

**HACETTEPE UNIVERSITY
COMPUTER SCIENCE & ENGINEERING DEPARTMENT**

**BBM473 - DATABASE MANAGEMENT SYSTEMS
LABORATORY PROJECT**



PART 2

SPRING 2020

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SPORTS CENTER MANAGEMENT SYSTEM

1. PROJECT DEFINITION

Sports Center Management System is an application for sports centers to register Managers, Instructors, Customers and other sports center entities. In the Sports Center Management System, there is an entity set called "SportsCenter". This entity has all the other entities. For different sports centers there are different entities in the system such as each sports center can define its own package and activities. Entity set "User" defines all the people in the system. Entity set "Role" defines the role information such as "manager", "instructor" or "customer". User entity has an attribute as "role" to define whether a user is a "manager", an "instructor" or a "customer". Entity set "Service" holds all the sport activities, spas and massages. Entity set "Package" contains the services in that "SportsCenter" entity. Each SportsCenter entity offers different "packages". So the entity "packages" are defined by the entity "SportsCenter". Entity set "Room" holds the physical room information. Entity set "Section" holds the room and service information as well as the time information and creates a "section" entity for the system. Once a user buys a package, he/she can attend any of the opened sections in the package if the section capacity does not exceed the room capacity. Entity set "News" holds the posted news/informations/motivative sentences by an instructor. Only an instructor can post news. Entity set "Address" holds the address information of all the users in the sports center. Entity set "Country" and "City" holds the country and city information, respectively.

2. APPLICATION & ENTITY INFORMATIONS

2.1 SIGN UP

In the Energy Shake - Sports Center Management System, there is a sign up form for the Customers to sign up to the sports center. The Manager is already exists in the database. Instructors are added by Manager. So this sign up form is only for Customers and the role field in the User table is filled as 'Customer' once any one signs up. This is because we did not want to give ability to customers to sign up as Instructor or Manager.

We used our custom designed sign up form and verified fields. Once the customer signs up, the page is directed to log in form. Each password is encrypted with SHA-256 and stored like so.

Here are the first entrance page and sign up form page:



Image 1. Entrance Page

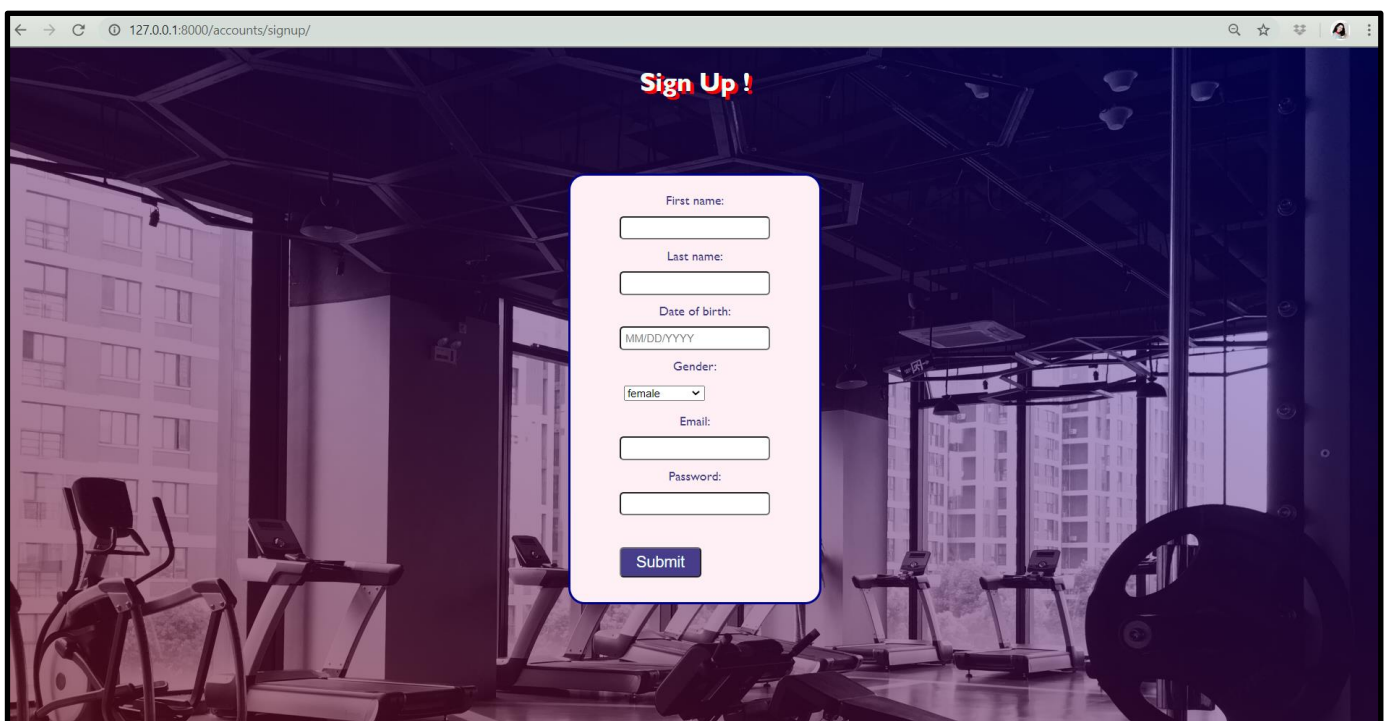


Image 2. Sign Up Page

2.2 LOGIN

Unlike sign up form, every User in the system can log in to the system. User identification and verification is done through 'email' and 'password' fields.

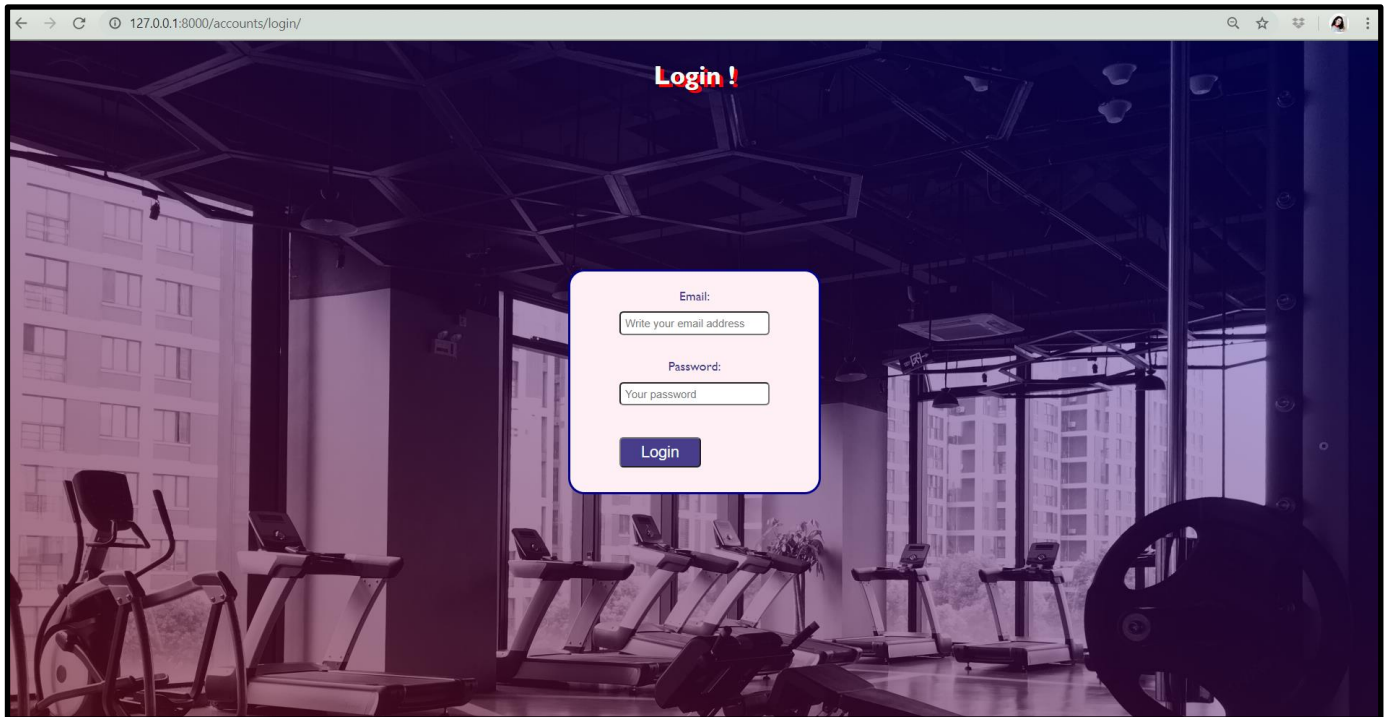


Image 3. Login Page

If the user tries to enter into the system without specifying email and password, system shows a message on the page. Likewise, if the email does not exist or the password is wrong the system shows different messages indicating the mistakes.

