

**Final Year Project,**

**Technical Manual,**

**Gym and Analytical App/Dashboard.**

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# Models

## Recorded\_workout.model.ts

export class RecordedWorkout {

    constructor(

        public id: string,

        public title: string,

        public date: Date,

        public notes: string,

        public exercises: string[],

        public weights: number[],

    ) {}

}

## User.model.ts

export class User {

    constructor(

        public id: string,

        public name: string,

        public email: string,

        public userType: string,

        public bodyWeigth: number,

        public height: number,

    ) {}

}

## Workout.model.ts

export class Workout {

    constructor(

        public id: string,

        public title: string,

        public description: string,

        public exercises: string[],

        public sets: number[],

        public reps: number[]

    ) {}

}

# Private

## Create-workout

### Create-workout.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/view-workouts"></ion-back-button></ion-buttons>

    <ion-title>Create Workout</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <form [formGroup]="form" (ngSubmit)="createWorkout()">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Name</ion-label>

          <ion-input type="text" clear-input required="true" autocomplete autocorrect formControlName="title"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Description</ion-label>

          <ion-input type="text" clear-input required="true" autocomplete autocorrect formControlName="description"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-row>

        <ion-col size="6">

        <div formArrayName="exercises" \*ngFor="let exercise of exercises.controls; let i=index">

          <ion-item>

            <ion-label position="floating">Exercises</ion-label>

            <ion-select [formControlName]="i" okText="Okay" cancelText="Cancel" required="true">

              <ion-select-option value="Bench Press">Bench Press</ion-select-option>

              <ion-select-option value="Squat">Squat</ion-select-option>

              <ion-select-option value="Deadlift">Deadlift</ion-select-option>

              <ion-select-option value="Pull Ups">Pull Ups</ion-select-option>

              <ion-select-option value="Shoulder Press">Shoulder Press</ion-select-option>

              <ion-select-option value="Dumbell Curls">Dumbell Curls</ion-select-option>

              <ion-select-option value="Barbell Curls">Barbell Curls</ion-select-option>

              <ion-select-option value="Leg Curls">Leg Curls</ion-select-option>

              <ion-select-option value="Pec Flies">Pec Flies</ion-select-option>

              <ion-select-option value="Chest Press">Chest Press</ion-select-option>

              <ion-select-option value="Incline Barbell Press">Incline Barbell Press</ion-select-option>

              <ion-select-option value="Barbell Row">Barbell Row</ion-select-option>

              <ion-select-option value="Penlay Row">Penlay Row</ion-select-option>

              <ion-select-option value="Leg Extensions">Leg Extensions</ion-select-option>

              <ion-select-option value="Block Pull Deadlifts">Block Pull Deadlifts</ion-select-option>

              <ion-select-option value="Deficit Deadlifts">Deficit Deadlifts</ion-select-option>

              <ion-select-option value="Chin Ups">Chin Ups</ion-select-option>

              <ion-select-option value="Push Ups">Push Ups</ion-select-option>

              <ion-select-option value="Sit Ups">Sit Ups</ion-select-option>

              <ion-select-option value="Lateral Pull Down">Lateral Pull Down</ion-select-option>

              <ion-select-option value="Tricep Extensions">Tricep Extensions</ion-select-option>

              <ion-select-option value="Hammer Curls">Hammer Curls</ion-select-option>

            </ion-select>

          </ion-item>

        </div>

        </ion-col>

        <ion-col>

        <div formArrayName="sets" \*ngFor="let set of sets.controls; let i=index">

          <ion-item>

            <ion-label position="floating">Sets</ion-label>

            <ion-input type="number" clear-input [formControlName]="i" expand="full" required="true"></ion-input>

          </ion-item>

        </div>

        </ion-col>

        <ion-col>

        <div formArrayName="reps" \*ngFor="let rep of reps.controls; let i=index">

          <ion-item>

            <ion-label position="floating">Reps</ion-label>

            <ion-input type="number" clear-input [formControlName]="i" required="true"></ion-input>

          </ion-item>

        </div>

        </ion-col>

        </ion-row>

      </ion-col>

    </ion-row>

  </form>

</ion-content>

<ion-footer>

  <div padding>

    <div>

      <ion-button color="dark"  size="large" expand="full" [disabled]="exercises.length === 1"  (click)="removeExercise()">Remove Exercise</ion-button>

    </div>

    <div>

      <ion-button color="dark"  size="large" expand="full" [disabled]="this.form.value.exercises[this.form.value.exercises.length - 1] === '' || this.form.value.sets[this.form.value.sets.length - 1] === '' || this.form.value.reps[this.form.value.reps.length - 1] === ''" (click)="addExercise()">Add Exercise</ion-button>

    </div>

    <div>

      <ion-button color="primary"  size="large" (click)="createWorkout()" [disabled]="!form.valid" expand="full">Create</ion-button>

    </div>

  </div>

</ion-footer>

### Create-workout.page.ts

import { Component, OnInit } from '@angular/core';

import { FormGroup, FormControl, Validators, FormArray, FormBuilder} from '@angular/forms';

import { AngularFirestoreCollection } from '@angular/fire/firestore';

import { HttpClient, HttpHeaders } from '@angular/common/http';

import { Workout } from '../../models/workout.model';

import { Injectable } from '@angular/core';

import { BehaviorSubject } from 'rxjs';

import { take, tap, delay, switchMap, map } from 'rxjs/operators';

import { WorkoutService } from '../../services/workout.service'

import { Router } from '@angular/router';

import { LoadingController } from '@ionic/angular';

@Component({

  selector: 'app-record-workout',

  templateUrl: './create-workout.page.html',

  styleUrls: ['./create-workout.page.scss'],

})

export class CreateWorkoutPage implements OnInit {

  form: FormGroup;

  isLoading = false;

  constructor(

    private fb: FormBuilder,

    public workoutServ: WorkoutService,

    public router: Router,

    private loadingCtrl: LoadingController

    ) { }

  ngOnInit() {

    this.form = new FormGroup({

      title: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      description: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      exercises: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      sets: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      reps: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      title: [''],

      description: [''],

      exercise: [''],

      exercises: this.fb.array(['']),

      set: [''],

      sets: this.fb.array(['']),

      rep: [''],

      reps: this.fb.array([''])

    });

  }

  get exercises() {

    return this.form.get('exercises') as FormArray;

  }

  get sets() {

    return this.form.get('sets') as FormArray;

  }

  get reps() {

    return this.form.get('reps') as FormArray;

  }

  addExercise() {

    this.exercises.push(this.fb.control(''));

    this.sets.push(this.fb.control(''));

    this.reps.push(this.fb.control(''));

  }

  removeExercise() {

    if(this.exercises.length > 1){

      this.exercises.removeAt(this.exercises.length - 1);

      this.sets.removeAt(this.sets.length - 1);

      this.reps.removeAt(this.reps.length - 1);

    } else {

      console.log("cant remove last exercise");

    }

  }

  createWorkout() {

    const newWorkout = new Workout(

      "",

      this.form.value.title,

      this.form.value.description,

      this.form.value.exercises,

      this.form.value.sets,

      this.form.value.reps,

    );

    console.log(newWorkout);

    this.loadingCtrl

        .create({ keyboardClose: true, message: 'Creating Workout...' })

        .then(loadingEl => {

          loadingEl.present();

          this.workoutServ.createWorkout(

            newWorkout

          ).subscribe(() => {

            this.isLoading = false;

            loadingEl.dismiss();

            this.router.navigateByUrl('/view-workouts');

          });

        });

  }

}

## Dashboard

### Dashboard.page.html

<ion-header>

  <ion-toolbar>

    <ion-button slot="start" fill="clear" (click)="logout()"><ion-icon color="primary" name="log-out"></ion-icon></ion-button>

    <ion-title>Revolute Fitness</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <ion-grid>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3" text-center>

        <h1>

           Welcome {{ this.userName }} !

        </h1>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

          <ion-button color="dark"  size="large" expand="full" routerLink='/view-workouts'>View Workouts</ion-button>

          <ion-button color="dark"  size="large" expand="full" routerLink='/record-workouts-view'>Record Workout</ion-button>

          <ion-button color="dark"  size="large" expand="full" routerLink='/view-recorded-workouts'>View Recorded Workouts</ion-button>

          <ion-button \*ngIf="userType == 'personal\_trainer'" color="dark"  size="large" expand="full" routerLink='/manage-clients'>Manage Clients</ion-button>

          <ion-button color="dark"  size="large" expand="full" routerLink='/user-stats'>View Stats</ion-button>

          <ion-button color="dark"  size="large" expand="full" (click)="openSite()">Exercise Analysis</ion-button>

        </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

### Dashboard.page.ts

import { Component, OnInit } from '@angular/core';

import { AngularFireAuth } from '@angular/fire/auth';

import { Router } from '@angular/router';

import { NgForm } from '@angular/forms';

import { LoadingController } from '@ionic/angular';

import { UserService } from '../../services/user.service';

import { User } from 'src/app/models/user.model';

import { InAppBrowser } from '@ionic-native/in-app-browser/ngx';

@Component({

  selector: 'app-dashboard',

  templateUrl: './dashboard.page.html',

  styleUrls: ['./dashboard.page.scss'],

})

export class DashboardPage implements OnInit {

  isLoading = false;

  isLogin = true;

  userType: string;

  userName: string;

  constructor(private authService: UserService,

              private router: Router,

              private loadingCtrl: LoadingController,

              private loginServ: UserService,

              private iab: InAppBrowser) { }

  ngOnInit() {

    this.userType = this.loginServ.currentUser.userType;

    this.userName = this.loginServ.currentUserName;

