



Bilkent University

Department of Computer Engineering

Object Oriented Software Engineering Course Project

BilHub: A Classroom Helper

Final Report

Group 1A

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Progress Report

May 3, 2021

Contents

- 1. Introduction**
- 2. Lessons Learnt**
- 3. User's Guide**
- 4. Build Instructions**
- 5. Work Allocation**
- 6. Conclusion**

1. Introduction

BilHub is a comprehensive classroom helper for instructors, teaching assistants, and students. It is a web application and we have created BilHub using React.js on the front-end and .net on the back-end.

There are 2 user types in BilHub: instructors and students. Teaching assistants are essentially students who instruct classes. Instructor users can create classes and add other instructors, TAs, and students into the classes. Additionally, BilHub enables both instructors and TA's to add students to give assignments that the students can submit their files using BilHub and create statistics about the assignments after they are graded.

BilHub is especially useful for classes that involve team projects. Students can form their project groups on BilHub. They can change their groups either by joining to another group or merging their groups with another one until the course gets locked by the instructors or TAs provided that the number of the members does not exceed the maximum group size. They can also finalize their groups for the semester if they would like. No student can leave or join the finalized groups. Groups that are not finalized yet are called pseudo-groups. When the course is locked, the system will assign groups (except for the already finalized ones) automatically by satisfying the most possible number of students.

Student pages will include students' info and other projects that students were or are involved with. Students can review other students' pages to get information about them. Each group will also have a page that includes project name and student names. Other students can review these pages and give feedback to the assignments that the group has submitted and also to the overall project. Finally, students can perform peer grading for other members in their groups until the deadline determined by the instructors.

2. Lessons Learnt

We have learned several things throughout the process. First of all, we have learned that GitHub is an extremely helpful tool while developing a software project. It enabled us to work much more efficiently compared to our CS101 project in which we have not used GitHub. Making use of GitHub, we could easily merge our parts without losing code or unintentionally breaking the project.

Secondly, we have learned that communication is an important part of the development process, especially in a virtual semester that we could not work together face-to-face. We have learned that texting is a good communication method for quick clarifications but whenever we realized we were not on the same page regarding an issue and needed to have deeper conversations, we immediately switched to Discord where we could talk to each other. We also made use of Discord's screen sharing feature a lot to overcome the downsides of the virtual semester like not being able to explain something to each other by demonstration.

We also learned how important it is to use diagrams and design patterns in projects like this. We have seen how design patterns can be useful. For example, we have used repository pattern in the back-end which helped us to perform changes more easily by separating the database, service, and controller layers.

Additionally, we have learnt many different technologies and programming languages. The back-end development team learned to use C#, .NET, working with databases, and using SQL Server Management Studio. The front-end development team learned to use JS, HTML, CSS, React, Semantic-UI languages and tools to build an advanced user interface.

Also, we have seen that estimating how much time a specific task would take can be harder than it looks. In order to overcome this, one should start doing the project early enough to make sure they would still meet the deadline even if tasks take longer than expected.

3. User's Guide

3.1 Login Page

Sign in to BilHub

Bilkent email address

[Forgot password?](#)

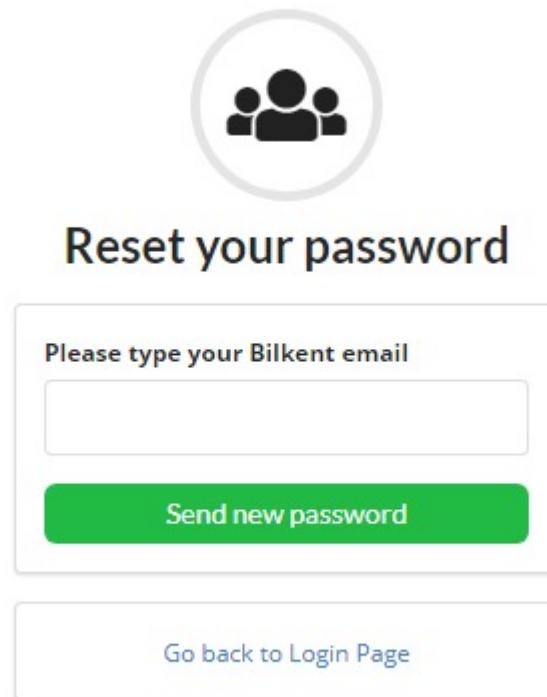
Password

Login

New to BilHub? [Create an account.](#)

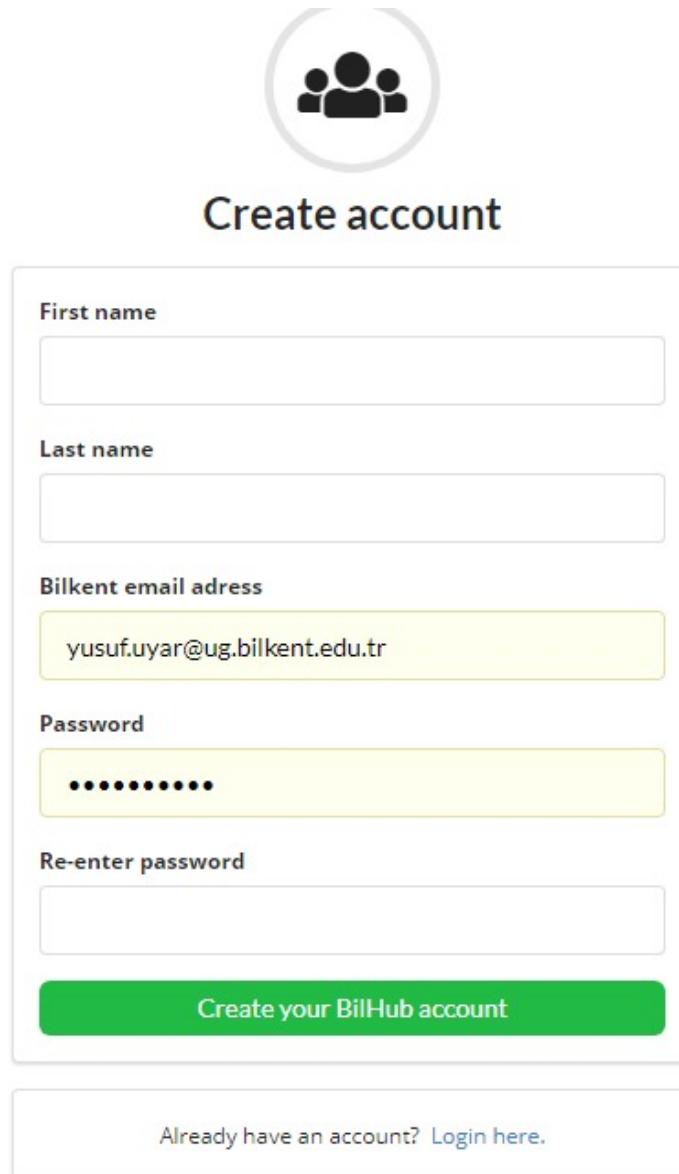
- Users can enter their Bilkent email address that they are registered with to the above textbox and their passwords to the below textbox.
- When they press the “Login” button, they are taken to the main page. If not, they are told that the password is incorrect.
- Pressing “Forgot password” enables the user to determine a new password.
- Pressing “Create an account” enables a new user to create an account.