2.3 MANAGER

Managers already exist in the system. They can log in with login page. Here is the home page after a successful login:

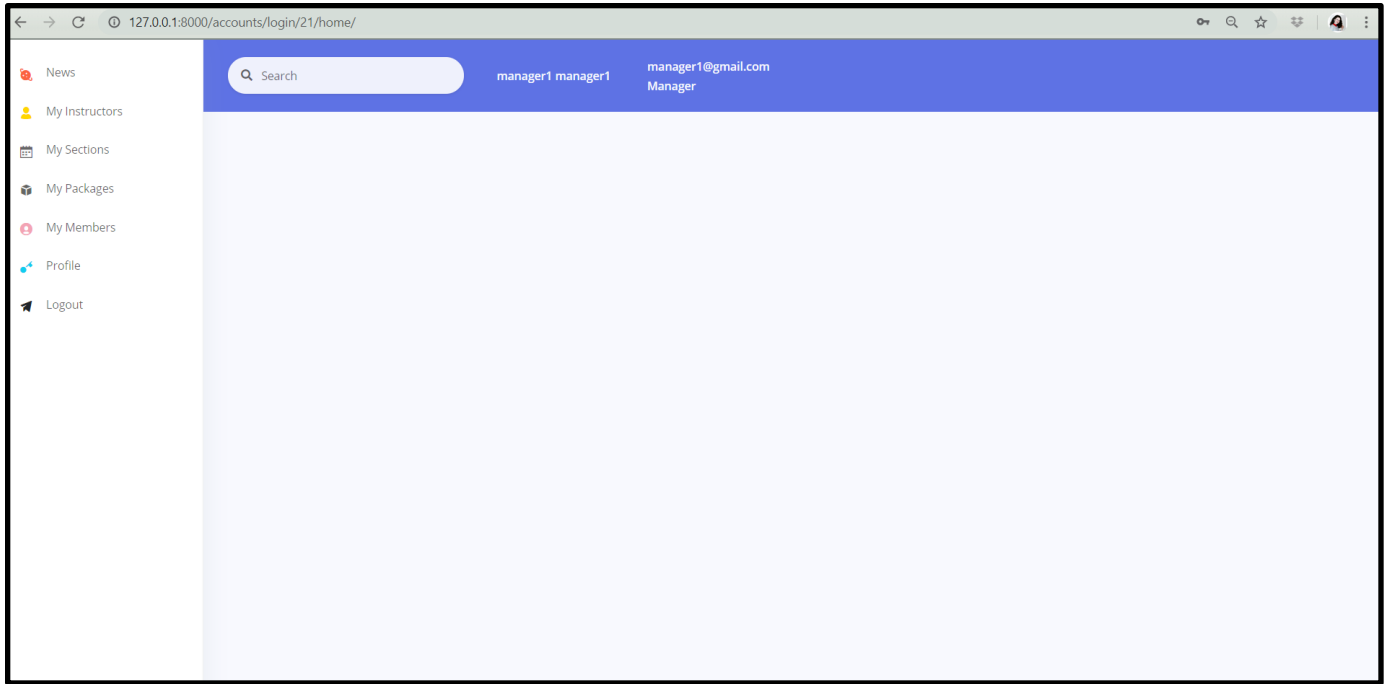


Image 4. Home

On the left side, there is a navigation bar. As you can see, a manager can access News, Instructors, Sections, Packages, Members and his/her own profile information. There is a logout button on the left which lets you log out of the system and redirects you to login page. In the url, we hold the logged in user's 'user_id' and from that information we can get the active user information when it is needed.

2.3.1 News

A manager can views the News written by instructors.

TITLE	DATE	LIKES	INSTRUCTOR
Pilatesin 10 Şaşırtıcı Faydası	June 4, 2020, 5:43 p.m.	0	instructor1 instructor1
Yoganın Faydaları	June 4, 2020, 5:40 p.m.	0	instructor1 instructor1
Yeni Başlayanlar İçin Ağırlık İdmanları	June 4, 2020, 5:38 p.m.	0	instructor2 instructor2
Spor ve Kahve İlişkisi	June 4, 2020, 5:36 p.m.	0	instructor2 instructor2
Antrenman Öncesi Beslenme Nasıl Olmalı?	June 4, 2020, 5:29 p.m.	0	instructor3 instructor3
Spor yapmak için en uygun saat	June 4, 2020, 9:18 a.m.	0	instructor3 instructor3

Image 5. Listing News

NAME-SURNAME	EMAIL	DATE OF BIRTH
instructor1 instructor1	instructor1@gmail.com	March 16, 1988
instructor2 instructor2	instructor2@gmail.com	April 4, 1994
instructor3 instructor3	instructor3@gmail.com	July 18, 1987

Image 6. Listing Instructors, Update and Delete Buttons

2.3.2 My Rooms

A manager can list, update, delete and add rooms for their sports center.

