Documentation: Department Survey Website Using Angular and Spring Boot

Project Team

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File Structure

- departmentWebsite
  - frontend [contains angular project]
  - backend [contains spring boot project]

High-level overiew

Frontend:

Commands used to create angular project

- 1> command to install angular cli : npm install -g @angular/cli
  2> To create project in angular: ng new departmentSurvey
  3> Go inside the project folder using command: cd departmentSurvey
  4> To run the angular project use the command: npm start
  5> Student survey form using command: ng g c listSurveys
  6> List of all survey using the command: ng g c surveyForm

- I have designed 2 extra components along with app component, namely `list-surveys` and `survey-form`.

- I have designed a service namely `survey-api` which has four methods `addSurvey` which handles the post request, `getSurveys` which returns a `httpClient` observable, `updateSurvey` which handles the update request and finally `deleteSurvey` which handles the delete operation.

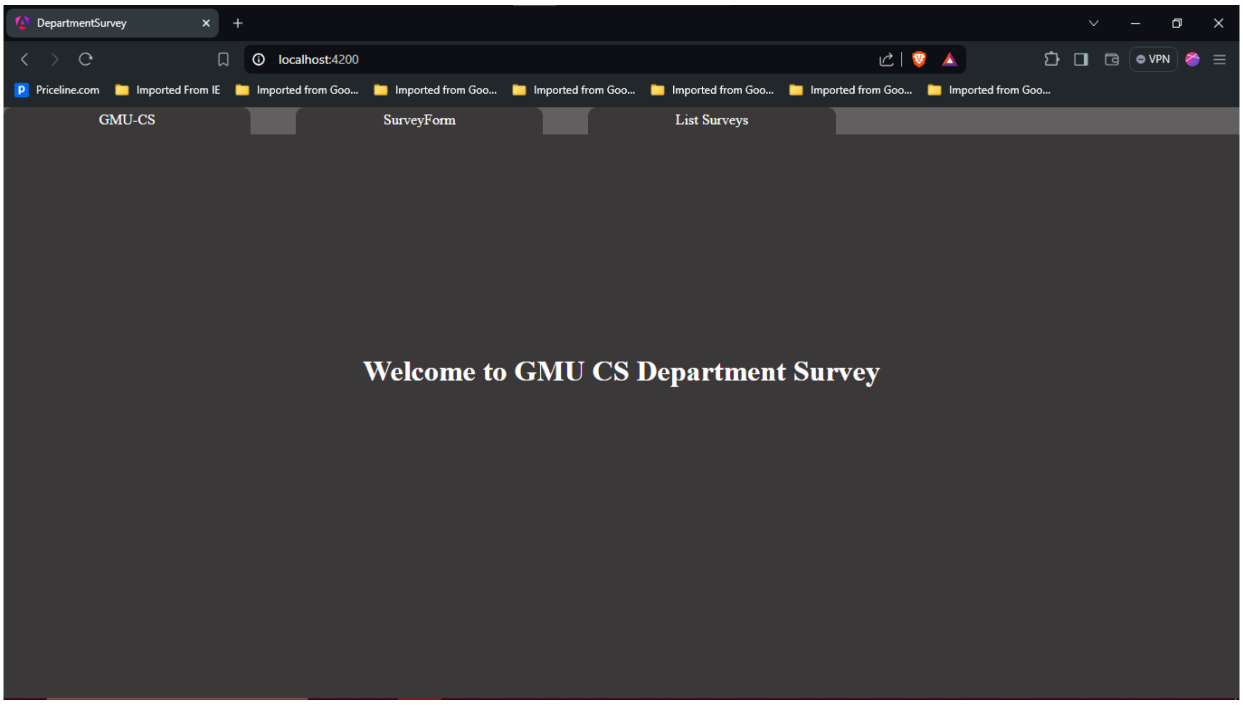
Backend:

- SpringBoot project with JPA, h2database, spring-web.
- It manages `SurveyFormEntity`, `SurveyFormRepository`, `SurveyFormServiceImpl` and finally `SurveyFormController`