  }

  openSite() {

    this.iab.create('http://kquinn1998.pythonanywhere.com/','\_blank');

  }

  logout() {

    this.isLoading = true;

    this.authService.logout();

    this.loadingCtrl

      .create({ keyboardClose: true, message: 'Logging out...' })

      .then(loadingEl => {

        loadingEl.present();

        setTimeout(() => {

          this.isLoading = false;

          loadingEl.dismiss();

          this.router.navigateByUrl('/login');

        }, 1500);

      });

  }

}

## Manage-client-dashboard

### Manage-client-dashboard.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/manage-clients"></ion-back-button></ion-buttons>

    <ion-title>Manage Clients</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <ion-grid>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

          <ion-button color="dark"  size="large" expand="full" routerLink='/view-workouts'>View Workouts</ion-button>

          <ion-button color="dark"  size="large" expand="full" routerLink='/view-recorded-workouts'>View Recorded Workouts</ion-button>

          <ion-button color="dark"  size="large" expand="full" routerLink='/user-stats'>View Stats</ion-button>

        </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

## Manage-clients

### Manage-clients.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/dashboard"></ion-back-button></ion-buttons>

    <ion-title>Manage Clients</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <form #add\_client\_form="ngForm" (ngSubmit)="addClient(add\_client\_form)">

    <ion-grid>

      <ion-row color="dark" justify-content-center>

        <ion-col align-self-center size-md="8" size-lg="7" size-xs="12">

          <div text-center>

            <h2>Add Client</h2>

          </div>

          <div padding>

            <ion-item no-padding>

            <ion-input type="email" placeholder="yourclient@email.com" clear-input autocomplete ngModel name="email" required email></ion-input>

            </ion-item>

          </div>

          <div \*ngIf="errorMessage">

            <ion-label color="danger">{{ errorMessage }}</ion-label>

          </div>

          <div padding-top>

            <ion-button color="dark"  size="large" type="submit" expand="full">Add</ion-button>

          </div>

        </ion-col>

      </ion-row>

    </ion-grid>

  </form>

  <p \*ngIf="isLoading" class="ion-text-center"><ion-spinner color="primary"></ion-spinner></p>

  <ion-grid \*ngIf="!isLoading">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-list>

          <div \*ngFor="let client of clients">

            <ion-item-sliding padding-bottom padding-end>

              <ion-item (click)="manageClient(client.id)">

                  <ion-label class="ion-text-wrap">

                    <h1>{{ client.name }}</h1>

                  </ion-label>

                  <ion-icon slot="end" md="md-arrow-back"></ion-icon>

              </ion-item>

              <ion-item-options side="end" padding-bottom padding-end>

                <ion-item-option color="danger" (click)="deleteClient(client.id)" >Delete</ion-item-option>

              </ion-item-options>

            </ion-item-sliding>

          </div>

        </ion-list>

      </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

### Manage-clients.page.ts

import { Component, OnInit } from '@angular/core';

import { UserService } from 'src/app/services/user.service';

import { User } from 'src/app/models/user.model';

import { Subscription } from 'rxjs';

import { NgForm } from '@angular/forms';

import { Router } from '@angular/router';

@Component({

  selector: 'app-manage-clients',

  templateUrl: './manage-clients.page.html',

  styleUrls: ['./manage-clients.page.scss'],

})

export class ManageClientsPage implements OnInit {

  private userSub: Subscription;

  private clientSub: Subscription;

  users: User[] = [ ];

  clients: User[] = [ ];

  isLoading = false;

  errorMessage: string;

  constructor(private userServ: UserService,

              public router: Router) { }

  ngOnInit() {

    this.errorMessage = '';

    this.isLoading = true;

    this.userSub = this.userServ.users.subscribe(users => {

      this.users = users;

    });

    this.clientSub = this.userServ.clientUsers.subscribe(clients => {

      this.clients = clients;

      this.isLoading = false;

    });

  }

  ionViewWillEnter() {

    this.userServ.ptMode = false;

    this.isLoading = true;

    this.userServ.fetchUsers().subscribe(() => {

    });

    this.userServ.fetchClientUsers().subscribe(() => {

      this.isLoading = false;

    });

  }

  ngOnDestroy(): void {

    if(this.userSub) {

      this.userSub.unsubscribe();

    }

  }

  async addClient(form: NgForm) {

    this.isLoading = true;

    this.errorMessage = 'No Client Found';

    for (const user of this.users) {

      if (user.email === form.value.email) {

        this.errorMessage = '';

        this.userServ.addClient(user).subscribe(() => {

          this.userServ.fetchClientUsers().subscribe(() => {

            this.isLoading = false;

          });

        });

        break;

      }

    }

  }

  async deleteClient(id: string) {

    this.isLoading = true;

    this.userServ.deleteClient(id).subscribe(() => {

      this.userServ.fetchClientUsers().subscribe(() => {

        this.isLoading = false;

      });

    });

  }

  manageClient(id: string){

    this.userServ.\_currentClient = id;

    this.userServ.ptMode = true;

    this.router.navigateByUrl('/manage-client-dashboard');

  }

}

## Record-workout

### Record-workout.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/view-workouts"></ion-back-button></ion-buttons>

    <ion-title>{{ isLoading ? 'Loading...' : workout.title }}</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <div \*ngIf="!isLoading">

  <form [formGroup]="form" (ngSubmit)="recordWorkout()">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Notes</ion-label>

          <ion-input type="text" autocomplete autocorrect formControlName="notes"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-row>

          <ion-col>

            <div formArrayName="exercises" \*ngFor="let exercise of exercises.controls; let i=index">

              <ion-item>

                <ion-label position="floating">Exercises</ion-label>

                <ion-input [readonly]='true' type="text" [formControlName]="i"></ion-input>

              </ion-item>

            </div>

          </ion-col>

          <ion-col>

            <div formArrayName="weights" \*ngFor="let weight of weights.controls; let i=index">

              <ion-item>

                <ion-label position="floating">Weights (kg)</ion-label>

                <ion-input type="number" clear-input [formControlName]="i"></ion-input>

              </ion-item>

            </div>

          </ion-col>

        </ion-row>

      </ion-col>

    </ion-row>

  </form>

  </div>

</ion-content>

<ion-footer>

  <ion-row>

    <ion-col size-sm="6" offset-sm="3">

      <ion-button color="primary" (click)='recordWorkout()' size="large" expand="full">Record</ion-button>

    </ion-col>

  </ion-row>

</ion-footer>

### Record-workout.page.ts

import { Component, OnInit } from '@angular/core';

import { FormGroup, FormControl, Validators, FormArray, FormBuilder } from '@angular/forms';

import { AngularFirestoreCollection } from '@angular/fire/firestore';

import { HttpClient } from '@angular/common/http';

import { Workout } from '../../models/workout.model';

import { RecordedWorkout } from '../../models/recorded\_workout.model';

import { Injectable } from '@angular/core';

import { BehaviorSubject, Subscription } from 'rxjs';

import { take, tap, delay, switchMap, map } from 'rxjs/operators';

import { WorkoutService } from 'src/app/services/workout.service';

import { ActivatedRoute, Router } from '@angular/router';

import { LoadingController } from '@ionic/angular';

@Component({

  selector: 'app-record-workout',

  templateUrl: './record-workout.page.html',

  styleUrls: ['./record-workout.page.scss'],

})

export class RecordWorkoutPage implements OnInit {

  workout: Workout;

  recordedWorkout: RecordedWorkout;

  workoutSub: Subscription;

  isLoading = false;

  editMode = false;

  form: FormGroup;

  constructor(private route: ActivatedRoute,

              private router: Router,

              private workoutServ: WorkoutService,

              private http: HttpClient,

              private fb: FormBuilder,

              private loadingCtrl: LoadingController) { }

  ngOnInit() {

    this.route.paramMap.subscribe(paramMap => {

      if(!paramMap.has('workoutId')){

        this.router.navigateByUrl('/view-workouts');

        return;

      }

      this.isLoading = true;

      this.workoutSub = this.workoutServ.getWorkout(paramMap.get('workoutId')).subscribe(workout => {

        this.workout = workout;

        this.setForm();

        this.isLoading = false;

      });

    });

  }

  setForm() {

    this.form = new FormGroup({

      notes: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      exercises: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      weights: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      notes: [''],

      exercise: [''],

      exercises: this.fb.array(this.workout.exercises),

      weight: [''],

      weights: this.fb.array(['']),

    });

    for (let i = 0; i < this.workout.exercises.length - 1; i++) {

      this.weights.push(this.fb.control(''));

    }

  }

  get exercises() {

    return this.form.get('exercises') as FormArray;

  }

  get weights() {

    return this.form.get('weights') as FormArray;

  }

  recordWorkout() {

    const newRecordWorkout = new RecordedWorkout(

      '',

      this.workout.title,

      new Date(),

      this.form.value.notes,

      this.form.value.exercises,

      this.form.value.weights,

    );

    this.loadingCtrl

        .create({ keyboardClose: true, message: 'Recording Workout...' })

        .then(loadingEl => {

          loadingEl.present();

          this.workoutServ.recordWorkout(

            newRecordWorkout

          ).subscribe(() => {

            this.isLoading = false;

            loadingEl.dismiss();

            this.router.navigateByUrl('/view-recorded-workouts');

          });

        });

  }

  ngOnDestroy() {

    if(this.workoutSub){

      this.workoutSub.unsubscribe();

    }

  }

}

## Record-workouts-view

### Record-workouts-view.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/dashboard"></ion-back-button></ion-buttons>