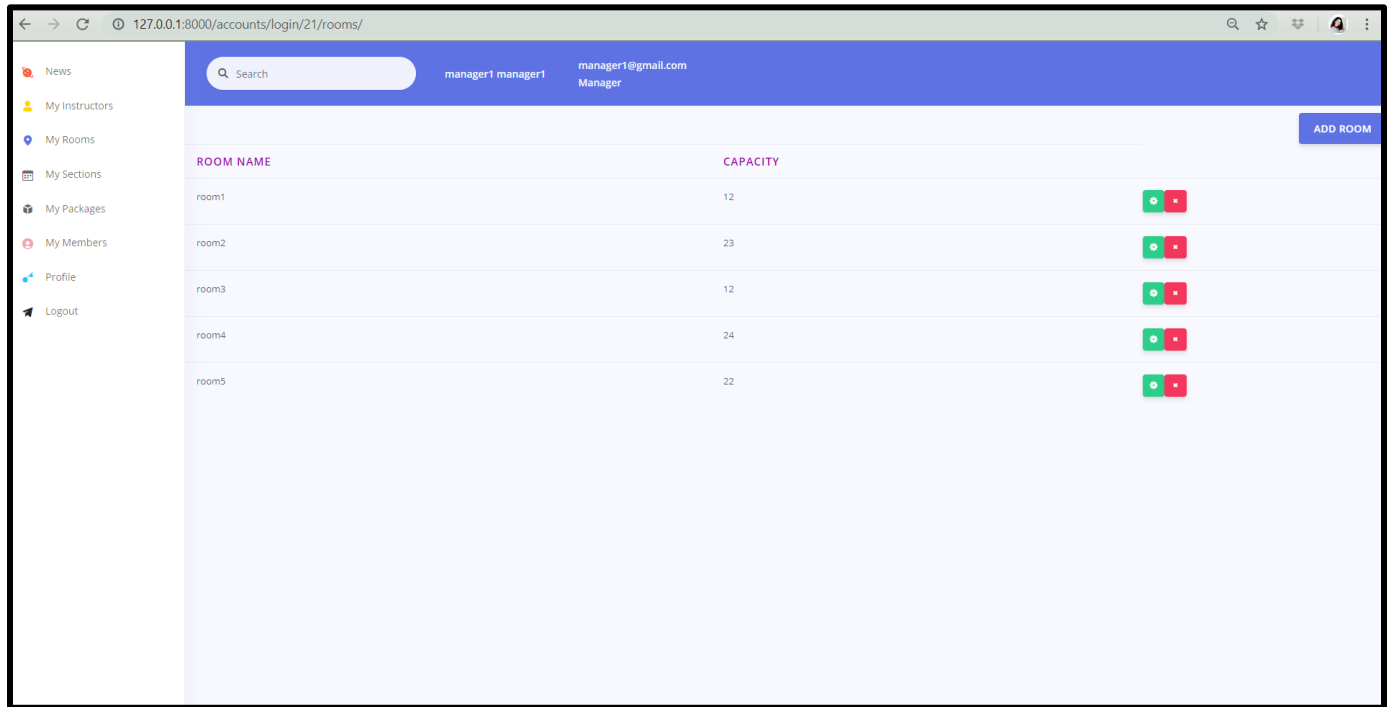


Image 7. Listing Rooms

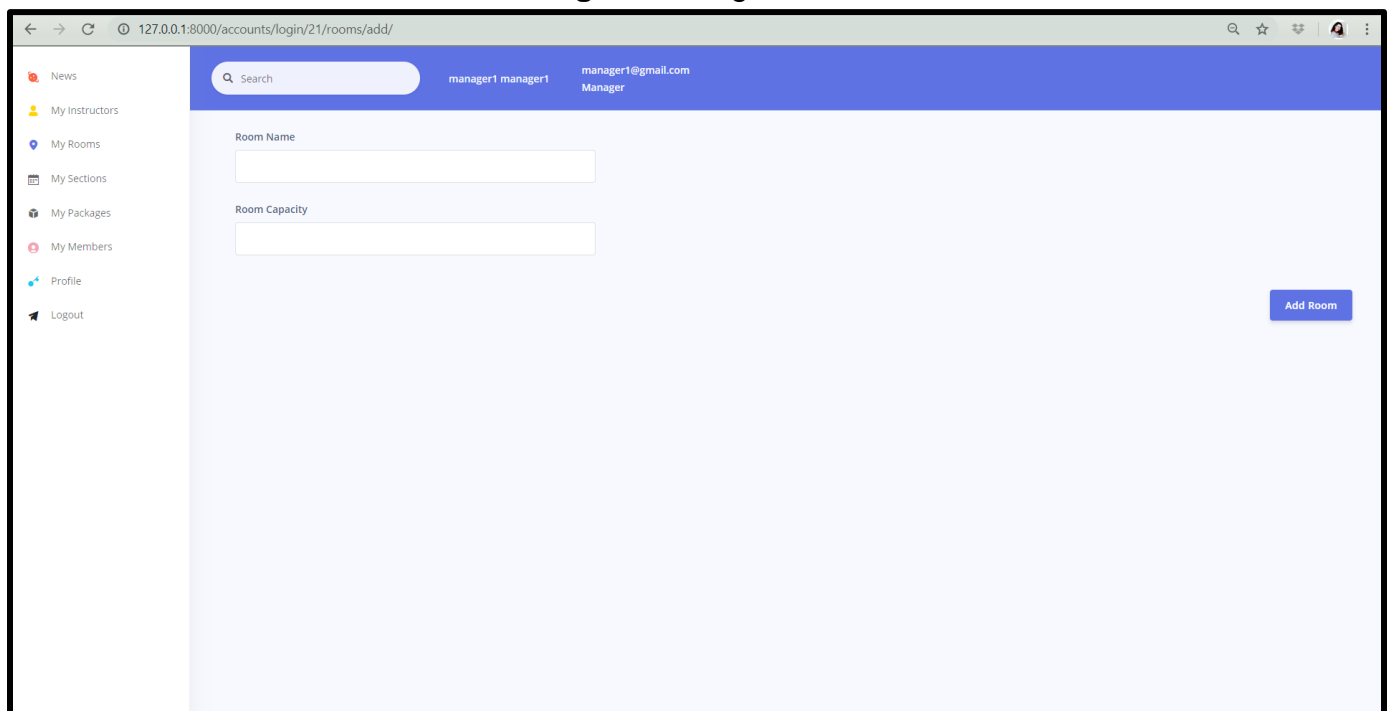
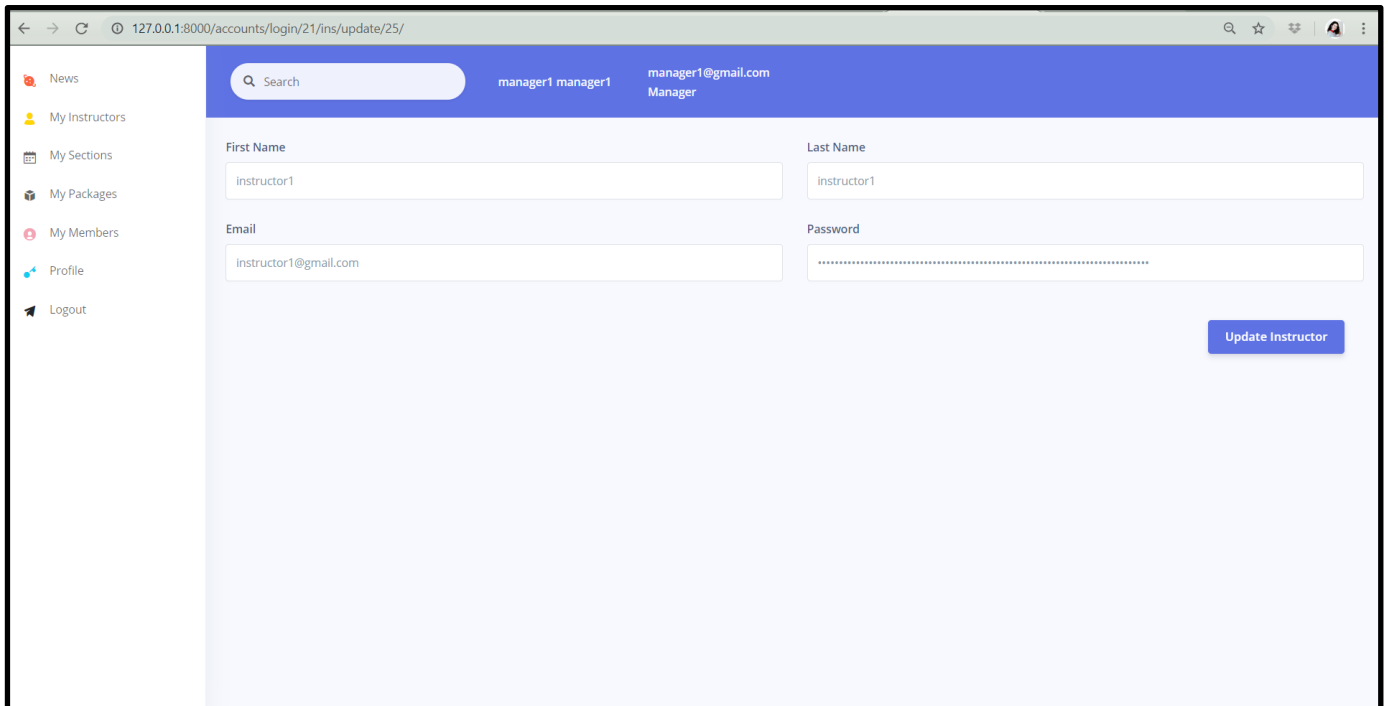


Image 8. Adding Room

2.3.3 My Instructors

A manager can list, update and delete the instructors in the system. From the green button on right, manager can update and from the red button on right



The screenshot shows a web browser window with the URL `127.0.0.1:8000/accounts/login/21/ins/update/25/`. The page has a blue header bar with a search input, the username `manager1 manager1`, and the email `manager1@gmail.com` with the role `Manager`. On the left is a sidebar menu with items: News, My Instructors (active), My Sections, My Packages, My Members, Profile, and Logout. The main content area is a form for updating an instructor. It contains four input fields: First Name (with value `instructor1`), Last Name (with value `instructor1`), Email (with value `instructor1@gmail.com`), and Password (with masked characters). A blue button labeled `Update Instructor` is located at the bottom right of the form.

