



Bilkent University

Department of Computer Engineering

CS319 TERM PROJECT

Section 3

Group Lux Æterna

Bilkent Pandemic Manager

Final Report

Group Members:

- Remzi Tepe (21802713)
- Deniz Semih Özal (21802414)
- Arman Engin Sucu (21801777)
- Berkan Sivrikaya (21803052)
- Saitcan Başkol (21803589)

Supervisor: Eray Tüzün

Contents

1. Introduction.....	2
2. Project Experience.....	2
3. User's Guide.....	3
4. Build Instructions.....	24
5. Work Allocation.....	25
6. Backend Documentation.....	29
7. What We Did, Did Not.....	31

1. Introduction

Currently authentication, sign up functionalities, checking daily corona news, services such as, adding Corona files, courses, and students work perfectly. However, connection between backend and frontend is problematic. Furthermore, like explained in the analysis report our project has 3 roles: Admin, Instructor and student. Admin can see all of the corona files/HES codes for other users, create/update/delete course as well as can delete dorm information for students. Students can add/delete nearby students to the courses. Instructors can see all students in a course as well as students with positive corona test results. The common services for instructors and students are: adding/updating corona files, adding/updating a covid test, adding updating dorm room information. The other services are nearly authorized for all the 3 types of users. The following features could not be implemented because of the limited time: Reports, risk calculator/am I Corona and quarantine tracking.

2. Project Experience

As a group LuxAeterna we have held meetings nearly 3 times a week. Although some of us were not able to attend all meetings, we have tried our best to compensate other team members with a tensor schedule. For diagrams and reports we have allocated the work evenly as possible. However, from the implementation process, since there was not time to learn new technology detailly, every member did the work about their previous experiences. Throughout the project we have encountered many things we do not know. We tried to help each other in these situations. Namely, this process has made us learn many things: Design patterns, UML diagrams, communicating with a team and working with a team, learning new technologies. However, in the end we could not manage to connect backend and frontend because of the time limitations, which made us disappointed. However, coming up with a project in a very limited time is part of computer engineering. Therefore, this was a lesson for us to manage our time better.

3. User's Guide

3.1. Login

When a user opens the website, the first page they see is the login page. Username and password for each user has already been assigned, so there is no need for the signup function. The role of the user has already been assigned before, so they will be directed to their specific page. The login page as follows:

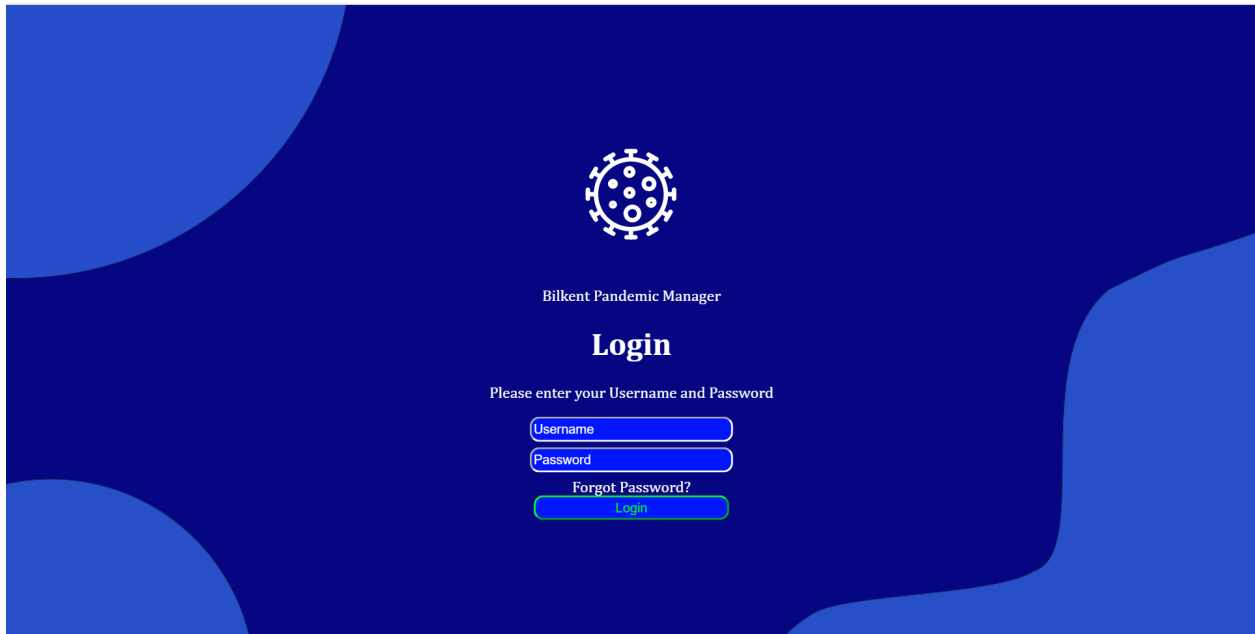


Fig. 1: Login Page

3.2. Covid-19 Files / Find User

3.2.1 Covid-19 Files (For User)

B
Bilkent Pandemic Manager

Covid-19 Files

- Courses
- Risk Calculator
- Covid-19 Reports
- News
- Send Feedback

Covid-19 Files

Hes Code

AKJ-943S-KBJSL

Send

Hes Status Riskless

Last Control Date
22.19.2021
23:12:43

Vaccinations

Vaccination Date	Vaccine Type	Verified
------------------	--------------	----------

Upload Vaccination Card

Covid-19 Test/Diagnosis Information

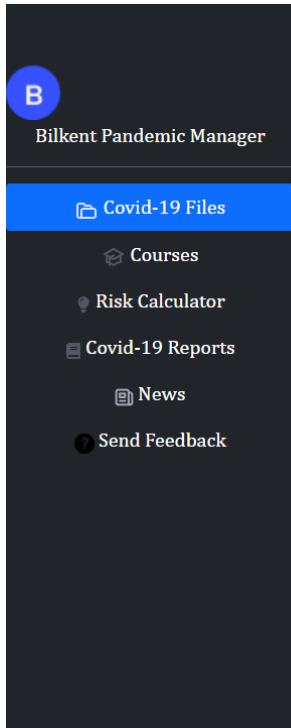
Add Diagnosis

Test History

User Name Here ▾

Covid-19 Files Page is redirected after successful login for instructors and students, Covid-19 Files page mainly allows the user actor to fill out credentials related to Covid-19 such as Hes Code, Vaccination Card and Diagnosis information. Furthermore, users can see past test results via the test history button.