Below are complete details of implementation

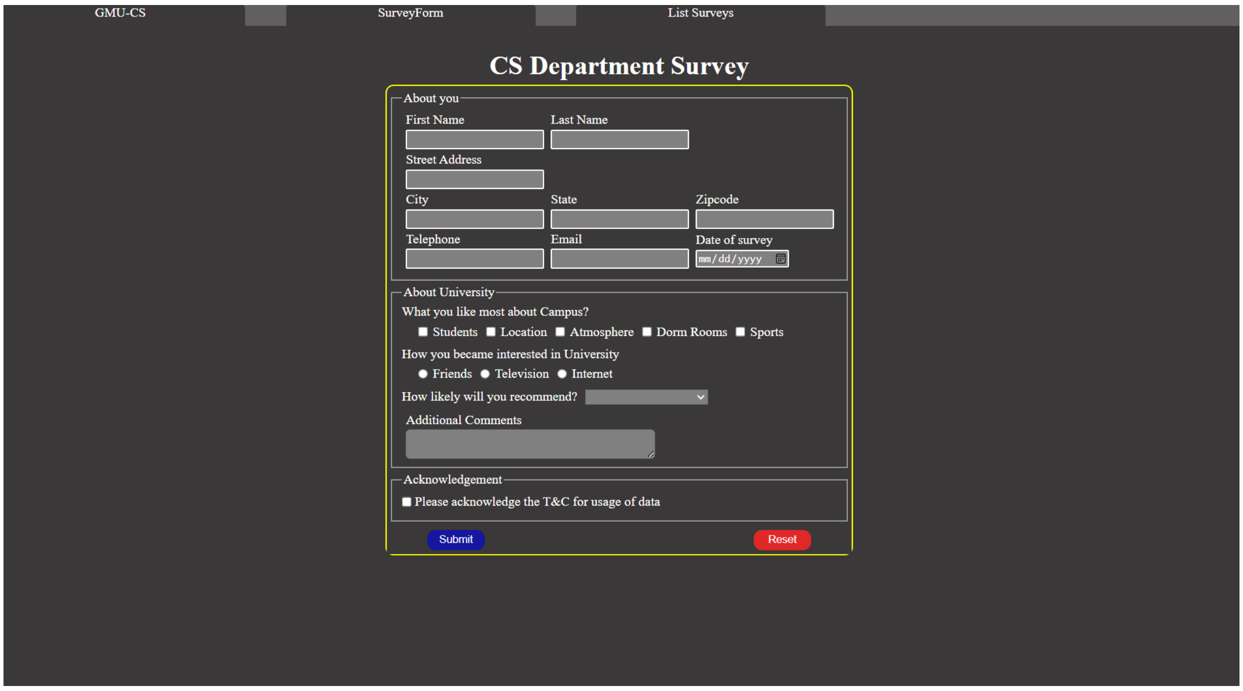
Frontend

- In the app component I have used `@if` directive with a underlying function for `(click)` event which changes to either to `survey-form` component or `list-surveys` component based on the click but defaults to welcome page as shown below



Welcome to GMU CS Department Survey

- By clicking on the `surveyForm` in the top, it updates the content to show the `survey-form` component which looks like below



