Dastan Iyembergen, Baktybek Doskul

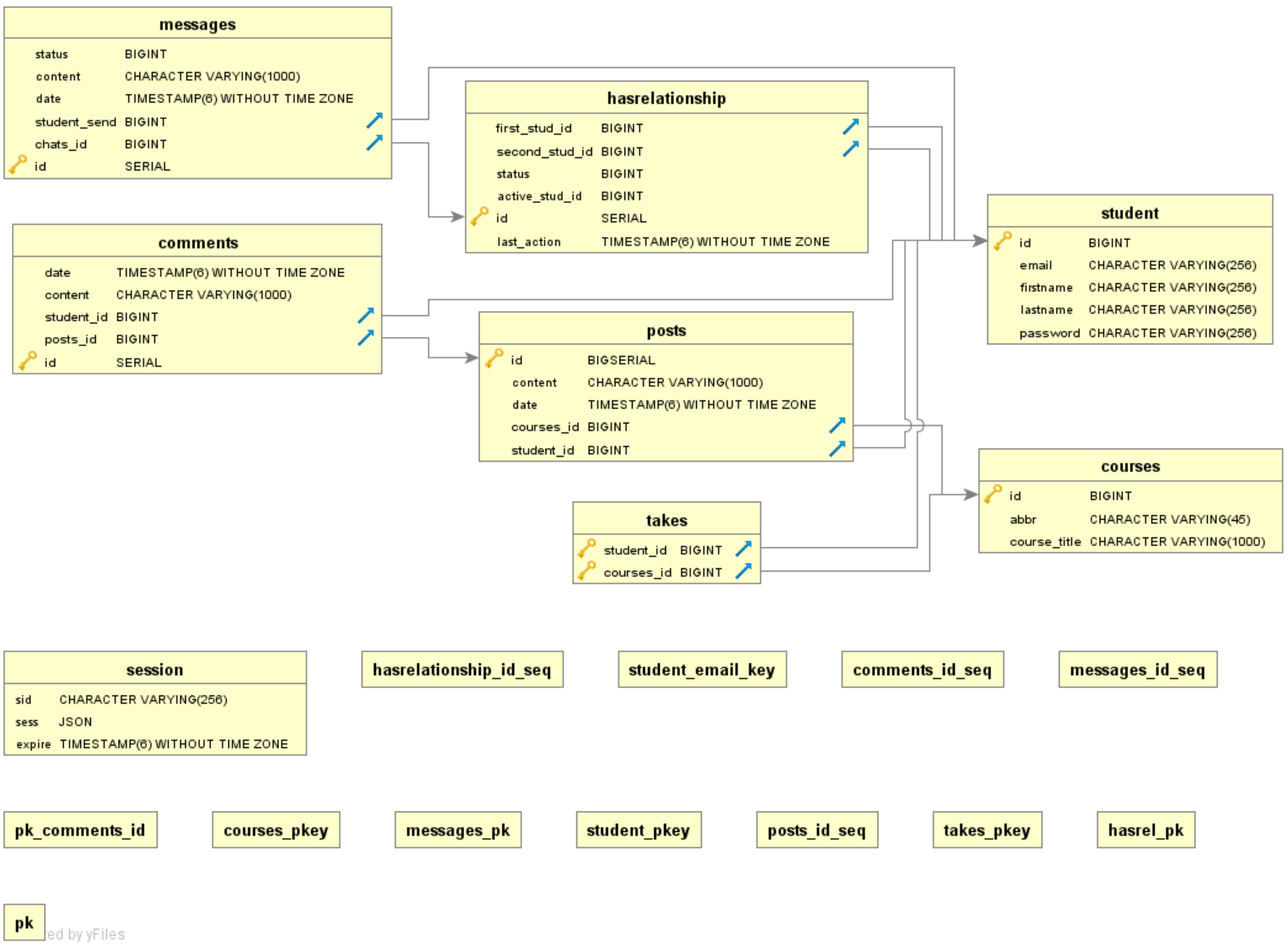
Report

“FriendZone” web application

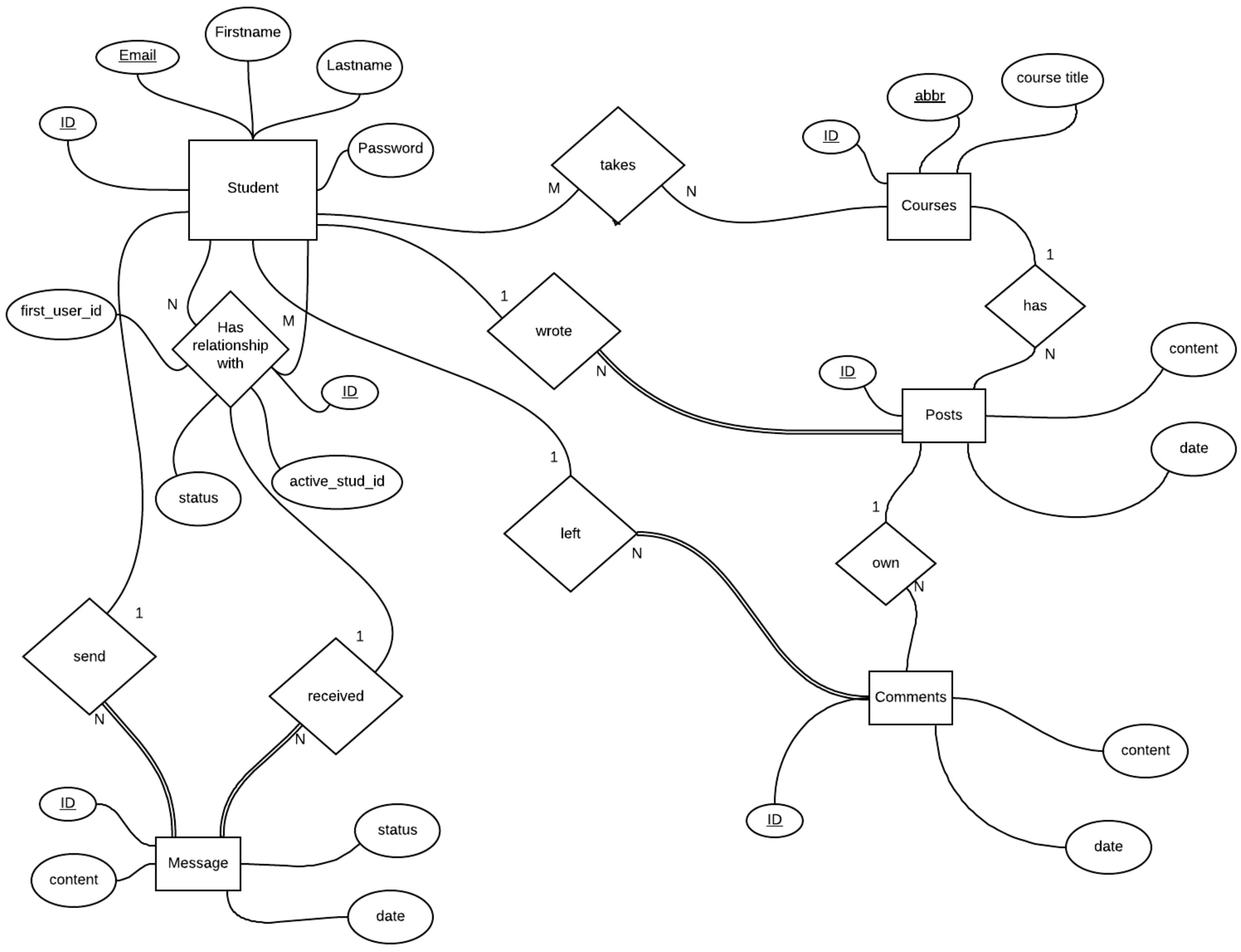
Introduction

The project is called “FriendZone” (web application) and designed for students of Nazarbayev University. The main goal of the project was to create social network, where students may discuss course related things. There are separate group for each course, so that a student may join several groups and make discussion with other students who also take these courses. Also, there is a one-to-one chat where two students can converse.

High-level design



Database design



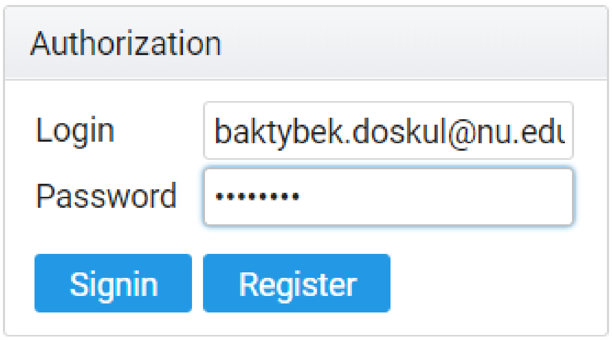
Methodology

The whole project was based on Nodejs. Also, many other frameworks for Nodejs were used during the development of front-end (client side) and back-end (server side):