3.2 Forgot Password Page



- The user can enter their email address into the textbox.
- When the user presses the “Send new password” button, a new password is created and sent to their email address.
- Pressing “Go back to Login Page”, takes the user to the login page.

3.3 Create Account Page



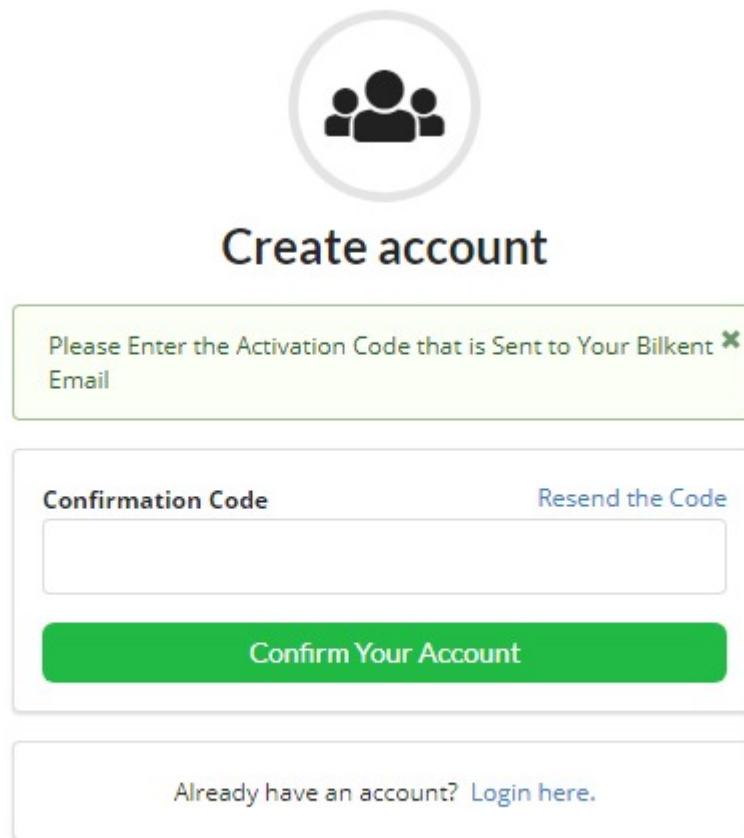
The image shows a user interface for creating a new account. At the top center is a circular icon containing three stylized human figures. Below it, the text "Create account" is centered. The main form area contains five input fields:

- First name:** An empty text input field.
- Last name:** An empty text input field.
- Bilkent email address:** A text input field containing the value "yusuf.uyar@ug.bilkent.edu.tr".
- Password:** A text input field containing a series of six asterisks ("*****").
- Re-enter password:** An empty text input field.

Below the form is a green button labeled "Create your BilHub account". At the bottom of the page, there is a link "Already have an account? [Login here.](#)".

- A new user can enter his/her Bilkent email address into the textbox at the top.
- He/she can enter his/her password into the textbox in the middle.
- He/she can enter his/her password again into the textbox at the bottom.
- Pressing “Create your BilHub account” button sends a verification code to the user’s email address.
- Pressing “Login here” takes the user to the login page.

3.4 Confirm Account Page



The image shows a user interface for creating an account. At the top is a circular icon containing three stylized human figures. Below it is the text "Create account". A green-bordered input field contains the placeholder text "Please Enter the Activation Code that is Sent to Your Bilkent Email". To the right of the input field is a blue "Resend the Code" link. Below the input field is a green button labeled "Confirm Your Account". At the bottom of the form is a link "Already have an account? Login here.".

Please Enter the Activation Code that is Sent to Your Bilkent Email

Confirmation Code [Resend the Code](#)

Confirm Your Account

Already have an account? [Login here.](#)

- Users can enter the confirmation code that is sent to their email address into the textbox.
- Pressing the “Confirm Your Account” button confirms the account and takes the user to login page
- Pressing “Resend the code” sends another code to the user’s email address.
- Pressing “Login here” takes the user to the login page.

