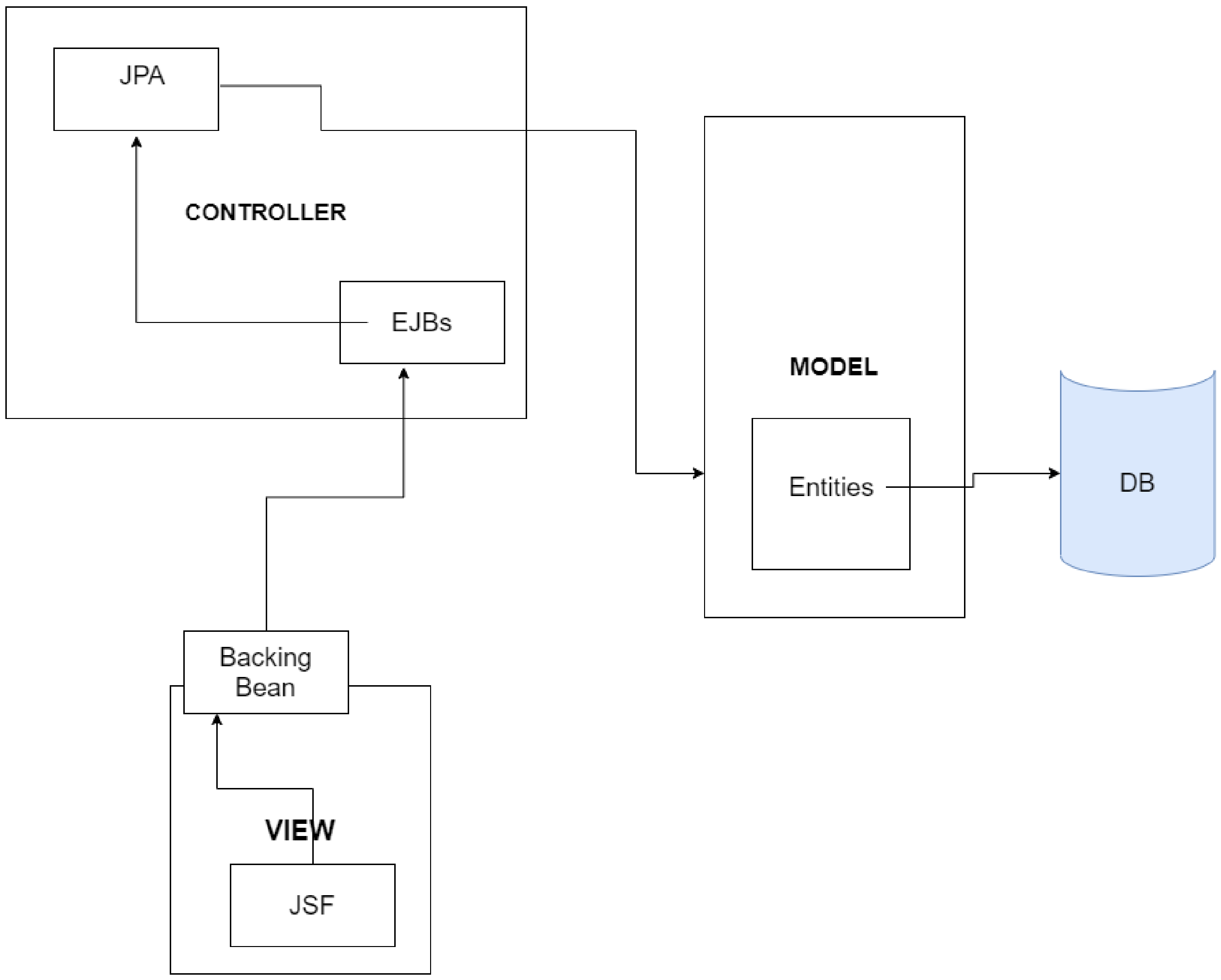
- (5%) How your design fits with the 3-tier architectural model and the model-view-controller software pattern

The project produced implements the model-view-controller software pattern via encapsulating the three components of MVC architecture, in my project these components were as follows. The model, made up of the EJBs along with the entity classes used to interact with the database, was used to perform business logic. JPA was used to interact with the underlying database via the entity classes and beans. The view was implemented using JSF, separating the user interface allowed the control to be executed via the backing bean.



- (5%) The strengths and weaknesses of your chosen methods for securing the application, comparing your approach to other options

Authentication occurs when logging in, checking against registered users in the DB via JDBC pool + data source. JPA enabled querying of the database. User roles were implemented, but without the proper Java EE technique of security roles. The security and roles were implemented using the DB and beans / entities. All database queries were properly constructed using the Persistence Query Language's typed queries, as to avoid any chances of SQL injection. Passwords are hashed and only ever compared after being hashed as to avoid any unwanted plaintext storage.

- (5%) How your design could be extended so that your server is not a single point of failure

Including caching, using Hibernate, would be an immense source of availability, as it would enable speedy data retrieval - lessening the strain on the network when requests are executed.

Distributing the load via clustering would greatly reduce the likelihood of single point of failure, by ensuring protection from failures, providing easier scalability and load balancing.

- (5%) How your system would deal with concurrent users accessing functionality and data

The project implements Java EE's technique for transactions, where all actions must complete or else the whole transaction gets rolled back. Injecting a UserTransaction object provides an interface so that apps are able to start, commit and/or roll back transactions, avoiding the inconsistent retrieval problem.