Image 9. Updating Instructor

2.3.4 My Sections

A manager can list, create, update and delete sections in the system.











SECTION NAME	DAY	TIME	SERVICE	INSTRUCTOR	ROOM	
SABAH FITNESS	Thursday	9:05 p.m. 10:05 p.m.	Pilates	Instructor2 Instructor2	room3	 
TEMPOLU EGZERSİZ	Friday	6:20 p.m. 9:20 p.m.	Fitness	Instructor3 Instructor3	room3	 
ZUMBA	Wednesday	11:30 a.m. 12:45 p.m.	Zumba	Instructor2 Instructor2	room3	 
KARDİYO EGZERSİZİ	Monday	4:15 p.m. 5:35 p.m.	Crossfit	Instructor3 Instructor3	room1	 
POWER YOGA	Thursday	11 a.m. noon	Yoga	Instructor1 Instructor1	room2	 

Image 10. Listing Sections

Section Name: SABAH FITNESS

Start Time: 21:05

End Time: 22:05

Choose a Day: Thursday

Choose a instructor: Instructor2 Instructor2

Choose a Room: room3

Choose a Service: Pilates

Update Section

Image 11. Updating Section

127.0.0.1:8000/accounts/login/21/section/add/

manager1 manager1 manager1@gmail.com Manager

Section Name

Start Time

End Time

Choose a Day: Monday

Choose a instructor: instructor3 instructor3

Choose a Room: room1

Choose a Service: Fitness

Add Section

Image 12. Creating Section

2.3.5 My Packages

A manager can list, create, update and delete packages. No one can create, update and delete packages other than the manager.

127.0.0.1:8000/accounts/login/21/pack/

manager1 manager1 manager1@gmail.com Manager

ADD PACKAGE













PACKAGE NAME	DURATION (DAYS)	PRICE	SERVICES	
YOGA & FITNESS	30	150	Yoga Pilates Crossfit	 
PILATES PAKETİ	21	312	Pilates	 
FULL FITNESS	365	1000	Fitness	 
YOGA & ZUMBA	120	500	Yoga Zumba	 
CROSSFIT & FITNESS	30	300	Fitness Crossfit	 
DANCE WORKOUT	30	250	Zumba	 

Image 13. Listing Packages

The screenshot shows a web browser window with the URL `127.0.0.1:8000/accounts/login/21/pack/add/`. The page has a blue header bar with a search bar, the username `manager1 manager1`, and the email `manager1@gmail.com` with the role `Manager`. On the left, there is a sidebar menu with links: `News`, `My Instructors`, `My Sections`, `My Packages`, `My Members`, `Profile`, and `Logout`. The main content area is a form for adding a new package. It includes three input fields: `Package Name` (containing `DANCE WORKOUT`), `Duration` (containing `30`), and `Price` (containing `250`). Below these fields is a section titled `Select Services` with a list of checkboxes: `Fitness` (checked), `Yoga`, `Pilates`, `Crossfit`, `Zumba` (checked), and `Calisthenics`. An `Add Package` button is located at the bottom right of the form.

Image 14. Adding Packages

2.3.6 My Members

A manager can list all the customers who are enrolled(bought a package) into his/her sports center.

MEMBER	PACKAGE	BEGIN DATE	DURATION (DAYS)
ayse yilmaz (ayseyilmaz@gmail.com)	CROSSFIT & FITNESS	June 4, 2020, 7:27 p.m.	30
ayse yilmaz (ayseyilmaz@gmail.com)	YOGA & FITNESS	June 4, 2020, 7:27 p.m.	30
ali yilmaz (ali@gmail.com)	CROSSFIT & FITNESS	June 4, 2020, 7:27 p.m.	30
ali yilmaz (ali@gmail.com)	YOGA & FITNESS	June 4, 2020, 7:26 p.m.	30

Image 15. Listing Members

2.4 INSTRUCTOR

2.3.1 News

An instructor is created by a manager. Instructor then can log in to the system. Only instructor can create, update news.