3.5 Main Page

The screenshot shows a user profile for 'YusufUyar' on the left. Below it, 'My Projects' list includes 'CS319-2021Spring/BilHub' (locked), 'CS315-2021Spring/D Flat' (locked), and 'CS102-2019Fall/BilCalendar'. Under 'Instructed Courses', there is 'CS102-2021Spring'. The main content area displays four assignment cards:

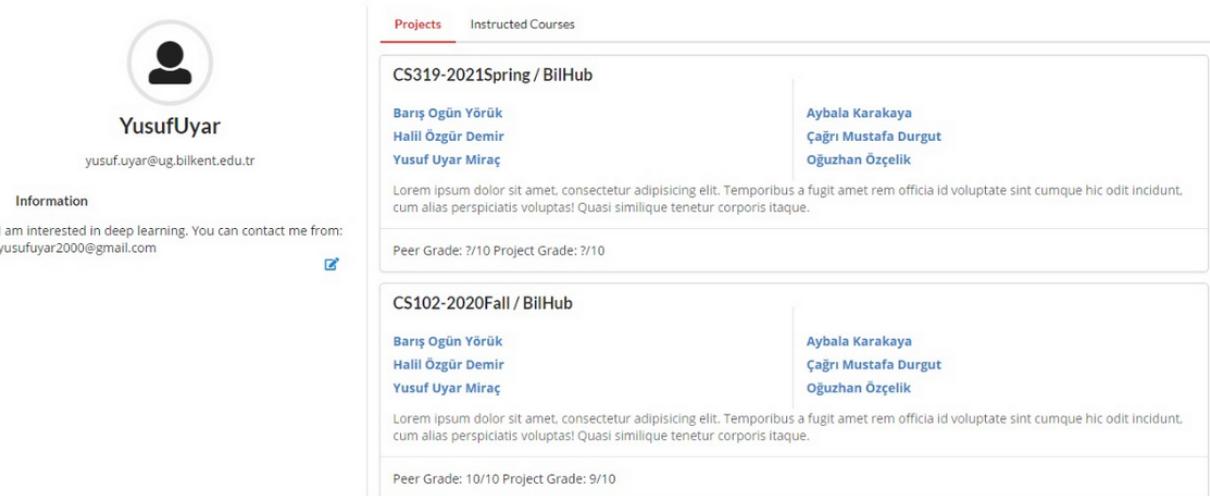
- CS315-2021Spring / Last Report** (by H.Altay Guvenir, due 15.06.2021 23:59)
- CS319-2021Spring / Final Report Assignment** (by Erdem Tuna, due 15.05.2021 23:59)
- CS319-2021Spring / Design Report Assignment** (by Erdem Tuna, due 15.03.2021 23:59)
- CS315-2021Spring / First Report** (by Irmak Turköz, due 15.06.2021 23:59)

On the right side, there are two sections: 'Upcoming Assignments' (listing CS315-2021Spring/Last Report due 15.06.2021 23:59) and 'Not Graded Assignments' (listing CS102-2021Spring/Analysis Report due 15.06.2021 23:59).

- User can see his/her project groups and the courses s/he is instructing on the left side of the main page. If the user clicks on the project group or course, s/he gets taken to the page of this project group or course.
- If the padlock sign that is in the left of the project group or course is locked, it means that it belongs to an older semester and is not active anymore. They can still be seen by the users, though. Else, they belong to the current semester and active.
- User can see the assignments for the courses they are taking in the middle of the main page along with their descriptions and due dates. If the user clicks on an assignment, s/he gets taken to the page of the assignment.
- Users can also see their upcoming assignments on the upper right side of the main page and click on them to go to their pages.
- Users can see assignments for the courses they are instructing that are not graded yet on the bottom right of the main page and click on them to go to their pages.

3.6 Profile Page

3.6.1 Projects



The screenshot shows a user profile page for 'YusufUyar'. At the top, there is a circular profile picture placeholder, the name 'YusufUyar', and the email 'yusuf.uyar@ug.bilkent.edu.tr'. Below this, there is a section titled 'Information' with the text: 'I am interested in deep learning. You can contact me from: yusufuyar2000@gmail.com' and a small edit icon.

At the top right, there are two tabs: 'Projects' (which is selected) and 'Instructed Courses'. The 'Projects' tab displays two entries:

- CS319-2021Spring / BilHub**
 - Members: Barış Ogün Yörük, Halil Özgür Demir, Yusuf Uyar Mirç
 - Participants: Aybala Karakaya, Çağrı Mustafa Durgut, Oğuzhan Özçelik
 - Description: Lorem ipsum dolor sit amet, consectetur adipisicing elit. Temporibus a fugit amet rem officia id voluptate sint cumque hic odit incidentum, cum alias perspiciatis voluptas! Quasi similique tenetur corporis itaque.
 - Peer Grade: ?/10 Project Grade: ?/10
- CS102-2020Fall / BilHub**
 - Members: Barış Ogün Yörük, Halil Özgür Demir, Yusuf Uyar Mirç
 - Participants: Aybala Karakaya, Çağrı Mustafa Durgut, Oğuzhan Özçelik
 - Description: Lorem ipsum dolor sit amet, consectetur adipisicing elit. Temporibus a fugit amet rem officia id voluptate sint cumque hic odit incidentum, cum alias perspiciatis voluptas! Quasi similique tenetur corporis itaque.
 - Peer Grade: 10/10 Project Grade: 9/10

- This is the profile page of a user. Other users can also see this page.
- If the user clicks on the pencil symbol that is under the information section on the right of the page, s/he is taken to the settings page which initially shows the profile settings. This can only be done by the user himself/herself.
- If a user clicks on “Projects” at the top, s/he can see the projects that are done or being done by the user who is the owner of this profile page. The group members’ names are clickable. When s/he clicks, the user is taken to the profile page of this member.
- If a user clicks on “Instructed Courses” at the top, s/he can see the courses that are given by the user who is the owner of this profile page.

3.6.2 Instructed Courses

The screenshot shows a user profile for 'YusufUyar'. At the top, there's a circular profile picture placeholder. Below it, the name 'YusufUyar' and the email 'yusuf.uyar@ug.bilkent.edu.tr' are displayed. A section titled 'Information' contains the text: 'I am interested in deep learning. You can contact me from: yusufuyar2000@gmail.com' with a small edit icon next to it. On the right, there are two tabs: 'Projects' and 'Instructed Courses', with 'Instructed Courses' being the active tab. Under this tab, it lists a course 'CS102-2021Spring'. It shows 'Instructors' Aynur Dayanik and Selim Aksoy, and 'TAs' Aybala Karakaya and Yusuf Uyar. A placeholder text 'Lorem ipsum dolor sit amet, consectetur adipisicing elit. Temporibus a fugit amet rem officia id voluptate sint cumque hic odit incidentum, cum alias perspiciatis voluptas! Quasi similique tenetur corporis itaque.' is present.

