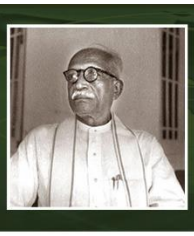
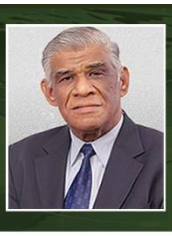



If you do not pay any relevent course fee to maintain Earth University BIT platform,
Be ethical enough to contribute while you are using our Academic Contents

www.earth.lk/community
2004-2024 (20th Anniversary)

Sprint-2 Plan

Employee Detail Management

1. Establishing Project Folder Architecture
2. Server App Initialization
3. **Sprint-2 Execution** [2(a), **2(b)**, 2(c), 2(d), 2(e), 2(f)]
4. Completing Sprint-1 Objectives

2(a) Employee Module - Analysis, Design & DB-Preparation

Data Design, UI Design, Sample Data, Database Preparation

2(b) Employee View

1. Controller Design
2. Coding-Server App
   - Version-1 (Client Pagination)
     - Entity Coding, DAO Coding, Controller Coding, Testing
   - Version-2 (Server Pagination)
     - Controller Modification, Testing
3. Coding-Client App
   - Version-1 (Client Pagination)
     - UI Preparation, Entity Coding, Service Coding, Controller Coding, Testing
   - Version-2 (Server Pagination)
     - Service Modification, Controller Modification, Testing

2(c) Employee Search

2(d) Employee Insert

2(e) Employee Update

2(f) Employee Delete

==========

2(b) Employee View

1. Controller Design
2. Coding Server-App
3. Coding Client-App

Version-1 (Client Pagination)

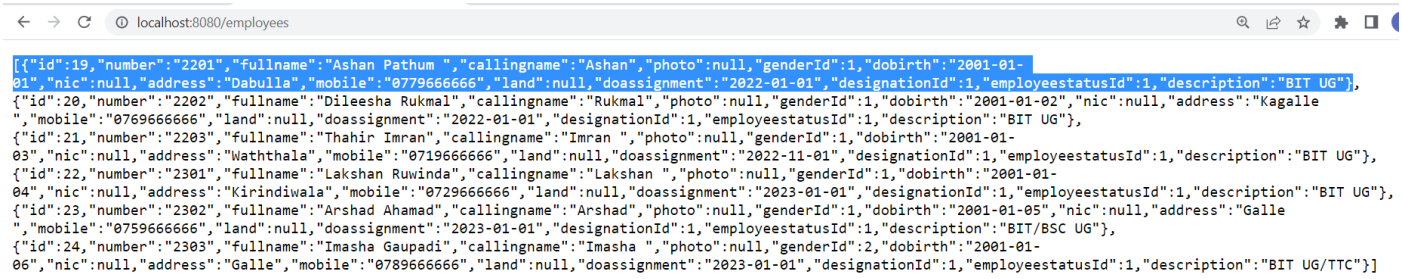
1. Client App Preparation for Sprint-2
2. UI Preparation with Static Data & Testing
3. Coding Entity Classes
4. Data Loading with Dynamic Data & Testing
5. Coding Service Classes for Dynamic Data & Testing (With & Without DI)
6. Error Correction – Server App – Employee Data Service
7. Data loading from Server & Testing, Promise-Pending/Resolve/Reject Status
8. Client Pagination
9. Client Search

Version-2 (Server Pagination)

==========

Error Correcting – Server App

Run the Server App and observe the following Output.
This was a problem with relationship mapping in Auto Generation of Entity Classes.
We have not ticked “Default Relationship” option.
(And need to exclude standalone numeric id from relationships)
It is also need to break the Cyclic JSON encoding in Relationships by annotation @JsonIgnore




```
{"id":19,"number":"2201","fullname":"Ashan Pathum","callingname":"Ashan", "photo":null,
"genderId":1, "dobirth":"2001-01-01", "nic":null, "address":"Dabulla", "mobile":"0779666666",
"land":null,"doassignment":"2022-01-01", "designationId":1,"employeestatusId":1,
"description":"BIT UG"}
```

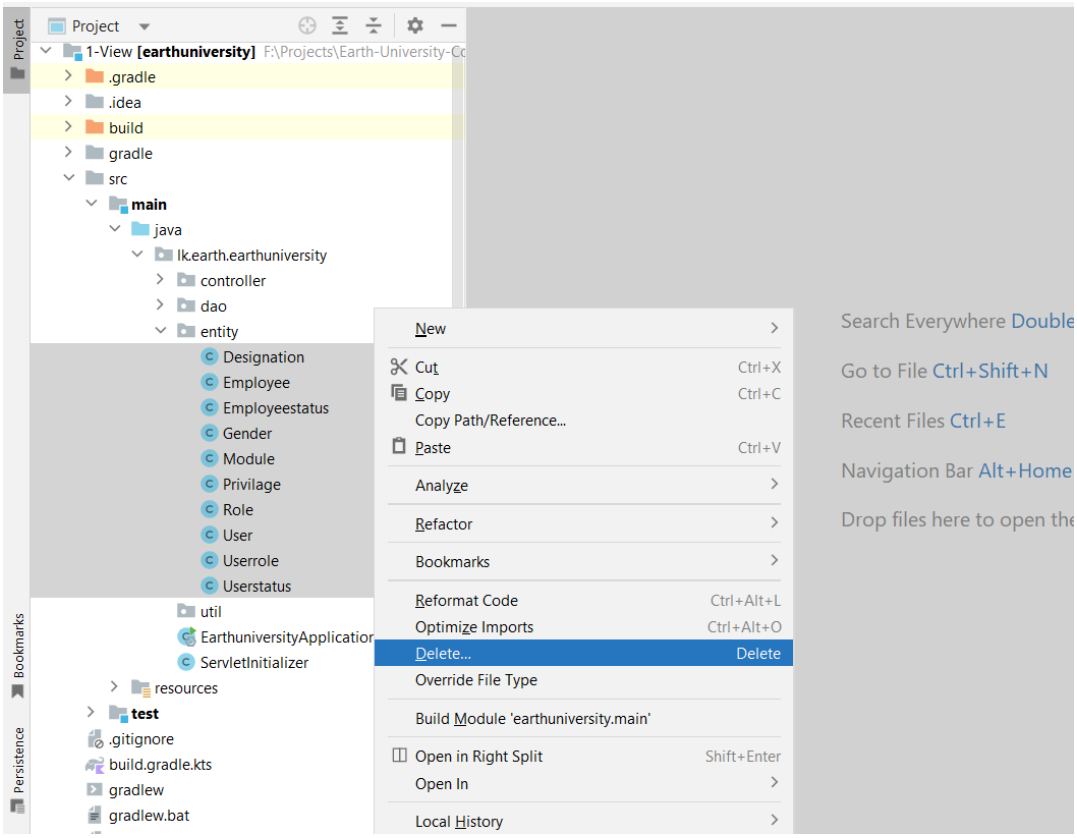
```
"genderId":1 → "gender":{--}
"designationId":1 → "designation":{--}
"employeestatusId":1 → "employeestatus":{--}
```