- Express – framework for creating routes, APIs;
- Passport – framework for authentication services;
- Connect-pg-simple – framework for making connection with PostgreSQL database;
- Bcrypt – framework for encrypting passwords of users;
- Socket.io – framework for making socket connection between front-end and back-end;
- Angular 4 – framework for designing client side;
- Prime-ng – framework for Angular 4 to manage a data;

The server side was based on Expressjs, while the client side was based on Angular 4. PostgreSQL was chosen as DBMS.

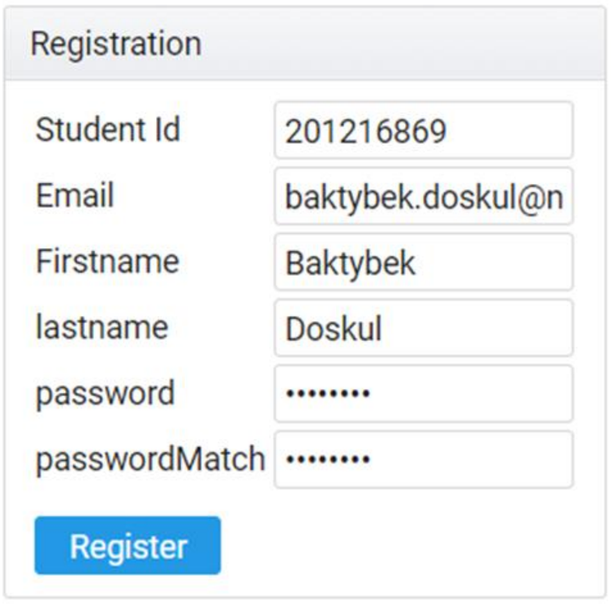
GUI


Authorization

Login	baktybek.doskul@nu.edu
Password	••••••••

'SELECT * FROM student WHERE email=$1', [username]

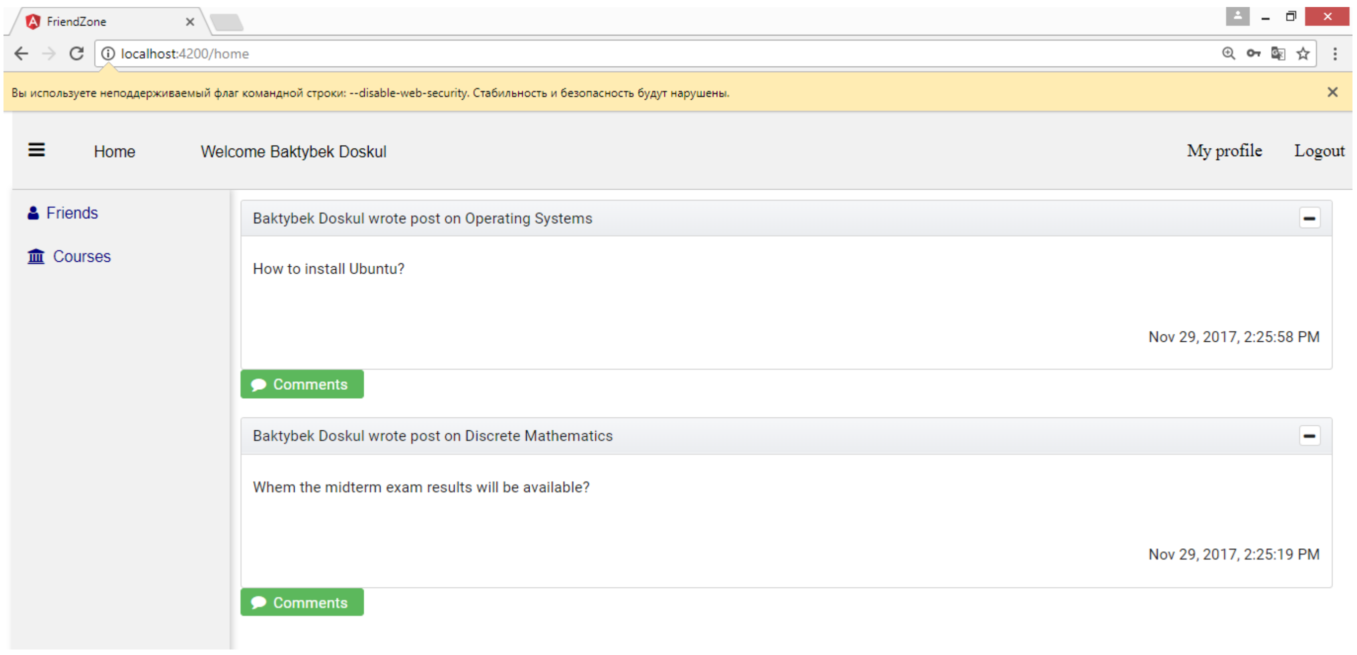
To authenticate a user, we find users with the given username and compare passwords.