    <ion-title>Select A Workout</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <p \*ngIf="isLoading" class="ion-text-center"><ion-spinner color="primary"></ion-spinner></p>

  <ion-grid \*ngIf="!isLoading">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <div \*ngIf="workouts.length === 0" text-center>

          <ion-item padding-bottom padding-end>

            <ion-label text-center class="ion-text-wrap">

              <h1>Add a Workout</h1>

            </ion-label>

          </ion-item>

        </div>

        <ion-list>

          <div \*ngFor="let workout of workouts">

            <ion-item-sliding padding-bottom padding-end>

              <ion-item [routerLink]="['/','record-workouts-view', workout.id]">

                  <ion-label text-center class="ion-text-wrap">

                    <h1>{{ workout.title }}</h1>

                  </ion-label>

              </ion-item>

            </ion-item-sliding>

          </div>

        </ion-list>

      </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

### Record-workouts-view.page.ts

import { Component, OnInit } from '@angular/core';

import { Subscription } from 'rxjs';

import { FormGroup } from '@angular/forms';

import { Workout } from 'src/app/models/workout.model';

import { WorkoutService } from 'src/app/services/workout.service';

@Component({

  selector: 'app-record-workouts-view',

  templateUrl: './record-workouts-view.page.html',

  styleUrls: ['./record-workouts-view.page.scss'],

})

export class RecordWorkoutsViewPage implements OnInit {

  private workoutSub: Subscription;

  form: FormGroup;

  isLoading = false;

  workouts: Workout[];

  constructor(private workoutServ: WorkoutService) { }

  ngOnInit() {

    this.isLoading=true;

    this.workoutSub = this.workoutServ.workouts.subscribe(workouts => {

      this.workouts = workouts;

      this.isLoading=false;

    });

  }

  ionViewWillEnter() {

    this.isLoading=true;

    this.workoutServ.fetchWorkouts().subscribe(() => {

      this.isLoading=false;

    });

  }

  ngOnDestroy(): void {

    if(this.workoutSub){

      this.workoutSub.unsubscribe();

    }

  }

}

## User-stats

### User-stats.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/dashboard"></ion-back-button></ion-buttons>

    <ion-title>User Statisics</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <canvas

  baseChart [datasets]="chartData1"

  [labels]="chartLabels1"

  [chartType]="chartType1"

  [colors]="chartColors1"

  [options]="chartOptions1">

  </canvas>

</ion-content>

### User-stats.page.ts

import { Component, OnInit } from '@angular/core';

import { ChartDataSets } from 'chart.js';

import { Label, Color } from 'ng2-charts';

import { WorkoutService } from 'src/app/services/workout.service';

import { Subscription } from 'rxjs';

import { RecordedWorkout } from 'src/app/models/recorded\_workout.model';

import { NONE\_TYPE } from '@angular/compiler/src/output/output\_ast';

@Component({

  selector: 'app-user-stats',

  templateUrl: './user-stats.page.html',

  styleUrls: ['./user-stats.page.scss'],

})

export class UserStatsPage implements OnInit {

  // Normal Page Variables

  private workoutSub: Subscription;

  workouts: RecordedWorkout[] = [ ];

  isLoading = false;

  // Chart1Variables

  chartData1: ChartDataSets[] = [{data: [], label: 'Total Workout Weight'}];

  chartLabels1: Label[];

  chartOptions1 = {

    responsive: true,

    maintainAspectRatio: true,

    aspectRatio: 1,

    scales: {

      xAxes: [{

        ticks: {

          display: true,

          autoSkip: true,

          maxRotation: 90,

          minRotation: 90,

          maxTicksLimit: 10

        }

      }],

      yAxes: [{

        ticks: {

          beginAtZero: true,

          callback(value: string) {

                  return value + 'kg';

          }

      },

      }]

    },

    title: {

      display: true,

      text: 'Total Weight'

    },

    elements: {

      line: {

        tension: 0

      }

    }

  };

  chartColors1: Color[] = [

    {

      borderColor: '#000000',

      backgroundColor: '#4287f5'

    }

  ];

  chartType1 = 'line';

  // Chart2 Variables

  chartData2: ChartDataSets[] = [{data: [], label: 'Total Weight'}];

  chartLabels2: Label[];

  chartOptions2 = {

    responsive: true,

    maintainAspectRatio: true,

    aspectRatio: 1.5,

    scales: {

      xAxes: [{

        ticks: {

          autoSkip: false,

          maxRotation: 90,

          minRotation: 90

        }

      }]

    },

    title: {

      display: true,

      text: 'Past Workouts'

    },

    elements: {

      line: {

        tension: 0

      }

    }

  };

  chartColors2: Color[] = [

    {

      borderColor: '#000000',

      backgroundColor: '#4287f5'

    }

  ];

  chartType2 = 'line';

  constructor(private workoutServ: WorkoutService) { }

  ngOnInit() {

    this.isLoading = true;

    this.workoutSub = this.workoutServ.recordedWorkouts.subscribe(recordedWorkouts => {

      this.workouts = recordedWorkouts;

      this.isLoading = false;

      this.setData();

    });

  }

  ionViewWillEnter() {

    this.isLoading = true;

    this.workoutServ.fetchRecordedWorkouts().subscribe(() => {

      this.isLoading = false;

    });

  }

  setData() {

    this.chartData1[0].data = [];

    this.chartLabels1 = [];

    let i = 1;

    for(const entry of this.workouts){

      const date: Date = new Date(entry.date);

      this.chartLabels1.push(entry.title + ' ' + date.getDate() + '/' + date.getMonth() + '/' + date.getFullYear());

      i = i + 1;

      let totalWeight = 0;

      for(const weight of entry.weights){

        totalWeight = totalWeight + Number(weight);

      }

      this.chartData1[0].data.push(totalWeight);

    }

  }

}

## View-recorded-workout-details

### View-recorded-workouts-details.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/view-recorded-workouts"></ion-back-button></ion-buttons>

    <ion-title>{{ isLoading ? 'Loading...' : recordedWorkout.title }}</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <div \*ngIf="!isLoading">

  <form [formGroup]="form">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Notes</ion-label>

          <ion-input type="text" autocomplete autocorrect formControlName="notes"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-row>

          <ion-col>

            <div formArrayName="exercises" \*ngFor="let exercise of exercises.controls; let i=index">

              <ion-item>

                <ion-label position="floating">Exercises</ion-label>

                <ion-input [readonly]='true' type="text" [formControlName]="i"></ion-input>

              </ion-item>

            </div>

          </ion-col>

          <ion-col>

            <div formArrayName="weights" \*ngFor="let weight of weights.controls; let i=index">

              <ion-item>

                <ion-label position="floating">Weights (kg)</ion-label>

                <ion-input [readonly]='true' type="number" [formControlName]="i"></ion-input>

              </ion-item>

            </div>

          </ion-col>

        </ion-row>

      </ion-col>

    </ion-row>

  </form>

  </div>

</ion-content>

### View-recorded-workouts-details.page.ts

import { Component, OnInit } from '@angular/core';

import { FormArray, FormGroup, FormControl, Validators, FormBuilder } from '@angular/forms';

import { Subscription } from 'rxjs';

import { RecordedWorkout } from 'src/app/models/recorded\_workout.model';

import { ActivatedRoute, Router } from '@angular/router';

import { WorkoutService } from 'src/app/services/workout.service';

import { HttpClient } from '@angular/common/http';

import { LoadingController } from '@ionic/angular';

@Component({

  selector: 'app-view-recorded-workout-details',

  templateUrl: './view-recorded-workout-details.page.html',

  styleUrls: ['./view-recorded-workout-details.page.scss'],

})

export class ViewRecordedWorkoutDetailsPage implements OnInit {

  recordedWorkout: RecordedWorkout;

  recordedWorkoutSub: Subscription;

  isLoading = false;

  form: FormGroup;

  constructor(private route: ActivatedRoute,

              private router: Router,

              private workoutServ: WorkoutService,

              private http: HttpClient,

              private fb: FormBuilder,

              private loadingCtrl: LoadingController) { }

  ngOnInit() {

    this.route.paramMap.subscribe(paramMap => {

      if(!paramMap.has('recordedWorkoutId')){

        this.router.navigateByUrl('/view-recorded-workouts');

        return;

      }

      this.isLoading = true;

      this.recordedWorkoutSub = this.workoutServ.getRecordedWorkout(paramMap.get('recordedWorkoutId')).subscribe(recordedWorkout => {

        this.recordedWorkout = recordedWorkout;

        this.setForm();

        this.isLoading = false;

      });

    });

  }

  setForm() {

    this.form = new FormGroup({

      notes: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      exercises: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      weights: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      notes: [this.recordedWorkout.notes],

      exercise: [''],

      exercises: this.fb.array(this.recordedWorkout.exercises),

      weight: [''],

      weights: this.fb.array(this.recordedWorkout.weights),

    });

  }

  get exercises() {

    return this.form.get('exercises') as FormArray;

  }

  get weights() {

    return this.form.get('weights') as FormArray;

  }

  ngOnDestroy() {

    if(this.recordedWorkoutSub){

      this.recordedWorkoutSub.unsubscribe();

    }

  }

}

## View-recorded-workouts

### View-recorded-workouts.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/dashboard"></ion-back-button></ion-buttons>

    <ion-title>Recorded Workouts</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <p \*ngIf="isLoading" class="ion-text-center"><ion-spinner color="primary"></ion-spinner></p>

  <ion-grid \*ngIf="!isLoading">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <div \*ngIf="recordedWorkouts.length === 0" text-center>

