**Models:**

1. Product:

* Id
* Name
* Category\_Id
* Description
* Price

1. Product Category

* Id
* Name

1. User (used for login)

* Username
* Password

**Features:**

**\*All pages must be written using JSP and Servlet only**

**\*Form validation is not required. User should input the correct value**

1. *Search Product (Search Page)*

* By Name (Text input)
* By Category (pre-defined values: Category 1, Category 2, Category 3, Category 4)
* By Price range (Number input)
* Order by:
  + Name
  + Price
* Search result must be displayed in a grid (table) with all attributes (Name, Category, Price and Description)
* Allow search with any combination of above criteria.
* Click on an item will go to Edit Product page. (Hidden for unauthorized user)
* Click on ‘Add New’ button will go to New Product page (Hidden for unauthorized user)

1. *Manage Product (Edit/New Product Page)*

* Form to add/edit new Product (name, category, price, description)
  + If add new, all fields are blank
  + If edit, all fields are pre-populated using selected product
* Button ‘Update’ / ‘Add New’ to persist data
* Button ‘Delete’
* After a transaction, back to Search Product Page

1. *Login Page*

* Default homepage
* A link to Search Product Page
* Form login: Username, password
* Password must be encrypted when stored in DB
* Login Fail: display error message
* Login success: go to Search Product Page
* Unauthorized user can only access Search Product Page.
* Unauthorized user will go to an error page if trying to access other pages (except for login page and Search Product Page)

1. *Display number of active sessions on Search Product Page.*

* Active session = authorized user (login successfully)
* 1 user login on 2 different browsers will count as 2
* There is no logout so we can use session timeout to reduce the count.

1. *Codebase improvement*

* Use Java Annotation and Java Reflection to improve the codebase.
  + MainController to reflect appropriate controller
  + GenericDAOImpl to implement all basic method

**Grading:**

* Feature 1: +25
* Feature 2: +15
* Feature 3: +20
* Feature 4: +10
* Feature 5: +20
* Extra points:
  + Support form validation: +5
  + Unit-testing: +10
  + Integration with Front-end course (User Friendly UI): +5
  + Import Products from tab file: +5
  + Any improvement that are not in the requirement: +10
* Penalty points: **(unlimited)**
  + Coding convention
  + Common error
  + Critical performance issue
  + No JDBC pooling: -5
  + No database configuration: -5

**Passing Score: 80**