Registration

Student Id	201216869
Email	baktybek.doskul@n
Firstname	Baktybek
lastname	Doskul
password	••••••••
passwordMatch	••••••••

'INSERT INTO student (id, email, firstname, lastname, password) VALUES ($1, $2, $3, $4, $5)', [student.id, student.email, student.firstname, student.lastname, hash]

To register a new user, we insert the information of user into student table.


FriendZone

localhost:4200/home

Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.

Home Welcome Baktybek Doskul My profile Logout

Friends

Courses

Baktybek Doskul wrote post on Operating Systems

How to install Ubuntu?

Nov 29, 2017, 2:25:58 PM

Comments

Baktybek Doskul wrote post on Discrete Mathematics

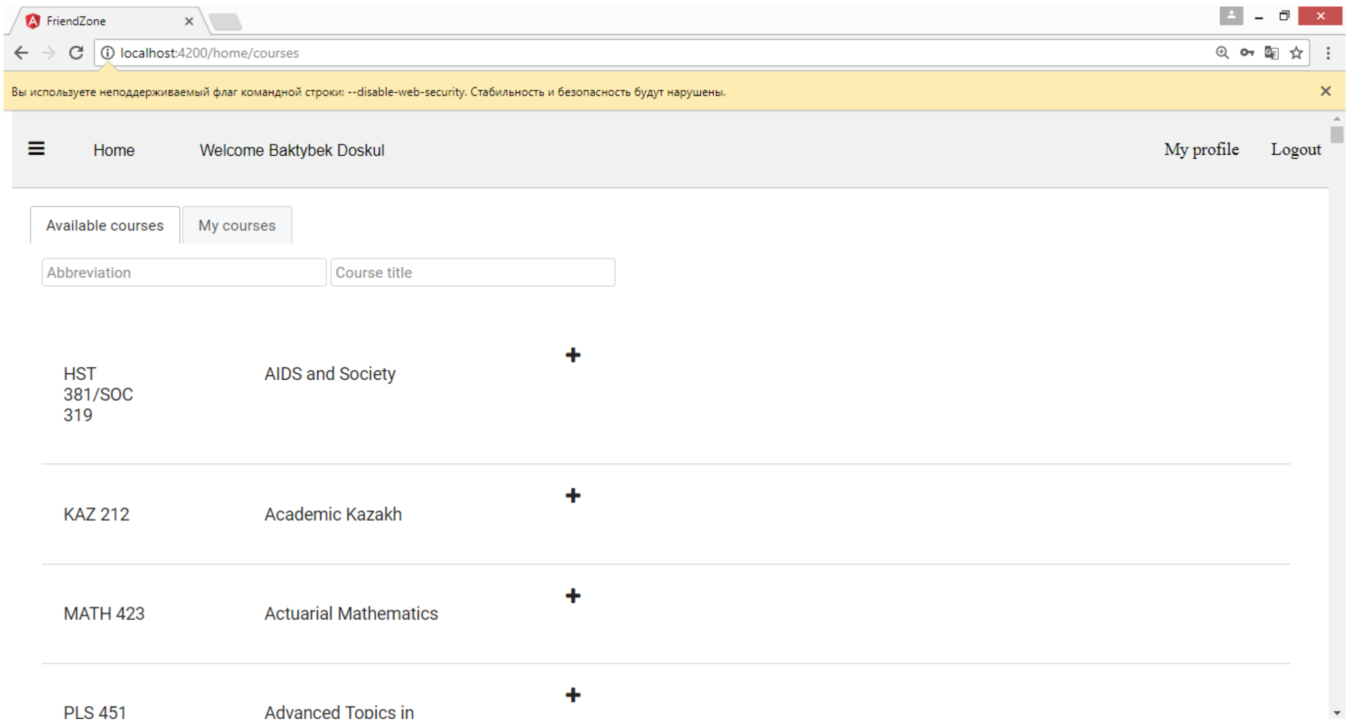
Whem the midterm exam results will be available?

Nov 29, 2017, 2:25:19 PM

Comments

'SELECT c.id as course_id, c.abbr, c.course_title, p.id , p.student_id, p.date, p.content, s.firstname, s.lastname, s.email FROM courses c, posts p, takes t, student s WHERE p.student_id=s.id AND c.id=p.courses_id AND t.courses_id=c.id AND t.student_id=$1 ORDER BY p.date DESC', [req.user.id]

In home page, the newest posts are shown. All posts from all courses, that user joined, are selected and ordered by date.


FriendZone

localhost:4200/home/courses

Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.