          <ion-item padding-bottom padding-end>

            <ion-label text-center class="ion-text-wrap">

              <h1>Record a Workout</h1>

            </ion-label>

          </ion-item>

        </div>

        <ion-list>

          <div \*ngFor="let recordedWorkout of recordedWorkouts">

            <ion-item-sliding padding-bottom padding-end>

              <ion-item [routerLink]="['/','view-recorded-workouts', recordedWorkout.id]" >

                  <ion-label class="ion-text-wrap">

                    <h1>{{ recordedWorkout.title }}</h1>

                  </ion-label>

                  <ion-label class="ion-text-wrap">

                    <h2>{{ recordedWorkout.date | date:'MM/dd/yyyy HH:mm'}}</h2>

                  </ion-label>

                  <ion-icon slot="end" md="md-arrow-back"></ion-icon>

              </ion-item>

              <ion-item-options side="end" padding-bottom padding-end>

                <ion-item-option color="danger" (click)="deleteRecordedWorkout(recordedWorkout.id)">Delete</ion-item-option>

              </ion-item-options>

            </ion-item-sliding>

          </div>

        </ion-list>

      </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

### View-recorded-workouts.page.ts

import { Component, OnInit, OnDestroy } from '@angular/core';

import { RecordedWorkout } from '../../models/recorded\_workout.model';

import { Subscription } from 'rxjs';

import { WorkoutService } from '../../services/workout.service';

import { UserService } from 'src/app/services/user.service';

@Component({

  selector: 'app-view-recorded-workouts',

  templateUrl: './view-recorded-workouts.page.html',

  styleUrls: ['./view-recorded-workouts.page.scss'],

})

export class ViewRecordedWorkoutsPage implements OnInit {

  private recordedWorkoutSub: Subscription;

  recordedWorkouts: RecordedWorkout[] = [ ];

  isLoading = false;

  ptMode = false;

  constructor(private workoutServ: WorkoutService,

              private userServ: UserService) { }

  ngOnInit() {

    this.isLoading=true;

    this.recordedWorkoutSub = this.workoutServ.recordedWorkouts.subscribe(recordedWorkouts => {

      this.recordedWorkouts = recordedWorkouts;

      this.isLoading=false;

    });

    this.ptMode = this.userServ.ptMode;

  }

  ionViewWillEnter() {

    this.isLoading=true;

    this.workoutServ.fetchRecordedWorkouts().subscribe(() => {

      this.isLoading=false;

    });

  }

  ngOnDestroy(): void {

    if(this.recordedWorkoutSub){

      this.recordedWorkoutSub.unsubscribe();

    }

  }

  deleteRecordedWorkout(id: string){

    this.workoutServ.deleteRecordedWorkout(id).subscribe();

  }

}

## View-workout-details

### View-workout-details.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/view-workouts"></ion-back-button></ion-buttons>

    <ion-title>{{ isLoading ? 'Loading...' : workout.title }}</ion-title>

    <ion-button slot="end" fill="clear" (click)="toggleEdit()"><ion-icon color="primary" name="create"></ion-icon></ion-button>

  </ion-toolbar>

</ion-header>

<ion-content>

  <div \*ngIf="!isLoading">

  <form [formGroup]="form" (ngSubmit)="editWorkout()">

    <ion-row \*ngIf="editMode">

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Name</ion-label>

          <ion-input [readonly]="!editMode" type="text" required="true" autocomplete autocorrect formControlName="title"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-item>

          <ion-label position="floating">Description</ion-label>

          <ion-input [readonly]="!editMode" type="text" required="true" autocomplete autocorrect formControlName="description"></ion-input>

        </ion-item>

      </ion-col>

    </ion-row>

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <ion-row>

          <ion-col size="6">

            <div formArrayName="exercises" \*ngFor="let exercise of exercises.controls; let i=index">

              <ion-item>

                <ion-label position="floating">Exercises</ion-label>

                <ion-select [formControlName]="i" okText="Okay" cancelText="Cancel" required="true">

                  <ion-select-option value="Bench Press">Bench Press</ion-select-option>

                  <ion-select-option value="Squat">Squat</ion-select-option>

                  <ion-select-option value="Deadlift">Deadlift</ion-select-option>

                  <ion-select-option value="Pull Ups">Pull Ups</ion-select-option>

                  <ion-select-option value="Shoulder Press">Shoulder Press</ion-select-option>

                  <ion-select-option value="Dumbell Curls">Dumbell Curls</ion-select-option>

                  <ion-select-option value="Barbell Curls">Barbell Curls</ion-select-option>

                  <ion-select-option value="Leg Curls">Leg Curls</ion-select-option>

                  <ion-select-option value="Pec Flies">Pec Flies</ion-select-option>

                  <ion-select-option value="Chest Press">Chest Press</ion-select-option>

                  <ion-select-option value="Incline Barbell Press">Incline Barbell Press</ion-select-option>

                  <ion-select-option value="Barbell Row">Barbell Row</ion-select-option>

                  <ion-select-option value="Penlay Row">Penlay Row</ion-select-option>

                  <ion-select-option value="Leg Extensions">Leg Extensions</ion-select-option>

                  <ion-select-option value="Block Pull Deadlifts">Block Pull Deadlifts</ion-select-option>

                  <ion-select-option value="Deficit Deadlifts">Deficit Deadlifts</ion-select-option>

                  <ion-select-option value="Chin Ups">Chin Ups</ion-select-option>

                  <ion-select-option value="Push Ups">Push Ups</ion-select-option>

                  <ion-select-option value="Sit Ups">Sit Ups</ion-select-option>

                  <ion-select-option value="Lateral Pull Down">Lateral Pull Down</ion-select-option>

                  <ion-select-option value="Tricep Extensions">Tricep Extensions</ion-select-option>

                  <ion-select-option value="Hammer Curls">Hammer Curls</ion-select-option>

                </ion-select>

              </ion-item>

            </div>

            </ion-col>

            <ion-col>

              <div formArrayName="sets" \*ngFor="let set of sets.controls; let i=index">

                <ion-item>

                  <ion-label position="floating">Sets</ion-label>

                  <ion-input [readonly]="!editMode" type="number" required="true" clear-input [formControlName]="i" expand="full"></ion-input>

                </ion-item>

              </div>

            </ion-col>

            <ion-col>

              <div formArrayName="reps" \*ngFor="let rep of reps.controls; let i=index">

                <ion-item>

                  <ion-label position="floating">Reps</ion-label>

                  <ion-input [readonly]="!editMode" type="number" required="true" clear-input [formControlName]="i"></ion-input>

                </ion-item>

              </div>

            </ion-col>

          </ion-row>

        </ion-col>

      </ion-row>

    </form>

  </div>

</ion-content>

<ion-footer \*ngIf="editMode">

  <div padding>

    <div>

      <ion-button color="dark"  size="large" expand="full" [disabled]="exercises.length === 1" (click)="removeExercise()">Remove Exercise</ion-button>

    </div>

    <div>

      <ion-button color="dark"  size="large" expand="full" [disabled]="this.form.value.exercises[this.form.value.exercises.length - 1] === '' || this.form.value.sets[this.form.value.sets.length - 1] === '' || this.form.value.reps[this.form.value.reps.length - 1] === ''" (click)="addExercise()">Add Exercise</ion-button>

    </div>

    <div>

      <ion-button color="primary"  size="large" (click)="editWorkout()" [disabled]="!form.valid" expand="full">Update</ion-button>

    </div>

  </div>

</ion-footer>

### View-workout-details.page.ts

import { Component, OnInit, OnDestroy } from '@angular/core';

import { ActivatedRoute, Router } from '@angular/router';

import { WorkoutService } from 'src/app/services/workout.service';

import { Workout } from 'src/app/models/workout.model';

import { Subscription } from 'rxjs';

import { FormGroup, FormControl, Validators, FormArray, FormBuilder } from '@angular/forms';

import { HttpClient } from '@angular/common/http';

import { LoadingController } from '@ionic/angular';

@Component({

  selector: 'app-view-workout-details',

  templateUrl: './view-workout-details.page.html',

  styleUrls: ['./view-workout-details.page.scss'],

})

export class ViewWorkoutDetailsPage implements OnInit, OnDestroy {

  workout: Workout;

  workoutSub: Subscription;

  isLoading = false;

  editMode = false;

  form: FormGroup;

  constructor(private route: ActivatedRoute,

              private router: Router,

              private workoutServ: WorkoutService,

              private http: HttpClient,

              private fb: FormBuilder,

              private loadingCtrl: LoadingController) { }

  ngOnInit() {

    this.route.paramMap.subscribe(paramMap => {

      if(!paramMap.has('workoutId')){

        this.router.navigateByUrl('/view-workouts');

        return;

      }

      this.isLoading = true;

      this.workoutSub = this.workoutServ.getWorkout(paramMap.get('workoutId')).subscribe(workout => {

        this.workout = workout;

        this.setForm();

        this.isLoading = false;

      });

    });

  }

  setForm() {

    this.form = new FormGroup({

      title: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      description: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      exercises: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      sets: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      reps: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      title: this.workout.title,

      description: this.workout.description,

      exercise: [''],

      exercises: this.fb.array(this.workout.exercises),

      set: [''],

      sets: this.fb.array(this.workout.sets),

      rep: [''],

      reps: this.fb.array(this.workout.reps)

    });

  }

  toggleEdit() {

    if(this.editMode){

      this.editMode=false;

    } else {

      this.editMode=true;

    }

  }

  get exercises() {

    return this.form.get('exercises') as FormArray;

  }

  get sets() {

    return this.form.get('sets') as FormArray;

  }

  get reps() {

    return this.form.get('reps') as FormArray;

