

## Lab 3.2- Stateful Session Beans and Lifecycle

### Maintaining State

- So now we will maintain state in an EJB, but it will be scoped to a user's session
- Create a new Interface `com.student.dao.StudentDaoWaitList` as below;

```
public interface StudentDaoWaitList {  
    void add(Student student);  
    Collection<Student> getAll();  
}
```

- From the setup directory for this lab copy the class `com.student.dao.StudentDaoWaitListBean` into the package `com.student.dao`. This class implements your new Interface
- This will maintain a temporary list of students that are not yet registered for classes in an `ArrayList` that is a class member variable

# EJB Annotations

- Annotate this new EJB bean as follows;
  - ❑ On the class itself define it as Stateful, scoped to the session, exposed only Locally and named "studentWaitListDao"

```
@Stateful  
@SessionScoped  
@Local  
@Named("studentDaowaitList")
```

- ❑ Since this bean will be created and destroyed at the mercy of the lifespan of a session, lets have a couple of call backs for these events
- ❑ On the method init() annotate it with @PostConstruct
- ❑ On the method exit() annotate it with @PreDestroy

# Updating our Dao Bean

In StudentDao add a new method; void add(Student student)

```
public interface StudentDao {  
    Student getOne(long id);  
    Collection<Student> getAll();  
    void add(Student student);  
}
```

You must now implement the add method in StudentDaoBean as below;

```
@Override  
public void add(Student student) {  
    long maxId = students.keySet().stream().count();  
    student.setFees(100.00);  
    student.setId(++maxId);  
    students.put(maxId, student);  
}
```

# Servlet Client

- Create a Servlet `com.student.servlet.WaitListServlet` mapped to the url “/waitlist”
- Inject into this servlet the EJB’s using their interface reference types
  - ❑ `StudentDAO`
  - ❑ `StudentDaoWaitList`
- The `doPost` method is to;
  - ❑ Receive request parameters and create a student instance
  - ❑ Delegate to the `StudentDaoWaitList add(Student student)` method
  - ❑ Call the `StudentDaoWaitList getAll()` method and place the returned Collection into the request as an attribute keyed on “waitList”
  - ❑ Dispatch to `home.jsp`
  - ❑ Luckily, we have an implementation for you. From the lab setup directory for this lab copy the contents of `post.txt` into the `doPost` method

# Transfer students from WaitList to Registered

- Now the doGet method of the Servlet;
  - ❑ First of all, get the HttpSession from the request i.e. request.getSession()
  - ❑ Get all the students in the WaitList and add them to the StudentDao Collection using our new add(Student) method

```
studentDaoWaitList.getAll().forEach(p-> {  
    studentDao.add(p);  
});
```

- ❑ Invalidate the session, this destroys the session scope StudentDaoWaitListBean instance. Hence the WaitList of Students is gone. But we have moved its Students to the StudentDAOBean map now
- ❑ On the next request a new HttpSession will be associated with a new StudentDAOWaitListBean instance. Dispatch to home.jsp i.e. request.getRequestDispatcher("home.jsp").forward(request, response);

# Stateful Session bean Lifecycle

- We have a new home.jsp for you in the lab setup directory for this project. Copy it into your project replacing the old home.jsp
- Restart your server and launch your application by selecting the root node of your project->right click->Run on Server
- We intend to test the lifecycle of a Stateful bean scoped to session

# Lifecycle illustrated

## Add New Student To Admissions WaitList

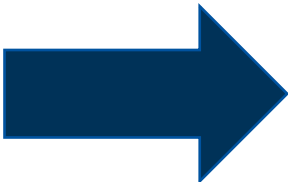
FirstName:

LastName:

Department:  x

[Empty WaitList](#)

WaitList  
PostConstruct  
method called



## Add New Student To Admissions WaitList

FirstName:

LastName:

Department:

[Empty WaitList](#)



WaitList PreDestroy  
method called

- Adding a Student to the WaitList creates a request and hence session
- A StudentDaoWaitListBean is created and we see PostConstruct. The student is added to its State
- Clicking “Empty Waitlist “triggers your session invalidate in the Servlet doGet and the destroy call back is called in your SessionScoped bean
- Click “Get All students” your Student is there added to the map in StudentDaoBean

Get All Students				
1	Eric	Colbert	English Literature	\$145.0
2	Mary	Contrary	Physics	\$155.0
3	Jason	Stewart	English Literature	\$145.0
4	Ester	Freeman	English Literature	\$145.0
5	Ann	Mouvier	French	\$125.0
6	Barney	Rubble	Engineering	\$100.0