

Please refer to the below state diagram of the product Entity.

### Product Entity

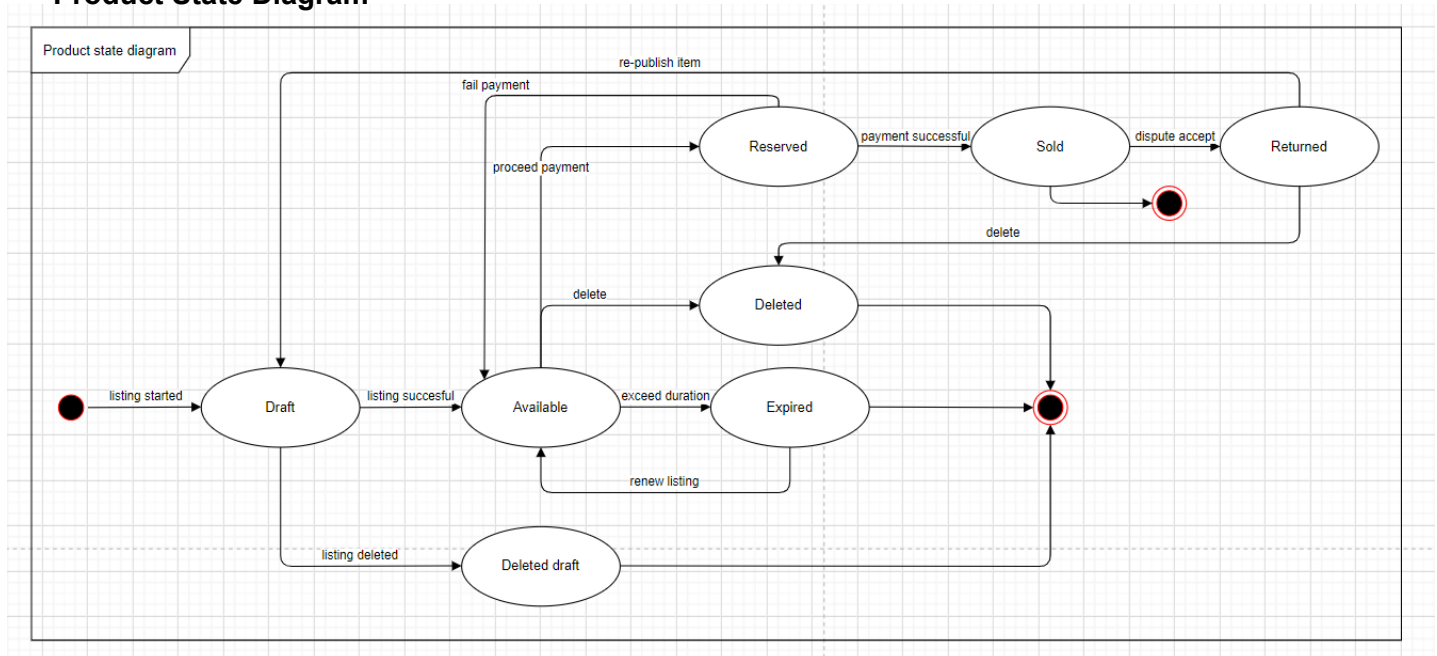
A Product has below fields:

- Product Name, Product Price, Images (One of this will be the main image)

A product belongs to one category.

A category may belong to one parent category. A category has category\_id, category\_name and parent\_id

### Product State Diagram



**You are required to:**

1. Document APIs on Swagger.
  - a. REST API and a GraphQL API to GET category list. If the parent\_id is given it should return only the child categories
  - b. REST API and a GraphQL API to get a list of products by state and transfer the state.
2. Design a proper class structure for handling the product state changes. You may use a matching design pattern (e.g. State Design Pattern). Proper exceptions should be thrown if there is an attempt to make invalid states. (e.g. draftProduct->sold() should not be allowed)
3. Implement unit testing for above APIs
4. Develop the REST and GraphQL APIs for above.