- These are the courses given by the user who owns the profile page right now or in the past. The instructor and TA names are clickable. When s/he clicks, the user is taken to the profile page of this user.
- If a user clicks on “Projects” at the top, s/he can see the projects that are done or being done by the user who is the owner of this profile page.

3.7 Settings

3.7.1 Profile settings

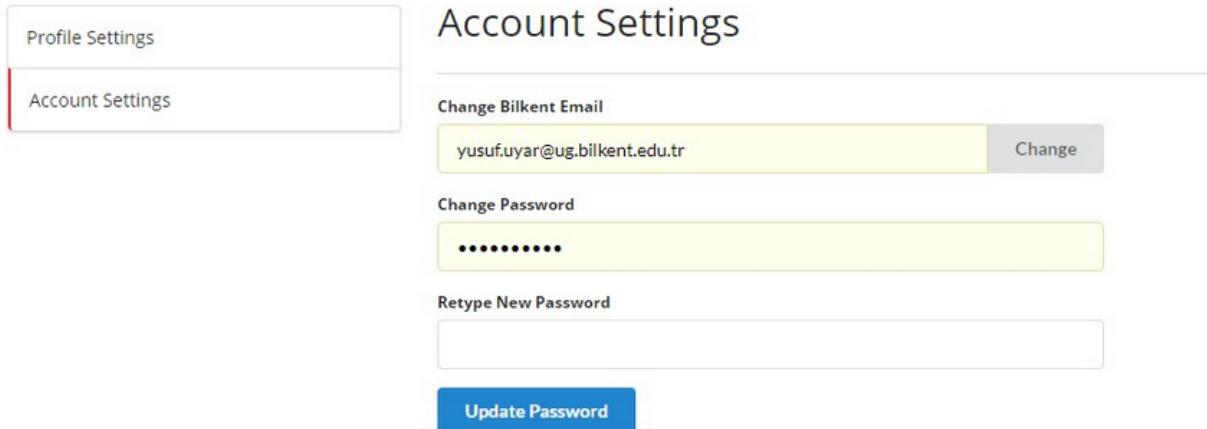
The screenshot shows the 'Profile Settings' page. On the left, there's a sidebar with 'Profile Settings' (which is active) and 'Account Settings'. The main area has a title 'Profile Settings'. It contains a 'Name' field with 'YusufUyar' and a 'Bio' field containing the text: 'I am interested in deep learning. You can contact me from: yusufuyar2000@gmail.com'. At the bottom, there's a blue 'Update' button.

- User can enter his/her name into the textbox on the top and his/her bio into the textbox below.

- When the user clicks on the “Update” button, his/her information is updated with the ones s/he entered. Else, they get discarded.

3.7.2 Account settings

 YusufUyar



The screenshot shows a user profile interface with a sidebar on the left containing "Profile Settings" and "Account Settings". The "Account Settings" tab is selected. The main area is titled "Account Settings" and contains three sections: "Change Bilkent Email", "Change Password", and "Retype New Password". The "Change Bilkent Email" section has a text input field containing "yusuf.uyar@ug.bilkent.edu.tr" and a "Change" button. The "Change Password" section has a text input field with masked text "*****" and a "Retype New Password" section below it with an empty input field. A blue "Update Password" button is at the bottom.

- In case of users bilkent account changes, they can update their Bilkent email. Such cases can happen when a student becomes a graduate student.
yusuf.uyar@ug.bilkent.edu.tr -> yusuf.uyar@bilkent.edu.tr
- User can enter his/her new password into the textboxes. If the passwords match, after clicking on the “Update” button, the password gets updated.

3.8 Notification Page

3.8.1 Incoming Requests

The screenshot shows the 'Incoming Requests' section of a user profile. At the top, there are tabs for 'Incoming Requests' (which is selected), 'Outgoing Requests', and 'New Feedbacks'. Below the tabs, a 'Pending' section is shown with two items:

- CS319-Spring2020**
Bariş Ogün Yörük wants to Join your group
Your Group
[Yusuf Uyar](#)
[Oğuzhan Özçelik](#)
Can I join your group?
Approved: 0/2
Request Date: 12.03.2021 00:15 / Formation Date: 05.04.2022 12:21
- CS315-Spring2020**
Hasan Kaya wants to Merge your group
Your Group
[Yusuf Uyar](#)
[Oğuzhan Özçelik](#)
Hi, we want to merge our groups if possible?
Approved: 1/4
Request Date: 12.03.2021 00:15 / Formation Date: 05.04.2022 12:21

At the bottom of the 'Pending' section, there are navigation links: 'Unresolved' and 'Resolved'.

- The notifications of incoming merge and join requests are shown on this page.
- Names of the members in the group that sent the request or are in your group are clickable and when clicked, the user is taken to the profile page of that user.
- The user can vote to accept or reject the requests by clicking on tick and cross, respectively. A reject cannot be taken back but if the user changes his/her mind after voting to accept, s/he can take his/her vote back by clicking on the cross once. If s/he clicks on the cross one more time, their vote is changed as being a reject vote.
- If s/he clicks to “Outgoing requests” at the top, s/he is taken to the outgoing requests notification page.
- If s/he clicks to “New feedbacks” at the top, s/he is taken to the new feedbacks notification page.