Home Welcome Baktybek Doskul My profile Logout

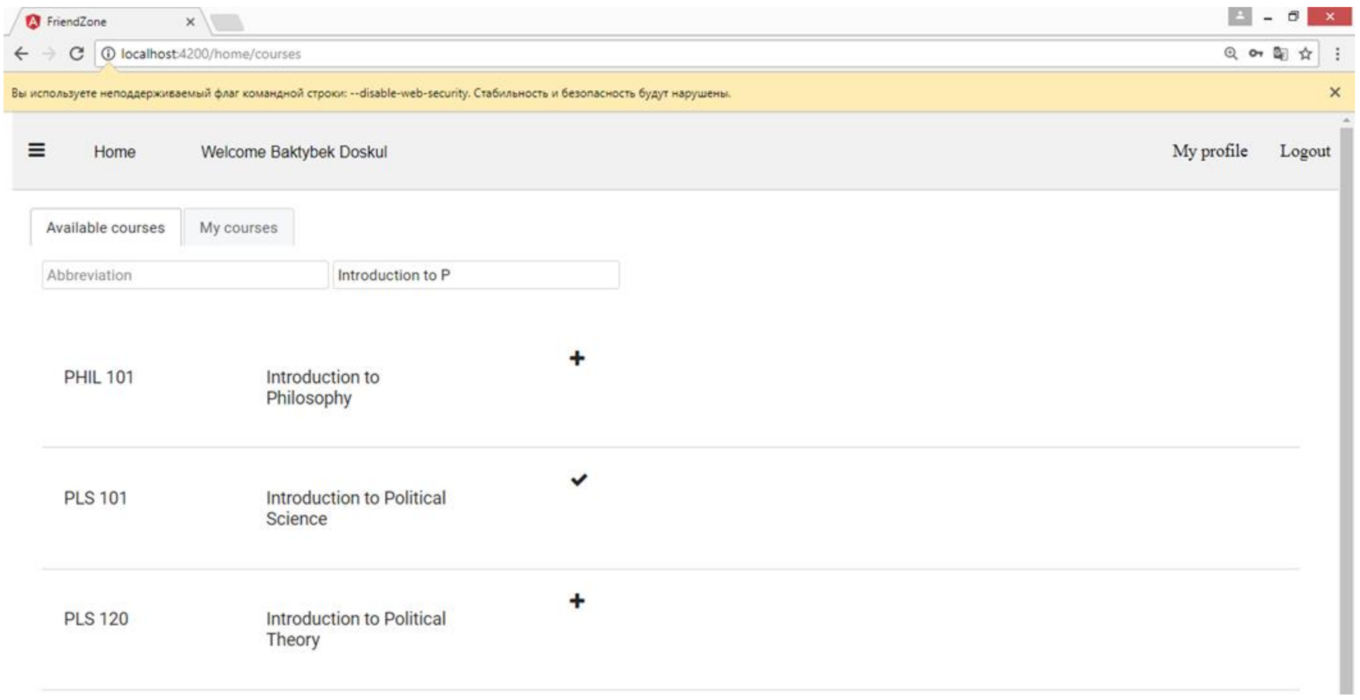
Available courses | My courses

Abbreviation | Course title

HST 381/SOC 319	AIDS and Society	+
KAZ 212	Academic Kazakh	+
MATH 423	Actuarial Mathematics	+
PLS 451	Advanced Topics in	+

'SELECT c.id, c.abbr, c.course_title, t.student_id FROM courses c left outer join takes t on (c.id=t.courses_id AND t.student_id=$1)', [req.user.id]

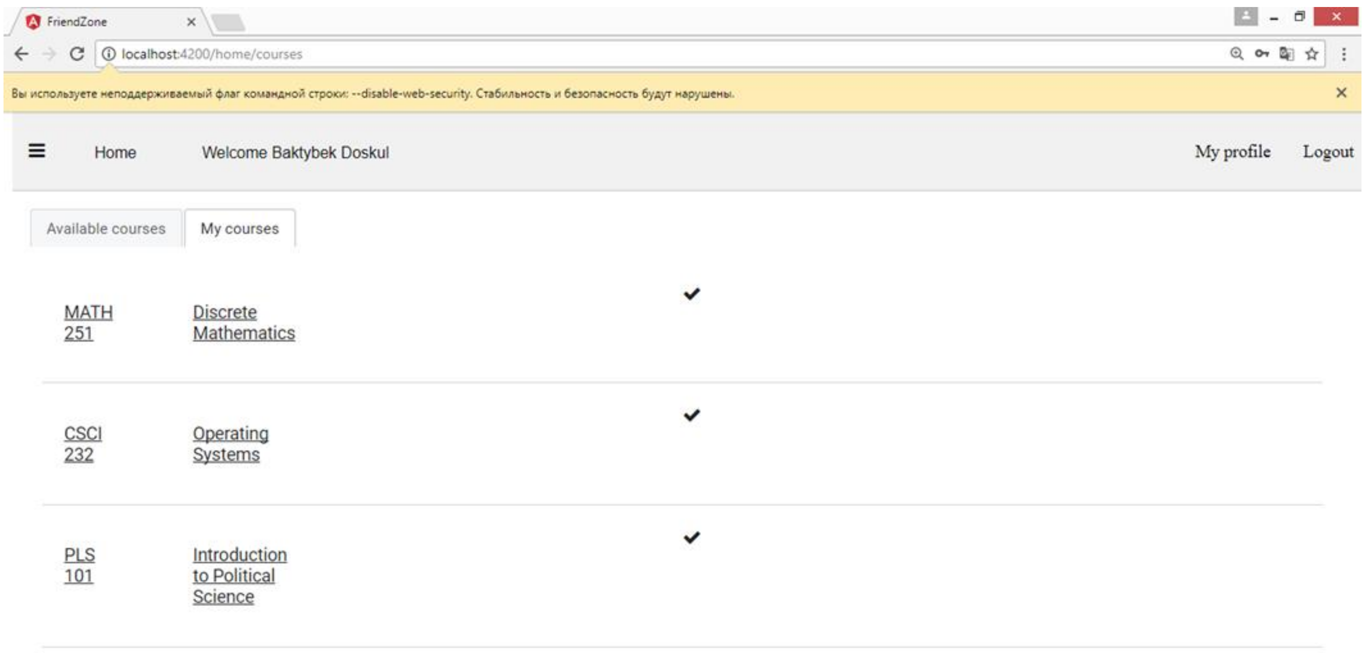
In ‘courses’ page, list of al courses are shown. There is button to ‘select’ or ‘unselect’ after each course. We select all courses from courses table and do left outer join with takes table in order to define, can user select this course or did user already select this course.


FriendZone
localhost:4200/home/courses
Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.
Home
Welcome Baktybek Doskul
My profile
Logout
Available courses
My courses
Abbreviation
Introduction to P

PHIL 101	Introduction to Philosophy	+
PLS 101	Introduction to Political Science	✓
PLS 120	Introduction to Political Theory	+

'INSERT INTO takes (student_id, courses_id) VALUES ($1, $2)', [req.user.id, req.body.courses_id]

