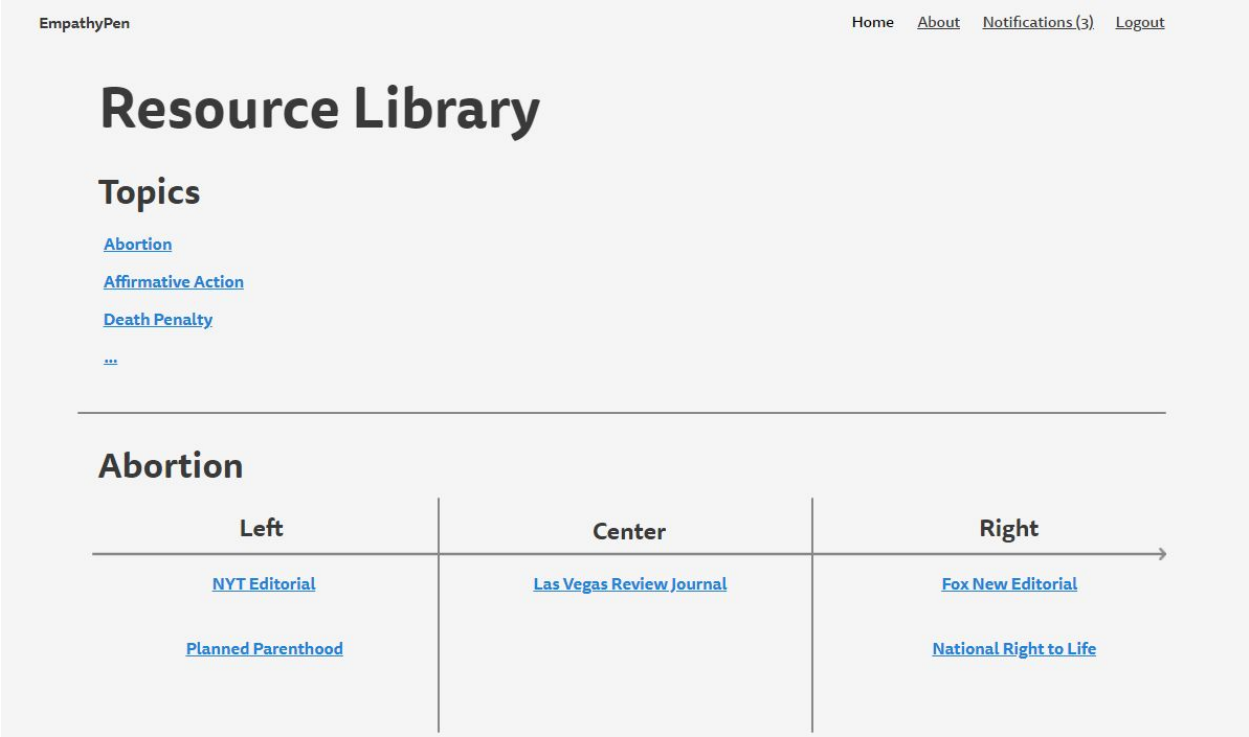
In order to ensure that pen pals are being respectful in the app, users can report comments that represent bullying or disrespectful behavior. After clicking the “Report” button next to a comment, a screen will pop up in the chat window which shows the comment in question and asks why the comment was reported.

The reported comments will be reviewed manually by administrators, and will be removed if necessary. After several reported comments, a user might be banned from using the app.

Abstract Code

User Action	**Web App Response**
A user clicks on the report button next to a comment.	The comment in question appears in the top of the chatbox, and the form UI populates in the chatbox. No reading from the database is necessary.
The user “submits” the report.	The data writes to the Reports table in the database.

Resource Library



Description

The resource library page has a list of all topics linked at the top of the page. If any topic is clicked, it links the user to the corresponding section down below.

Each individual section consists of links representing all all points of view, from left to center to right. Clicking on the links directs the user to the reading website.

The resources library is available for users to use during the unstructured portion of the topic conversations. The library will be linked in the Helper Box, and clicking on the link will take the user to the corresponding section on the Resource Library page. A table showing a starter Resource Library is displayed below.