3.2.2 Upload Vaccination Card (For User)



Upload Vaccination Card

Add Vaccination in Turkey

Dosya Seç

Dosya seçilmedi

Confirm

Add Vaccination Abroad

Choose your vaccination type

In which country you are vaccinated

Vaccination Date

gg.aa.yyyy

Vaccination Document

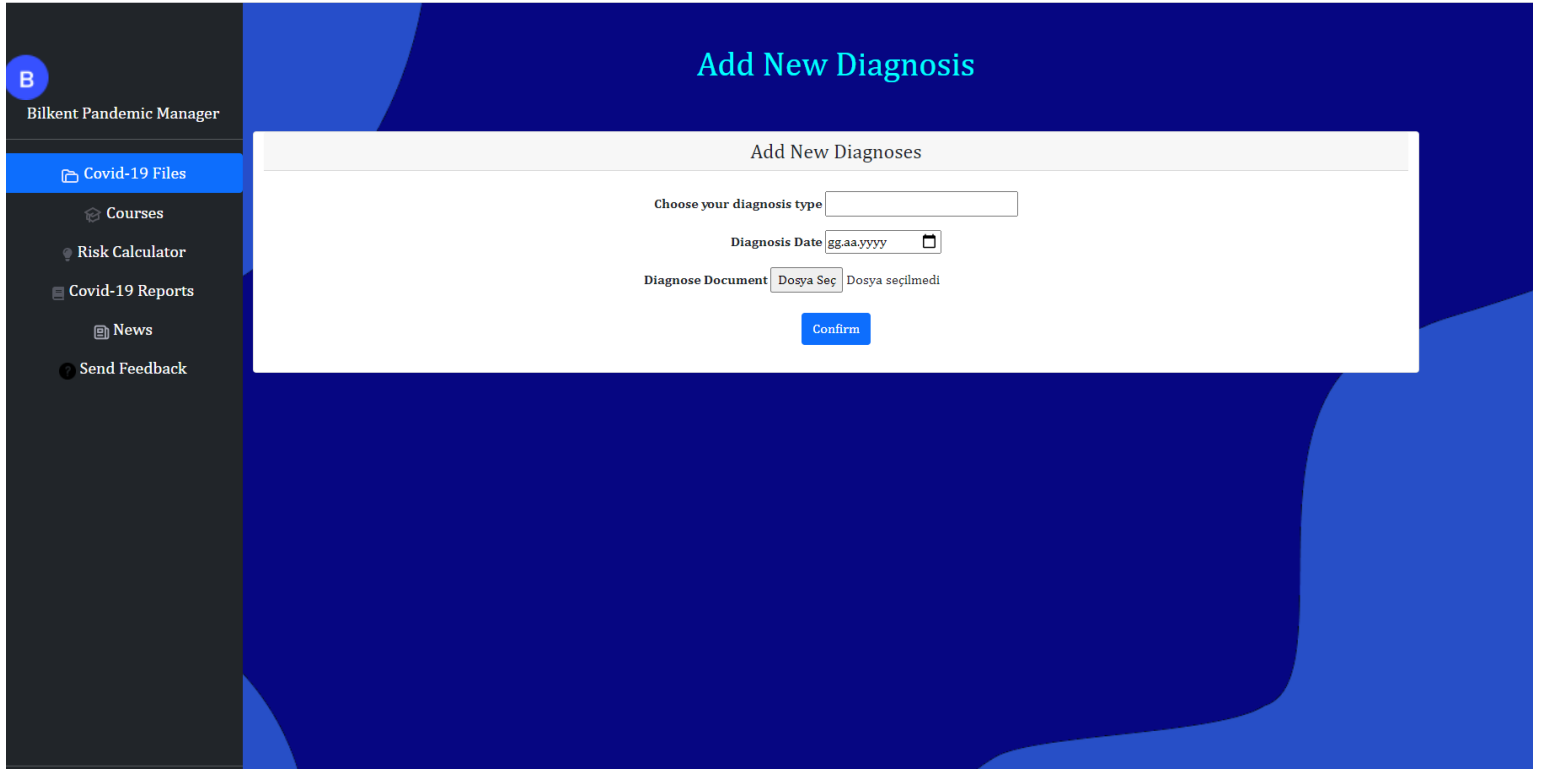
Dosya Seç

Dosya seçilmedi

Confirm

When the upload vaccination card is pressed, the user is directed to upload the vaccination card page, in this page there exist two different options regarding vaccination country. If the user is vaccinated in Turkey, the left form must be used, otherwise the right form must be used. These form credentials are significant for validating the vaccination card of the user.

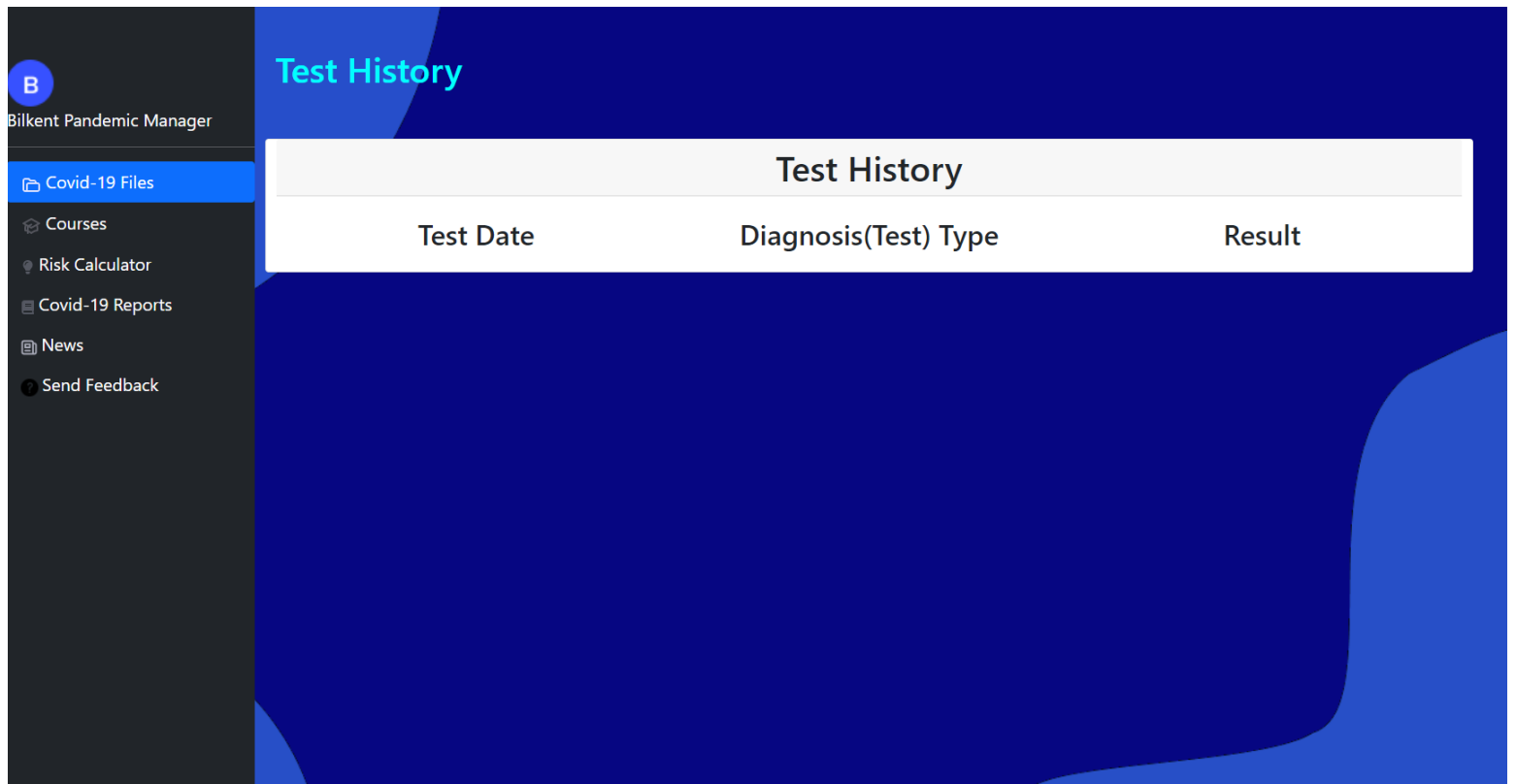
3.2.3 Add New Diagnosis (For User)



The screenshot shows the 'Add New Diagnosis' form within the Bilkent Pandemic Manager application. The left sidebar contains a navigation menu with the following items: 'Bilkent Pandemic Manager' (with a user icon 'B'), 'Covid-19 Files' (highlighted), 'Courses', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue background with the title 'Add New Diagnosis' in light blue. A white form box is centered on the page with the title 'Add New Diagnoses'. The form contains three input fields: 'Choose your diagnosis type' (a text input), 'Diagnosis Date' (a date picker showing 'gg.aa.yyyy'), and 'Diagnose Document' (a file selection button labeled 'Dosya Seç' with the text 'Dosya seçilmedi' next to it). A blue 'Confirm' button is located at the bottom right of the form.