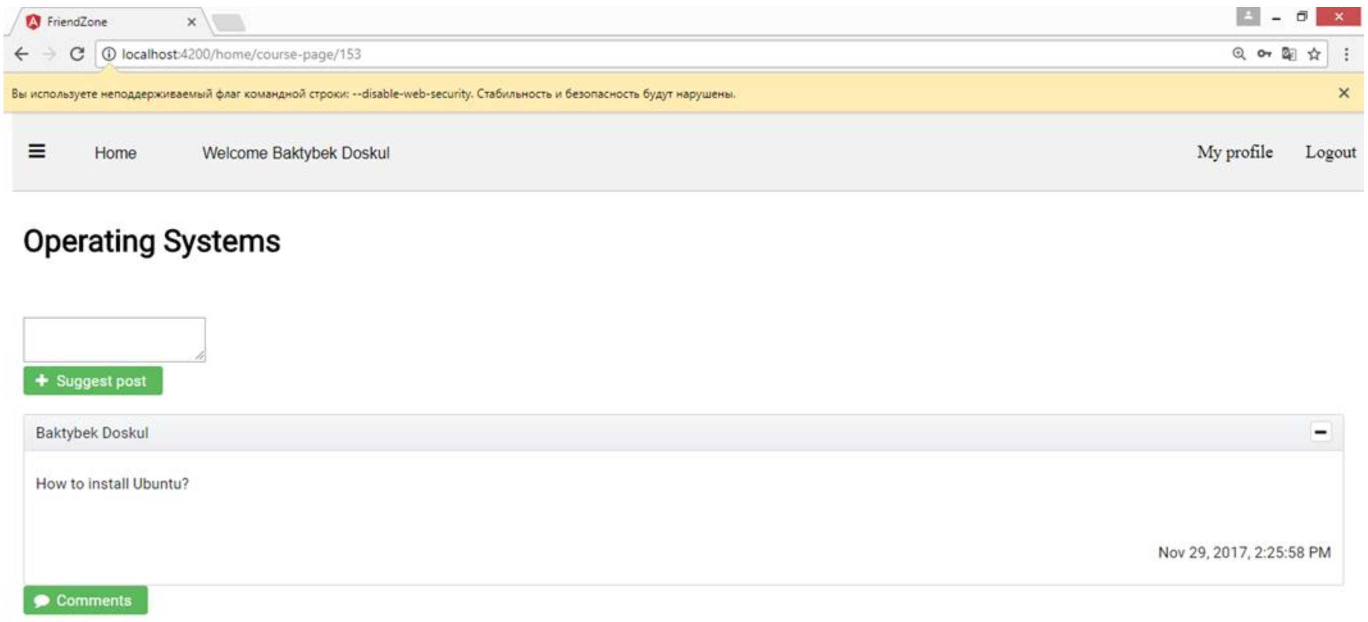
When user clicks plus button, he/she selects the course. The query with appropriate parameters to insert new data into the takes table is send.


FriendZone
localhost:4200/home/courses
Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.
Home
Welcome Baktybek Doskul
My profile
Logout
Available courses
My courses

MATH 251	Discrete Mathematics	✓
CSCI 232	Operating Systems	✓
PLS 101	Introduction to Political Science	✓

'SELECT c.id, c.abbr, c.course_title FROM takes t, courses c WHERE t.student_id=$1 AND t.courses_id=c.id', [req.user.id]

In my courses page, the list of courses, that the user selected, are shown. To get this data from the database, we make inner join of tables takes and courses.


FriendZone

localhost:4200/home/course-page/153

Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.

Home   Welcome Baktybek Doskul   My profile   Logout

Operating Systems

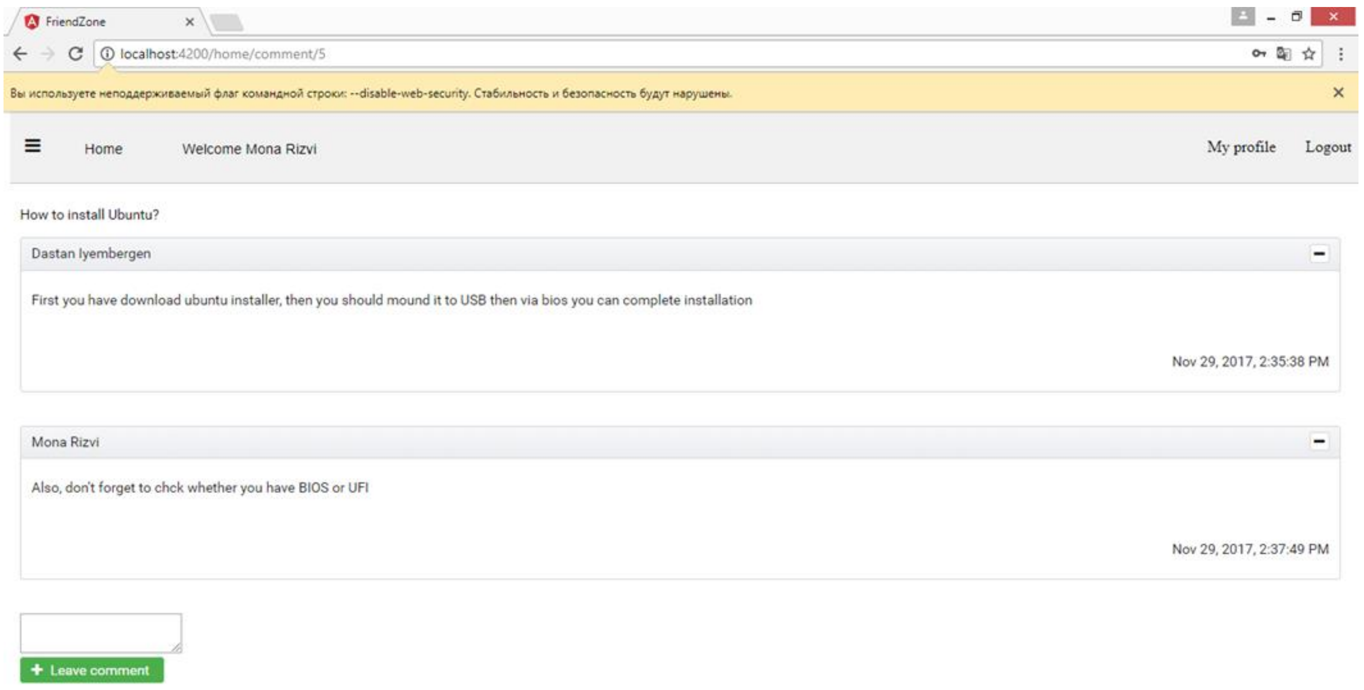
Baktybek Doskul

How to install Ubuntu?

Nov 29, 2017, 2:25:58 PM

'SELECT p.id, p.content, p.date, p.student_id, s.firstname, s.lastname, s.email FROM posts p, student s WHERE p.student_id=s.id AND courses_id=$1 ORDER BY date', [req.params.id]

In course page of one course, all posts of this course ordered by date are shown. We take all posts from posts table that have the same posts_id and make inner join to define the authors's name.