Issue	**Left**	**Right**
Abortion	https://www.nytimes.com/interactive/2018/12/28/opinion/pregnancy-women-pro-life-abortion.html	https://www.americamagazine.org/faith/2019/01/08/pro-life-movement-has-always-been-pro-women-our-priorities-should-reflect

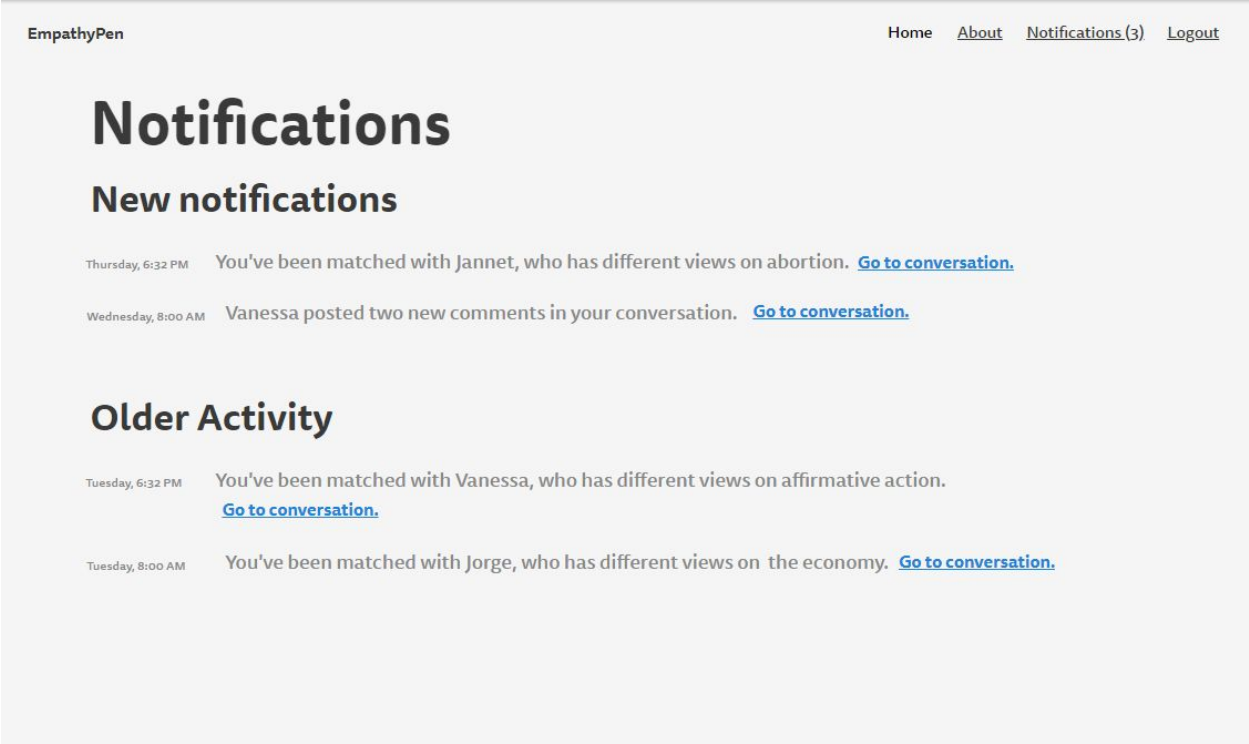
Affirmative Action	https://diverseeducation.com/article/129115/ https://www.insidehighered.com/views/2017/08/15/why-colleges-and-universities-need-affirmative-action-programs-essay https://www.theatlantic.com/business/archive/2013/07/the-best-new-argument-for-affirmative-action/278241/	https://www.csus.edu/indiv/g/gaskilld/business_computer_ethics/The%20Case%20Against%20Affirmative%20Action.htm https://stanfordmag.org/contents/the-case-against-affirmative-action
Education	https://www.washingtonpost.com/opinions/charter-schools-are-leading-to-an-unhealthy-divide-in-american-education/2018/06/22/73430df8-7016-11e8-afd5-778aca903bbe_story.html http://www.aasa.org/SchoolAdministratorArticle.aspx?id=10850 https://www.bloomberg.com/opinion/articles/2018-10-11/charter-schools-when-school-choice-means-the-opposite	https://fee.org/articles/3-reasons-to-support-school-choice/ http://cincinnatirepublic.com/school-choice-good-thing/ https://www.heritage.org/education/commentary/here-are-10-reasons-school-choice-winning
Healthcare	https://www.nytimes.com/2016/08/09/upshot/obamacare-appears-to-be-making-people-healthier.html https://www.bloomberg.com/news/articles/2018-08-29/fewer-americans-without-health-insurance-since-obamacare-debut https://www.newyorker.com/magazine/2017/03/06/trumpcare-vs-obamacare	https://www.usnews.com/opinion/policy-dose/articles/2017-01-23/3-reasons-to-repeal-and-replace-obamacare https://www.washingtontimes.com/news/2018/jun/3/8-reasons-to-still-hate-obamacare/ https://www.wsj.com/articles/trumpcare-beats-obamacare-1532370778
Immigration	https://psmag.com/social-justice/patriotic-americans-are-pro-immigration https://www.denverpost.com/2018/11/30/congress-fix-daca-protect-dreamers/ https://www.heraldtribune.com/opinion/20170906/editorial-daca-participants-deserve-to-stay	https://www.economist.com/open-future/2018/08/06/anti-immigration-like-pro-immigration-is-a-legitimate-political-position https://www.wsj.com/articles/the-silly-arguments-against-a-border-wall-11547165119

		https://www.chicagotribune.com/news/opinion/commentary/ct-perspec-wall-daca-immigration-trump-samuelson-1012-20171011-story.html

Abstract Code

User Action	**Web App Response**
User goes to the page	All elements of the page are loaded; querying the database is not needed.