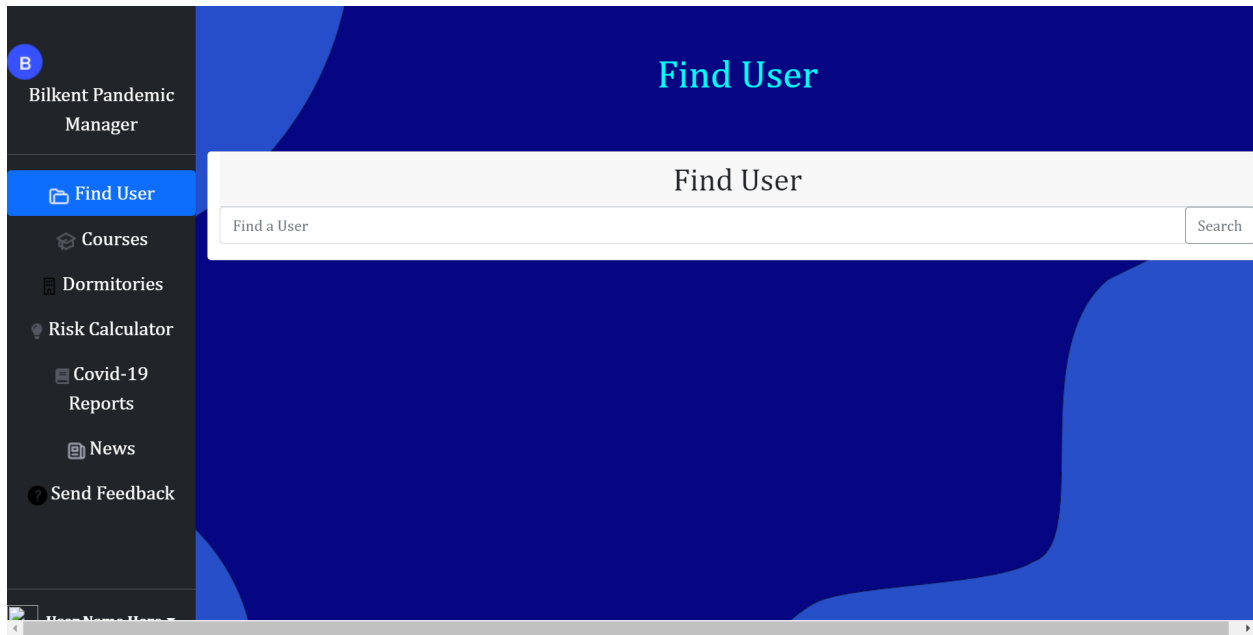
With pressing the add diagnosis button in Covid-19 Files under the Covid-19 Test/Diagnosis Information card, the user is redirected to add a new diagnosis page. With the new diagnosis form users must provide diagnosis type, diagnosis date and diagnosis document. With these credentials the user's provided diagnosis form is validated.

3.2.4 Test History (For User)



The user could see his/her past tests via clicking the test history button. Test Date, Diagnosis(Test) Type and Test Result is shown in this part to the user.

3.2.5 Find User (For Admin)



If admin logs in the website, they will be redirected to the Find User page that they can add/remove or update information about users they find on the search bar. If they find a user and select them, the admin will be redirected to the user's profile page.

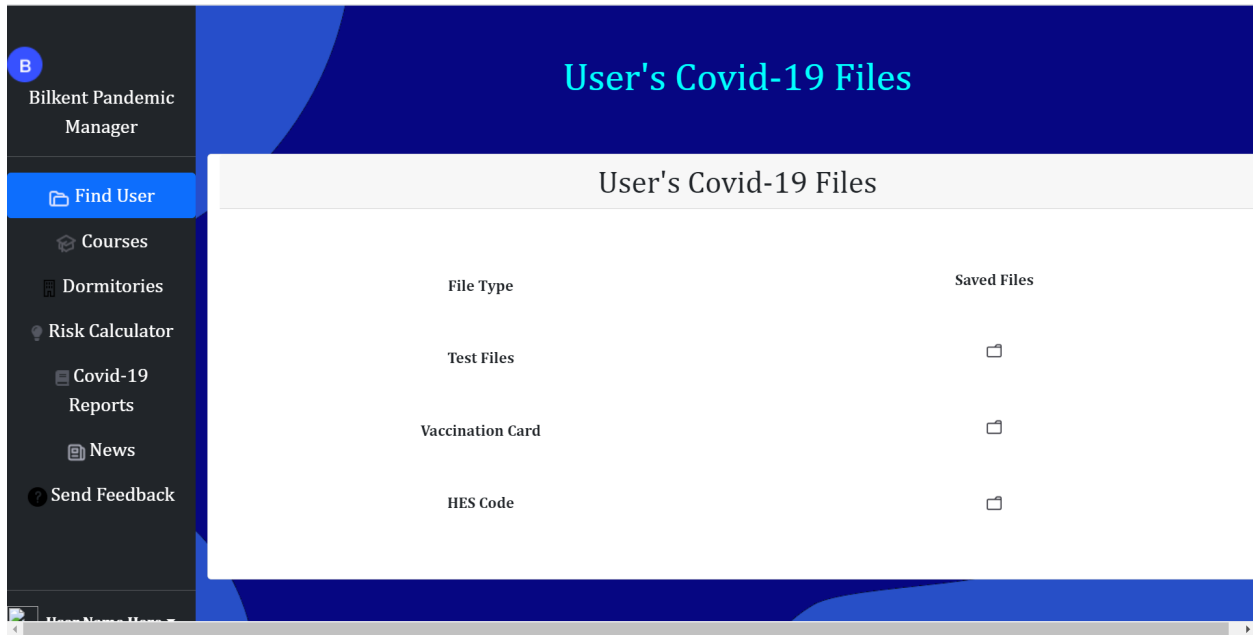
3.2.6 User Profile (For Admin)

The screenshot shows the 'User Profile' page for an admin. On the left is a dark sidebar with the 'Bilkent Pandemic Manager' logo and a list of navigation items: 'Find User' (highlighted), 'Courses', 'Dormitories', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue header with the title 'User Profile' in light blue. Below the header is a white table displaying user information for 'Ahmet Can'. The table has four columns: Name, Bilkent ID, National ID No, and E-Mail Address. Below the table, there are three blue buttons labeled 'Covid-19 Files', 'Courses', and 'Dormitory'.

Name	Bilkent ID	National ID No	E-Mail Address
Ahmet Can	2203432	394832204909	ahmet.can@bilkent.edu.tr

After this page, the user's profile page will be shown as follows that student's information are present with their Covid-19 Files, Courses and Dormitory pages' buttons

3.2.7 User's Covid-19 Files (For Admin)



After clicking Covid-19 Files button, the page below will be shown. In this page admin can see and download user's test files, vaccination cards and HES codes

3.3 Courses (For Admin)

The screenshot displays the Bilkent Pandemic Manager web application. On the left is a dark sidebar with a user profile 'B' and the title 'Bilkent Pandemic Manager'. Below this are menu items: 'Find User' (highlighted in blue), 'Courses' (with a graduation cap icon), 'Dormitories' (with a building icon), 'Risk Calculator' (with a lightbulb icon), 'Covid-19 Reports' (with a document icon), 'News' (with a newspaper icon), and 'Send Feedback' (with a question mark icon). The main content area has a dark blue header with the word 'Courses' in light blue. Below the header is a white form titled 'Courses'. This form contains four input fields: 'Course', 'Department', 'Section', and 'Instructor'. At the bottom of the form are three buttons: 'Add Course' (blue), 'Remove Course' (red), and 'Update Course' (cyan).

After clicking the Courses button, the admin can see/add/remove courses to the user as above below:

3.4 Dormitory (For Admin)

The screenshot displays the 'Bilkent Pandemic Manager' application. On the left is a dark sidebar with a menu containing: 'Find User' (highlighted in blue), 'Courses', 'Dormitories', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue header with the text 'User's Dormitory' in cyan. Below this is a white table with the title 'User's Dormitory' and six columns: 'Dormitory', 'Floor', 'Block', 'Room', 'Number of Students', and 'Date'. The table is currently empty. Below the table, there are two buttons: a blue 'Add Course' button and a red 'Remove Course' button. At the bottom of the sidebar, there is a small section labeled 'User Name Here'.