After Correction

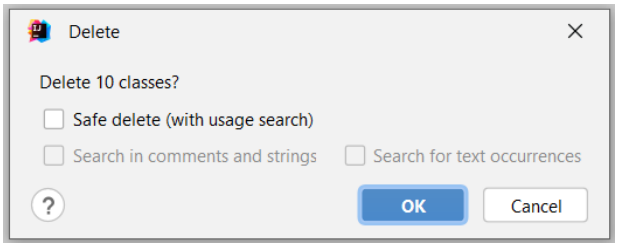
{"id":19,"number":"2201","fullname":"Ashan Pathum ","callingname":"Ashan","photo":null,"dobirth":"2001-01-01","nic":null,"address":"Dabulla","mobile":"0779666666","land":null,"doassignment":"2022-01-01","description":"BIT UG", "gender":{"id":1,"name":"Male"}, "designation":{"id":1,"name":"Demonstrator L1"}, "employeestatus":{"id":1,"name":"Active "}, "users":[]}

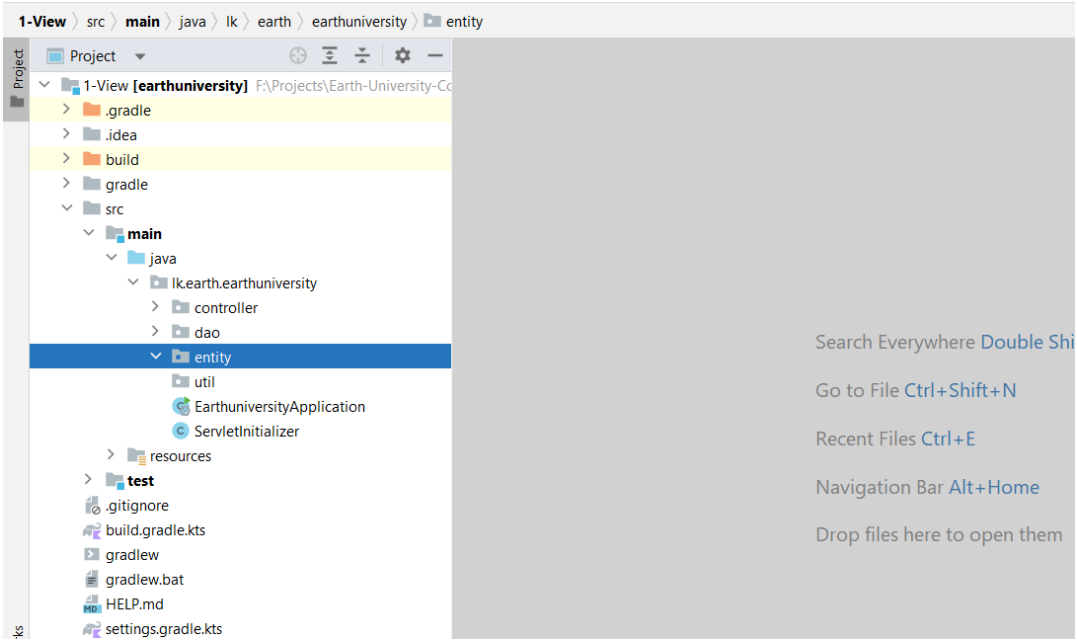
Steps to follow for Correction.

1. Delete all the Entity Classes without Safely Delete. *(Keep a copy of these classes to compare with new Entity Classes)*
2. Regenerate the Entity Classes as Correctly and Observe the Output. Identify New Error created by modification
3. Correct the Error with @JsonIgnore