  }

  addExercise() {

    this.exercises.push(this.fb.control(''));

    this.sets.push(this.fb.control(''));

    this.reps.push(this.fb.control(''));

  }

  removeExercise() {

    if(this.exercises.length > 1){

      this.exercises.removeAt(this.exercises.length - 1);

      this.sets.removeAt(this.sets.length - 1);

      this.reps.removeAt(this.reps.length - 1);

    } else {

      console.log("cant remove last exercise");

    }

  }

  editWorkout() {

    const newWorkout = new Workout(

      this.workout.id,

      this.form.value.title,

      this.form.value.description,

      this.form.value.exercises,

      this.form.value.sets,

      this.form.value.reps,

    );

    console.log(newWorkout);

    this.loadingCtrl

        .create({ keyboardClose: true, message: 'Updating Workout...' })

        .then(loadingEl => {

          loadingEl.present();

          this.workoutServ.editWorkout(

            newWorkout

          ).subscribe(() => {

            this.isLoading = false;

            loadingEl.dismiss();

            this.router.navigateByUrl('/view-workouts');

          });

        });

  }

  ngOnDestroy() {

    if(this.workoutSub){

      this.workoutSub.unsubscribe();

    }

  }

}

## View-workouts

### View-workouts.page.html

<ion-header>

  <ion-toolbar>

    <ion-buttons slot="start"><ion-back-button defaultHref="/dashboard"></ion-back-button></ion-buttons>

    <ion-title>Workouts</ion-title>

    <ion-button slot="end" fill="clear" routerLink="/create-workout"><ion-icon color="primary" name="add"></ion-icon></ion-button>

  </ion-toolbar>

</ion-header>

<ion-content>

  <p \*ngIf="isLoading" class="ion-text-center"><ion-spinner color="primary"></ion-spinner></p>

  <ion-grid \*ngIf="!isLoading">

    <ion-row>

      <ion-col size-sm="6" offset-sm="3">

        <div \*ngIf="workouts.length === 0" text-center>

          <ion-item padding-bottom padding-end>

            <ion-label text-center class="ion-text-wrap">

              <h1>Add a Workout</h1>

            </ion-label>

          </ion-item>

        </div>

        <ion-list>

          <div \*ngFor="let workout of workouts">

            <ion-item-sliding padding-bottom padding-end>

              <ion-item [routerLink]="['/','view-workouts', workout.id]">

                  <ion-label class="ion-text-wrap">

                    <h1>{{ workout.title }}</h1>

                  </ion-label>

                  <ion-icon slot="end" md="md-arrow-back"></ion-icon>

              </ion-item>

              <ion-item-options side="end" padding-bottom padding-end>

                <ion-item-option color="danger" (click)="deleteWorkout(workout.id)">Delete</ion-item-option>

              </ion-item-options>

            </ion-item-sliding>

          </div>

        </ion-list>

      </ion-col>

    </ion-row>

  </ion-grid>

</ion-content>

### View-workouts.page.ts

import { Component, OnInit, OnDestroy } from '@angular/core';

import { Workout } from '../../models/workout.model';

import { Subscription } from 'rxjs';

import { WorkoutService } from '../../services/workout.service';

@Component({

  selector: 'app-view-workouts',

  templateUrl: './view-workouts.page.html',

  styleUrls: ['./view-workouts.page.scss'],

})

export class ViewWorkoutsPage implements OnInit, OnDestroy{

  private workoutSub: Subscription;

  workouts: Workout[] = [ ];

  isLoading = false;

  constructor(private workoutServ: WorkoutService) { }

  ngOnInit() {

    this.isLoading=true;

    this.workoutSub = this.workoutServ.workouts.subscribe(workouts => {

      this.workouts = workouts;

      this.isLoading=false;

    });

  }

  ionViewWillEnter() {

    this.isLoading=true;

    this.workoutServ.fetchWorkouts().subscribe(() => {

      this.isLoading=false;

    });

  }

  ngOnDestroy(): void {

    if(this.workoutSub){

      this.workoutSub.unsubscribe();

    }

  }

  deleteWorkout(id: string){

    this.workoutServ.deleteWorkout(id).subscribe();

  }

}

# Public

## Forgot-password

### Forgot-password.page.html

<ion-header>

  <ion-toolbar>

    <ion-title>Revolute Fitness</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <form [formGroup]="form" (ngSubmit)="changePassword()">

    <ion-grid padding-top>

      <ion-row justify-content-center>

        <ion-col align-self-center size-md="8" size-lg="7" size-xs="12">

          <div text-center>

            <h1>Forgot Password</h1>

          </div>

          <div padding>

            <ion-item no-padding>

              <ion-label position="floating">Accounts Email</ion-label>

            <ion-input type="email" placeholder="your@email.com" clear-input autocomplete="off" autofocus formControlName="email" required email></ion-input>

            </ion-item>

          </div>

        </ion-col>

      </ion-row>

    </ion-grid>

  </form>

</ion-content>

<ion-footer>

  <div padding>

    <div>

      <ion-button color="dark"  size="large" (click)="changePassword()" [disabled]="!form.valid" expand="full">Submit</ion-button>

    </div>

    <div>

      <ion-button size="large" routerLink='/login' expand="full">Back</ion-button>

    </div>

  </div>

</ion-footer>

### Forgot-password.page.ts

import { Component, OnInit } from '@angular/core';

import { UserService } from 'src/app/services/user.service';

import { FormBuilder, FormGroup, FormControl, Validators } from '@angular/forms';

import { Router } from '@angular/router';

@Component({

  selector: 'app-forgot-password',

  templateUrl: './forgot-password.page.html',

  styleUrls: ['./forgot-password.page.scss'],

})

export class ForgotPasswordPage implements OnInit {

  constructor(

    private authService: UserService,

    private fb: FormBuilder,

    private router: Router) { }

  form: FormGroup;

  isLoading = false;

  ngOnInit() {

    this.form = new FormGroup({

      email: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      })

    });

    this.form = this.fb.group({

      email: ['']

    });

  }

  async changePassword() {

    await this.authService.changePasswordRequest(this.form.value.email);

    this.router.navigateByUrl('/login');

  }

}

## Login

### Login.page.html

<ion-header>

  <ion-toolbar>

    <ion-title>Revolute Fitness</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <form [formGroup]="form" (ngSubmit)="login()">

    <ion-grid padding-top>

      <ion-row justify-content-center>

        <ion-col align-self-center size-md="8" size-lg="7" size-xs="12">

          <div text-center>

            <h1>Login</h1>

          </div>

          <div padding>

            <ion-item no-padding>

              <ion-label position="floating">Email</ion-label>

            <ion-input type="email" placeholder="your@email.com" clear-input autocomplete="off" autofocus formControlName="email" required email></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">Password</ion-label>

              <ion-input type="password" placeholder="Password" clear-input clear-on-edit formControlName="password" required password minLength="6"></ion-input>

            </ion-item>

          </div>

          <div text-center>

            <a href="/forgot-password">Forgot Password</a>

          </div>

          <div padding>

            <ion-label color="danger">{{ errorMessage }}</ion-label>

          </div>

        </ion-col>

      </ion-row>

    </ion-grid>

  </form>

</ion-content>

<ion-footer>

        <div padding>

          <div>

            <ion-button color="dark"  size="large" (click)="login()" [disabled]="!form.valid" expand="full">Login</ion-button>

          </div>

          <div>

            <ion-button size="large" routerLink='/register' expand="full">Register</ion-button>

          </div>

        </div>

</ion-footer>

### Login.page.ts

import { Component, OnInit } from '@angular/core';

import { AngularFireAuth } from '@angular/fire/auth';

import { Router } from '@angular/router';

import { NgForm, FormGroup, FormBuilder, FormControl, Validators } from '@angular/forms';

import { LoadingController } from '@ionic/angular';

import { UserService } from '../../services/user.service';

@Component({

  selector: 'app-login',

  templateUrl: './login.page.html',

  styleUrls: ['./login.page.scss']

})

export class LoginPage implements OnInit {

  constructor(

    private authService: UserService,

    private fb: FormBuilder,) { }

  form: FormGroup;

  isLoading = false;

  errorMessage;

  isKeyboardHide: boolean;

  ngOnInit() {

    this.form = new FormGroup({

      email: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      password: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      email: [''],

      password: ['']

    });

  }

  async login() {

    await this.authService.login(this.form.value.email, this.form.value.password);

    this.errorMessage = this.authService.loginErrorMessage;

  }

}

## Register

### Register.page.html

<ion-header>

  <ion-toolbar>

    <ion-title>Revolute Fitness</ion-title>

  </ion-toolbar>

</ion-header>

<ion-content>

  <form [formGroup]="form" (ngSubmit)="register()">

    <ion-grid>

      <ion-row color="dark" justify-content-center>

        <ion-col align-self-center size-md="8" size-lg="7" size-xs="12">

          <div text-center>

            <h3>Register Your Account</h3>

          </div>

          <div padding>

            <ion-item no-padding>

              <ion-label position="floating">Full Name</ion-label>

              <ion-input  name="name" type="text" placeholder="John Doe" clear-input autofocus autocapitalize="on" formControlName="name" required="true"></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">Email</ion-label>

              <ion-input name="email" type="email" placeholder="your@email.com" clear-input formControlName="email" required="true"></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">Password</ion-label>

              <ion-input name="password" type="password" placeholder="\*\*\*\*\*\*\*\*\*" clear-on-edit clear-input formControlName="password" required ="true"></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">Height</ion-label>

              <ion-input name="height" type="number" placeholder="180cm" clear-input formControlName="height" required="true"></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">Weight</ion-label>

