**ISCG7425 – Enterprise Java Programming**

**Lab Session 4**

Struts Framework + Hibernate + Associative Entities

1. Re-use the lab session from last week. Remove / comment out any references to the String genre in the Book model class.
2. Create a new Genre, and BookGenre class with appropriate Hibernate annotations to replicate the following database structure – ie. one Book can have many BookGenres, and a Genre is linked with many associative BookGenres entities.

Genre

Book

BookGenre

* Use the code provided as a guide:
* You will want to use a @OneToMany annotation on the Book and Genre sides of the relationship and an @ManyToOne on the BookGenre side
* A Genre object should be able to get access to the book object that it is associated with – so include a reverse link back to the Book Genre associative entity. This will in turn allow the user to enumerate any books that a genre is linked to.

1. Alter the user interface to allow a user to add and update multiple genres separating the different genre records using a comma
   * Write code to separate the different genre records
   * Write code to combine different genre records using commas when displaying the update user interface
2. Write new manager / controller code to prevent the creation of duplicate genre records. For example, if a Science Fiction genre already exists then the system will link against the existing record in preference to creating a new genre record. In either case, the system will require BookGenre records to be written to link multiple books with multiple genres.
3. Re-write or modularise the same code so that the update action does the same thing. ie. link against existing genre records instead of creating duplicates.

Write code to delete and recreate BookGenre records when a Books genre fields are updated.

1. Alter the Struts query user interface so that the multiple genres associated with a book are now displayed.