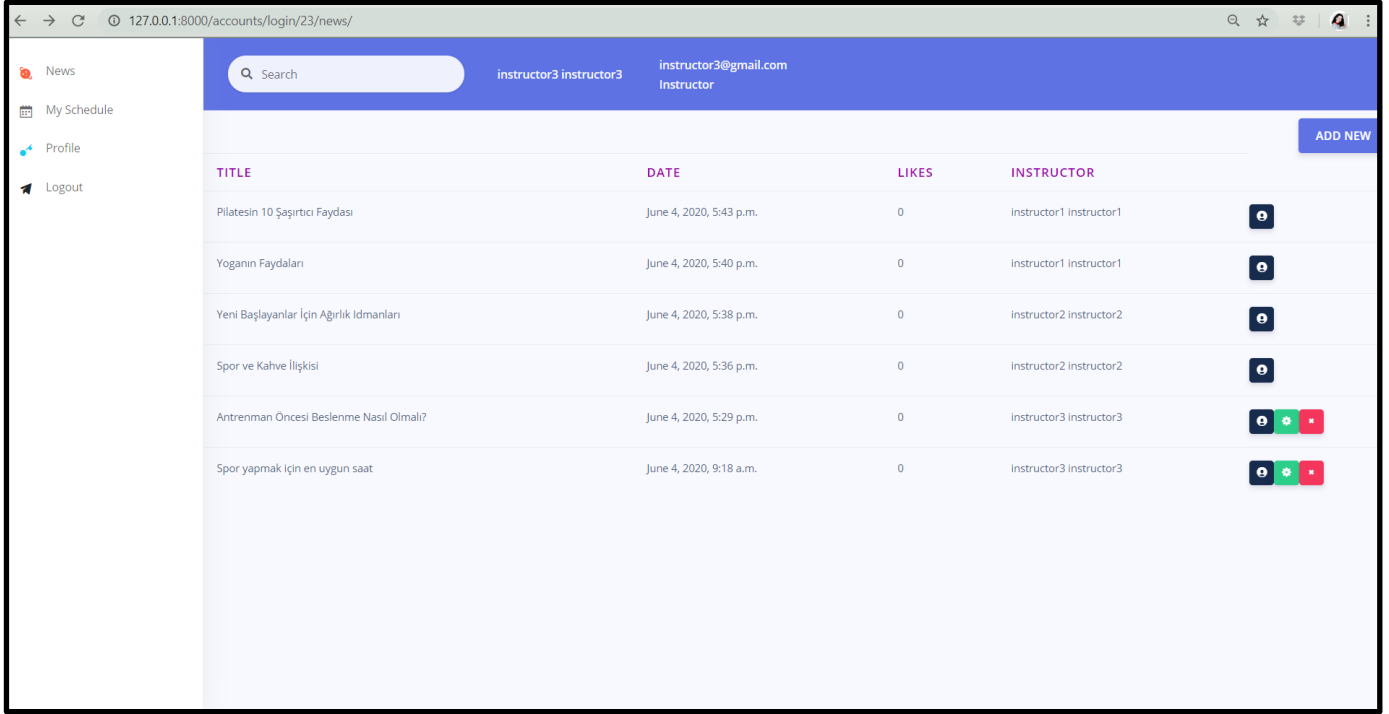


Image 16. Listing News

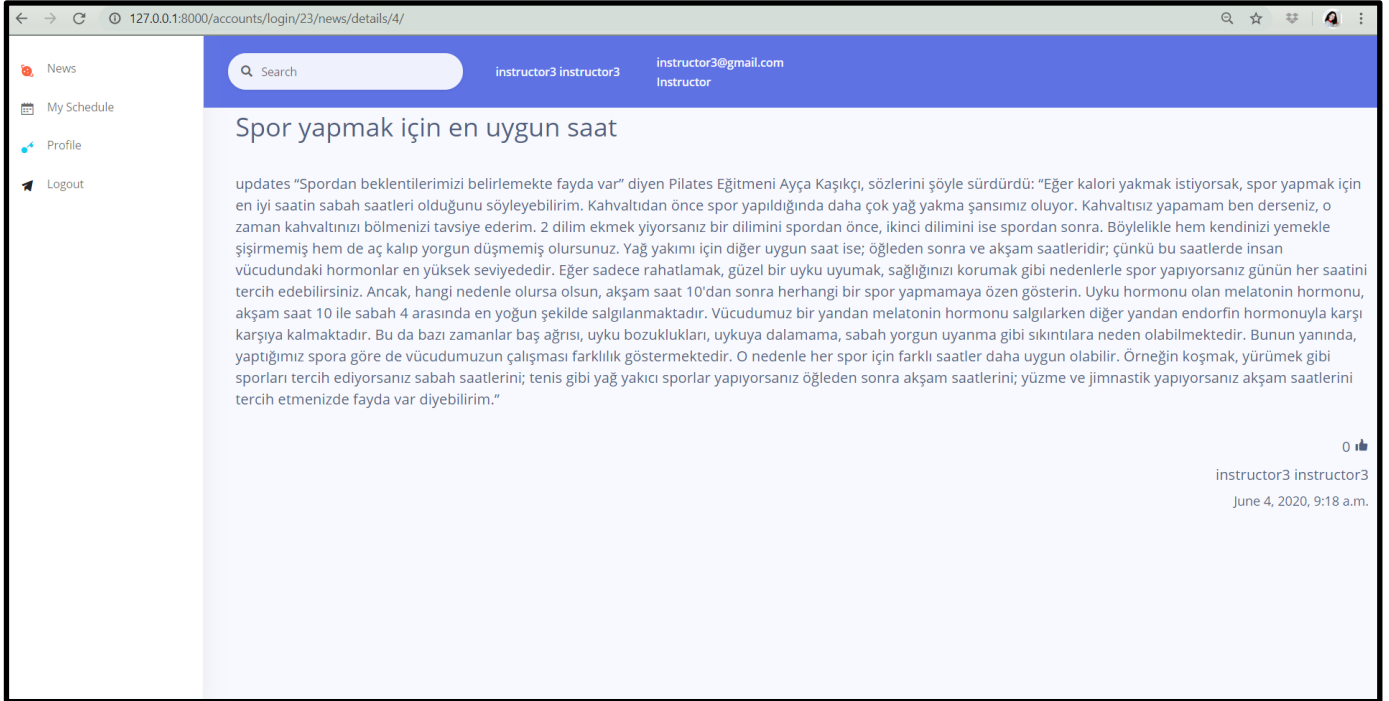


Image 17. View News Detail

127.0.0.1:8000/accounts/login/23/news/update/4/?csrfmiddlewaretoken=cojGitjv2FOwp9hRUMBiVEgugfcUsoQmxXfaMcu86zy9MrbDFEfk6YdcgSha3CKo

News

My Schedule

Profile

Logout

Search

instructor3 instructor3

instructor3@gmail.com
Instructor

Title

Spor yapmak için en uygun saat

Description

updates

"Spordan beklentilerimizi belirlemek fayda var" diyen Pilates Eğitmeni Ayça Kaşıkçı, sözlerini şöyle sürdürdü: "Eğer kalori yakmak istiyorsak, spor yapmak için en iyi saatin sabah saatleri olduğunu söyleyebilirim. Kahvaltıdan önce spor yapıldığında daha çok yağ yakma şansımız oluyor. Kahvaltıyı yapmam ben dersiniz, o zaman kahvaltınızı bölmenizi tavsiye ederim. 2 dilim ekmek yiyorsanız bir dilimini spordan önce, ikinci dilimini ise spordan sonra. Böylelikle hem kendinizi yemekle şırmemiş hem de aç kalıp yorgun düşmemiş olursunuz. Yağ yakımı için diğer uygun saat ise; öğleden sonra ve akşam saatleridir, çünkü bu saatlerde insan vücudundaki hormonlar en yüksek seviyededir.

Eğer sadece rahatlamak, güzel bir uyku uyumak, sağlığını korumak gibi nedenlerle spor yapıyorsanız günün her saatini tercih edebilirsiniz. Ancak, hangi nedenle olursa olsun, akşam saat 10'dan sonra herhangi bir spor yapmamaya özen gösterin. Uyku hormonu olan melatonin hormonu, akşam saat 10 ile sabah 4 arasında en yoğun şekilde salgılanmaktadır. Vücudumuz bir yandan melatonin

Update New

Image 18. Updating News

127.0.0.1:8000/accounts/login/23/news/add/

News

My Schedule

Profile

Logout

Search

instructor3 instructor3

instructor3@gmail.com
Instructor

Title

Description

Add New

Image 19. Create News

2.3.1 My Schedule

An Instructor can view his/her schedule.

ROOM	DAY	START-FINISH	SERVICE
room1	Thursday	10:05 p.m. 11:05 p.m.	Fitness
room1	Monday	4:15 p.m. 5:35 p.m.	Crossfit
room3	Friday	6:20 p.m. 9:20 p.m.	Fitness

Image 20. View Schedule

Every User in the system, can view his/her profile. From the button on the right, user can change password by verifying the new password.