              <ion-input name="weight" type="number" placeholder="70kg" clear-input formControlName="weight" required="true"></ion-input>

            </ion-item>

            <ion-item no-padding>

              <ion-label position="floating">User Type</ion-label>

              <ion-select value="general\_user" formControlName="userType" required="true" okText="Okay" cancelText="Cancel" >

                <ion-select-option value="general\_user">General User</ion-select-option>

                <ion-select-option value="personal\_trainer">Personal Trainer</ion-select-option>

                <ion-select-option value="client">Client</ion-select-option>

              </ion-select>

            </ion-item>

          </div>

          <div padding>

            <ion-label color="danger">{{ errorMessage }}</ion-label>

          </div>

        </ion-col>

      </ion-row>

    </ion-grid>

  </form>

</ion-content>

<ion-footer>

  <div padding>

    <div>

      <ion-button color="dark"  size="large" (click)="register()" [disabled]="!form.valid" expand="full">Register</ion-button>

    </div>

    <div>

      <ion-button size="large" routerLink='/login' expand="full">Back</ion-button>

    </div>

  </div>

</ion-footer>

### Register.page.ts

import { Component, OnInit } from '@angular/core';

import { AngularFireAuth } from '@angular/fire/auth';

import { auth } from 'firebase/app';

import { NavController } from '@ionic/angular';

import { UserService } from '../../services/user.service';

import { NgForm, FormGroup, FormBuilder, FormControl, Validators } from '@angular/forms';

import { User } from '../../models/user.model';

@Component({

  selector: 'app-register',

  templateUrl: './register.page.html',

  styleUrls: ['./register.page.scss'],

})

export class RegisterPage implements OnInit {

  public errorMessage: string;

  form: FormGroup;

  isLoading = false;

  constructor(public afAuth: AngularFireAuth,

              public nav: NavController,

              private regService: UserService,

              private fb: FormBuilder,) { }

  ngOnInit() {

    this.form = new FormGroup({

      name: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      email: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      password: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      height: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      weight: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

      userType: new FormControl(null, {

        updateOn: 'blur',

        validators: [Validators.required]

      }),

    });

    this.form = this.fb.group({

      name: [''],

      email: [''],

      password: [''],

      height: [''],

      weight: [''],

      userType: ['general\_user'],

    });

  }

  async register() {

    const user = new User(

      '',

      this.form.value.name,

      this.form.value.email,

      this.form.value.userType,

      this.form.value.weight,

      this.form.value.height,

    );

    await this.regService.register(user, this.form.value.password);

    this.errorMessage = this.regService.registerErrorMessage;

  }

}

# Services

## Login.gaurd.ts

import { Injectable } from '@angular/core';

import { CanLoad, Route, UrlSegment, Router } from '@angular/router';

import { Observable } from 'rxjs';

import { UserService } from './user.service';

@Injectable({

  providedIn: 'root'

})

export class AuthGuard implements CanLoad {

  constructor(private authService: UserService, private router: Router) {}

  canLoad(

    route: Route,

    segments: UrlSegment[]

  ): Observable<boolean> | Promise<boolean> | boolean {

    if (!this.authService.userIsAuthenticated) {

      this.router.navigateByUrl('/login');

    }

    return this.authService.userIsAuthenticated;

  }

}

## User.service.ts

import { Injectable } from '@angular/core';

import { NavController, LoadingController } from '@ionic/angular';

import { AngularFireAuth } from '@angular/fire/auth';

import { Router } from '@angular/router';

import { Message } from '@angular/compiler/src/i18n/i18n\_ast';

import { User } from '../models/user.model';

import { HttpClient } from '@angular/common/http';

import { map, tap, take } from 'rxjs/operators';

import { BehaviorSubject, Subscription } from 'rxjs';

import \* as firebase from 'firebase';

interface UserDataInt {

  name: string;

  email: string;

  userType: string;

  bodyWeigth: number;

  height: number;

}

@Injectable({

  providedIn: 'root'

})

export class UserService {

  // Login Stuff

  private userSub: Subscription;

  private user: firebase.User;

  private \_userIsAuthenticated = false;

  private \_userId: string;

  private \_currentUser: User;

  public ptMode = false;

  public \_currentClient;

  private isLoading = false;

  private isLogin = true;

  public loginErrorMessage: string;

  public registerErrorMessage: string;

  get userIsAuthenticated() {

    return this.\_userIsAuthenticated;

  }

  get userId() {

    if (this.ptMode) {

      return this.\_currentClient;

    } else {

      return this.\_userId;

    }

  }

  get currentUser() {

    return this.\_currentUser;

  }

  get currentUserName() {

    return this.\_currentUser.name;

  }

  // PT STUFF

  private \_users = new BehaviorSubject<User[]>([]);

  private \_clientUsers = new BehaviorSubject<User[]>([]);

  get users() {

    return this.\_users.asObservable();

  }

  get clientUsers() {

    return this.\_clientUsers.asObservable();

  }

  constructor(public nav: NavController,

              private afAuth: AngularFireAuth,

              private router: Router,

              private loadingCtrl: LoadingController,

              private http: HttpClient) {

                afAuth.authState.subscribe(user => {

                  this.user = user;

                });

              }

  async login(email: string, password: string) {

    this.isLoading = true;

    try {

      firebase.auth().setPersistence(firebase.auth.Auth.Persistence.LOCAL);

      const res = await this.afAuth.auth.signInWithEmailAndPassword(email, password);

      if (this.user.emailVerified){

        this.\_userId = this.user.uid;

        this.userSub = this.getUserRecord().subscribe(userReturned => {

          this.\_currentUser = userReturned;

        });

        this.loadingCtrl

          .create({ keyboardClose: true, message: 'Logging in...' })

          .then(loadingEl => {

            loadingEl.present();

            setTimeout(() => {

              this.isLoading = false;

              loadingEl.dismiss();

              this.router.navigateByUrl('/dashboard');

            }, 1500);

          });

        this.\_userIsAuthenticated = true;

      } else {

        this.loginErrorMessage = 'Users email needs to be verified, check your inbox !';

      }

    } catch (err) {

      this.loginErrorMessage = err.message;

      this.loadingCtrl

        .create({ keyboardClose: true, message: 'Logging in...' })

        .then(loadingEl => {

          loadingEl.present();

          setTimeout(() => {

            this.isLoading = false;

            loadingEl.dismiss();

          }, 1500);

        });

    }

  }

  async logout() {

    this.\_userIsAuthenticated = false;

    this.\_userId = null;

    this.\_currentUser = null;

    await this.afAuth.auth.signOut();

  }

  async register(userObj: User, password: string) {

    this.isLoading = true;

    try {

      const res = await this.afAuth.auth.createUserWithEmailAndPassword(userObj.email, password);

      const user = this.afAuth.auth.currentUser;

      user.updateProfile({

        displayName: name,

      }).then(function() {

      }, function(error) {

      });

      this.createUserRecord(userObj, user.uid).subscribe();

      user.sendEmailVerification().then( resp => {

        // Email sent.

      }).catch(error => {

        // An error happened.

      });

      this.logout();

      this.loadingCtrl

        .create({ keyboardClose: true, message: 'Registering...' })

        .then(loadingEl => {

          loadingEl.present();

          setTimeout(() => {

            this.isLoading = false;

            this.nav.navigateForward('/login');

            loadingEl.dismiss();

          }, 1500);

        });

    } catch (err) {

      this.registerErrorMessage = err.message;

    }

  }

  createUserRecord(user: User, uid: string) {

    return this.http.put(`https://revolutefitness-a92df.firebaseio.com/users/${uid}.json` , {

      ...user,

      id: null

    });

  }

  getUserRecord() {

    return this.http

      .get<UserDataInt>(

        `https://revolutefitness-a92df.firebaseio.com/users/${this.\_userId}.json`

      )

      .pipe(

        map(userData => {

          return new User(

            this.userId,

            userData.name,

            userData.email,

            userData.userType,

            userData.bodyWeigth,

            userData.height,

          )

          }

        )

      );

  }

  async changePasswordRequest(email: string) {

    await this.afAuth.auth.sendPasswordResetEmail(email);

  }

  // PT Client Stuff

  fetchUsers() {

    return this.http

      .get<{ [key: string]: UserDataInt }>(

        `https://revolutefitness-a92df.firebaseio.com/users.json`

      )

      .pipe(

        map(UserDataInt => {

          const users = [];

          for (const key in UserDataInt) {

            if (UserDataInt.hasOwnProperty(key) && UserDataInt[key].userType === 'client') {

              users.push(

                new User(

                  key,

                  UserDataInt[key].name,

                  UserDataInt[key].email,

                  UserDataInt[key].userType,

                  UserDataInt[key].bodyWeigth,

                  UserDataInt[key].height

                )

              );

            }

          }

          return users;

        }),

        tap(users => {

          this.\_users.next(users);

        })

      );

  }

  fetchClientUsers() {

    return this.http

      .get<{ [key: string]: UserDataInt }>(

        `https://revolutefitness-a92df.firebaseio.com/personal\_trainers/${this.currentUser.id}/clients.json`

      )

      .pipe(

        map(UserDataInt => {

          const users = [];

          for (const key in UserDataInt) {

            if (UserDataInt.hasOwnProperty(key)) {

              users.push(

                new User(

                  key,

                  UserDataInt[key].name,

                  UserDataInt[key].email,

                  UserDataInt[key].userType,

                  UserDataInt[key].bodyWeigth,

                  UserDataInt[key].height

                )

              );

            }

          }

          return users;

        }),

        tap(users => {

          this.\_clientUsers.next(users);