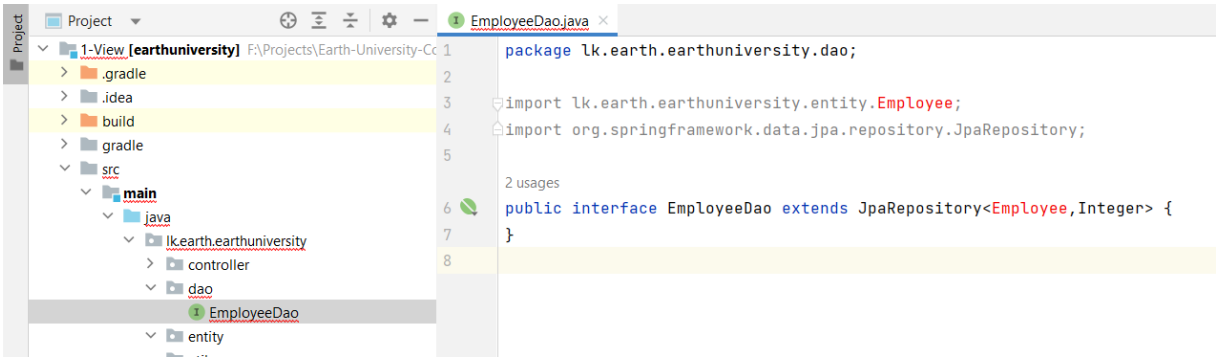
Untick Safe Delete

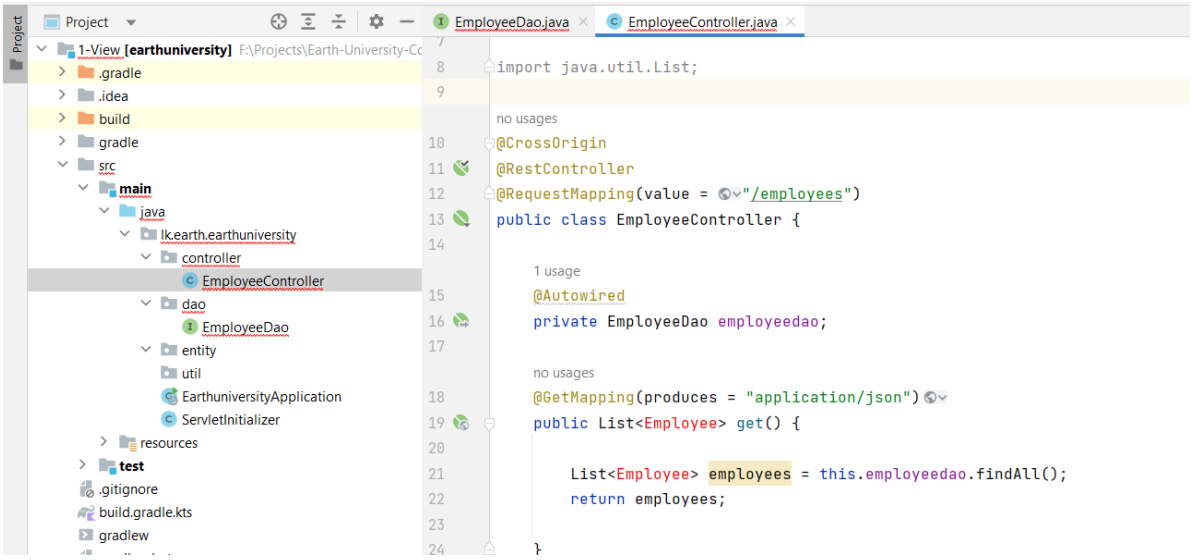




Now, there will be Errors in DAO Classes and Controllers

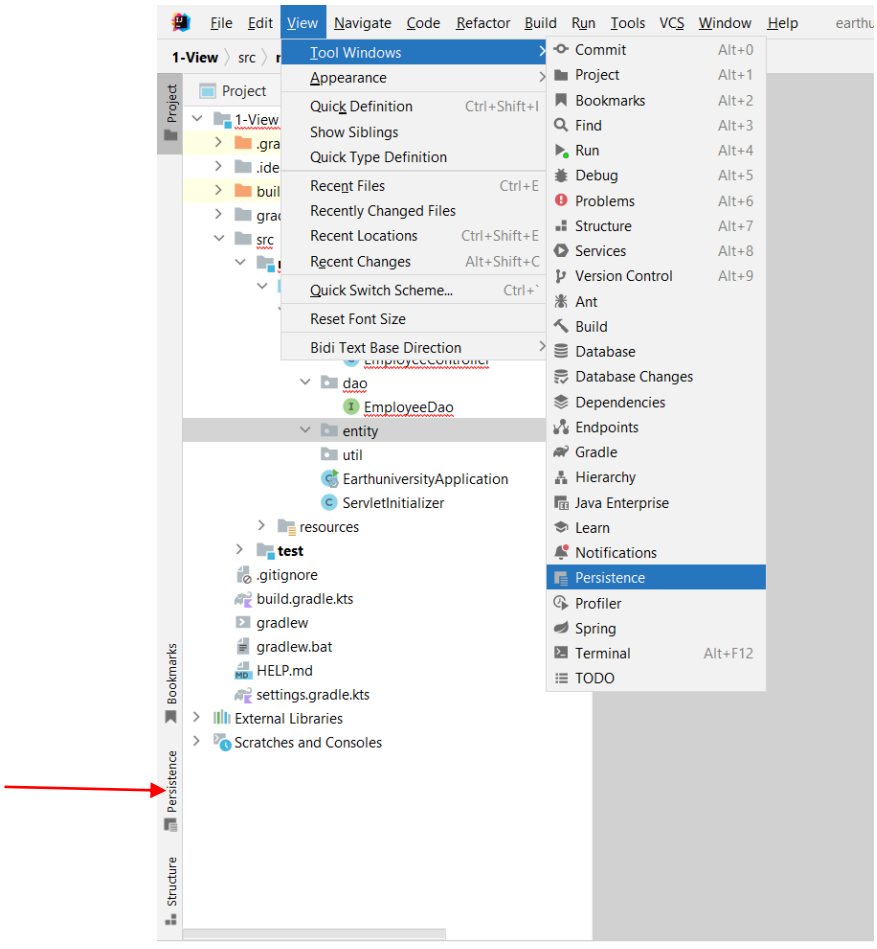
Do not need to correct them, it will be automatically corrected when we build Entity Classes again