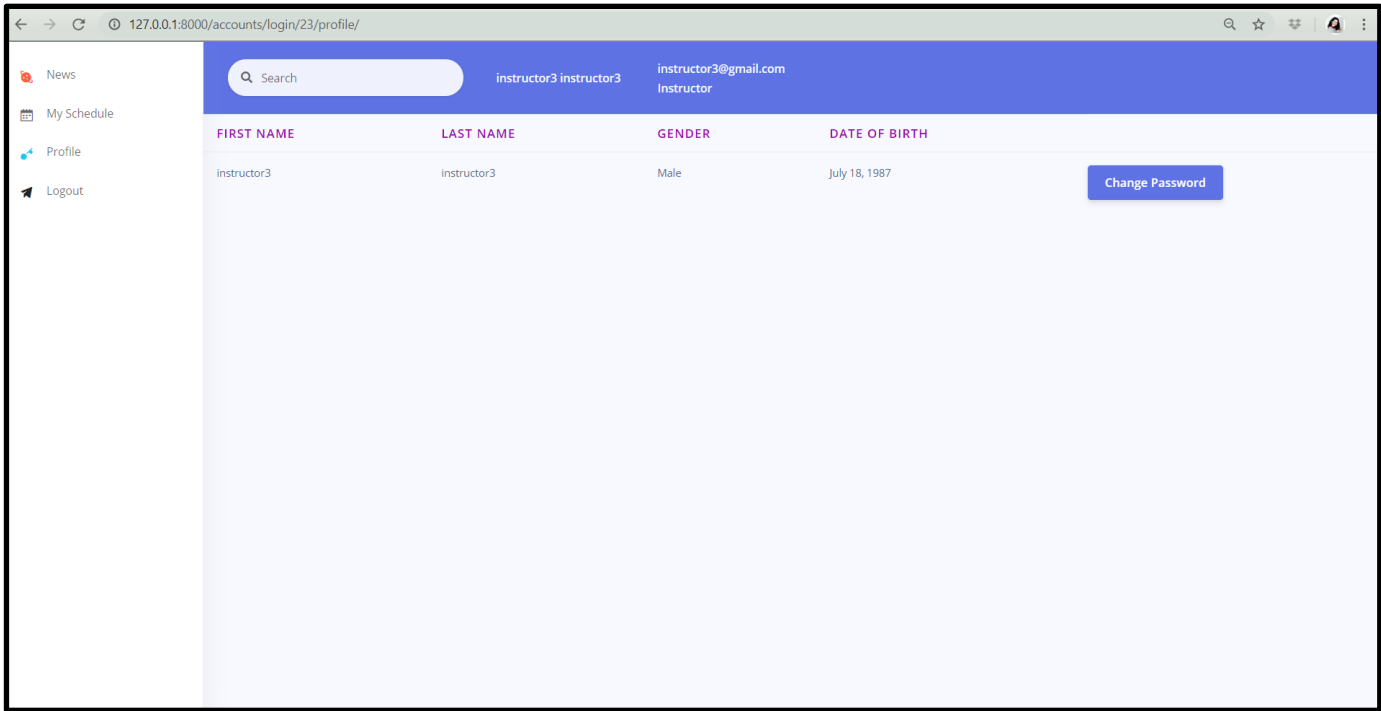


Image 21. Profile

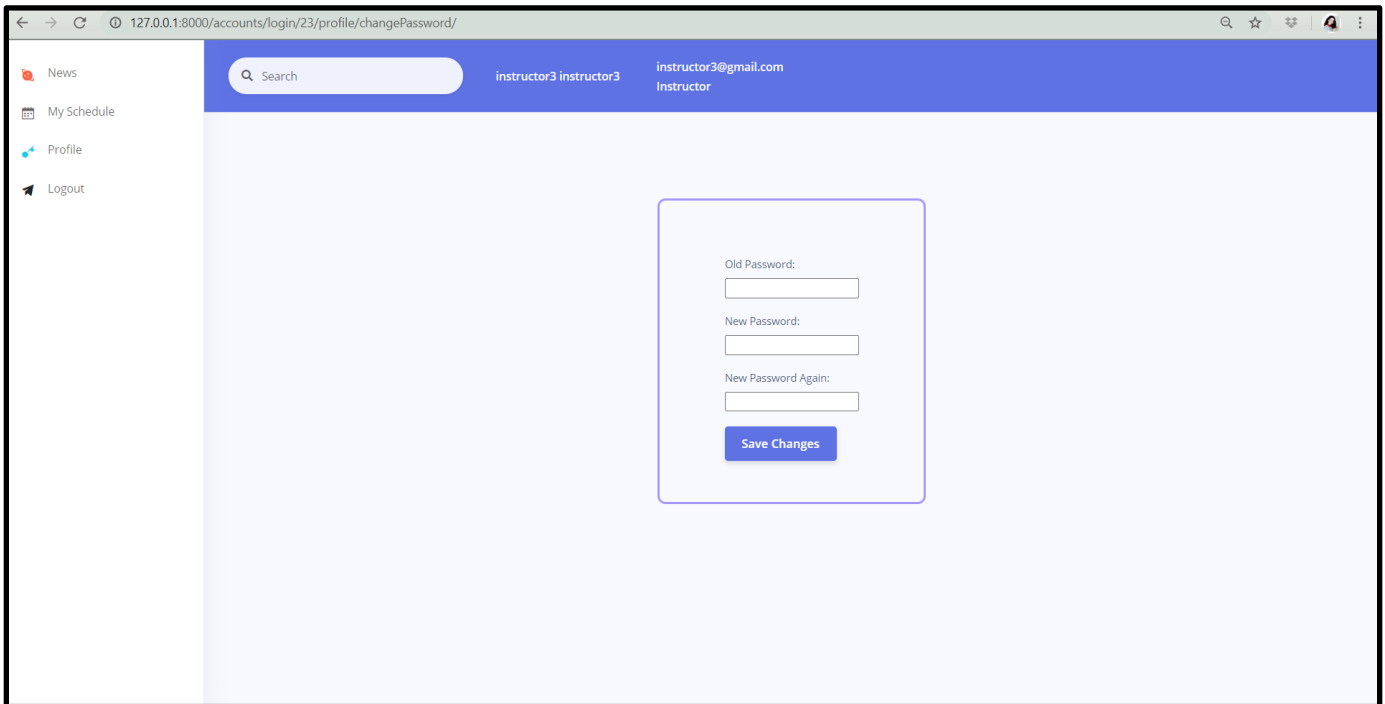
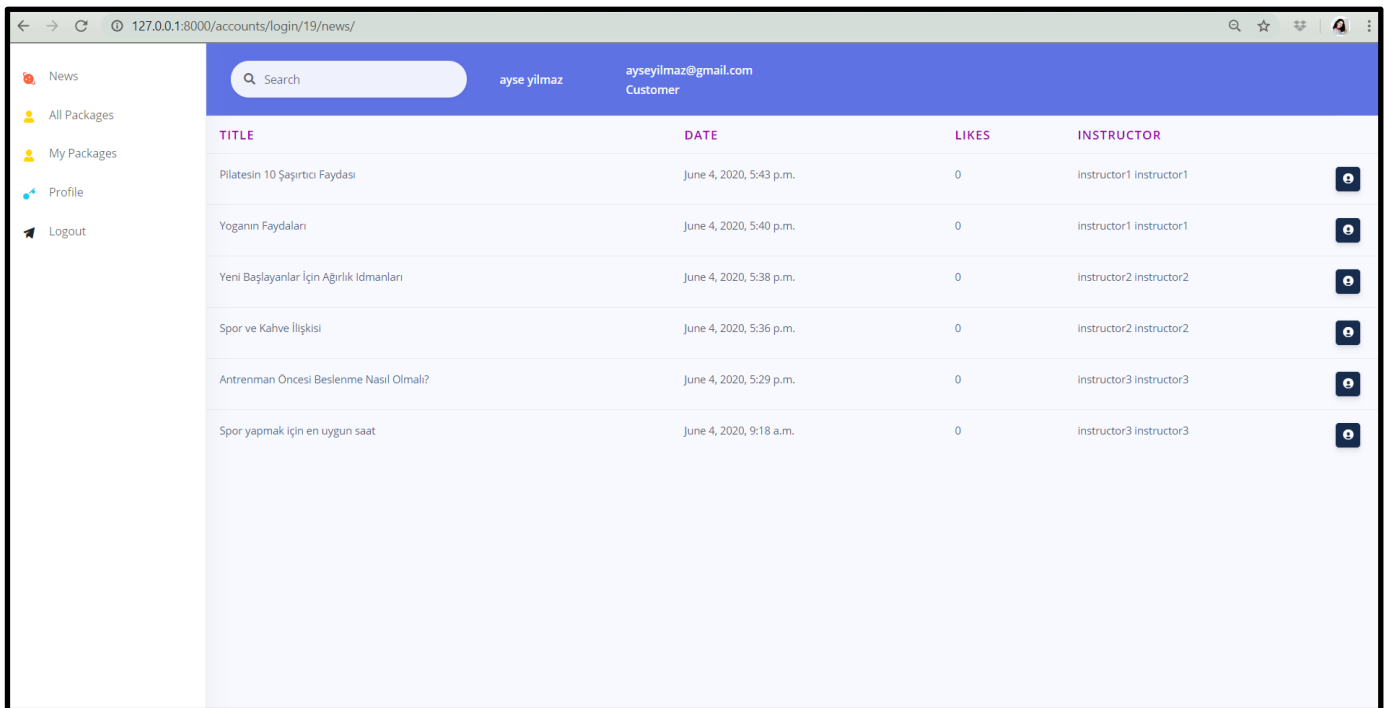


Image 22. Change Password

2.5 CUSTOMER

2.5.1 News

A customer can only list and view the details of the news which are created by the instructors.