        })

      );

  }

  addClient(user: User) {

    return this.http.put(`https://revolutefitness-a92df.firebaseio.com/personal\_trainers/${this.userId}/clients/${user.id}.json` , {

      ...user,

    });

  }

  deleteClient(id: string) {

    return this.http

      .delete(

        `https://revolutefitness-a92df.firebaseio.com/personal\_trainers/${this.userId}/clients/${id}.json`

      );

  }

}

## Workout.service.ts

import { Injectable } from '@angular/core';

import { NavController, LoadingController } from '@ionic/angular';

import { AngularFireAuth } from '@angular/fire/auth';

import { Router } from '@angular/router';

import { Message } from '@angular/compiler/src/i18n/i18n\_ast';

import { Workout } from '../models/workout.model';

import { RecordedWorkout } from '../models/recorded\_workout.model';

import { HttpClient } from '@angular/common/http';

import { BehaviorSubject } from 'rxjs';

import { map, tap, switchMap, take } from 'rxjs/operators';

import { UserService } from './user.service';

interface WorkoutDataInt {

  title: string;

  description: string;

  id: string;

  exercises: string[];

  sets: number[];

  reps: number[];

}

interface RecordedWorkoutDataInt {

  id: string;

  title: string;

  date: Date;

  notes: string;

  exercises: string[];

  weights: number[];

}

@Injectable({

  providedIn: 'root'

})

export class WorkoutService {

  private \_workouts = new BehaviorSubject<Workout[]>([]);

  private \_recordedWorkouts = new BehaviorSubject<RecordedWorkout[]>([]);

  constructor(private http: HttpClient, private loginServ: UserService) {}

  get workouts() {

    return this.\_workouts.asObservable();

  }

  getWorkout(id: string) {

    return this.http

      .get<WorkoutDataInt>(

        `https://revolutefitness-a92df.firebaseio.com/workouts/${this.loginServ.userId}/${id}.json`

      )

      .pipe(

        map(workoutData => {

          return new Workout(

            id,

            workoutData.title,

            workoutData.description,

            workoutData.exercises,

            workoutData.sets,

            workoutData.reps

          );

        })

      );

  }

  editWorkout(workout: Workout){

    let generatedId: string;

    return this.http.put<{name: string}>(`https://revolutefitness-a92df.firebaseio.com/workouts/${this.loginServ.userId}/${workout.id}.json` ,{

      ...workout,

      id: null

    })

    .pipe(

      switchMap(resData => {

        generatedId = resData.name;

        return this.workouts;

      }),

      take(1),

      tap(workouts => {

        workout.id = generatedId;

        this.\_workouts.next(workouts.concat(workout));

      })

    )

  }

  createWorkout(workout: Workout){

    let generatedId: string;

    return this.http.post<{name: string}>(`https://revolutefitness-a92df.firebaseio.com/workouts/${this.loginServ.userId}.json`, {

      ...workout,

      id: null

    })

    .pipe(

      switchMap(resData => {

        generatedId = resData.name;

        return this.workouts;

      }),

      take(1),

      tap(workouts => {

        workout.id = generatedId;

        this.\_workouts.next(workouts.concat(workout));

      })

    );

  }

  fetchWorkouts(){

    return this.http

      .get<{ [key: string]: WorkoutDataInt }>(

        `https://revolutefitness-a92df.firebaseio.com/workouts/${this.loginServ.userId}.json`

      )

      .pipe(

        map(WorkoutDataInt => {

          const workouts = [];

          for (const key in WorkoutDataInt) {

            if (WorkoutDataInt.hasOwnProperty(key)) {

              workouts.push(

                new Workout(

                  key,

                  WorkoutDataInt[key].title,

                  WorkoutDataInt[key].description,

                  WorkoutDataInt[key].exercises,

                  WorkoutDataInt[key].sets,

                  WorkoutDataInt[key].reps

                )

              );

            }

          }

          return workouts;

        }),

        tap(workouts => {

          this.\_workouts.next(workouts);

        })

      );

  }

  deleteWorkout(id: string) {

    return this.http

      .delete(

        `https://revolutefitness-a92df.firebaseio.com/workouts/${this.loginServ.userId}/${id}.json`

      )

      .pipe(

        switchMap(() => {

          return this.workouts;

        }),

        take(1),

        tap(workouts => {

          this.\_workouts.next(workouts.filter(b => b.id !== id));

        })

      );

  }

  // RECORDED WORKOUTS

  get recordedWorkouts() {

    return this.\_recordedWorkouts.asObservable();

  }

  recordWorkout(recordedWorkout: RecordedWorkout) {

    let generatedId: string;

    return this.http.post<{name: string}>(`https://revolutefitness-a92df.firebaseio.com/recorded\_workouts/${this.loginServ.userId}.json` ,{

      ...recordedWorkout,

      id: null

    })

    .pipe(

      switchMap(resData => {

        generatedId = resData.name;

        return this.recordedWorkouts;

      }),

      take(1),

      tap(recordedWorkouts => {

        recordedWorkout.id = generatedId;

        this.\_recordedWorkouts.next(recordedWorkouts.concat(recordedWorkout));

      })

    )

  }

  getRecordedWorkout(id: string) {

    return this.http

      .get<RecordedWorkoutDataInt>(

        `https://revolutefitness-a92df.firebaseio.com/recorded\_workouts/${this.loginServ.userId}/${id}.json`

      )

      .pipe(

        map(recordedWorkoutData => {

          return new RecordedWorkout(

            id,

            recordedWorkoutData.title,

            recordedWorkoutData.date,

            recordedWorkoutData.notes,

            recordedWorkoutData.exercises,

            recordedWorkoutData.weights

          );

        }

        )

      );

  }

  fetchRecordedWorkouts() {

    return this.http

      .get<{ [key: string]: RecordedWorkoutDataInt }>(

        `https://revolutefitness-a92df.firebaseio.com/recorded\_workouts/${this.loginServ.userId}.json`

      )

      .pipe(

        map(recordedWorkoutData => {

          const recordedWorkouts = [];

          for (const key in recordedWorkoutData) {

            if (recordedWorkoutData.hasOwnProperty(key)) {

              recordedWorkouts.push(

                new RecordedWorkout(

                  key,

                  recordedWorkoutData[key].title,

                  recordedWorkoutData[key].date,

                  recordedWorkoutData[key].notes,

                  recordedWorkoutData[key].exercises,

                  recordedWorkoutData[key].weights

                )

              );

            }

          }

          return recordedWorkouts;

        }),

        tap(recordedWorkouts => {

          this.\_recordedWorkouts.next(recordedWorkouts);

        })

      );

  }

  deleteRecordedWorkout(id: string) {

    return this.http

      .delete(

        `https://revolutefitness-a92df.firebaseio.com/recorded\_workouts/${this.loginServ.userId}/${id}.json`

      )

      .pipe(

        switchMap(() => {

          return this.recordedWorkouts;

        }),

        take(1),

        tap(recordedWorkouts => {

          this.\_recordedWorkouts.next(recordedWorkouts.filter(b => b.id !== id));

        })

      );

  }

}

## App.routing.module.ts

import { NgModule } from '@angular/core';

import { PreloadAllModules, RouterModule, Routes } from '@angular/router';

import { AuthGuard } from './services/login.guard';

const routes: Routes = [

  { path: '', redirectTo: 'login', pathMatch: 'full' },

  {

    path: 'login',

    loadChildren: () => import('./public/login/login.module').then( m => m.LoginPageModule)

  },

  {

    path: 'register',

    loadChildren: () => import('./public/register/register.module').then( m => m.RegisterPageModule)

  },

  {

    path: 'dashboard',

    loadChildren: () => import('./private/dashboard/dashboard.module').then( m => m.DashboardPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'view-workouts',

    loadChildren: () => import('./private/view-workouts/view-workouts.module').then( m => m.ViewWorkoutsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'record-workouts-view/:workoutId',

    loadChildren: () => import('./private/record-workout/record-workout.module').then( m => m.RecordWorkoutPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'create-workout',

    loadChildren: () => import('./private/create-workout/create-workout.module').then( m => m.CreateWorkoutPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'view-workouts/:workoutId',

    loadChildren: () => import('./private/view-workout-details/view-workout-details.module').then( m => m.ViewWorkoutDetailsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'manage-clients',

    loadChildren: () => import('./private/manage-clients/manage-clients.module').then( m => m.ManageClientsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'record-workouts-view',

    loadChildren: () => import('./private/record-workouts-view/record-workouts-view.module').then( m => m.RecordWorkoutsViewPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'exercise-analysis',

    loadChildren: () => import('./private/exercise-analysis/exercise-analysis.module').then( m => m.ExerciseAnalysisPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'view-recorded-workouts',

    loadChildren: () => import('./private/view-recorded-workouts/view-recorded-workouts.module').then( m => m.ViewRecordedWorkoutsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'view-recorded-workouts/:recordedWorkoutId',

    loadChildren: () => import('./private/view-recorded-workout-details/view-recorded-workout-details.module').then( m => m.ViewRecordedWorkoutDetailsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'user-stats',

    loadChildren: () => import('./private/user-stats/user-stats.module').then( m => m.UserStatsPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'manage-client-dashboard',

    loadChildren: () => import('./private/manage-client-dashboard/manage-client-dashboard.module').then( m => m.ManageClientDashboardPageModule),

    canLoad: [AuthGuard]

  },

  {

    path: 'forgot-password',

    loadChildren: () => import('./public/forgot-password/forgot-password.module').then( m => m.ForgotPasswordPageModule)

  }

];