FriendZone

localhost:4200/home/comment/5

Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.

Home   Welcome Mona Rizvi   My profile   Logout

How to install Ubuntu?

Dastan Iyembergen

First you have download ubuntu installer, then you should mound it to USB then via bios you can complete installation

Nov 29, 2017, 2:35:38 PM

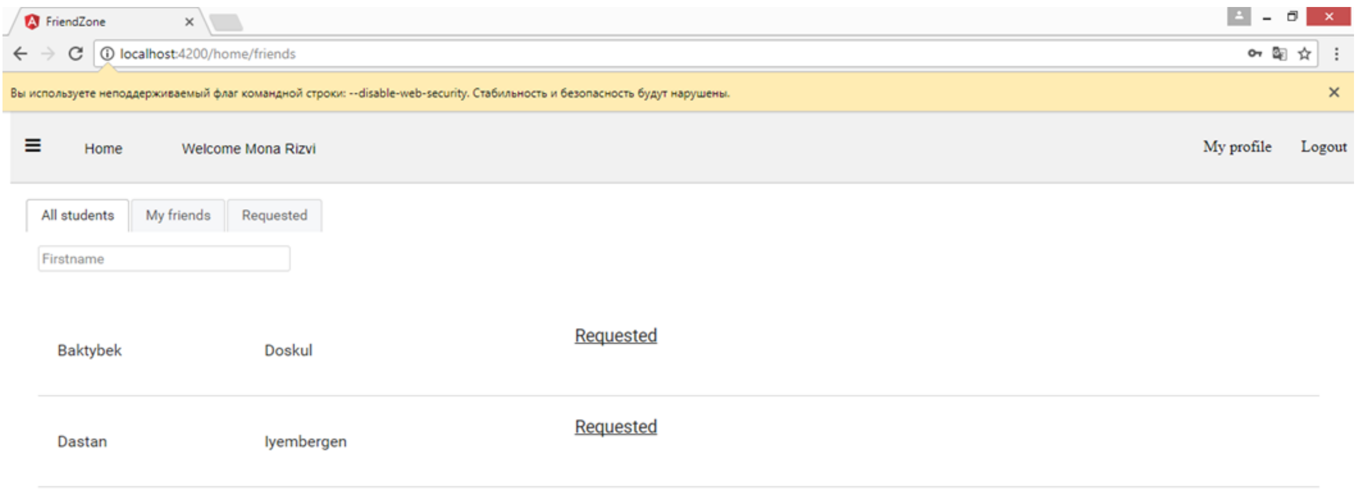
Mona Rizvi

Also, don't forget to chck whether you have BIOS or UFI

Nov 29, 2017, 2:37:49 PM

'SELECT c.id, c.content, c.date, c.student_id, s.firstname, s.lastname, s.email FROM comments c, student s WHERE c.student_id=s.id AND c.posts_id=$1 ORDER BY date', [req.params.id]

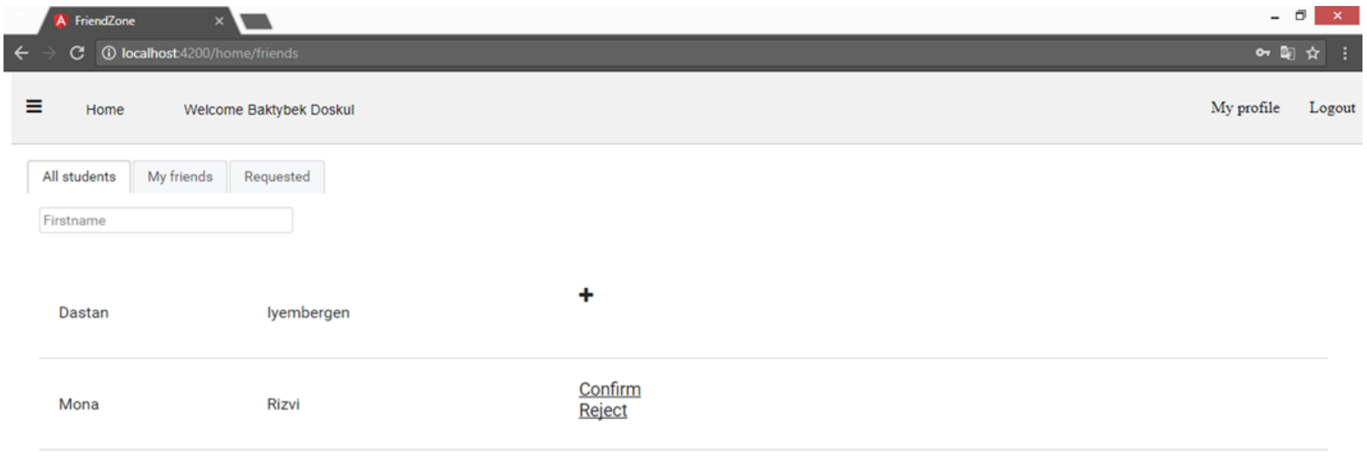
When the user goes to comments of one post, all comments related to these post are shown. We get all comments from comments table with the same posts_id and make inner join with student table to define the author's name.


FriendZone
localhost:4200/home/friends
Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.
Home
Welcome Mona Rizvi
My profile
Logout
All students
My friends
Requested
Firstname

Baktybek	Doskul	Requested
Dastan	Iyembergen	Requested

'SELECT s.id, s.firstname, s.lastname, s.email, h.status, h.active_stud_id FROM student s left outer join hasrelationship h on ((h.first_stud_id=$1 AND h.second_stud_id=s.id) OR (h.first_stud_id=s.id AND h.second_stud_id=$1)) WHERE s.id<>$1 ORDER BY s.firstname, s.lastname', [req.user.id]

In all students page the list of all students are shown. We select all students from student table and make outer join with hasrelationship to define relationship with the user.