TITLE	DATE	LIKES	INSTRUCTOR
Pilatesin 10 Şaşırtıcı Faydası	June 4, 2020, 5:43 p.m.	0	instructor1 instructor1
Yoga'nın Faydaları	June 4, 2020, 5:40 p.m.	0	instructor1 instructor1
Yeni Başlayanlar İçin Ağırılık İdmanları	June 4, 2020, 5:38 p.m.	0	instructor2 instructor2
Spor ve Kahve İlişkisi	June 4, 2020, 5:36 p.m.	0	instructor2 instructor2
Antrenman Öncesi Beslenme Nasıl Olmalı?	June 4, 2020, 5:29 p.m.	0	instructor3 instructor3
Spor yapmak için en uygun saat	June 4, 2020, 9:18 a.m.	0	instructor3 instructor3

Image 21. Listing the News



Image 22. Details of the News

2.5.2 All Packages

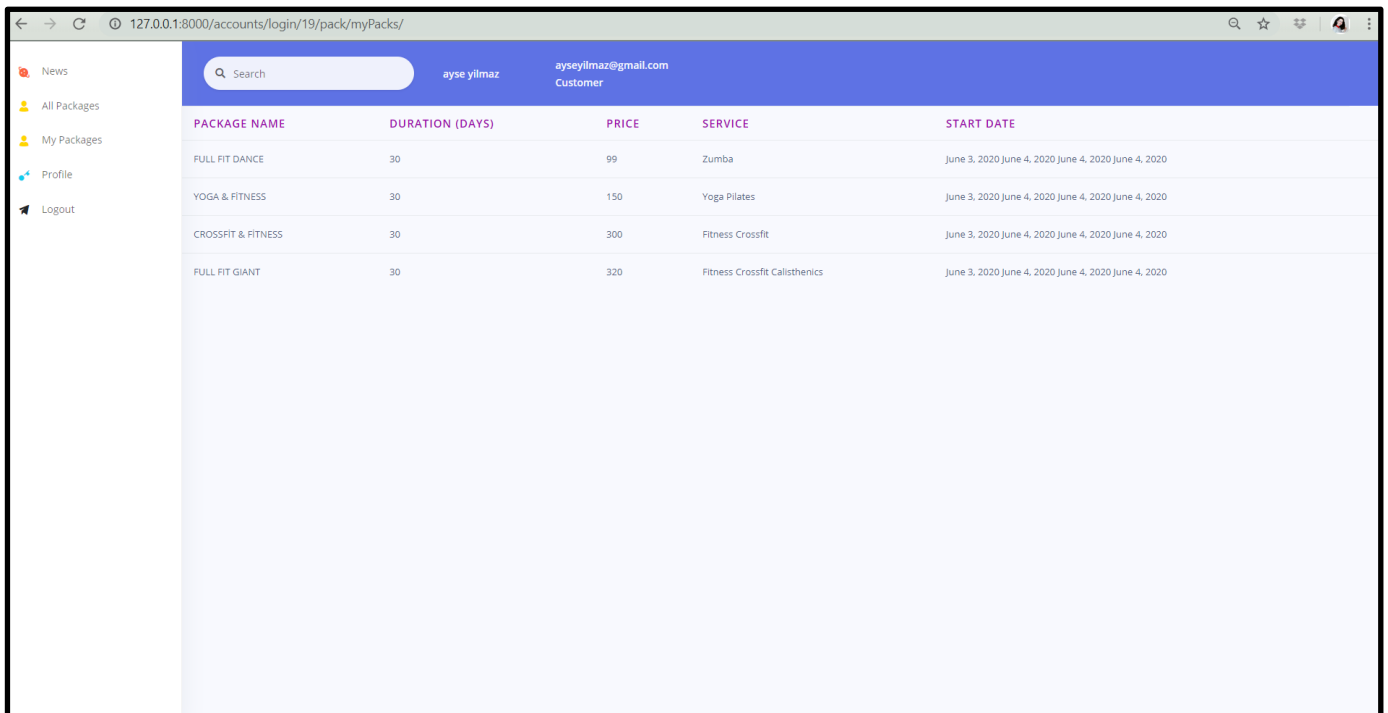
A customer can list all the packages that exist in the system. With the button on the right, he/she can buy a package or more.

PACKAGE NAME	DURATION (DAYS)	PRICE	SERVICES	
FULL FIT GIANT	30	320	Fitness Crossfit Calisthenics	Buy
FULL FIT RELAX	30	170	Yoga Pilates	Buy
FULL FIT DANCE	30	99	Zumba	Buy
FULL FIT FULL PACKAGE 2	302	4002	Pilates	Buy
PILATES PAKETİ	21	312	Pilates	Buy
FULL FITNESS	365	1000	Fitness	Buy
DANCE WORKOUT	30	250	Zumba	Buy
YOGA & ZUMBA	120	500	Yoga Zumba	Buy
CROSSFIT & FITNESS	30	300	Fitness Crossfit	Buy
YOGA & FITNESS	30	150	Yoga Pilates	Buy

Image 23. Listing Packages

2.5.2 My Packages

A customer can list the packages that he/she bought.



PACKAGE NAME	DURATION (DAYS)	PRICE	SERVICE	START DATE
FULL FIT DANCE	30	99	Zumba	June 3, 2020 June 4, 2020 June 4, 2020 June 4, 2020
YOGA & FITNESS	30	150	Yoga Pilates	June 3, 2020 June 4, 2020 June 4, 2020 June 4, 2020
CROSSFIT & FITNESS	30	300	Fitness Crossfit	June 3, 2020 June 4, 2020 June 4, 2020 June 4, 2020
FULL FIT GIANT	30	320	Fitness Crossfit Calisthenics	June 3, 2020 June 4, 2020 June 4, 2020 June 4, 2020

Image 24. My Packages

3. REQUIREMENTS & CONSTRAINTS

- Sport Center must have at least one instructor and one manager.
- There should be only one instructor in the Section.
- Only one service can be provided in the Section.
- Sport Center must have at least one package.
- Package must contain at least one Service.
- Sport Center must have an Address.
- News can only be written by an Instructor.

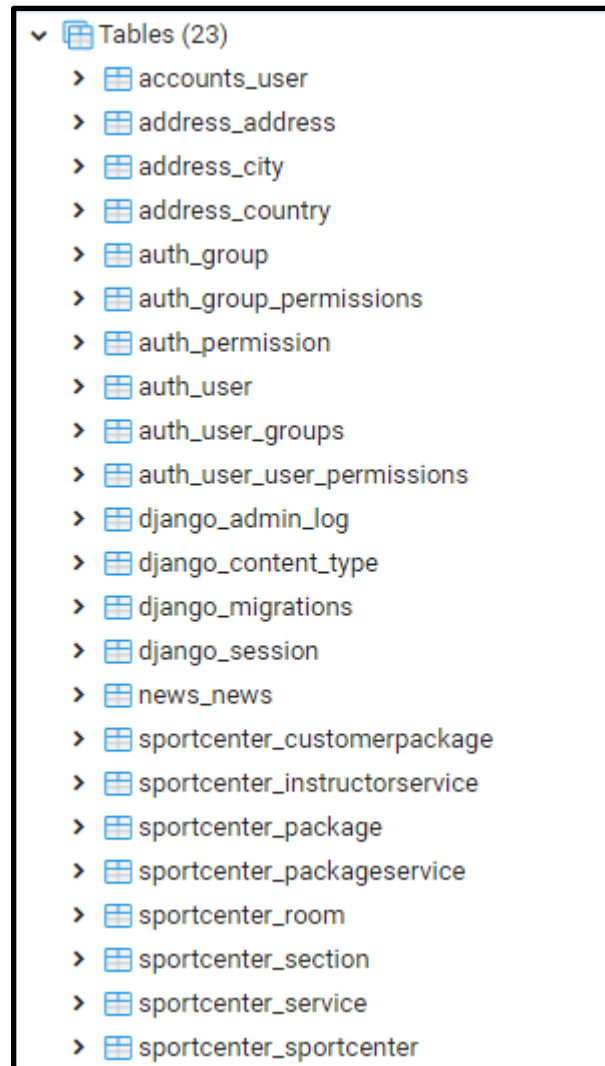
In the application, there are a lot of input fields and forms. They are required to be filled by the user. To be able to prevent submitting empty data, we checked the fields. If the necessary fields are not filled, then the system renders a message to the user. In almost every html file and views, we used these checks to guide the user. Here is an example code:

```
def change_password_action(request, user_id):
    active_user = User.objects.get(pk=user_id)
    password = request.POST.get('old_password')
    if len(password) > 0 and check_password(password, active_user.password):
        new_password = request.POST.get('new_password')
        new_password_again = request.POST.get('new_password_again')
        if len(new_password) > 0 and len(new_password_again) > 0:
            if new_password == new_password_again:
                active_user.password = make_password(new_password)
                active_user.save()
            else:
                messages.error(request, 'New passwords do not match!')
                return render(request, 'sportcenter/change_password.html',
                              {'active_user': active_user})
        else:
            messages.error(request, 'Please fill the blanks!')
            return render(request, 'sportcenter/change_password.html',
                          {'active_user': active_user})
    else:
        messages.error(request, 'Password is not correct!')
        return render(request, 'sportcenter/change_password.html',
                      {'active_user': active_user})

    return render(request, 'sportcenter/profile.html',
                  {'active_user': active_user})
```

4. TABLES

As previously mentioned, we used postgresql as a database. Our Relation Tables are like this. Also, these tables and their features are shown in the diagram below.