3.8.2 Outgoing Requests

The screenshot shows the 'Outgoing Requests' section of the YusufUyar application. At the top, there are tabs for 'Incoming Requests', 'Outgoing Requests' (which is currently selected), and 'New Feedbacks'. Below the tabs, a dropdown menu shows 'Pending' requests. A single request is listed: 'CS315-Spring2020' by 'Yusuf Uyar' (Your Group) to 'Hasancan Demir' and 'Tuna Dağılı' (Their Group). The request message is 'Can we two join you guys?'. At the bottom of the request card, it says 'Approved: 1/2' with a checkmark and a cross, and the 'Request Date: 12.03.2021 12:34 / Formation Date: 13.05.2022 14:15'. Below the main card, there are links for 'Unresolved' and 'Resolved' requests.

- The notifications of outgoing merge and join requests are shown on this page.
- Names of the members in the group that you or your group has sent the request to or are in your group are clickable and when clicked, the user is taken to the profile page of that user.
- The user can vote to accept or reject the requests by clicking on tick and cross, respectively. A reject cannot be taken back but if the user changes his/her mind after voting to accept, s/he can take his/her vote back by clicking on the cross once. If s/he clicks on the cross one more time, their vote is changed as being a reject vote.
- The user can only vote in merge requests since in join requests, s/he is the one who sent it.
- If s/he clicks to “Incoming requests” at the top, s/he is taken to the incoming requests notification page.
- If s/he clicks to “New feedbacks” at the top, s/he is taken to the new feedbacks notification page.

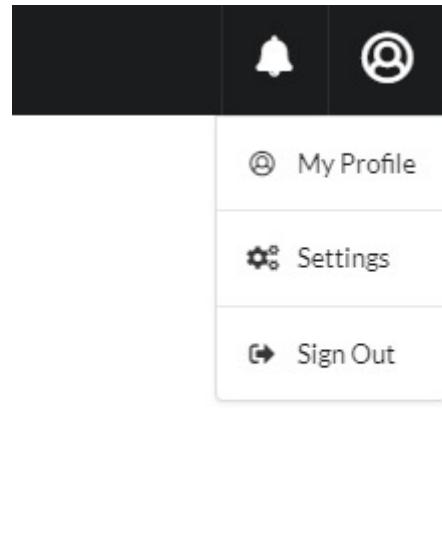
3.8.3 New Feedbacks

The screenshot shows the YusufUyar application interface. At the top, there is a navigation bar with tabs: 'Incoming Requests', 'Outgoing Requests', and 'New Feedbacks'. The 'New Feedbacks' tab is currently selected. Below the navigation bar, there is a sidebar on the left with sections for 'My Projects' (listing 'CS319-2021Spring/BilHub', 'CS315-2021Spring/D Flat', and 'CS102-2019Fall/BilCalendar') and 'Instructed Courses' (listing 'CS102-2021Spring'). The main content area on the right is titled 'Instructor Feedbacks' and contains a single feedback entry for 'CS319-2021Spring / Eray Tüzün / Analiz Report'. The feedback content is 'Good Work!' and includes a grade 'Grade: 10/10' and a timestamp '13.10.2029 23:32'. Below this entry, there are links for 'TA Feedbacks' and 'Student Feedbacks'.

- The notifications of new feedbacks are shown on this page. User can see the new feedbacks given by instructors, TAs, and students here.
- Names of the members in the group that you or your group has sent the request to or are in your group are clickable and when clicked, the user is taken to the profile page of that user.
- The user can vote to accept or reject the requests by clicking on tick and cross, respectively. A reject cannot be taken back but if the user changes his/her mind after voting to accept, s/he can take his/her vote back by clicking on the cross once. If s/he clicks on the cross one more time, their vote is changed as being a reject vote.
- The user can only vote in merge requests since in join requests, s/he is the one who sent it.
- If s/he clicks to “Incoming requests” at the top, s/he is taken to the incoming requests notification page.
- If s/he clicks to “Outgoing requests” at the top, s/he is taken to the outgoing requests notification page.

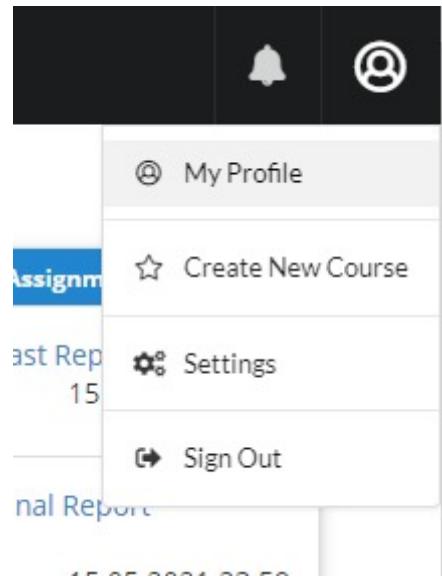
3.9 Right Top Dropdown

3.9.1 Student dropdown



- If the user clicks on the profile symbol at the right top on the navigation bar that can be seen at every page, s/he can go to his/her profile page, settings page, or sign out.
- If the user clicks on the bell symbol at the right top on the navigation bar that can be seen at every page, s/he can go to the notifications page.

3.9.2 Instructor dropdown



- If the user clicks on the profile symbol at the right top on the navigation bar that can be seen at every page, s/he can go to his/her profile page, create new course page, settings page, or sign out.

- If the user clicks on the bell symbol at the right top on the navigation bar that can be seen at every page, s/he can go to the notifications page.

3.10 Course Page

3.10.1 Groups

3.10.1.1 Formed Groups

CS102-2021Spring
Algorithms and Programming II

Instructors

- Selim Aksoy
- Aynur Dayanık

TA's

- Yusuf Uyar
- Aybala Karakaya

Information

CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Groups Statistics Assignments

Section 1

Formed Groups

Course Helper	GPS Utilizer	UNSCO
Hasan Kaya Ayşe Kaya Demir Kaya	Hallı Özgür Demir Banış Ogün Yörük Oğuzhan Ozçelik	Tuna Dağılı Ahmet Mümtaz Hakan Sivik

Unformed Groups

- Users can come to this page by clicking on “Groups” at the top of the page.
- Users can use the dropdown menu to choose a section to display the groups in that section.
- Formed groups are displayed using several different colors.
- Clicking on the “Lock groups” button, locks the groups and they cannot be changed anymore. This can only be done by instructors and TAs.

