

Principles of Database Systems

Project Part #5

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Github Source Code: https://github.com/usman-z/Project_Part_5

The Technologies used:

- This web application uses AngularJS, a popular javascript-based frontend framework, for the frontend.
- This web application uses ExpressJS, a popular javascript-based backend framework, for the backend.
- This web application uses XAMPP as the Database Management System.

Running the Web application:

- The AngularJS frontend can be started using the "ng serve" command once you cd into the AngularJS directory and use the "npm install" command to download all the necessary dependencies to serve the frontend on <http://localhost:4200/>
- The ExpressJS backend can be started using the "node app.js" command once you cd into the ExpressJS and use the "npm install" command to download all the necessary dependencies to serve the backend on <http://localhost:8080/>
- The application uses XAMPP for the database, so for the application to run the XAMPP SQL server must be running on <http://localhost:3306/>

Is the error checking done by Application or by Database?

All error checking against bad inputs in this web application is done by the application to ensure only valid and accurate inputs are received by the database and that the user receives immediate error feedback.

Explain the trade-offs and give examples of both.

Pros and Cons of Application Error Checking

Application error checking is advantageous to Database error checking because it provides the user with immediate error feedback, and it is less costly in time and resources since no information is sent to the database just for the input to be rejected because it is invalid.

Application error checking is disadvantageous to Database error checking since it requires extra coding work for the programmer and the possibility of errors in that extra code. Everywhere in the application where you accept the input you will need the appropriate error-checking code, which leads to redundant and repetitive code.

Example of Application Error Checking: The ssn input given by the user is checked using javascript logic to ensure that the input string is all numerical values and has a length of 9 before passing it to the database.

Pros and Cons of Database Error Checking

Database error checking is advantageous to Application error checking because you avoid repetitive error-checking code in the application and instead have the database error check the input.

Database error checking is disadvantageous to Application error checking because it is a slow resource-consuming process in which input, as given by the user, is sent directly to the database without a validity check by the application, and error feedback is not immediately visible to the user.

Example of Database Error Checking: The ssn input given by the user is passed to the database without any error checking by the application for the database to check the input and decide whether to accept the input or reject it with an error.