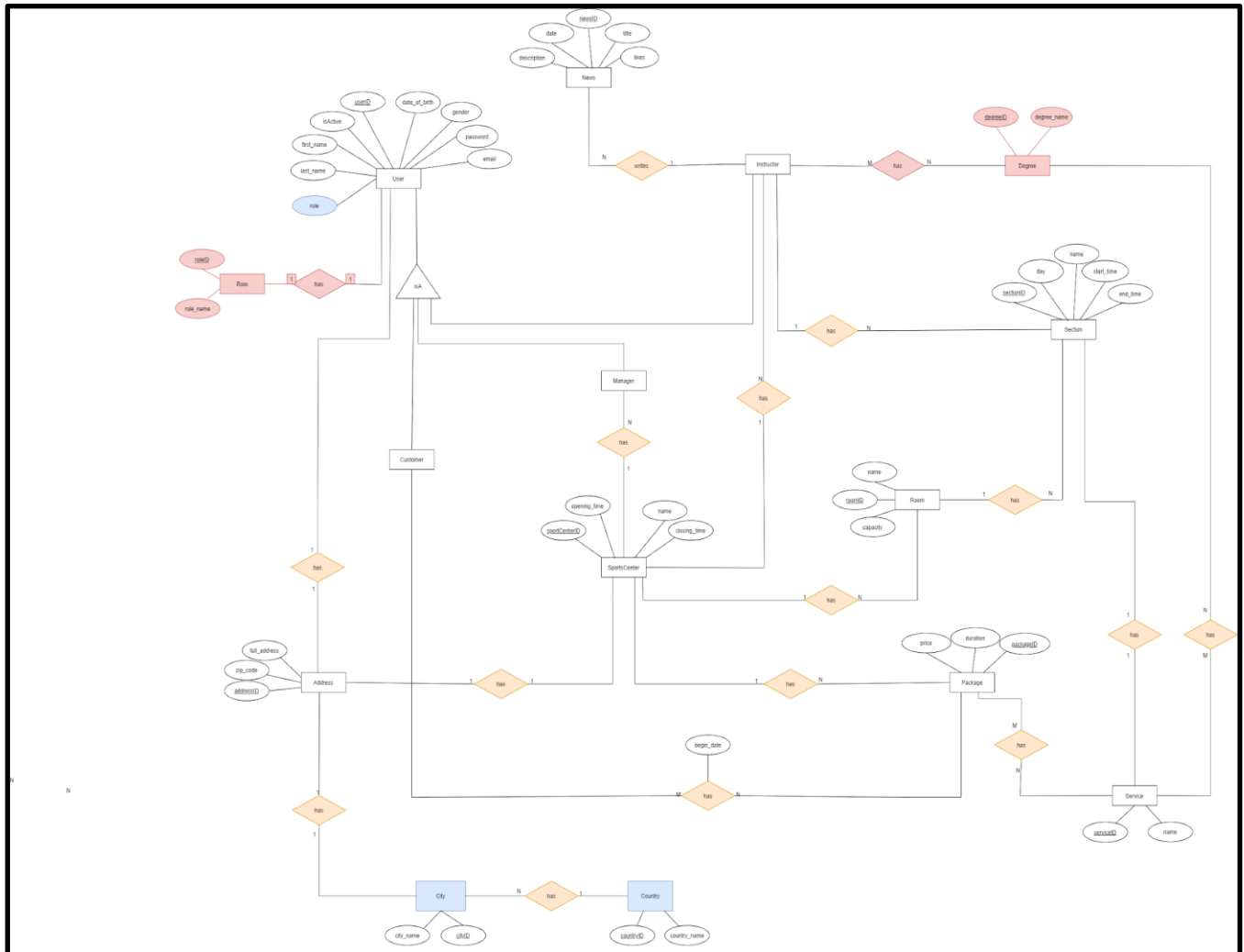
```

5 CREATE TABLE public.sportcenter_sportcenter
6 (
7     id integer NOT NULL DEFAULT nextval('sportcenter_sportcenter_id_seq'::regclass),
8     sport_center_name character varying(100) COLLATE pg_catalog."default" NOT NULL,
9     opening_time time without time zone NOT NULL,
10    closing_time time without time zone NOT NULL,
11    address_id_id integer NOT NULL,
12    CONSTRAINT sportcenter_sportcenter_pkey PRIMARY KEY (id),
13    CONSTRAINT sportcenter_sportcen_address_id_id_a08ca636_fk_address_a FOREIGN KEY (address_id_id)
14        REFERENCES public.address_address (id) MATCH SIMPLE
15        ON UPDATE NO ACTION
16        ON DELETE NO ACTION
17        DEFERRABLE INITIALLY DEFERRED
18 )
19
20 TABLESPACE pg_default;
21
22 ALTER TABLE public.sportcenter_sportcenter
23     OWNER to postgres;
24 -- Index: sportcenter_sportcenter_address_id_id_a08ca636
25
26 -- DROP INDEX public.sportcenter_sportcenter_address_id_id_a08ca636;
27
28 CREATE INDEX sportcenter_sportcenter_address_id_id_a08ca636
29     ON public.sportcenter_sportcenter USING btree
30     (address_id_id ASC NULLS LAST)
31     TABLESPACE pg_default;

```

Table 1. Example

5. RELATIONS



The red color means drop the relations, entity or attributes.

The blue color means change the relations, entity or attributes.

Diagram links for high resolution:

<https://drive.google.com/file/d/15JX4KzggBYfe8CVjpUZ2xUhQOyKJ3LZt/view?ts=5e823345>

One-to-one relationships:

- User Address: User can only have one address.
- Sportscenter-Address: Sportscenter can only have one address.
- Address-City: The address can contain only one city.
- Section-Service: Section can give only one service

One to many relations:

- Instructor-News :We choose one to many relation for instructor-news relation because an instructor can write many news into the system.
- Country-City: We choose one to many relations for country-city relations because countries have many cities.
- Instructor-Section: We choose one to many relation for instructor-section relation because instructors can join the many sections.
- Sportscenter-Manager: We choose one to many relation for spotcenter-manager relation because a sportscenter can has a lot of managers.
- Sportscenter-Instructor: We choose one to many relation for spotcenter-instructor relation because a sportscenter can have a lot of instructors.
- Sportscenter-Package: We choose one to many relation for spotcenter-package relation because a sportscenter can sell a lot of packages.
- Sportscenter-Room: We choose one to many relation for sportscenter-room relation because a sportscenter can has a lot of rooms.
- Room-Section: We choose one to many relation for room-section relation because room can be used by many sections.

Many to many relations:

-Package-Service : We choose many to many relation for package-service relation because a package can include a lot of services and a service can select by a lot of packages.

-Customer-Package: We choose many to many relation for customer-package relation because a customer can buy a lot of packages and a package can be bought by a lot of customers.

-Instructor-Service : We choose many to many relation for instructor-service relation because an instructor can give a lot of services and a service is given by a lot of instructors.

6. RUN THE APPLICATION

You can either sign up as a customer or use one of the users that are already exist in the database. You can login with manager and create instructor and then login with it if you do not want to use the instructor given below. However, you need to use the manager given below since we assume that manager already exists in the database. If we could let users to specify which role are they, that would cause security problems.

Manager email : manager1@gmail.com

Manager password: 123456

Instructor email: instructor3@gmail.com

Instructor password: ins312

/. REFERENCES

- <https://docs.djangoproject.com/en/3.0/>
- <https://www.youtube.com/playlist?list=PL4cUxeGkcC9ib4HsrXEYpQnTOTZE1x0uc>
- <https://getbootstrap.com/docs/4.1>
- <https://www.elephantsql.com/>