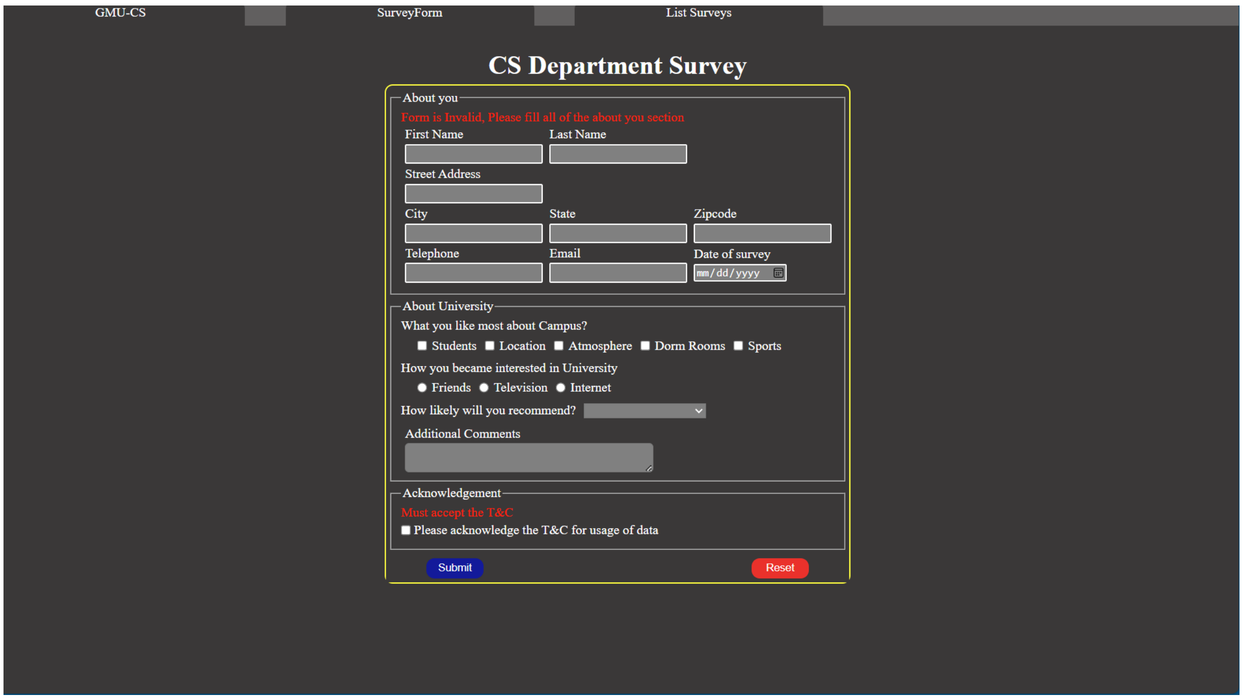
CS Department Survey

About you
First Name
Last Name
Street Address
City
State
Zipcode
Telephone
Email
Date of survey
mm/dd/yyyy

About University
What you like most about Campus?
Students Location Atmosphere Dorm Rooms Sports
How you became interested in University
Friends Television Internet
How likely will you recommend?
Additional Comments

Acknowledgement
Please acknowledge the T&C for usage of data

- Where the user can fill the survey, user is required to fill all of the about you section but about university section is optional.
- Upon submission, form checks for basic validation of required fields, which outputs an collective error like below



CS Department Survey

About you

Form is Invalid, Please fill all of the about you section

First Name	Last Name	
Street Address		
City	State	Zipcode
Telephone	Email	Date of survey mm/dd/yyyy

About University

What you like most about Campus?

☐ Students ☐ Location ☐ Atmosphere ☐ Dorm Rooms ☐ Sports

How you became interested in University

○ Friends ○ Television ○ Internet

How likely will you recommend?