Notifications



Description

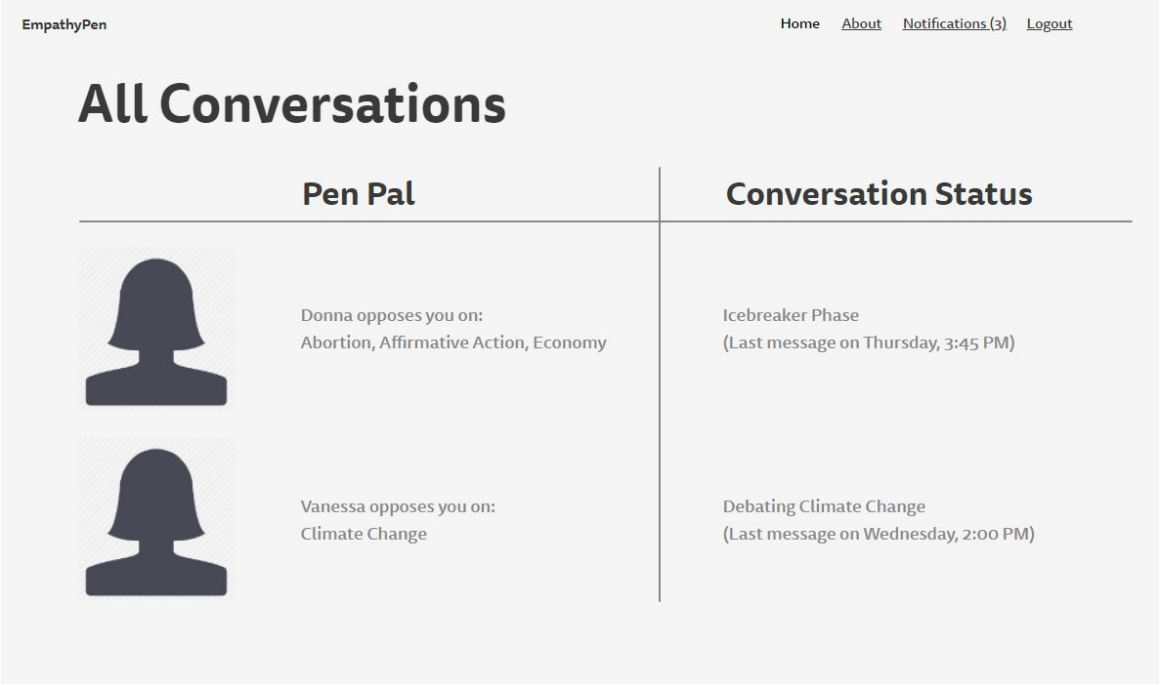
The notifications page shows both new match and conversation activity. Next to each item is a link which takes the user to the given conversation or match mentioned in the notification.

The notifications page has two parts. The first part are New Notifications -- these are activity items previously unseen during the last visit of the Notifications page and/or involve new messages previously unseen by the user. The second part includes Older Activity, and include all match and conversation activities.

Abstract Code

User Action	**Web App Response**
User goes to the page	The Matches, Conversations, and Notifications tables are queried. Previously unseen matches and conversations are extracted and shown under the “New notifications” heading. All other items are listed in chronicological order under the “Older Activity” section.
User clicks on a link to a conversation.	The app will proceed to the Conversation screen with that particular pen pal.

View All Conversations



Description

This page, linked through the Home Screen, shows all conversations with all pen pals. This includes conversations which have not yet been started, as well as conversations which have already completed. The avatar of each pen pal will appear on the left side of the screen, along with a sentence explaining how the pen pal differs with the user in opinion. On the right hand side is the conversation status. This will give information on what phase of the conversation is currently ongoing, as well as the last update date. The conversations will be ordered in chronological order, with the most recently updated conversation first.

When the avatar of the pen pal is clicked, the app will proceed to the conversation screen for that given pen pal.

Abstract Code

User Action	**Web App Response**
User goes to the page	The User, Matches and Conversations tables are queried and relevant information is shown on the page.
User clicks on an avatar.	The app will proceed to the Conversation screen with that particular pen pal.