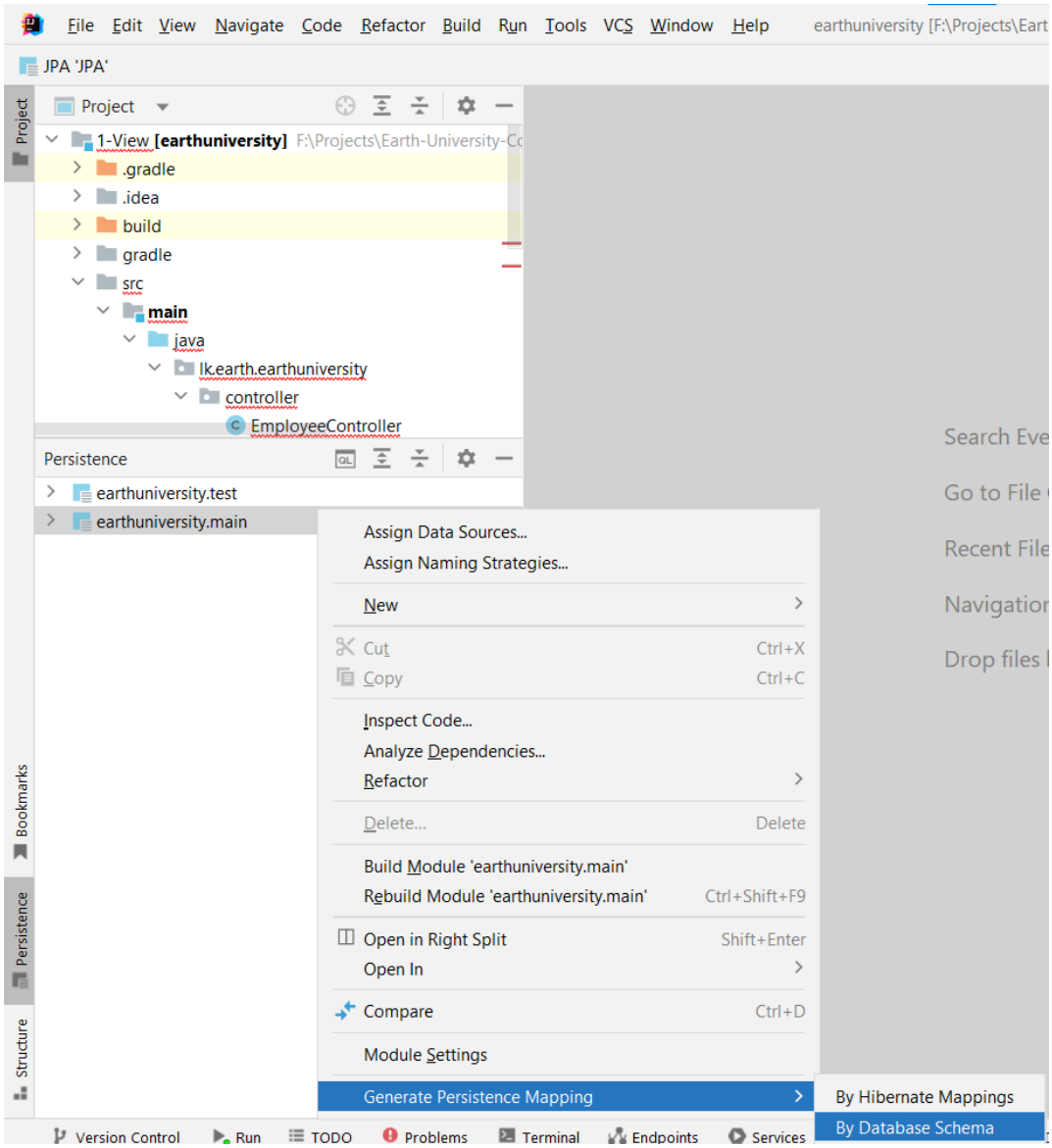




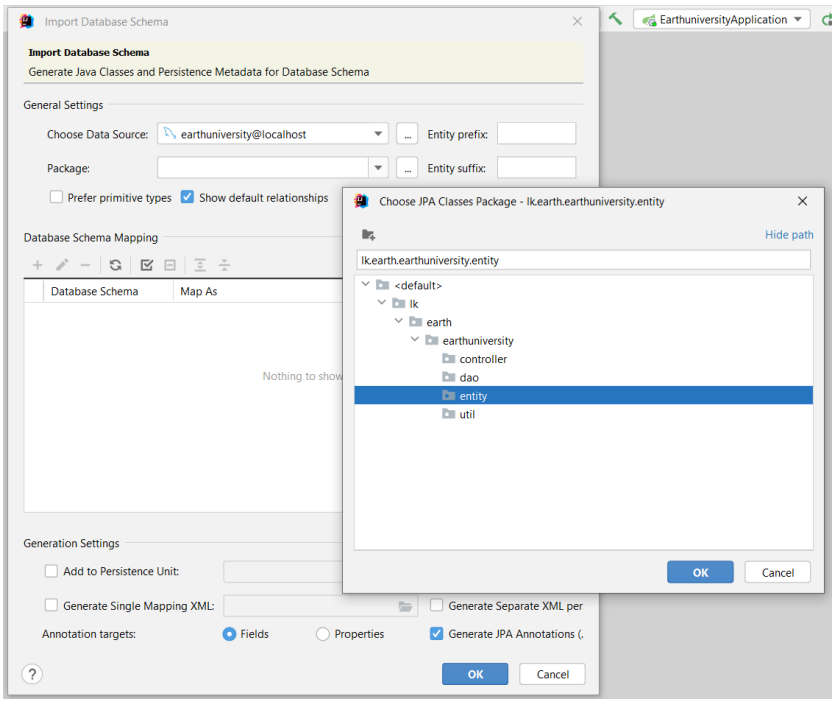
Generating Entity Classes correctly

Get the Persistence Window if you do not see it

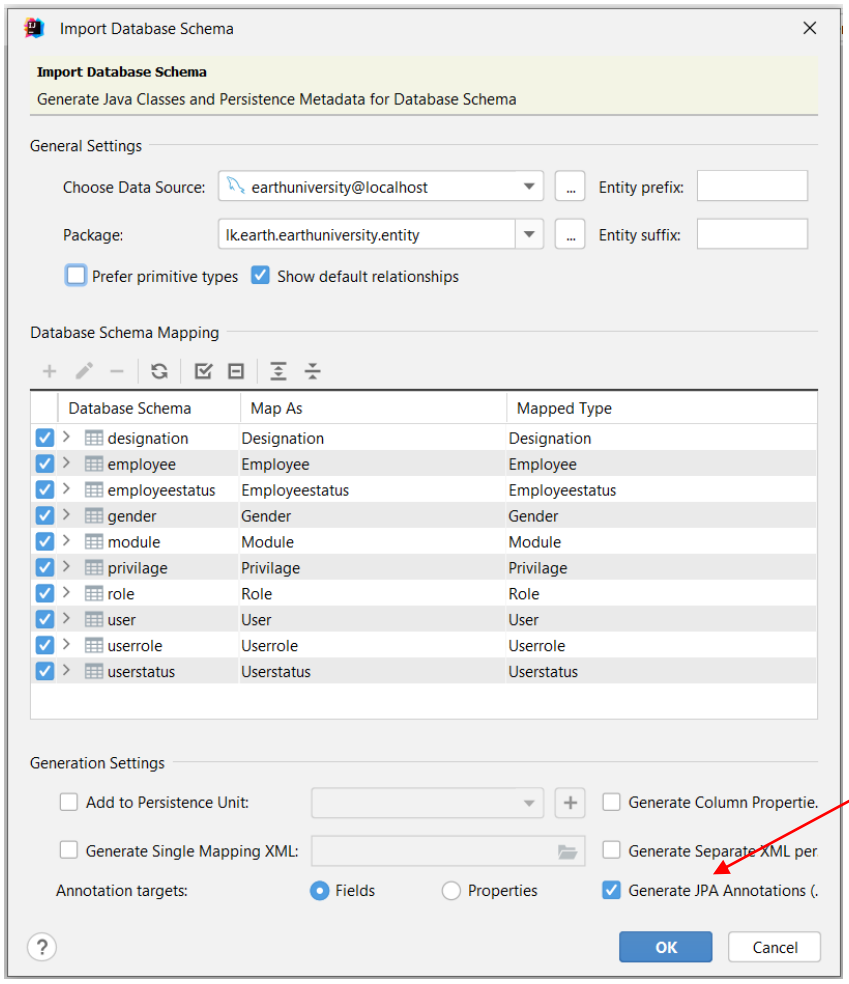




Select the Data Source, Entity Package, Tick “Show Default Relationship”, No Prefix or Suffix
If the Entity Classes are not listed, Tick & Untick Prefer Primitive Types. (Make sure finally it is unticked)

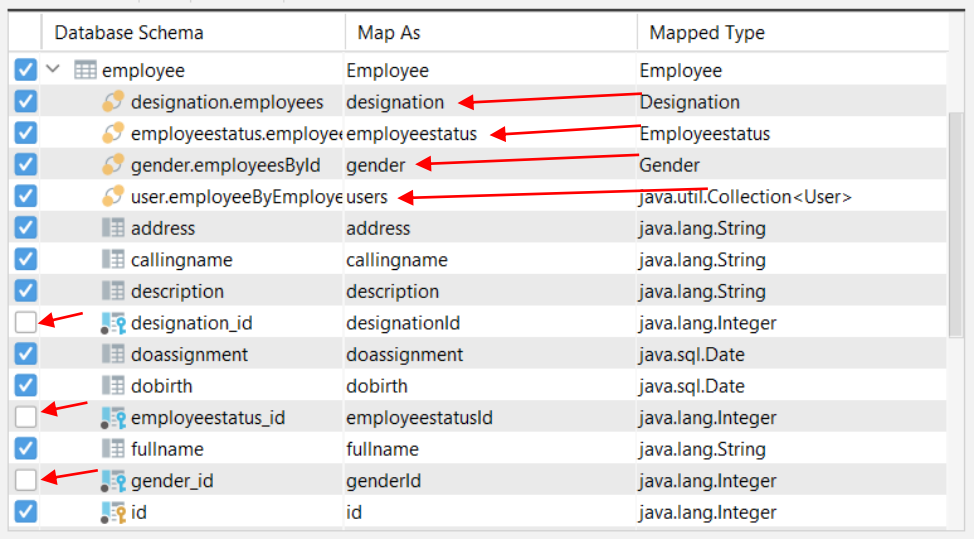


Generate JPA Annotation is required to be selected



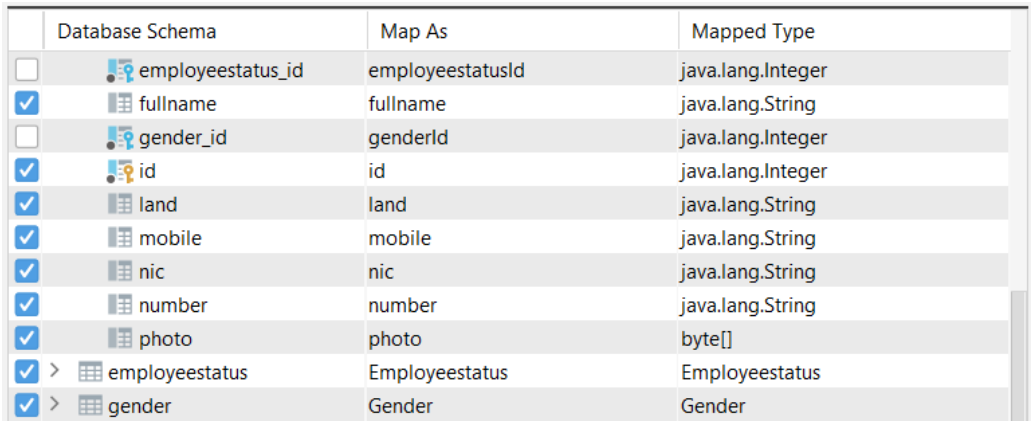
Change the reference variable name for simplicity

employeesById → employees (Collections → with "s" – employee**s** , Single → employee)