Additional Comments

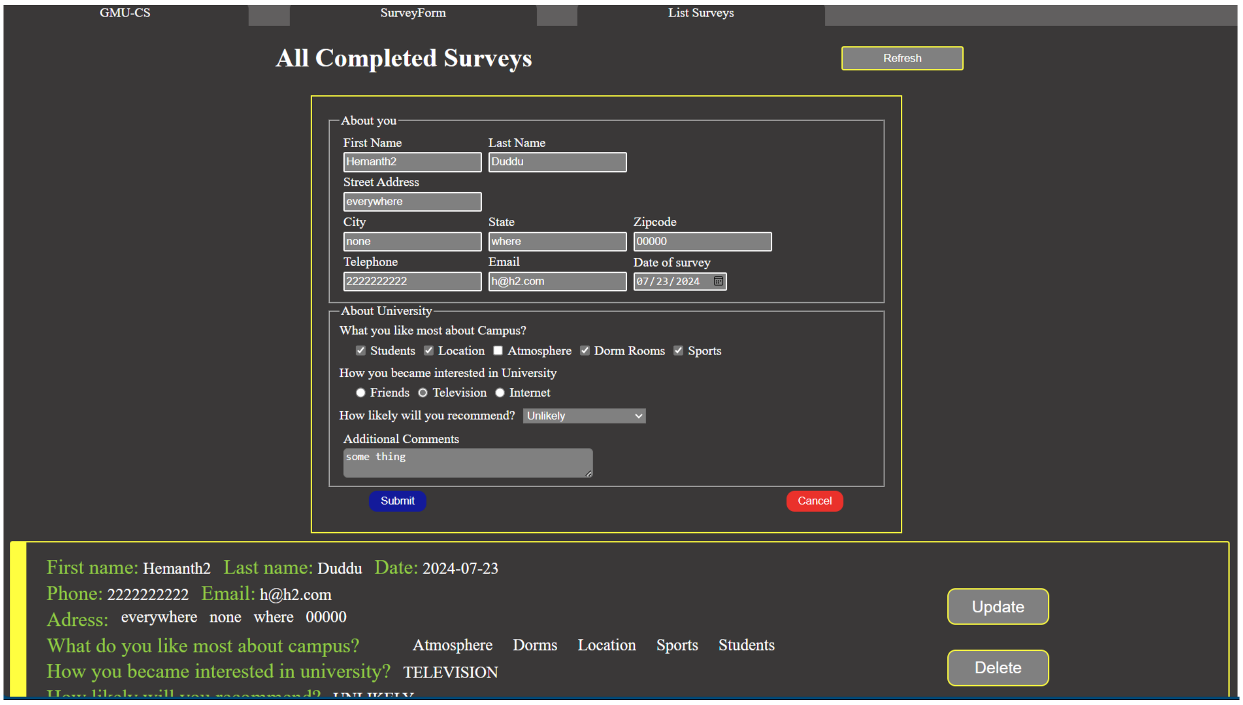
Acknowledgement

Must accept the T&C

☐ Please acknowledge the T&C for usage of data

- Once you fill the contents and click on submit, it will invoke the `onSubmit` function, this function takes the whole form as argument as `NgForm` and let's us manage the form's inputs.
- In the `onSubmit` method, we have used the `surveyFormApi` service and invoked `addSurvey` method which handles the post request and send the form data to backend and in turn saved to a database.
- Similary `reset` button has `(click)` event connected to `onReset` method which just resets the whole form.
- Another component is `list-surveys` clicking on this displays all the surveys stored on database. which looks like below:
  alt text
- I created a `fetchData` method, which uses the service `surveyFormApi` injected into the `list-surveys` component using `inject()` function and makes use of the method provided by service called `getSurveys` which returns an observable.
- I created a `signal` called `allSurveysSignal` of type `any` initialized to an `empty array`. which invokes subscription of the observable in `fetchData` method, I have set the data from server to this signal using `this.allSurveysSignal.set(fetchedData)`.
- Then I invoked this function in the `ngOnInit`, which make sures the data fetched upon component creation.
- after having the data, I have made use of `@for` directive and populated the `list-surveys` page.
- I also created a `refresh` button, which invokes the method `refreshData()` through `(click)`, it just inturn calls the `fetchData` method and updates our signal.
- Then we have two buttons `delete` and `update`, `delete` has simple underlying `(click)` event which inturn use `surveyFormApi` service and just deletes that specific survey data and then refreshes the component.
- Where as when you click on `update` it will create space for similar form on top of page with the prefilled data. From there you can either `submit` to update data or `cancel` to discard the update.

The page looks like below:



All Completed Surveys

About you

First Name	Last Name	
Hemanth2	Duddu	
Street Address		
everywhere		
City	State	Zipcode
none	where	00000
Telephone	Email	Date of survey
2222222222	h@h2.com	07/23/2024

About University

What you like most about Campus?