After clicking the Dormitory button, the admin can see/add/remove dorm information about the user as shown below

3.5 Courses (For Student)

The screenshot displays the Bilkent Pandemic Manager web application. On the left is a dark sidebar with a user profile 'B' and the title 'Bilkent Pandemic Manager'. Below this are menu items: 'Covid-19 Files' (highlighted in blue), 'Courses', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue header with the word 'Courses' in light blue. Below the header is a table with the title 'Courses' in its header row. The table has four columns: 'Course Code', 'Course Name', 'Number of Close Seating Classmates', and 'Select Your Closeby Contact'. The 'Select Your Closeby Contact' column contains a blue 'Select' button. The table body is currently empty.

Courses			
Course Code	Course Name	Number of Close Seating Classmates	Select Your Closeby Contact
			Select

The student could see his/her courses via the Courses page. Course code, course name, number of close seating classmates features could be seen there. The user could select his/her closeby contacts via the course page.

3.6 Select Your Closeby Contact (For Student)

The screenshot shows the Bilkent Pandemic Manager web application. On the left is a dark sidebar with a user profile icon 'B' and the text 'Bilkent Pandemic Manager'. Below this are menu items: 'Covid-19 Files' (highlighted in blue), 'Courses', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a white header 'Select Your Closeby Contact'. Below the header is a table with three columns: 'Name', 'Bilkent ID', and 'Select Your Closeby Contact'. The 'Select Your Closeby Contact' column contains two buttons: a blue 'Add' button and a red 'Remove' button. Below the table, the text 'Selected Classmates:' is followed by a list containing one item: '• Saitcan Başkol'.

Name	Bilkent ID	Select Your Closeby Contact
		<button>Add</button> <button>Remove</button>

Selected Classmates:

- Saitcan Başkol

In this Select Your Closeby Contact page, Course student list is displayed and via add remove buttons, a student is adding or deleting closeby contacts of themselves.

3.7 Courses (For Instructor)



If the user actor is instructor and if the Courses button is clicked from the left sidebar, instructor is redirected to courses page. In the Courses page instructors can see themselves currently giving lectures with Course Code and Course Name with additional Number of Corona Cases information. Number of Corona Cases information is the total number of Covid-19 positive students in the individual course. With the See Diagnosed Students button, instructors can display diagnosed students in the selected course.

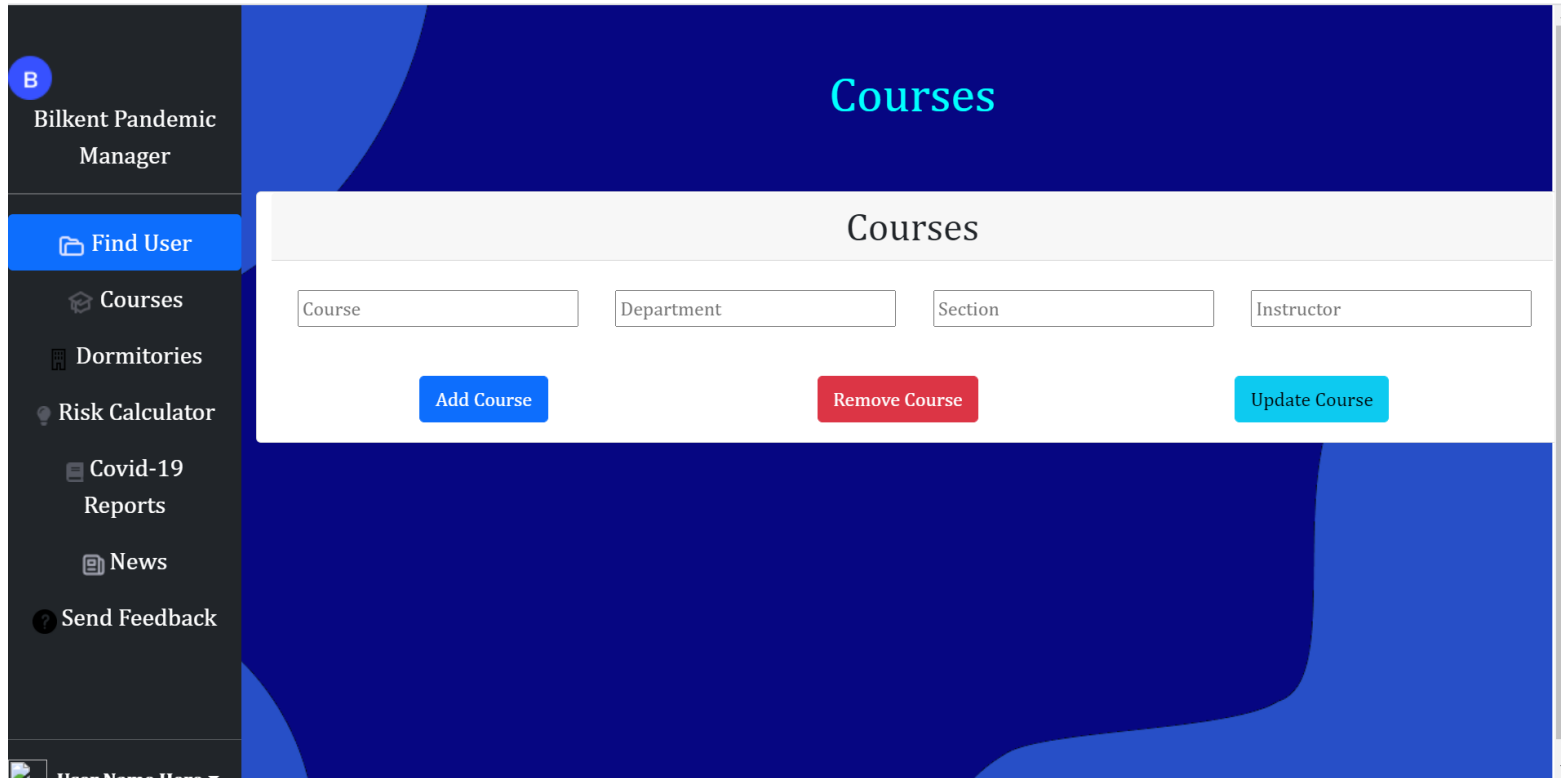
3.8 See Diagnosed Students (For instructor)

The screenshot displays the 'Bilkent Pandemic Manager' web application. On the left is a dark sidebar with a user profile 'B' and a list of menu items: 'Covid-19 Files' (highlighted in blue), 'Courses', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue header with the title 'See Diagnosed Students' in light blue. Below the header is a table titled 'Diagnosed Students' with three columns: 'Name', 'Bilkent ID', and 'Status'. The 'Status' column contains a blue button labeled 'Positive/Risky'. The table body is currently empty.

Name	Bilkent ID	Status
		Positive/Risky

In the See Diagnosed Students Page, instructors can see the full name of the students and their Bilkent ID with additional Positive or Risky status, if the student is actively Covid-19 positive, status will be positive, if the student is contacted, status will be risky.