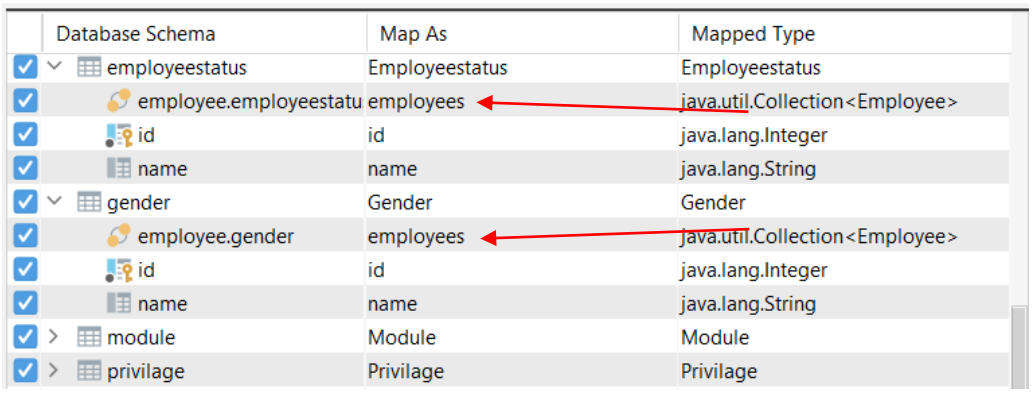


designationById → designation, employeestatus, gender, user**s**,

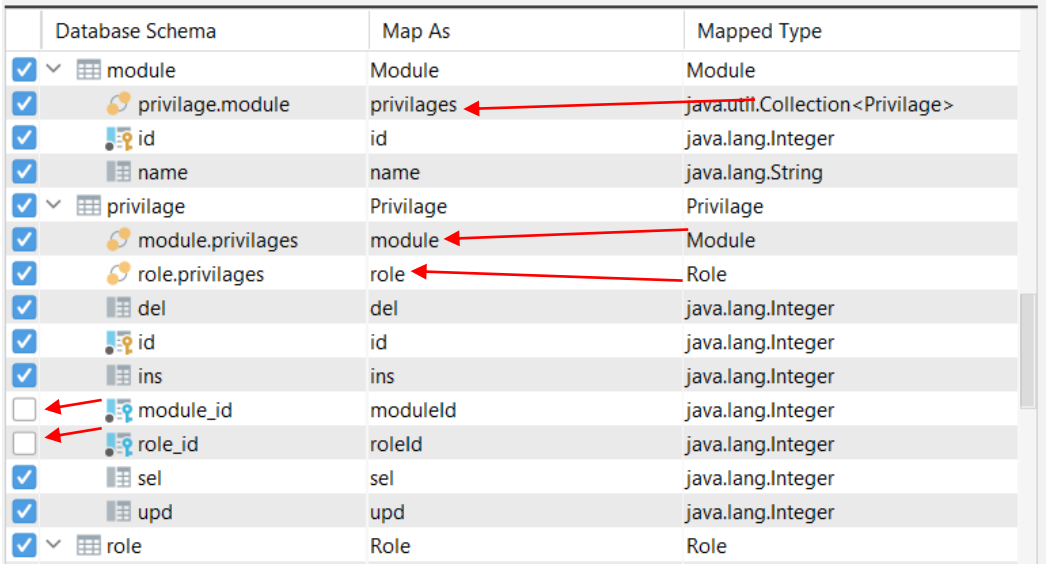
Untick Integer Ids for relationships, Tick all other attributes including "id"



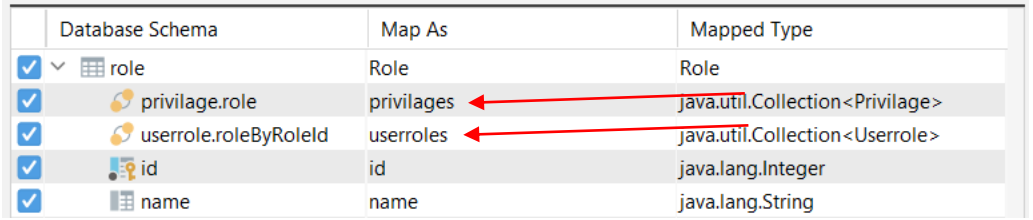
Database Schema	Map As	Mapped Type
employeestatus_id	employeestatusId	java.lang.Integer
fullname	fullname	java.lang.String
gender_id	genderId	java.lang.Integer
id	id	java.lang.Integer
land	land	java.lang.String
mobile	mobile	java.lang.String
nic	nic	java.lang.String
number	number	java.lang.String
photo	photo	byte[]
employeestatus	Employeestatus	Employeestatus
gender	Gender	Gender



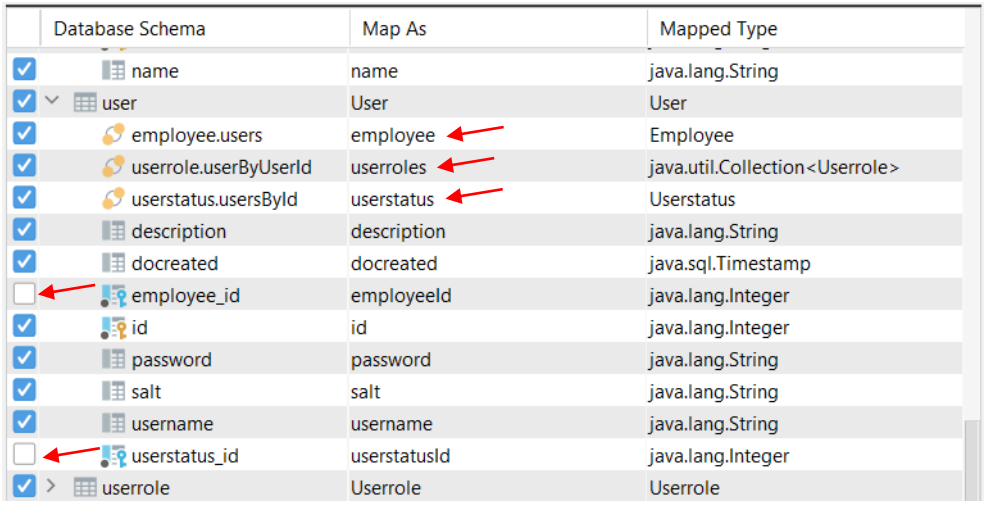
Database Schema	Map As	Mapped Type
employeestatus	Employeestatus	Employeestatus
employee.employeestatu	employees	java.util.Collection<Employee>
id	id	java.lang.Integer
name	name	java.lang.String
gender	Gender	Gender
employee.gender	employees	java.util.Collection<Employee>
id	id	java.lang.Integer
name	name	java.lang.String
module	Module	Module
privilage	Privilage	Privilage

