**CST-323 Design Report Template**

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| **Topic:** | *Topic 1* | |
| **Date:** | *08/31/2025* | |
| **Revision:** | *Rev 1.0* | |
| **Team:** | 1. *Daniyar Abeuov* | |
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| **Weekly Team Status Summary:** | |  |  |  |  | | --- | --- | --- | --- | | **User Story** | **Team**  **Member** | **Hours**  **Worked** | **Hours Remaining** | | *User Registration/Login* | *1* | *2* | *0* | | *Car List* | *1* | *0.5* | *0* | | *Admin CRUD* | *1* | *3* | *0* | | *MySQL DB* | *1* | *1* | *0* | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | | |
| **GIT URL:** | *The GIT Bitbucket URL that I can use to clone your code.* | |
| **Hosting URL:** | *NA no public url, only on localhost for now* | |
| **Peer Review:** | *Y* | We acknowledge that our team has reviewed this report and we agree to the approach we are all taking. |

**Design Documentation**

**Install Instructions:**

*Include step-by-step instructions for setting up your database, configuring, and deploying/installing your application. This section should also include detailed instructions for what configuration files are required by your application, what configuration settings need to be adjusted for various runtime (development or production) environments, and where the files need to be deployed to. This section should also contain detailed instructions for how to clone your application source code from Bitbucket and deploy the application to an externally hosted site.*

1. *Install JDK 17 or newer, set JAVA\_HOME environment variable and add JDK to the PATH*
2. *Set up MySQL DB server, download mysql, then create a database by entering this command in the mysql terminal: CREATE DATABASE car\_management;*
3. *Clone the repository git clone* [*https://github.com/AbeuovDaniyar/car-management-app.git*](https://github.com/AbeuovDaniyar/car-management-app.git)
4. *Configure db connection in src/main/resources/application.properties*
5. *Run the application*
6. *Application Access http://localhost:8080*

**General Technical Approach:**

*You should, in words, describe your approach and design here. You should also summarize any meeting notes, brainstorming sessions, etc. that you want to retain through the design of your project.*

*Using Spring Boot framework as per the activity guidelines with SLF4J for logging. Using MVC architecture for simple and quick development and debugging. This application uses MySQL for persistent data storage as per the activity guidelines. The backend uses Spring Data JPA for database abstraction, Spring Security for authentication and authorization. Frontend uses Thymeleaf for templating, bootstrap 5 for UI as per the activity guidelines. The app is stored on github and uses git for version control.*

**Key Technical Design Decisions:**

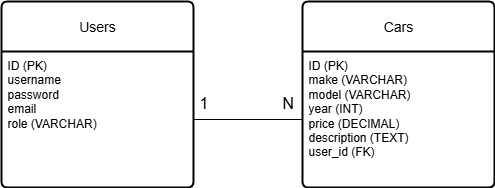
*Any final technical design decisions, such as framework decisions and so forth., should be documented here. This should list the technology/framework, its purpose in the design, and why it was chosen.*

*Spring boot was chosen as a Framework, because of the activity requirements as well as its rapid development capabilities and rich documentation available. MySQL 8.0 is chosen as a Database of choice due to it being the activity requirement as well as its simplicity. Spring Security was used for authentication and authorization because it is one of the standard security frameworks with built in protections against common vulnerabilities.*

*Spring Data JPA is used for simplicity, efficiency of development, provides automatic query generation. Thymeleaf is the Template Engine of choice due to it being simple and efficient. Bootstrap 5 as the UI Framework because of the activity requirements to provide responsive design and cross-browser compatibility. SLF4J for logging per the activity requirements for logging and debugging. BCrypt for password hashing to securely store passwords.*

**ER Diagram:**

*Insert the image file of your ER database diagram.*

**

**DDL Scripts:**

*This should contain a link to Bitbucket where the DDL script can be downloaded.*

**Sitemap Diagram:**

*Include the image file of your Sitemap diagram.*

*A screenshot of a computer

AI-generated content may be incorrect.*

**Security Design:**

*This section should outline the design for how authentication and authorization was supported. This section should also contain all of the roles and privileges that are supported by the design.*

*Authentication:*

* Form-based authentication with username and password
* BCrypt for password hashing
* Session-based authentication
* Custom UserDetailsService for db user lookup

*Authorization:*

* Role based access
* 2 roles of admin and user

|  |  |  |
| --- | --- | --- |
| Role | Privileges | Access |
| Admin | Full CRUD operations on cars. View Cars | /admin, /cars, /cars |
| User | View Cars | /cars |
| Anonymous | Registration, Login | /register, /login |

**Third Party Interface Design:**

*NA*

**Flowcharts:**

*Insert any flowcharts here. Flowcharts should document algorithms or workflow that will be implemented in your program. At a minimum, this section should contain a flowchart of your shopping experience.*

**User Interface Diagrams:**

*Insert any wireframe drawings or white board concepts that were developed to support your application. If you have no supporting documentation, please explain the rationale for leaving this section as N/A.*

**Class Diagrams:**

*Insert any class diagrams here. Your class diagrams should be drawn correctly with the three appropriate class compartments, + and – minus to indicate accessibility, and the data types for the state/properties, as well as method arguments and return types. If you have no supporting documentation, please explain the rationale for leaving this section as N/A.*

**Pseudo Code:**

*Provide Bitbucket URL references to any code stubs and pseudo code. If you have no supporting documentation, please explain the rationale for leaving this section as N/A.*

**Other Documentation:**

*Insert any additional drawings, storyboards, white board pictures, project schedules, tasks lists, etc. that support your approach, design, and project. If you have no supporting documentation, please explain the rationale for leaving this section as N/A.*