3.10.1.2 Unformed Groups

CS102-2021Spring
Algorithms and Programming II

Instructors
[Selim Aksoy](#)
[Aynur Dayanik](#)

TA's
[Yusuf Uyar](#)
[Aybala Karakaya](#)

Information
CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Groups Statistics Assignments

Section 1

- ▶ Formed Groups
- ▼ Unformed Groups

Semih Karay Yağmur Topçu	Engin Uygur Ece Zengin	Erim Eraydin Yaşar Dinc	Devrim Toker
Onur Gollu	Banu Ceren	Ela Nazif	Doga Genç
Iskander Koç			

- Unformed groups are displayed using gray color.

3.10.2 Statistics

CS102-2021Spring
Algorithms and Programming II

Instructors
[Selim Aksoy](#)
[Aynur Dayanik](#)

TA's
[Yusuf Uyar](#)
[Aybala Karakaya](#)

Information
CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Groups **Statistics** Assignments

▼ Table

Groups	Selim Aksoy	Aynur Dayanik	Yusuf Uyar	Aybala Karakaya	Students
Course Helper	99	98	97	10	89
GPS Utilizer	75	45	23	10	89
UNSCO	38	98	97	1	43

▶ Groups vs Grade Graphic
▶ Grade vs Group Number Graphic

- Users come to this page by clicking the “Statistics” at the top of the course page.
- Users can see different statistics by clicking on their names such as “Groups vs grade graphic” and “Grade vs group number graphic”.

3.10.3 Assignments

CS102-2021Spring

Algorithms and Programming II

Instructors

Selim Aksøy
Aynur Dayanik

TA's

Yusuf Uyar
Aybala Karakaya

Information

CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Design Report 2
Second iteration of Design Report

Yusuf Uyar
Publication Date: 12.03.2021 12:00 / Due Date: 12.06.2021 23:59

Analysis Report 2
Second iteration of Analysis Report

Aybala Karakaya
Publication Date: 12.03.2021 12:00 / Due Date: 12.05.2021 23:59

Design Report 1
First iteration of Design Report

Yusuf Uyar
Publication Date: 12.03.2021 12:00 / Due Date: 12.03.2021 23:59

Analysis Report 1
First iteration of Analysis Report

Aybala Karakaya
Publication Date: 12.03.2021 12:00 / Due Date: 12.05.2021 23:59

New Assignment

- Users can come to this page by clicking on “Assignments” at the top of the page.
- An instructor or TA can create a new assignment by clicking on the “New assignment” button at the bottom of the page.
- Clicking on an assignment takes the user to “Assignment information” page.

3.10.3.1 Assignment Information

CS102-2021Spring
Algorithms and Programming II

Instructors
Selim Aksoy
Aynur Dayanik

TA's
Yusuf Uyar
Aybala Karakaya

Information
CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Assignment Information Submissions Statistics

CS102-2021Spring / Design Report 2
Second Iteration of Design Report

Yusuf Uyar
Publication Date: 12.03.2021 12:00 / Due Date: 12.03.2021 12:00

- TA or Instructor can update the assignment information or delete an assignment by using the pencil and cross symbols at the top right.

3.10.3.2 Submissions

CS102-2021Spring
Algorithms and Programming II

Instructors
Selim Aksoy
Aynur Dayanik

TA's
Yusuf Uyar
Aybala Karakaya

Information
CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Back To Course Page Assignment Information Submissions Statistics

Section 2 ▾
▼ Graded

File Name	Grade	Date
BilHub2: 21_1_analysisReport.pdf	2/10	02.03.2021 17:00
Classroom Helper: 1_1_analysisReport.pdf	7/10	15.03.2021 17:00

► Submitted
► Not Submitted

Download All Files **Download Only Not Graded Files**

- TAs and instructors can download all submission files or download all non-graded submission files using their respective buttons.
- Using the dropdown menu, user can choose a section to see its submissions.

3.10.3.3 Statistics

CS102-2021Spring
Algorithms and Programming II

Instructors
[Selim Aksoy](#)
[Aynur Dayanik](#)

TA's
[Yusuf Uyar](#)
[Aybala Karakaya](#)

Information
 CS102 gives you an opportunity to put the basic computer literacy, design and programming skills you learnt in CS101 into practice. The course has two components. The first is simply a continuation of CS101 aimed at expanding the range of techniques you have available to solve problems. These new techniques will be presented in formal lectures and, as in CS101, you will be given lab. assignments designed to let you practice them.

Statistics

Table

Groups	Selim Aksoy	Aynur Dayanik	Yusuf Uyar	Aybala Karakaya	Students
Course Helper	99	98	97	10	89
Classroom Helper	75	45	23	10	89
BRICA	38	98	97	1	43
GPS Utilizer	46	87	24	10	94

Groups vs Grade Graphic
 Grade vs Group Number Graphic

- Users can see different statistics by clicking on their names such as “Groups vs grade graphic” and “Grade vs group number graphic”

3.10.4 Peer Review

CS319-2021Spring

Object-Oriented Software Engineering

Instructors
[Eray Tüzün](#)
[Alper Sarıkan](#)

TAs
[Erdem Tuna](#)
[Kraliçe İrmak](#)

Information
 Lorem ipsum dolor sit amet, consectetur adipisicing elit. Odio, et assumenda fugiat repudiandae doloribus eaque at possimus tenetur cum ratione, non voluptatibus? Provident nam cum et cupiditate corporis earum vel ut? Illum beatae molestiae praesentium cumque sapiente, quasi neque consequatur distinctio iste possimus in dolor. Expedita rem totam ex distinctio!