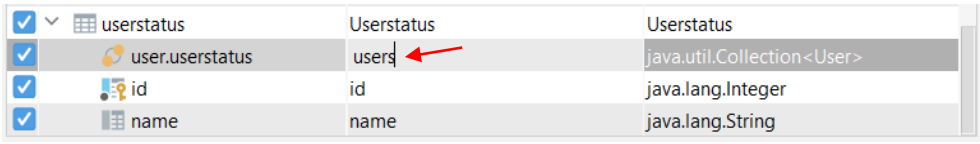


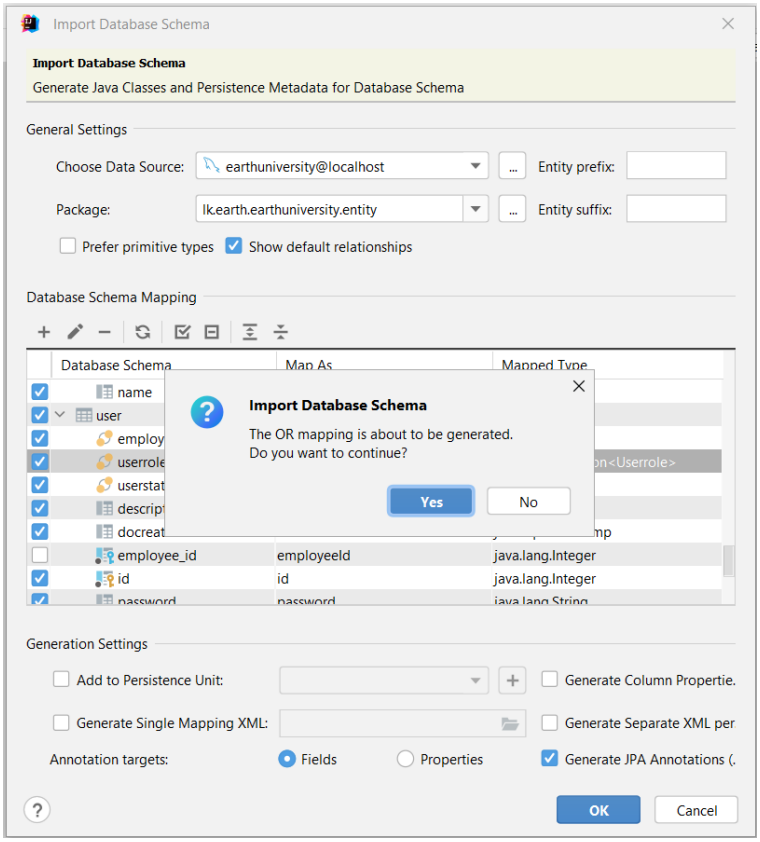
Database Schema	Map As	Mapped Type
module	Module	Module
privilage.module	privilages	java.util.Collection<Privilage>
id	id	java.lang.Integer
name	name	java.lang.String
privilage	Privilage	Privilage
module.privilages	module	Module
role.privilages	role	Role
del	del	java.lang.Integer
id	id	java.lang.Integer
ins	ins	java.lang.Integer
module_id	moduleId	java.lang.Integer
role_id	roleId	java.lang.Integer
sel	sel	java.lang.Integer
upd	upd	java.lang.Integer
role	Role	Role



Database Schema	Map As	Mapped Type
role	Role	Role
privilage.role	privilages	java.util.Collection<Privilage>
userrole.roleByRoleId	userroles	java.util.Collection<Userrole>
id	id	java.lang.Integer
name	name	java.lang.String







Click on “Yes”
Entities will be created automatically and resolve entity references in both DAO and Controller Classes.

Run the Project and Get the Output
No Compilation Error
But Runtime Error will be thrown,

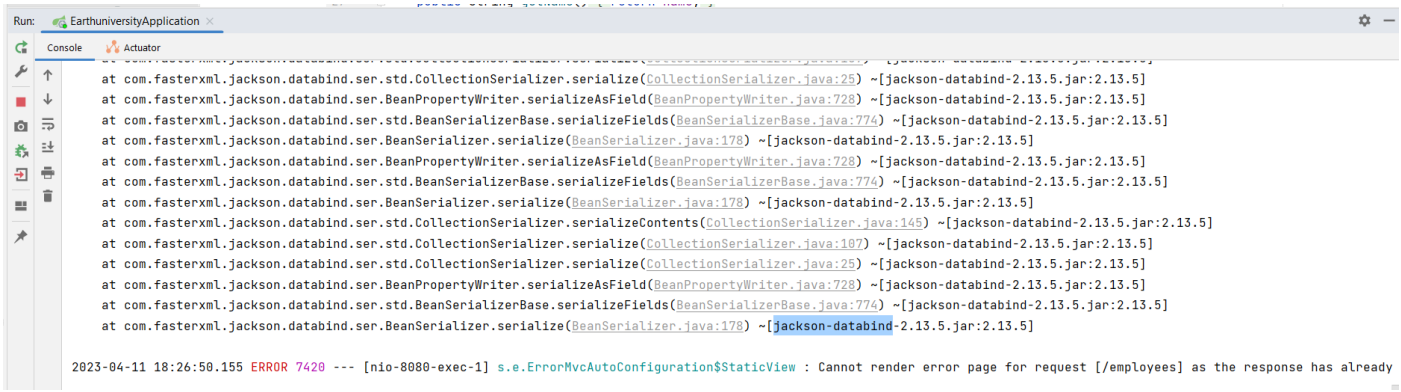
This Error is due to Cyclic Bi directional Relationship between Entity Objects