3.9 Courses (For Admin)

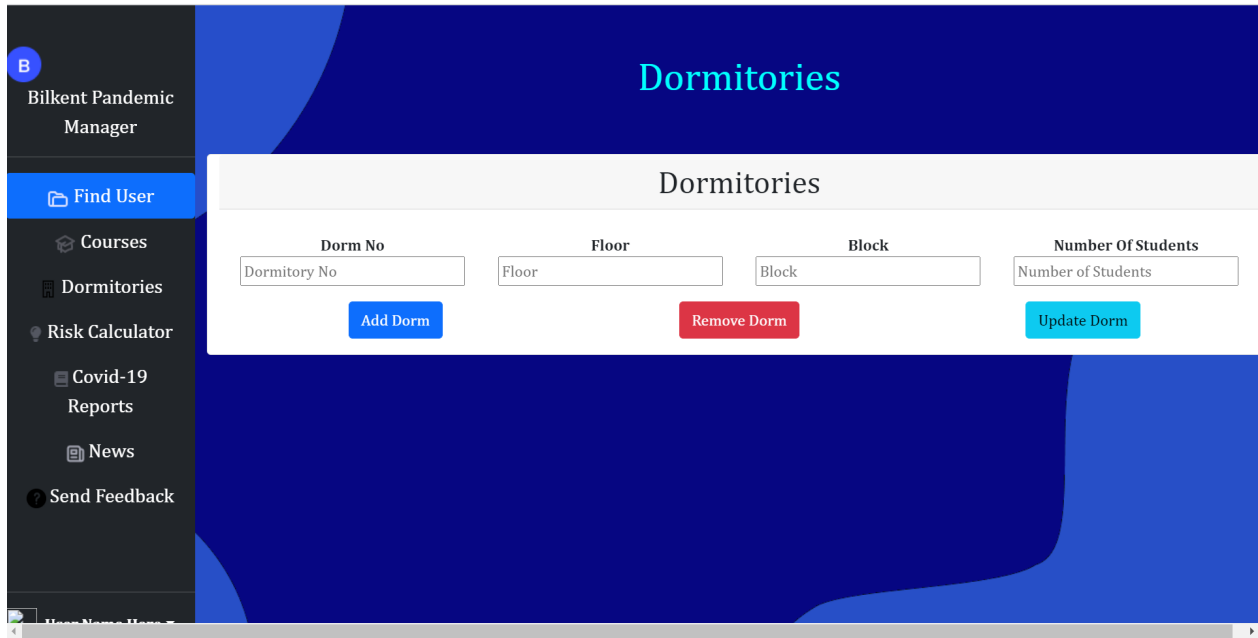


The screenshot displays the 'Courses' management interface for an administrator. The sidebar on the left contains the following menu items: 'Find User', 'Courses' (highlighted), 'Dormitories', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'. The main content area has a dark blue header with the title 'Courses' in light blue. Below the header is a white form titled 'Courses' containing four input fields: 'Course', 'Department', 'Section', and 'Instructor'. At the bottom of the form are three buttons: 'Add Course' (blue), 'Remove Course' (red), and 'Update Course' (cyan).

If the actor is an admin, the courses page will have functionalities that adding, removing and updating courses as.

After clicking the add course, the selected course will be added, when the remove course button is clicked, the selected course will be removed. Also, when clicking the update course button, the specifications about the course will be updated.

3.10 Dormitory Page (For Admin)



B Bilkent Pandemic Manager

Find User

Courses

Dormitories

Risk Calculator

Covid-19 Reports

News

Send Feedback

Dormitories

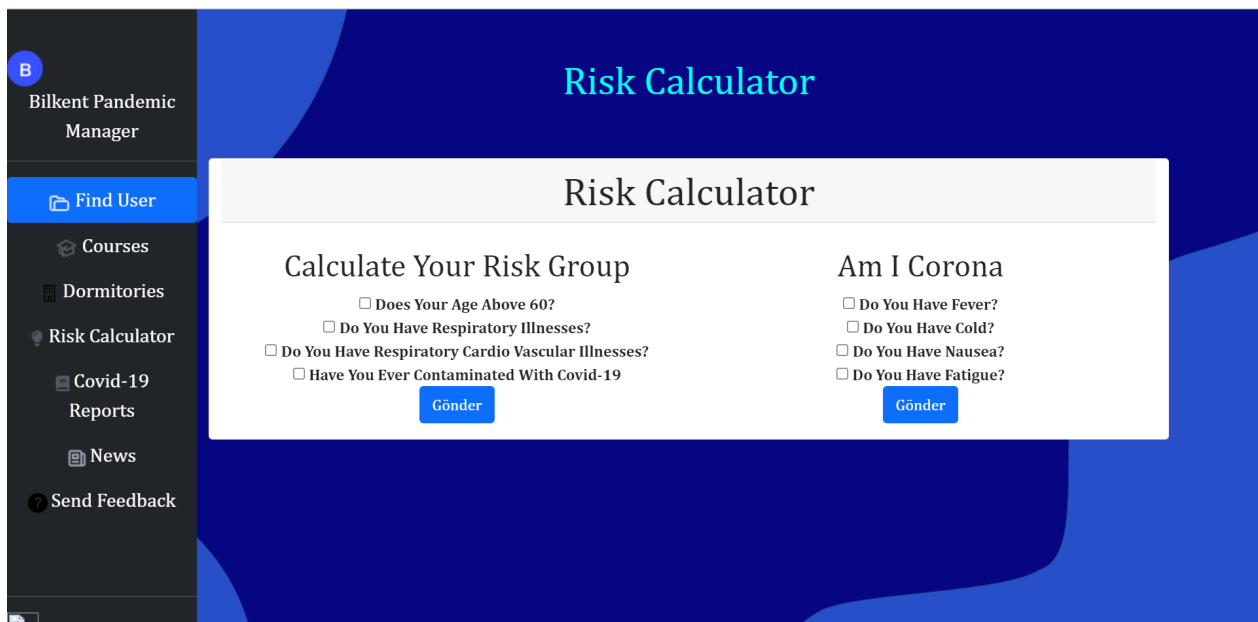
Dorm No Floor Block Number Of Students

Dormitory No Floor Block Number of Students

Add Dorm Remove Dorm Update Dorm

In this page, the admin can access the dormitories' information and manipulate them as they can do in the courses page. Firstly, they can add dorms, remove dorms and update dorms by adding students.

3.11 Risk Calculator (For User)



B Bilkent Pandemic Manager

Find User

Courses

Dormitories

Risk Calculator

Covid-19 Reports

News

Send Feedback

Risk Calculator

Calculate Your Risk Group

☐ Does Your Age Above 60?

☐ Do You Have Respiratory Illnesses?

☐ Do You Have Respiratory Cardio Vascular Illnesses?

☐ Have You Ever Contaminated With Covid-19

Gönder

Am I Corona

☐ Do You Have Fever?

☐ Do You Have Cold?

☐ Do You Have Nausea?

☐ Do You Have Fatigue?

Gönder

In this page, users can evaluate their risk status against Covid-19 by answering some questions.