Groups Statistics Assignments **Peer Review**

3 Not Bilhub 2Halil Ozgür Demir

3
 lorem5 ur adipisicing elit. Cumque neque ullam a 0
 Grade: 2/5
 12.00.2013 12:12

2
 lorem5 ur adipisicing elit. Cumque neque ullam a 0
 Grade: 2/5
 12.00.2013 12:12

4
 lorem5 ur adipisicing elit. Cumque neque ullam a 0
 Grade: 2/5
 12.00.2013 12:12

5
 lorem5 ur adipisicing elit. Cumque neque ullam a 0

- Instructors and TAs can see peer grades given by students. They can choose section number, project group, and student using dropdown menus at the top.

3.11 Project Page

3.11.1 Assignments

The screenshot shows the project page for CS319-2021Spring. On the left, there's a sidebar with 'Members' (Barış Ogün Yörük, Halil Özgür Demir, Yusuf Uyar Miraç, Aybala Karakaya, Çağrı Mustafa Durgut, Oğuzhan Özçelik) and 'Information' (BilHub is a comprehensive classroom helper for instructors, teaching assistants and students especially designed for classes that include teamwork). The main area has tabs for 'Assignments', 'Grades', 'Feedbacks', and 'Peer Review'. There are three assignment cards:

- CS319-2021Spring / Final Report Assignment**: Description of the web site. Published by Erdem Tuna on 01.05.2021 08:00, due by 15.05.2021 23:59.
- CS319-2021Spring / Design Report Assignment**: Detailed explanation fo the design paterns used in the project. Published by Erdem Tuna on 01.03.2021 08:00, due by 15.03.2021 23:59.
- CS319-2021Spring / Analysis Report Assignment**: Analysis Report of the project. Published by Erdem Tuna on 01.01.2021 08:00, due by 15.01.2021 23:59.

- Users can come to this page by clicking on “Assignments” at the top of the page.
- When a student clicks on an assignment, s/he is taken to the Submission page.

3.11.1.1 Submission

The screenshot shows the submission page for the 'Design Report Assignment'. At the top, it says 'Back To Assigments'. The assignment details are the same as in the previous screenshot. Below that, it says 'Not submitted yet' and has a button 'Add New Submission'.

- Users can add a new submission by using the button for the assignment on this page if they are on this group. Else, they can see the submission submitted by the group.

3.11.1.2 Grades

[CS319-2021Spring](#)
[BillHub](#)

Members

- Bařış Ogün Yörük
- Halil Özgür Demir
- Yusuf Uyar Miraç
- Aybala Karakaya
- Çağrı Mustafa Durgut

Information

BillHub is a comprehensive classroom helper for instructors, teaching assistants and students especially designed for classes that include teamwork.

Back To Assignments		
Submission	Grades	Feedbacks
User	Person	Grade
Project Instructor	Eray Tüzün	9.5
TA	Erdem Tuna	9
TA	Elgun Jabrayilzade	10
Students Average		8
BillHub Avarage		Course Average
9.125		6.5
Final Grade: 10		

- Users can see the grades given to the group's submission for this assignment.

3.11.1.3 Feedbacks

CS319-2021Spring
BilHub

Members

- Barış Oğün Yörük
- Halil Özgür Demir
- Yusuf Uyar Miraç
- Aybala Karakaya
- Çağrı Mustafa Durgut
- Oğuzhan Özçelik

Information

BilHub is a comprehensive classroom helper for instructors, teaching assistants and students especially designed for classes that include teamwork.

Feedbacks

Your Feedback:

Grade: 10 Choose File No file chosen Give Feedback +

SRS Feedback

Grade: 10/10

- Instructor Feedbacks
- TA Feedbacks
- Student Feedbacks

- Users can submit feedback for the submission of this group on this page. They can write their comments on the textbox, can enter a numerical grade, and submit a file.

3.11.2 Grades

CS319-2021Spring
BilHub

Members

- Barış Oğün Yörük
- Halil Özgür Demir
- Yusuf Uyar Miraç
- Aybala Karakaya
- Çağrı Mustafa Durgut
- Oğuzhan Özçelik

Information

BilHub is a comprehensive classroom helper for instructors, teaching assistants and students especially designed for classes that include teamwork.

Assignments	Grades	Feedbacks	Peer Review
User	Person	Grade	
Instructor	Eray Tüzün	9.5	
TA	Erdem Tuna	9	
TA	Elgun Jabrayilzade	10	
Students Average		8	
BilHub Average		Course Average	
9.125		6.5	
Final Grade: 10			

- Users can see a group's project grades and how they compare to the rest of the class here.

3.11.3 Feedbacks

The screenshot shows the 'Feedbacks' tab of the BilHub interface for the 'CS319-2021Spring' course. On the left, a sidebar lists group members: Barış Ogün Yörük, Halil Özgür Demir, Yusuf Uyar Miraç, Aybala Karakaya, Çağrı Mustafa Durgut, and Oğuzhan Özçelik. Below this is an 'Information' section with a note about BilHub being a classroom helper for teamwork. The main content area has tabs for 'Assignments', 'Grades', 'Feedbacks' (which is selected), and 'Peer Review'. Under 'Feedbacks', there's a large text area for 'Your Feedback:', a grade input field set to '10', a 'Choose File' button with 'No file chosen' message, and a 'Give Feedback' button with a plus sign. Below this is a section for 'SRS Feedback' with a 'Add SRS Grade' button and links for 'Instructor Feedbacks', 'TA Feedbacks', and 'Student Feedbacks'.

- Users can give feedback to this group on this page. They can add files by clicking the “Choose file” button.
- Users can see the feedback given to this group at the bottom of the page.

3.11.4 Peer Review

The screenshot shows the 'Peer Review' tab of the BilHub interface for the 'CS319-2021Spring' course. The sidebar is identical to the Feedbacks page. The main area has tabs for 'Assignments', 'Grades', 'Feedbacks', and 'Peer Review' (selected). It features a 'Select Peer' dropdown menu, a large text area for comments, a grade dropdown menu with '#', and a 'Submit' button with a paper airplane icon.