@NgModule({

  imports: [

    RouterModule.forRoot(routes, { preloadingStrategy: PreloadAllModules })

  ],

  exports: [RouterModule]

})

export class AppRoutingModule { }

# Machine Learning

## Model Creation

from \_\_future\_\_ import absolute\_import, division, print\_function, unicode\_literals

# TensorFlow and tf.keras

import tensorflow as tf

from tensorflow import keras

from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Dense, Dropout, Activation, Flatten, Conv2D, MaxPooling2D

import pickle

# Helper libraries

import numpy as np

import matplotlib.pyplot as plt

import cv2

import os

print(tf.\_\_version\_\_)

DATADIR = "C:/Users/kevin/Documents/Ionic/FYP\_Applications/ML\_Model\_Creation/exercises"

CATEGORIES = ["Squat", "Bench"]

for category in CATEGORIES:

    path = os.path.join(DATADIR, category)

    for img in os.listdir(path):

        img\_array = cv2.imread(os.path.join(path,img), cv2.IMREAD\_GRAYSCALE)

        plt.imshow(img\_array, cmap="gray")

        plt.show()

        break

    break

IMG\_SIZE = 150

new\_array = cv2.resize(img\_array, (IMG\_SIZE, IMG\_SIZE))

plt.imshow(new\_array, cmap = 'gray')

plt.show()

training\_data = []

def create\_training\_data():

    for category in CATEGORIES:

        path = os.path.join(DATADIR, category)

        class\_num = CATEGORIES.index(category)

        for img in os.listdir(path):

            try:

                img\_array = cv2.imread(os.path.join(path,img), cv2.IMREAD\_GRAYSCALE)

                new\_array = cv2.resize(img\_array, (IMG\_SIZE, IMG\_SIZE))

                training\_data.append([new\_array, class\_num])

            except Exception as e:

                pass

create\_training\_data()

import random

random.shuffle(training\_data)

X = []

y = []

for features, label in training\_data:

    X.append(features)

    y.append(label)

X = np.array(X).reshape(-1, IMG\_SIZE, IMG\_SIZE, 1)

y = np.array(y)

import pickle

pickle\_out = open("X.pickle", "wb")

pickle.dump(X, pickle\_out)

pickle\_out.close()

pickle\_out = open("y.pickle", "wb")

pickle.dump(y, pickle\_out)

pickle\_out.close()

pickle\_in = open("X.pickle", "rb")

X = pickle.load(pickle\_in)

pickle\_in.close()

pickle\_in = open("y.pickle", "rb")

y = pickle.load(pickle\_in)

pickle\_in.close()

X = X / 255.0

model = Sequential()

model.add(Conv2D(64, (3,3), input\_shape = X.shape[1:]))

model.add(Activation("relu"))

model.add(MaxPooling2D(pool\_size=(2,2)))

model.add(Conv2D(64, (3,3)))

model.add(Activation("relu"))

model.add(MaxPooling2D(pool\_size=(2,2)))

model.add(Flatten())

model.add(Dense(64))

model.add(Activation("relu"))

model.add(Dense(1))

model.add(Activation('sigmoid'))

model.compile(loss="binary\_crossentropy", optimizer="adam", metrics=["accuracy"])

model.fit(X, y, batch\_size=1,epochs=10, validation\_split=0.05)

def prepare(filepath):

    img\_array = cv2.imread(filepath, cv2.IMREAD\_GRAYSCALE)

    new\_array = cv2.resize(img\_array, (IMG\_SIZE,IMG\_SIZE))

    return new\_array.reshape(-1,IMG\_SIZE,IMG\_SIZE,1)

prediction = model.predict([prepare('C:/Users/kevin/Documents/Ionic/FYP\_Applications/ML\_Model\_Creation/exercises/predict4.jpg')])

print(CATEGORIES[int(prediction[0][0])])

model.save('my\_model.h5')

DATADIR = "C:/Users/kevin/Documents/Ionic/exercises"

CATEGORIES2 = ["Squat\_TEST", "Bench\_TEST"]

for category in CATEGORIES2:

    path = os.path.join(DATADIR, category)

    for img in os.listdir(path):

        img\_array = cv2.imread(os.path.join(path,img), cv2.IMREAD\_GRAYSCALE)

        plt.imshow(img\_array, cmap="gray")

        plt.show()

        break

    break

IMG\_SIZE = 150

new\_array = cv2.resize(img\_array, (IMG\_SIZE, IMG\_SIZE))

plt.imshow(new\_array, cmap = 'gray')

plt.show()

testing\_data = []

def create\_testing\_data():

    for category in CATEGORIES2:

        path = os.path.join(DATADIR, category)

        class\_num = CATEGORIES2.index(category)

        for img in os.listdir(path):

            try:

                img\_array = cv2.imread(os.path.join(path,img), cv2.IMREAD\_GRAYSCALE)

                new\_array = cv2.resize(img\_array, (IMG\_SIZE, IMG\_SIZE))

                testing\_data.append([new\_array, class\_num])

            except Exception as e:

                pass

create\_testing\_data()

random.shuffle(testing\_data)

X\_test = []

y\_test = []

for features, label in training\_data:

    X\_test.append(features)

    y\_test.append(label)

X\_test = np.array(X).reshape(-1, IMG\_SIZE, IMG\_SIZE, 1)

y\_test = np.array(y)

X\_test = X\_test / 255.0

from sklearn.metrics import confusion\_matrix

y\_pred = model.predict\_classes(X\_test)

confusion\_matrix(y\_test, y\_pred)

## Flask App

### App.py

from flask import Flask, render\_template, url\_for, flash, redirect, request

# TensorFlow and tf.keras

import pandas as pd

import tensorflow as tf

from tensorflow import keras

from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Dense, Dropout, Activation, Flatten, Conv2D, MaxPooling2D

import pickle

# Helper libraries

import numpy as np

import matplotlib.pyplot as plt

import cv2

import os

app = Flask(\_\_name\_\_)

app.debug = True

@app.route("/", methods=['POST','GET'])

@app.route("/home", methods=['POST','GET'])

def home(name=None):

    if request.args:

        result = request.args['result']

    else:

        result = None

    return render\_template('home.html', predictions=result)

app.config['IMAGE\_UPLOADS'] = "C:/Users/kevin/Documents/Ionic/Revolute\_Fitness/ML\_Flask\_App/static/img"

@app.route("/predict/", methods=['POST','GET'])

def runPrediction():

    if request.method == 'POST':

        if request.files:

            image = request.files['image']

            image.save(os.path.join(app.config['IMAGE\_UPLOADS'], 'predict.jpg'))

            result = predict(os.path.join(app.config['IMAGE\_UPLOADS'], 'predict.jpg'))

            os.remove(os.path.join(app.config['IMAGE\_UPLOADS'], 'predict.jpg'))

            return redirect(url\_for('.home', result=result))

    return redirect('/home')

#ML STUFF

def prepare(filepath):

    IMG\_SIZE = 150

    img\_array = cv2.imread(filepath, cv2.IMREAD\_GRAYSCALE)

    new\_array = cv2.resize(img\_array, (IMG\_SIZE,IMG\_SIZE))

    new\_array = new\_array.astype(np.float64)

    return new\_array.reshape(-1,IMG\_SIZE,IMG\_SIZE,1)

def predict(filepath):

    model = tf.keras.models.load\_model('my\_model.h5')

    prediction = model.predict([prepare(filepath)])

    CATEGORIES = ["Barbell Squat", "Barbell Bench Press"]

    result = CATEGORIES[int(prediction[0][0])]

    print(result)

    return result

if \_\_name\_\_ == '\_\_main\_\_':

    app.run(debug=True)

### Home.html

<!DOCTYPE html>

<html lang="en">

<head>

  <title>Bootstrap Example</title>

  <meta charset="utf-8">

  <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">

  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>

  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>

  <script>

    function readURL(input) {

        if (input.files && input.files[0]) {

            var reader = new FileReader();

            reader.onload = function (e) {

                $('#blah')

                    .attr('src', e.target.result)

                    .width(150)

                    .height(200);

            };

            reader.readAsDataURL(input.files[0]);

        }

    }

  </script>

</head>

<body>

<div class="jumbotron text-center">

  <h1>Exercise Image Analysis</h1>

  <p>Select an image of a bench press or a squat and the application will classify the image</p>

</div>

<div class="container">

  <form action="/predict/" method="post" enctype="multipart/form-data">

    <div class="row">

      <div class="col-sm-4">

        <h3>Select Prediction Image</h3>

        <input name='image' id='image' class="form-control border-0" type="file" onchange="readURL(this)">

        <button type="submit" class="btn btn-primary">Predict</button>

      </div>

      <div class="col-sm-4">

        <h3>Selected Image</h3>

        <img id="blah" src="#"/>

      </div>

      <div class="col-sm-4">

        <h3>Prediction</h3>

        <h4><b>{{ predictions }}</b></h4>

      </div>

    </div>

  </form>

</div>

</body>

</html>

# Appendix

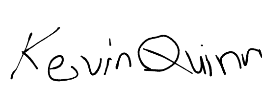
## Declaration

* I declare that all material in this submission e.g. thesis/essay/project/assignment is entirely my/our own work except where duly acknowledged.
* I have cited the sources of all quotations, paraphrases, summaries of information, tables, diagrams or other material; including software and other electronic media in which intellectual property rights may reside.
* I have provided a complete bibliography of all works and sources used in the preparation of this submission.
* I understand that failure to comply with the Institute’s regulations governing plagiarism constitutes a serious offense.

**Student Name:** Kevin Quinn

**Student Number:** C00216607

**Signature:**

****

Date: 20/04/2020