3.12 Covid-19 Reports (For User)

Bilkent Pandemic Manager

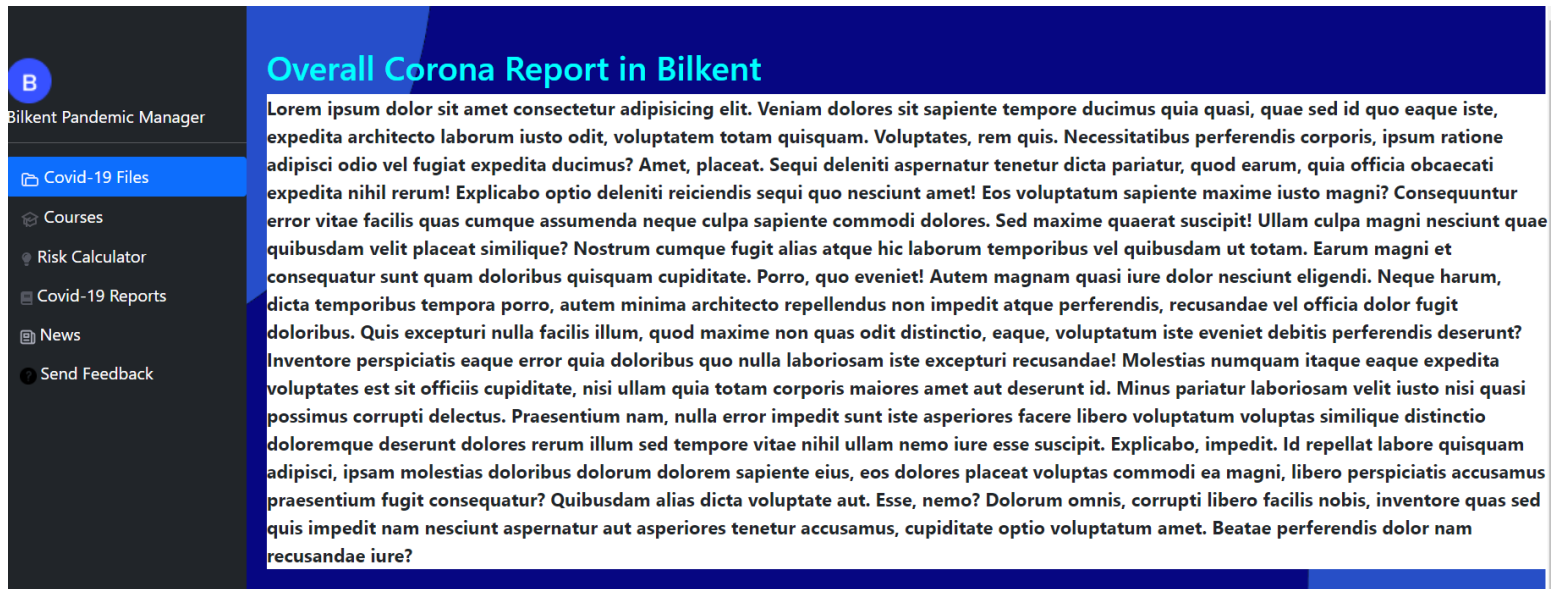
Covid-19 Reports

Covid-19 Reports			
Daily Cases	Daily Death Number	Number of Tests	Number of Recoveries
123	567	789	999

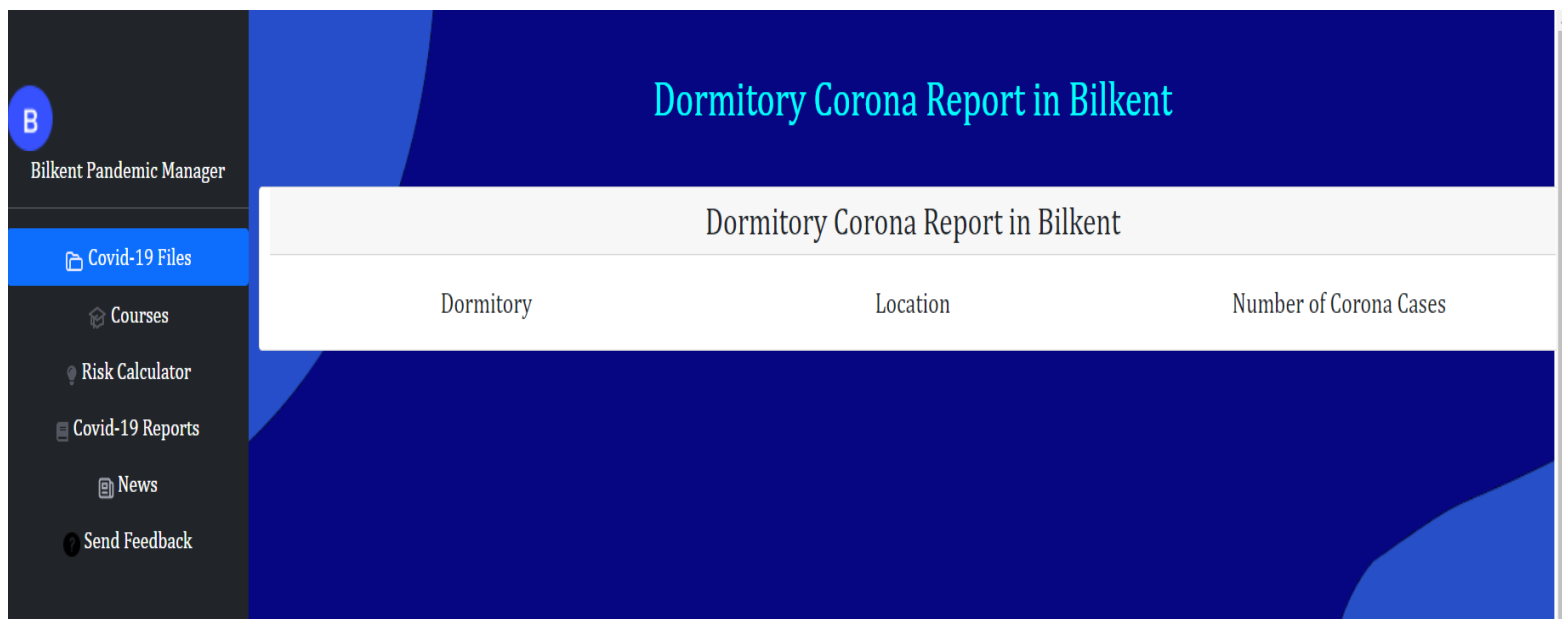
[Overall Corona Report in Bilkent](#) [Dormitory Corona Report in Bilkent](#) [Lecture Corona Report in Bilkent](#)

From the left sidebar Covid-19 Reports page can be accessed, in this page users can view general Covid-19 Reports, with Daily Cases, Daily Death Number, Number of Tests and Number of Recoveries fields. Furthermore from buttons below, users can view Overall Corona Reports in Bilkent, Dormitory Corona Reports in Bilkent and Lecture Corona Reports in Bilkent. Each of the buttons will redirect users to different reports pages.

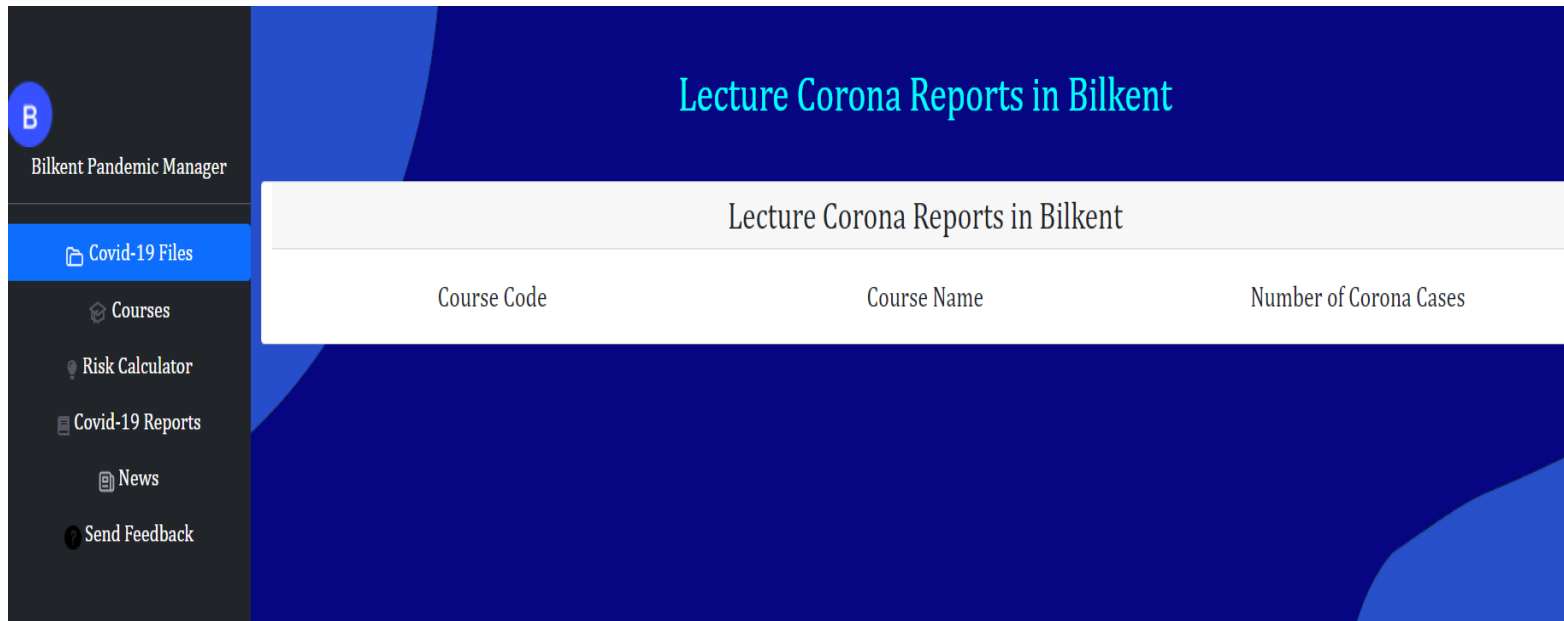
In the Overall Corona Reports in Bilkent page, users can view Bilkent Universities Covid-19 reports.