- Users can grade their group members here. They first choose a group member from the dropdown at the top. They can write comments in the middle. They choose a grade from the dropdown menu at the bottom. After that, they can submit using the button.

3.12 Create New Course

Create New Course

Code:	Year:	Semester:
<input type="text"/>	<input type="text"/>	<input type="button" value="Select"/>
Short Course Description: <input type="text"/>		
<input type="checkbox"/> Group Formation Between Sections		Number of Sections: <input type="text" value="1"/>
THESE CHOICES CANNOT BE CHANGED		
Add Instructor:	Add Teaching Assistants	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Enter	Enter	Enter
<input type="button" value="+"/>	<input type="button" value="+"/>	<input type="button" value="+"/>
Add Student as .txt file: Section: <input type="text" value="1"/>		
Choose File No file chosen		
Add Student as a list: Section: <input type="text" value="1"/>		
<input type="text"/>		
Enter		
<input type="button" value="+"/>		

Group Formation Settings

- Instructors can create new courses using this page.
- An instructor can come to this page by using the dropdown at the top right corner of the navigation bar (see 3.9.2).

4. Build Instructions

In order to build back-end you need to have .NET 5.0 sdk, the best way to obtain it is downloading the [Visual Studio](#). In Visual Studio Installer you need to select and download the packages related with ASP.NET. After that you should have dotnet sdk installed in your machine. Thereafter, you need to install [SQL Server 2019 Express](#), It is optional but recommended to have [SQL Server Management Studio \(SSMS\)](#) in order to see your database server is up and running. After this step you can go ahead to Visual Studio or Visual Studio Code, restore the project, create a migration and update the database. We recommend you to VSCode with dotnet cli you need to type “dotnet restore”, “dotnet ef migrations add FinalMigration” and then “dotnet ef database update” respectively. If you are in Visual Studio you can run the some commands after you make sure that you are in dotnet cli. Finally if you are sure that your database is up and runnnig with seeded information you can go ahead and type “dotnet run” in order to run the project.

And then you can go ahead to your localhost:portName/swagger/index.html to see the endpoints. After you saw this page below you can go ahead to second part.

Assignment	
POST	/Assignment/File/{assignmentId}
DELETE	/Assignment/File/{assignmentId}
GET	/Assignment/File/{assignmentId}
POST	/Assignment
PUT	/Assignment
DELETE	/Assignment/{assignmentId}
GET	/Assignment/{assignmentId}
GET	/Assignment/Feeds
GET	/Assignment/NotGraded
GET	/Assignment/Upcoming

In order to build front-end you need to have node js 14.16.1 LTS from <https://nodejs.org/en> by clicking the button “Recommended For Most Users”. By installing node.js, we can use npm commands to install required packages. Then in our project files we will change our directory to bilhub-frontend. Then here we will first install our dependencies via typing ‘npm install’ to cmd. Then after installation ‘npm start’ will start our front end.

5. Work Allocation

Barış Ogün Yörük:

- Prepared the UI pages for the requirements report and overall report.
- Designed the business layer for the design report and overall report.
- Worked on the front-end and combining back-end and front-end.
- Created the file structure of the front-end.
- Created general component and router structures for front-end.
- Implemented mostly the logic behind UI's
- Established react-redux for common auth system.
- Established react-router for multiple page feeling in a single page.

Halil Özgür Demir:

- Prepared activity diagrams and contributed other parts of the analysis report.
- Focused on edge cases and contributed on other parts of the design report.
- Learned and used CSS to make sensitive arrangements in layout.
- Worked on course creating page, course settings page, peer reviewing tabs from scratch.
- Contributed many pages in order to edit logic and layout of that page.
- Designed the logic of some modals.
- Linked the interface with backend logics.

Mustafa Çağrı Durgut:

- Worked on reports
- Selection of the environment, technology and the learning resources used in back-end
- Distributed the work in back-end and kickstarted it.
- Specifically worked on authorization system, database management, file storage, submission, assignment and comment (feedback) services.
- Worked in order to make the communication between backend and frontend smoother.

Yusuf Miraç Uyar:

- Design the overall look and pattern of the program.
- Worked on reports.

- Controlled all the diagrams for consistency issues.
- In the coding phase, worked directly on the frontend. Mostly focused on the final look of the program by working on the css and html part of the code.
- Write some of the logic between pages.
- Debugged the frontend by creating and using dummy data sets.

Aybala Karakaya:

- Prepared the sequence diagrams and contributed to the other parts of the requirements report.
- Contributed to the various parts of the design report and worked on the second iteration of it.
- Worked on the back-end, specifically join request, merge request, peer grading, and project grades. Made adjustments and updates to my parts according to the needs and wants of the front-end team.
- Created dummy data to make the testing process faster and to help the front-end team combine the back-end with the front-end.
- Worked on the final report and slides.

Oğuzhan Özçelik:

- Designed the models and class diagrams in the reports.
- Worked on the use case diagram.
- Worked on the back-end. Project Group, Course, Section services are implemented.
- Helped my teammates in their parts. Especially in GitHub use and their problems in their services. Implemented additional endpoints that front-end need in order to make their job easier.
- Wrote the algorithm needing parts of the code.

6. Conclusion

In conclusion, BilHub is an extensive classroom helper. It provides functionalities to help students form project groups, turn in assignments, give feedback to other students' works, see the feedback given to their own works, and peer grade their team members. It also helps instructors to give assignments, grade them, and create statistics about the assignments after they are graded.

We have developed this project using React.js on the front-end and .net on the back-end. This report is an extensive user's guide that also involves instructions to help users build the system on their computers.

BilHub will make the instructors' and TAs' jobs easier by saving them the trouble of having to keep up with Slack and emails. It will also greatly help students in their project group formation process. To sum up, BilHub will create a functional environment for the Bilkent community during the semester.