Gender→Employee→Gender

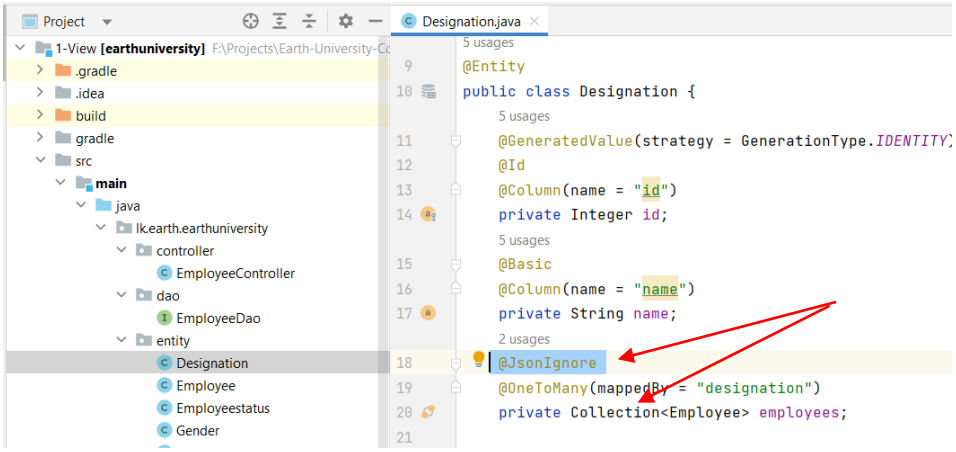
Designation→ Employee→Designation

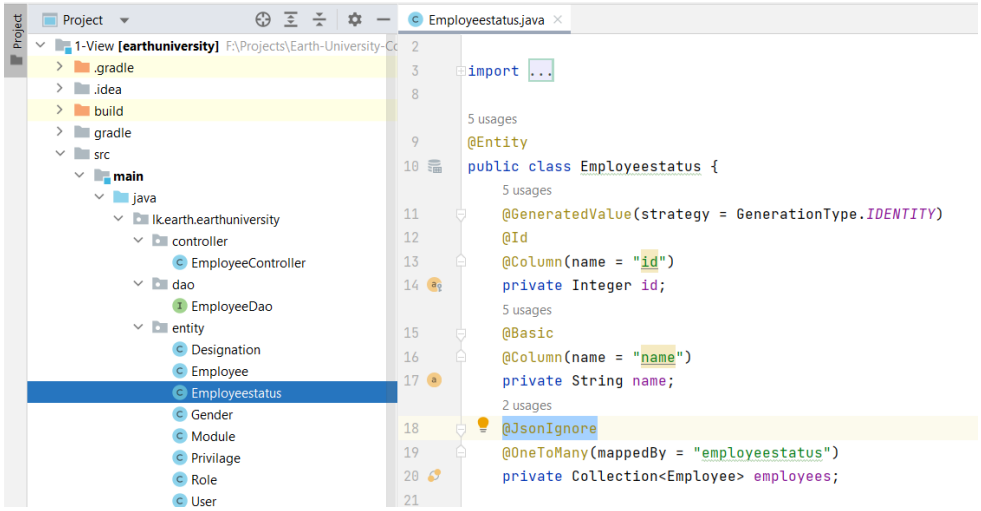
Employeestatus→ Employee→Employestatus

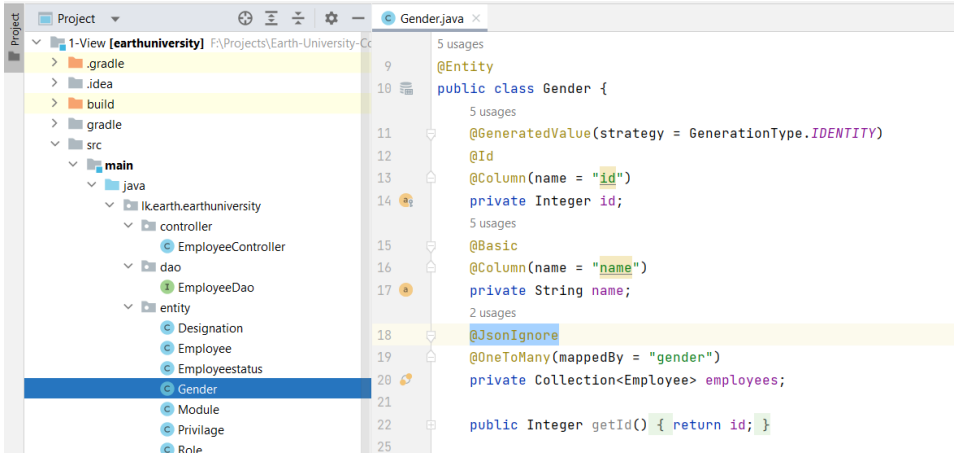
User→Employee→User

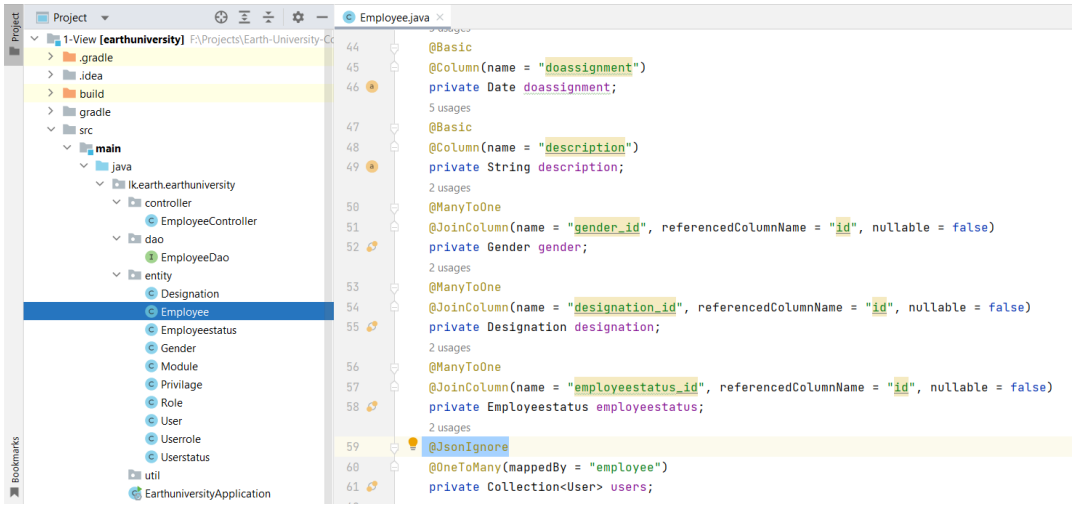


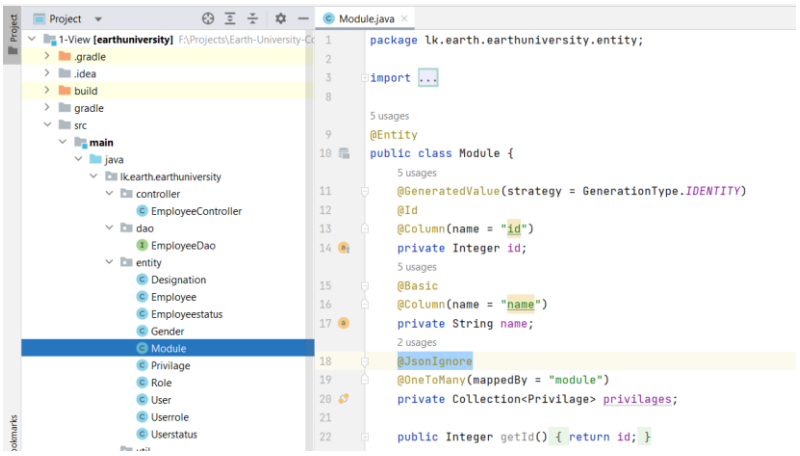
We can instruct “Jackson” library (Library that contains Gson and convert Java-Objects into JSON Strings)
Using @JsonIgnore Annotation to break many side of the bi-directional one-to-many cycle

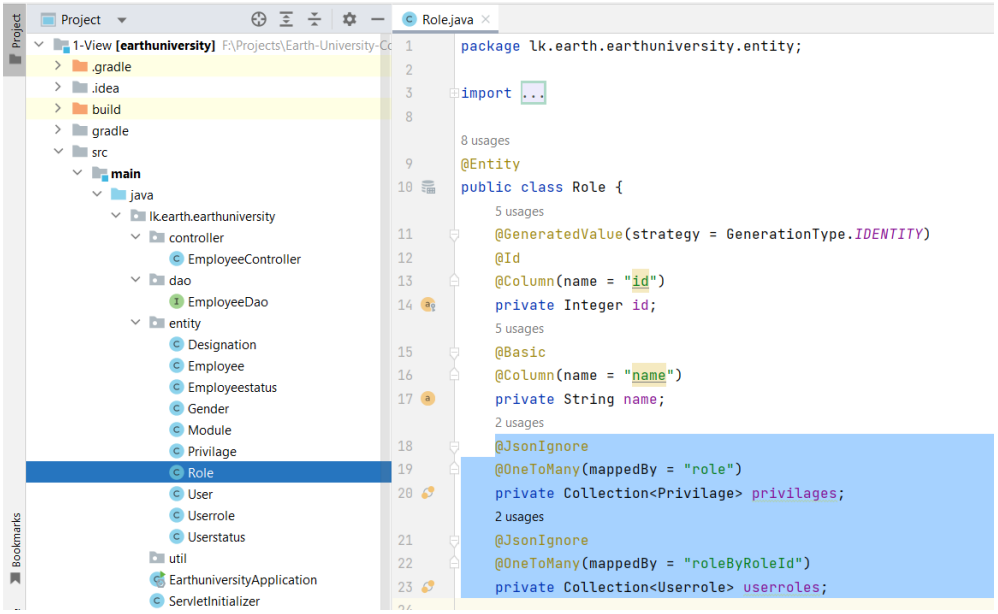


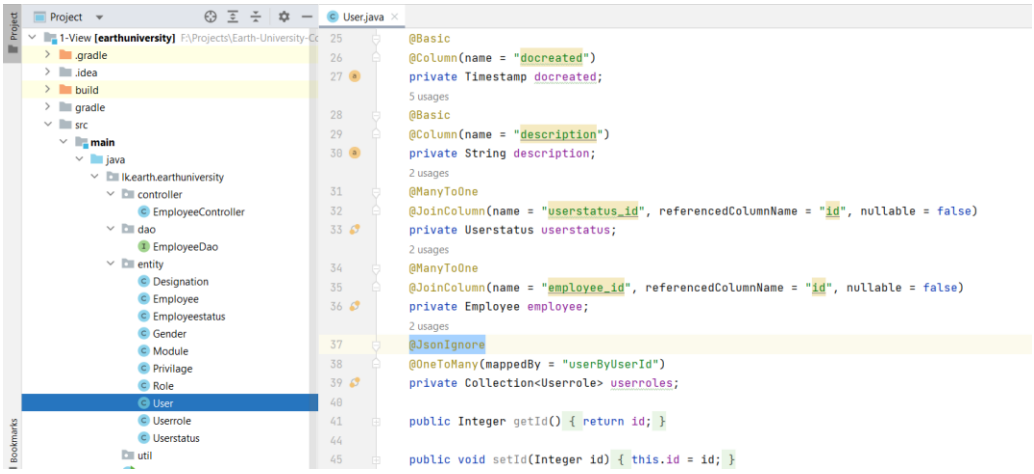

Project
1-View [earthuniversity] F:\Projects\Earth-University-Cc
.gradle
.idea
build
gradle
src
main
java
lk.earth.earthuniversity
controller
EmployeeController
dao
EmployeeDao
entity
Designation
Employee
Employeestatus
Gender
Module
Privilage
Role
User
Employeestatus.java
import ...
5 usages
@Entity
public class Employeestatus {
5 usages
@GeneratedValue(strategy = GenerationType.IDENTITY)
@Id
@Column(name = "id")
private Integer id;
5 usages
@Basic
@Column(name = "name")
private String name;
2 usages
@JsonIgnore
@OneToMany(mappedBy = "employeestatus")
private Collection<Employee> employees;