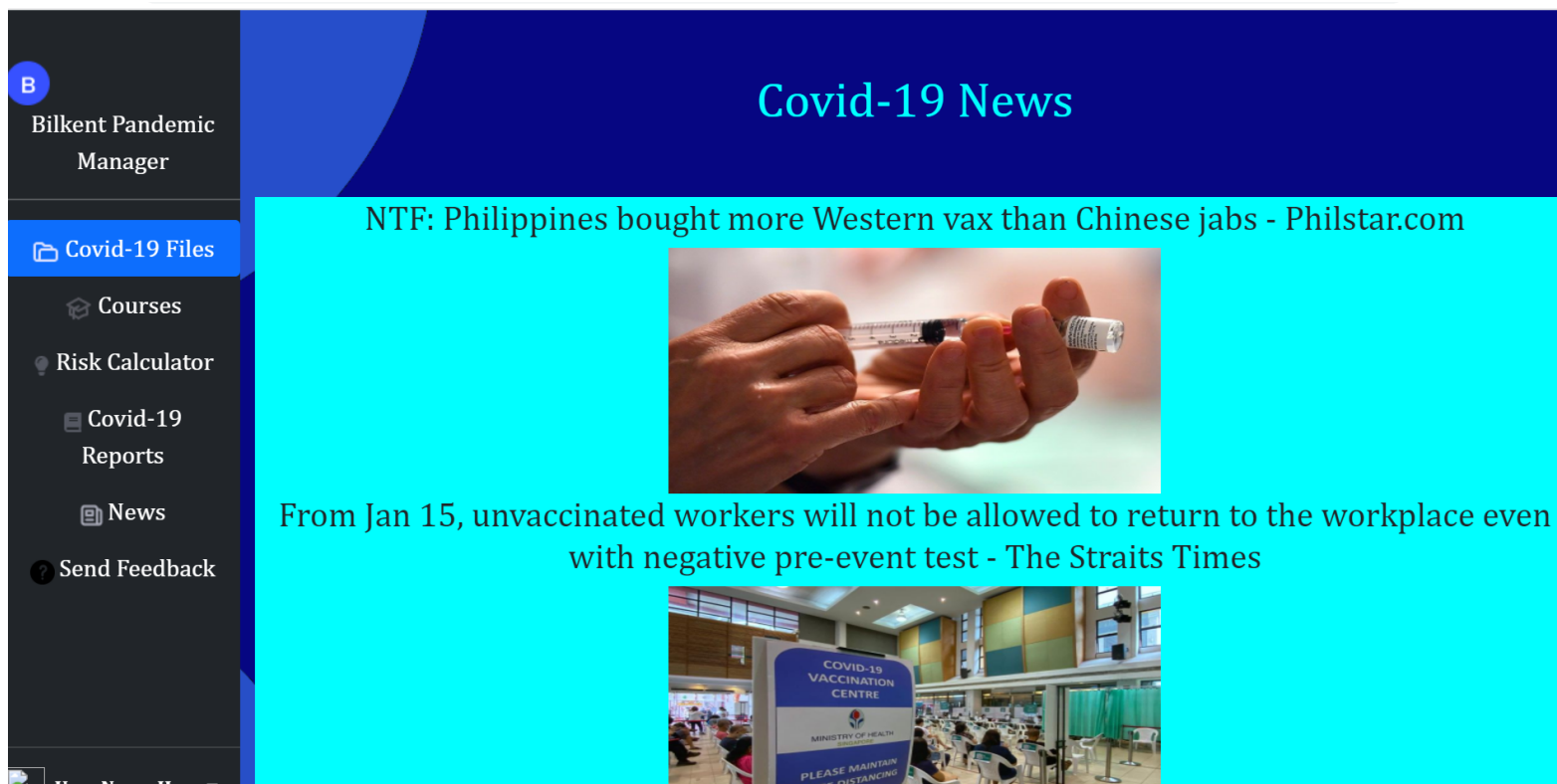
In the Dormitory Corona Report in Bilkent Page, users can view Covid-19 reports related to each individual dormitory and the total number of Covid-19 positive cases.



In Lecture Corona Report in Bilkent page, users can see each course with Course Code and Course Name and Number of Corona Cases which means Covid-19 positive students in the course.



3.13. News Page (For Student)



In this page, users can see the latest news about Covid-19. The news are fetched from Google's News API. The interface is shown below:

3.14. Send Feedback Page (Student)

The screenshot shows the 'Send Feedback' page of the Bilkent Pandemic Manager application. The interface features a dark blue sidebar on the left with a navigation menu. The main content area has a dark blue header with the title 'Send Feedback' in light blue. Below the header is a white form with a title bar 'Send Feedback' and a subtitle 'You can share your opinions with us...'. The form contains a large text input field and a blue 'Send Feedback' button. The sidebar menu includes options like 'Find User', 'Courses', 'Dormitories', 'Risk Calculator', 'Covid-19 Reports', 'News', and 'Send Feedback'.

B
Bilkent Pandemic Manager

Find User

Courses

Dormitories

Risk Calculator

Covid-19 Reports

News

Send Feedback

Send Feedback

You can share your opinions with us...

Send Feedback

In this page, users can send their opinions about the application to update it better.

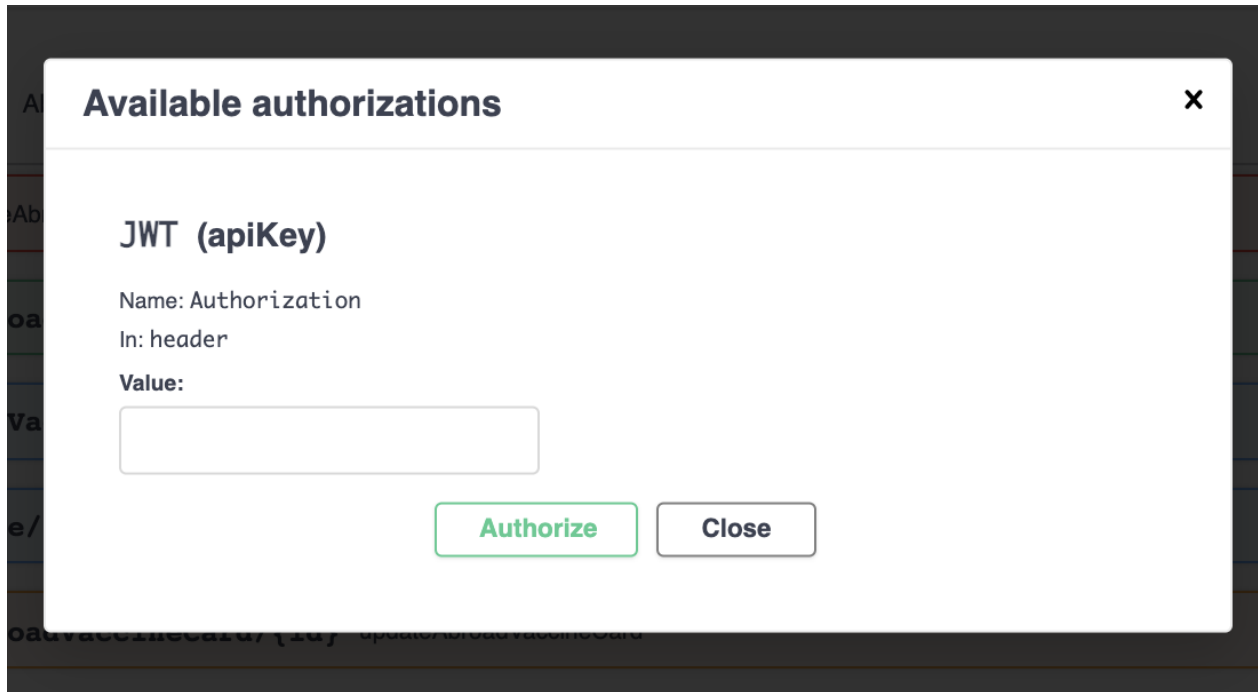
4. Build Instructions

BPM is an Spring Boot web application which can be run locally right now. The latest version of the app could be found at https://github.com/qlanduril/lux_aterna, the app uses PostgreSQL and it is already up and running at Heroku.