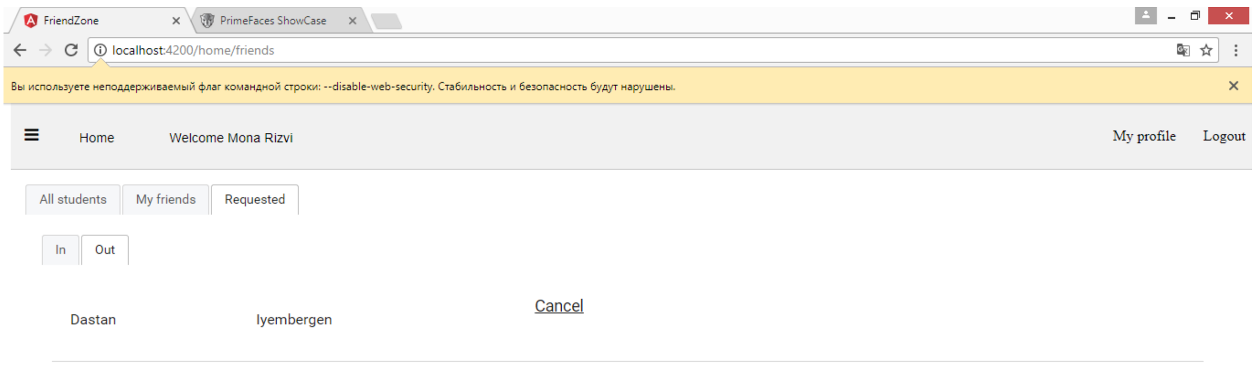


Dastan	Iyembergen	+
Mona	Rizvi	Confirm Reject

'INSERT INTO hasrelationship (first_stud_id, second_stud_id, status, active_stud_id) VALUES ($1, $2, $3, $4)', [firstId, secondId, 0, req.user.id]

'UPDATE hasrelationship SET status=0, active_stud_id=$3 WHERE first_stud_id=$1 AND second_stud_id=$2', [firstId, secondId, req.user.id]

When the user sends request (to be friend) to another user, we insert new record into hasrelationship table, or update existing data if they had relationship before.


FriendZone
PrimeFaces ShowCase
localhost:4200/home/friends
Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.
Home
Welcome Mona Rizvi
My profile
Logout
All students
My friends
Requested
In
Out
Cancel

Dastan Iyembergen

'SELECT s.id, s.email, s.firstname, s.lastname, s.id FROM hasrelationship h, student s WHERE (h.first_stud_id=$1 OR h.second_stud_id=$1) AND (h.first_stud_id=s.id OR h.second_stud_id=s.id) AND s.id<>$1 AND h.status=0 AND h.active_stud_id<>$1 ORDER BY h.last_action desc', [req.user.id]

'SELECT s.id, s.email, s.firstname, s.lastname, s.id FROM hasrelationship h, student s WHERE (h.first_stud_id=$1 OR h.second_stud_id=$1) AND (h.first_stud_id=s.id OR h.second_stud_id=s.id) AND s.id<>$1 AND h.status=0 AND h.active_stud_id=$1 ORDER BY h.last_action desc', [req.user.id]

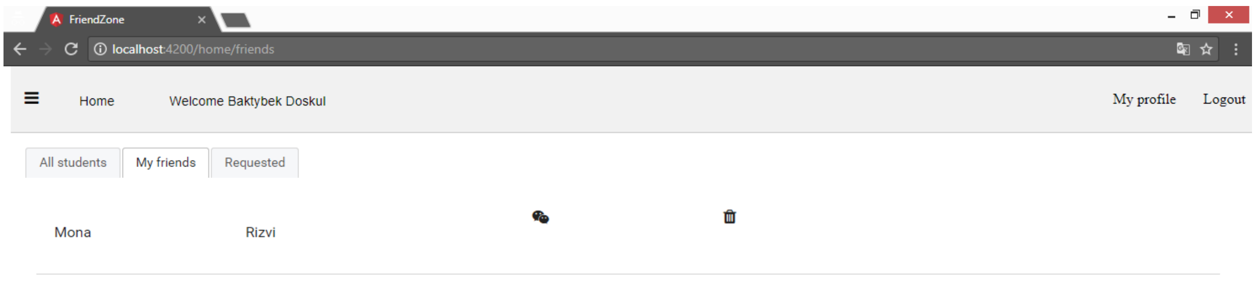
'UPDATE hasrelationship SET status=1, last_action=now() WHERE first_stud_id=$1 AND second_stud_id=$2', [firstId, secondId]

'UPDATE hasrelationship SET status=null, active_stud_id=null WHERE first_stud_id=$1 AND second_stud_id=$2', [firstId, secondId]

In requested page, the user can see the list of requests in and requests out. All these information we get from hasrelationship table and separate request ins from request outs by active_user_id.

Also, the user can confirm request ins. We update the appropriate hasrelationship record by setting status to 1.

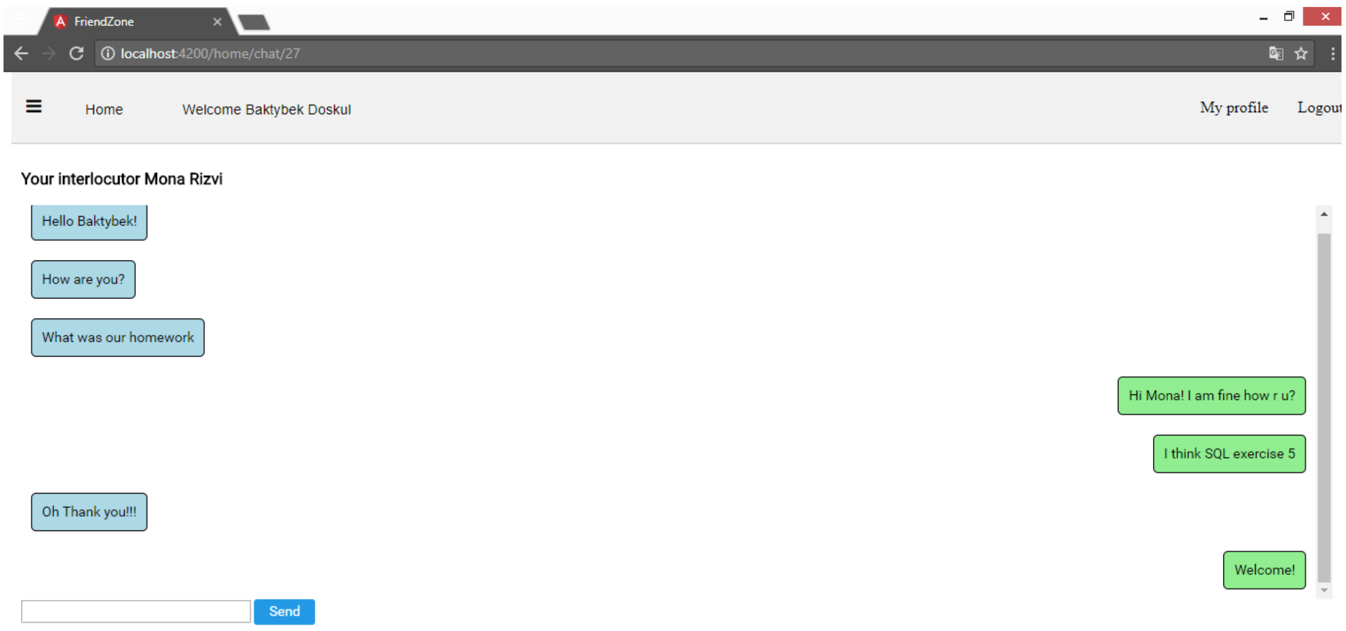
The user also may delete friends or cancel requests. We update the hasrelationship record by setting status to null.