✓ Students ✓ Location ☐ Atmosphere ✓ Dorm Rooms ✓ Sports

How you became interested in University

● Friends ○ Television ● Internet

How likely will you recommend? Unlikely

Additional Comments

some thing

First name: Hemanth2 Last name: Duddu Date: 2024-07-23
Phone: 2222222222 Email: h@h2.com
Adress: everywhere none where 00000
What do you like most about campus? Atmosphere Dorms Location Sports Students
How you became interested in university? TELEVISION

Backend

- First I initilized the project using spring-starter with h2database, springJPA, spring-web as the dependencies.
- Then used the following settings in application.properties to initialize the h2 database connection.

```
spring.datasource.url=jdbc:h2:file:./testdb
spring.datasource.driverClassName=org.h2.Driver
spring.datasource.username=sa
spring.datasource.password=password
spring.jpa.database-platform=org.hibernate.dialect.H2Dialect
spring.h2.console.enabled=true
spring.jpa.show-sql=true
spring.jpa.hibernate.ddl-auto=update
```

- Then I created `SurveyFormEntity` using `@Entity` annotation with the following attributes

```
@Id
@GeneratedValue(strategy = GenerationType.IDENTITY)
private Long id;

private String firstName;
private String lastName;
private String address;
private String city;
private String state;
private String zip;
private String phone;
```

```
    private String email;
    private LocalDate dateOfSurvey;
    private boolean q1Students;
    private boolean q1Location;
    private boolean q1Campus;
    private boolean q1Atmosphere;
    private boolean q1Dorms;
    private boolean q1Sports;
    private String q2answer;
    private String q3answer;
    private String additionalComments;
```

- After setting entity pojo, created another file with `SurveyFormRepository` which is an interface that just extends to `JPARepository` for abstracted methods.
- Then Created another interface called `SurveyFormServices` which just puts out all the services available, in this case only two, which are

```
    boolean postSurvey(surveyFormEntity surveyForm);
    HashMap<String,List<surveyFormEntity>> getSurveys();
    boolean deleteSurvey(Long surveyId);
    boolean updateSurvey(surveyFormEntity surveyForm);
```

- Then Created another class called `SurveyFormServiceImpl` which implements the `SurveyFormServices`, and also class should have annotation `@Service`. It also uses `SurveyFormRepository` for database operations which is initialized through `Dependency Injection` by spring-boot. Please see the code file `SurveyFormServiceImpl.java` for specific details.
- The last thing remaining is `Controller`, create a new class `SurveyFormController` and it is annotated by `@RestController`. It makes use of `SurveyFormServiceImpl` and implemented two controllers that can be used by the frontend, namely,

```


    @GetMapping(path = "/allSurveys")
    public ResponseEntity<HashMap<String,List<surveyFormEntity>>> allSurveys()
{
        return new ResponseEntity<>(this.surveyFormServiceImpl.getSurveys(),
HttpStatus.OK);
    }

    @PostMapping(path="/addSurvey")
    public ResponseEntity<surveyFormEntity> addSurvey(@RequestBody
surveyFormEntity surveyFormEntity) {
        if(this.surveyFormServiceImpl.postSurvey(surveyFormEntity)){
            return new ResponseEntity<>(surveyFormEntity, HttpStatus.CREATED);
        }else{
            return new ResponseEntity<>(surveyFormEntity,
HttpStatus.BAD_REQUEST);
```

```
        }
    }

    @PutMapping(path = "/updateSurvey")
    public ResponseEntity<surveyFormEntity> updateSurvey(@RequestBody
surveyFormEntity surveyFormEntity) {
        if(this.surveyFormServiceImpl.updateSurvey(surveyFormEntity)){
            return new ResponseEntity<>(surveyFormEntity, HttpStatus.CREATED);
        }
        return new ResponseEntity<>(surveyFormEntity, HttpStatus.BAD_REQUEST);
    }

    @DeleteMapping(path = "/deleteSurvey/{id}")
    public ResponseEntity<Boolean> deleteSurvey(@PathVariable Long id) {
        if(this.surveyFormServiceImpl.deleteSurvey(id)){
            return new ResponseEntity<>(true, HttpStatus.OK);
        }
        return new ResponseEntity<>(false, HttpStatus.NOT_FOUND);
    }
```

- Finally one last file named as `CorsConfiguration` which uses an annotation `@Configuration`, which allows CORS for our angular server, it contents are as below:

```
@Bean
    public WebMvcConfigurer corsConfigurer() {
        return new WebMvcConfigurer() {
            @Override
            public void addCorsMappings(CorsRegistry registry) {

registry.addMapping("/**").allowedOrigins("*").allowedMethods("GET", "POST",
"PUT", "DELETE");
            }
        };
    }
```