After cloning the app from the repository, it should be runned so that app can download all necessary dependencies from maven. App runs at <http://localhost:8080>. Moreover, to test the services of the app or to understand the functions the swagger API could be visited at <http://localhost:8080/swagger-ui/index.html>.

Furthermore, after cloning the project, one can change the application.properties file to customize the project or to analyze it. One can configure their database by changing database credentials from application.properties file which is at src/main/resources/application.properties. Moreover. From that file our S3 bucket configurations can be customized as well or one can add their own AWS services.






5. Backend Documentation



The image shows a modal window titled "Available authorizations" with a close button (X) in the top right corner. Inside the modal, the text "JWT (apiKey)" is displayed. Below this, the details "Name: Authorization" and "In: header" are shown. A label "Value:" is followed by a text input field. At the bottom of the modal, there are two buttons: "Authorize" (highlighted with a green border) and "Close".

To use services in swagger documentation, the user should authenticate himself with the JWT token by coming from the sign up function. To authorize user should enter JWT token with word "Bearer"






abroad-vaccine-card-controller Abroad Vaccine Card Controller

DELETE	/abroadVaccineCard/{id}	deleteAbroadVaccineCard	
POST	/abroadVaccineCard/createAbroadVaccineCard	createAbroadVaccineCard	
GET	/abroadVaccineCard/getAbroadVaccineCards	getAllAbroadVaccineCards	
GET	/abroadVaccineCard/getHesCode/{id}	getAbroadVaccineCardById	
PUT	/abroadVaccineCard/updateAbroadVaccineCard/{id}	updateAbroadVaccineCard	

auth-controller Auth Controller

POST	/signin/	authenticateUser	
POST	/signup/	registerUser	

base-vaccine-card-controller Base Vaccine Card Controller

DELETE	/api/baseVaccineCard/{id}	deleteBaseVaccineCard	
POST	/api/baseVaccineCard/createBaseVaccineCard	createBaseVaccineCard	
GET	/api/baseVaccineCard/getBaseVaccineCard	getAllBaseVaccineCards	
GET	/api/baseVaccineCard/getHesCode/{id}	getBaseVaccineCardById	
PUT	/api/baseVaccineCard/updateBaseVaccineCard{id}	updateBaseVaccineCard	

- Vaccine Card Controller enables basic CRUD operations for BPM
- Auth Controller enables users to signin and signup. User gets an authentication error if he tries to sign in before signup. After signing in user gets a token to use other services if he is authorized to use them.
- Base Vaccine Card Controller enables basic CRUD operations for BPM

hes-code-controller Hes Code Controller			▼
DELETE	/api/hesCode/{id}	deleteHesCode	🔒
POST	/api/hesCode/createHesCode	createHesCode	🔒
GET	/api/hesCode/getHesCode/{id}	getHesCodeById	🔒
GET	/api/hesCode/getHesCodes	getAllHesCodes	🔒
PUT	/api/hesCode/updateHesCode/{id}	updateHesCode	🔒
role-controller Role Controller			▼
DELETE	/role/{id}	deleteRole	🔒
POST	/role/create	createRole	🔒
GET	/role/get/{id}	getRoleById	🔒
GET	/role/getAll	getAllRoles	🔒
PUT	/role/update/{id}	updateRole	🔒
student-controller Student Controller			▼
POST	/student/addNearby/{id}/{nearbyId}	addNearbyStudent	🔒
POST	/student/create	createStudent	🔒
DELETE	/student/delete/{id}	deleteStudent	🔒
DELETE	/student/deleteNearby/{id}/{nearbyId}	deleteNearbyStudent	🔒
GET	/student/get/{id}	getStudentById	🔒
GET	/student/getAll	getAllStudent	🔒
PUT	/student/update/{id}	updateStudent	🔒

- Hes Code Controller enables basic CRUD operations for BPM
- Role Controller enables basic CRUD operations in order to test the services we have created because without roles in the database the authentication does not work.
- Student Controller enables basic CRUD operations for BPM. Moreover, it enables students to add/delete nearby student.

course-controller Course Controller			▼
DELETE	/api/course/{id}	deleteCourse	🔒
POST	/api/course/createCourse	createCourse	🔒
GET	/api/course/getCourse/{id}	getCourseById	🔒
GET	/api/course/getCourse/instructor/{id}	getCourseByInstructor	🔒
GET	/api/course/getCourses	getAllCourses	🔒
PUT	/api/course/updateCourse/{id}	updateCourse	🔒
covid-test-controller Covid Test Controller			▼
DELETE	/api/covidTest/{id}	deleteCovidTest	🔒
POST	/api/covidTest/createCovidTest	createCovidTest	🔒
GET	/api/covidTest/getCovidTest/{id}	getCovidTestById	🔒
GET	/api/covidTest/getCovidTests	getAllCovidTests	🔒
PUT	/api/covidTest/updateCovidTest/{id}	updateCovidTest	🔒
file-controller File Controller			▼
POST	/file	uploadFile	🔒
GET	/file/{id}	getFile	🔒
GET	/file/list	getFileList	🔒

- Course Controller enables basic CRUD operations for BPM. Furthermore, it enables to find all courses of instructor
- Covid Test Controller enables basic CRUD operations for BPM
- File Controller enables adding and getting files to upload corona files or to get them in BPM.

6. Work Allocation

Remzi Tepe:

Analysis Report:

- Functional and Non-Functional Requirements
- Some Scenarios
- User Interface
- Overall Organization

Design Report:

- Object Design Trade-offs
- Final Object Design
- Admin Interface Management Layer
- Overall Organization

Implementation:

- Frontend of the system
- Website templates

Saitcan Başkol:

Analysis Report:

- State Diagrams
- Activity Diagrams
- Class Diagram
- Some Mockups
- Improvement in text content

Design Report:

- Subsystem Decomposition
- Access Control Matrix
- Deployment Diagram
- Final Object Design
- User Interface Management Layer

Implementation

- Frontend of the system
- Website Templates

Deniz Semih Özal

Analysis Report:

- State Diagrams
- Activity Diagram
- Use Case
- UI Mockups for Admin and User

Design Report:

- Design Goals
- Subsystem Decomposition
- Data Management Layer
- Web Server Layer
- Explanation of Class Interfaces
- Boundary Conditions

Implementation:

- Backend
- API Connections
- API Testing

Arman Engin Sucu

Analysis Report:

- Use Case Diagram
- Some State Diagrams
- Explanation of Use Case Diagram
- Some Mockups

Design Report:

- Persistent Data Management
- Final Object Design
- Class Interfaces
- Explanation of Class Interfaces
- Explanation of Some Packages
- Design Patterns

Implementation:

- Backend
- API Documentation
- API Testing

Eyüp Berkan Sivrikaya

Analysis Report:

- Sequence Diagram
- Object and Class Model

Design Report

- Introduction
- Subsystem Decomposition
- Persistent Data Management
- Boundary Conditions
- Deployment Diagram
- Final Object Design
- Facade Design Pattern
- Data Management Layer-Entity
- Data Management Layer-Database
- Explanation of Class Interfaces

Implementation

- Backend-Entities
- Cloud Database

7. What We Did, Did Not

- ❖ Covid-19 Files Service (+)
- ❖ Course Service (+)
- ❖ Dorm Service (+)
- ❖ User Service (+)
- ❖ Authentication & Authorization (+)
- ❖ News Service (+)
- ❖ Role Service (+)
- ❖ User Interface (+)
- Backend & Frontend Connection (-)
- Contacted Service (-)

- Quarantine Service(-)
- Risk Calculator Service (-)
- Report Service (-)