Mona Rizvi

'SELECT h.id as chats_id, s.email, s.firstname, s.lastname, s.id FROM hasrelationship h, student s WHERE (h.first_stud_id=$1 OR h.second_stud_id=$1) AND (h.first_stud_id=s.id OR h.second_stud_id=s.id) AND s.id<>$1 AND h.status=1 ORDER BY h.last_action desc', [req.user.id]

In my friends page, user can see the list of friends. We get this list from hasrelationship table joined with students table.


FriendZone

localhost:4200/home/chat/27

Home Welcome Baktybek Doskul My profile Logout

Your interlocutor Mona Rizvi

Hello Baktybek!

How are you?

What was our homework

Hi Mona! I am fine how r u?

I think SQL exercise 5

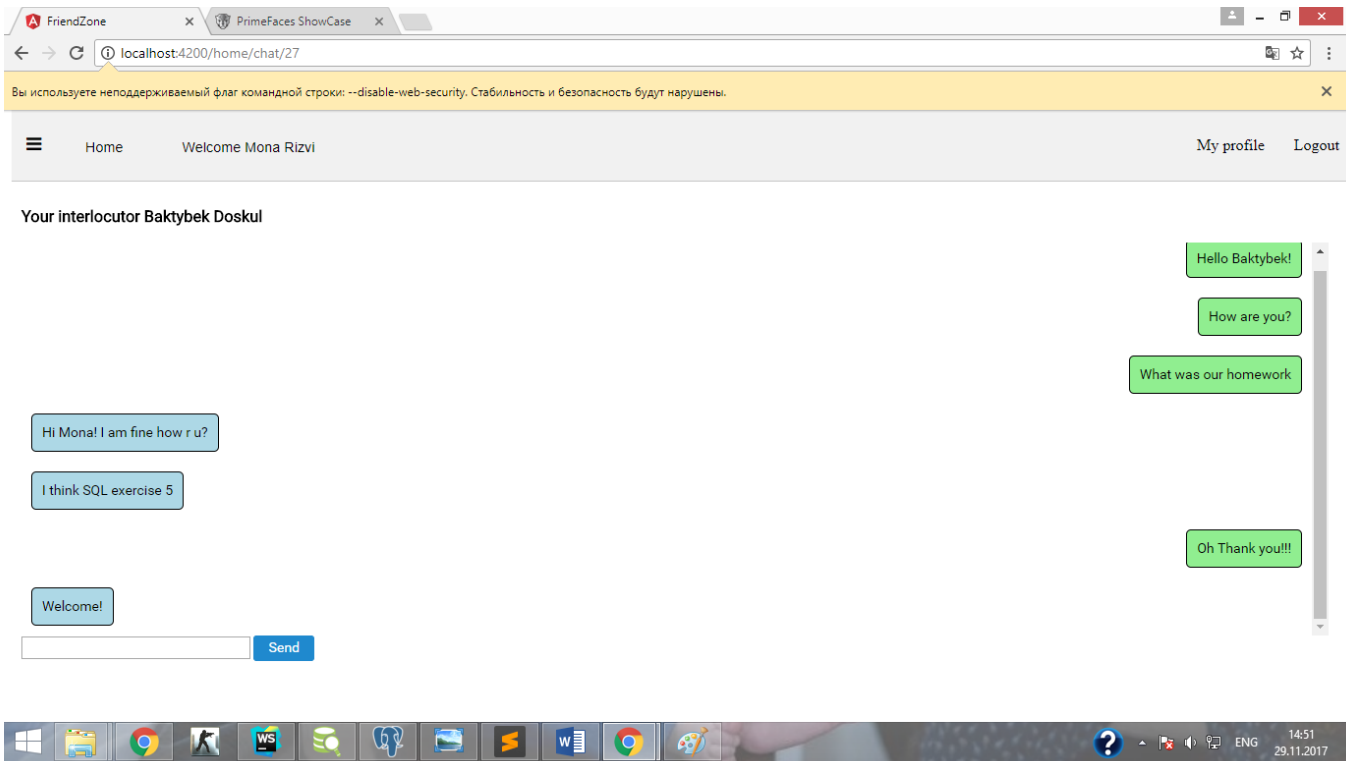
Oh Thank you!!!

Welcome!

Send

'SELECT student_send, chats_id, content FROM messages WHERE chats_id=$1 ORDER BY id', [chats_id]

When user goes to chat, the history of all messages between users is loaded. We get this history from messages table by defining the chat's id.


FriendZone PrimeFaces ShowCase

localhost:4200/home/chat/27

Вы используете неподдерживаемый флаг командной строки: --disable-web-security. Стабильность и безопасность будут нарушены.

Home Welcome Mona Rizvi My profile Logout

Your interlocutor Baktybek Doskul

Hello Baktybek!

How are you?

What was our homework

Hi Mona! I am fine how r u?

I think SQL exercise 5

Oh Thank you!!!

Welcome!

Send

ENG 14:51 29.11.2017

'INSERT INTO messages (content, student_send, chats_id) VALUES ($1, $2, $3)', [data.content, parseInt(socket.request.user.id), data.chats_id]

When the user sends a message, the message immediately shown on the screen of the other user. Also, the message is saved in the database.

Development

The database design was discussed and created together. The back-end was mainly developed by Dastan, while the front-end was mainly developed by Baktybek. However, many aspects of both front and back-end were discussed and designed together.

The main difficulty with development was sockets. We could not develop chat features with only http requests, because chat should refresh every time when a message comes. So, we had to use socket.io. There were some issues with integrating soket.io with express and passport. In addition, we had not experience in using socket.io. However, we finally overcame these issues with additional frameworks.

The main issue in developing front-end was blocking unauthorized user (synchronizing sessions in client and server sides). This problem also was solved.

Generally, we had experience in web development before this project. However, many things were new for us. We have learned to use our knowledge, that we have gained in Database systems course, in practice. So, “FriendZone” was a great experience for us.