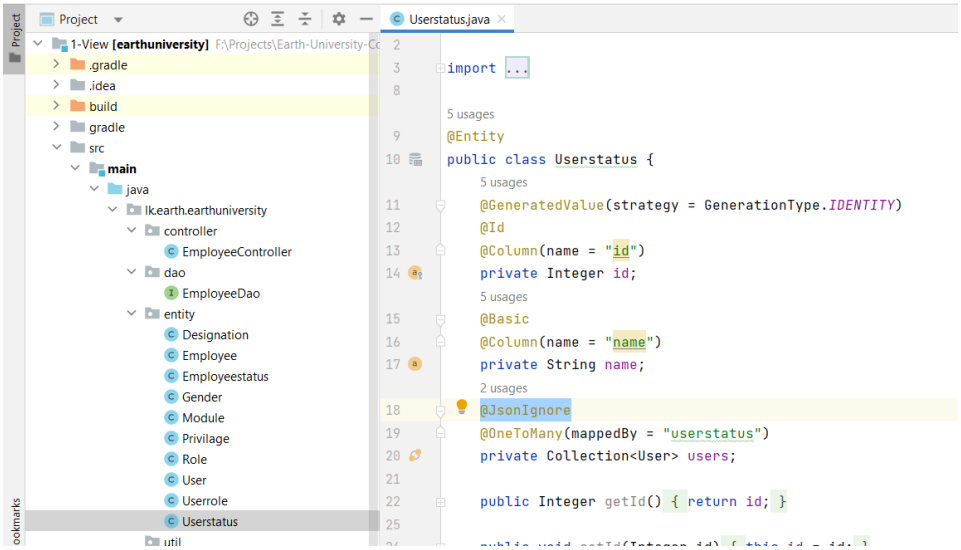

Project
1-View [earthuniversity] F:\Projects\Earth-University-Cc
.gradle
.idea
build
gradle
src
main
java
lk.earth.earthuniversity
controller
EmployeeController
dao
EmployeeDao
entity
Designation
Employee
Employeestatus
Gender
Module
Privilage
Gender.java
5 usages
@Entity
public class Gender {
5 usages
@GeneratedValue(strategy = GenerationType.IDENTITY)
@Id
@Column(name = "id")
private Integer id;
5 usages
@Basic
@Column(name = "name")
private String name;
2 usages
@JsonIgnore
@OneToMany(mappedBy = "gender")
private Collection<Employee> employees;
public Integer getId() { return id; }


Project
1-View [earthuniversity] F:\Projects\Earth-University-Cc
.gradle
.idea
build
gradle
src
main
java
lk.earth.earthuniversity
controller
EmployeeController
dao
EmployeeDao
entity
Designation
Employee
Employeestatus
Gender
Module
Privilage
Role
User
Userrole
Userstatus
util
EarthuniversityApplication
Bookmarks
Employee.java
@Basic
@Column(name = "doassignment")
private Date doassignment;
5 usages
@Basic
@Column(name = "description")
private String description;
2 usages
@ManyToOne
@JoinColumn(name = "gender_id", referencedColumnName = "id", nullable = false)
private Gender gender;
2 usages
@ManyToOne
@JoinColumn(name = "designation_id", referencedColumnName = "id", nullable = false)
private Designation designation;
2 usages
@ManyToOne
@JoinColumn(name = "employeestatus_id", referencedColumnName = "id", nullable = false)
private Employeestatus employeestatus;
2 usages
@JsonIgnore
@OneToMany(mappedBy = "employee")
private Collection<User> users;


Project
1-View [earthuniversity] F:\Projects\Earth-University-Cc
.gradle
.idea
build
gradle
src
main
java
lk.earth.earthuniversity
controller
EmployeeController
dao
EmployeeDao
entity
Designation
Employee
Employeestatus
Gender
Module
Privilage
Role
User
Userrole
Userstatus
Module.java
package lk.earth.earthuniversity.entity;
import ...
5 usages
@Entity
public class Module {
5 usages
@GeneratedValue(strategy = GenerationType.IDENTITY)
@Id
@Column(name = "id")
private Integer id;
5 usages
@Basic
@Column(name = "name")
private String name;
2 usages
@JsonIgnore
@OneToMany(mappedBy = "module")
private Collection<Privilage> privilages;
public Integer getId() { return id; }







Rerun the Project and Test the employee service

Finite List of Employee JSONs will be displayed
No Runtime Error in the Project Window
Related Objects are linked as Objects, not just with Ids of Foreign Keys.

localhost:8080/employees


```
[{"id":19,"number":"2201","fullname":"Ashan Pathum ","callingname":"Ashan","photo":null,"dobirth":"2001-01-01","nic":null,"address":"Dabulla","mobile":"0779666666","land":null,"doassignment":"2022-01-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":20,"number":"2202","fullname":"Dileesha Rukmal","callingname":"Rukmal","photo":null,"dobirth":"2001-01-02","nic":null,"address":"Kagalle ","mobile":"0769666666","land":null,"doassignment":"2022-01-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":21,"number":"2203","fullname":"Thahir Imran","callingname":"Imran ","photo":null,"dobirth":"2001-01-03","nic":null,"address":"Waththala","mobile":"0719666666","land":null,"doassignment":"2022-11-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":22,"number":"2301","fullname":"Lakshan Ruwinda","callingname":"Lakshan ","photo":null,"dobirth":"2001-01-04","nic":null,"address":"Kirindiwala","mobile":"0729666666","land":null,"doassignment":"2023-01-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":23,"number":"2302","fullname":"Arshad Ahamad","callingname":"Arshad","photo":null,"dobirth":"2001-01-05","nic":null,"address":"Galle ","mobile":"0759666666","land":null,"doassignment":"2023-01-01","description":"BIT/BSC UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":24,"number":"2303","fullname":"Imasha Gaupadi","callingname":"Imasha ","photo":null,"dobirth":"2001-01-06","nic":null,"address":"Galle","mobile":"0789666666","land":null,"doassignment":"2023-01-01","description":"BIT UG/TTC","gender":{"id":2,"name":"Female "},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}}]
```

localhost:8080/employees


```
[{"id":19,"number":"2201","fullname":"Ashan Pathum ","callingname":"Ashan","photo":null,"dobirth":"2001-01-01","nic":null,"address":"Dabulla","mobile":"0779666666","land":null,"doassignment":"2022-01-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":20,"number":"2202","fullname":"Dileesha Rukmal","callingname":"Rukmal","photo":null,"dobirth":"2001-01-02","nic":null,"address":"Kagalle ","mobile":"0769666666","land":null,"doassignment":"2022-01-01","description":"BIT UG","gender":
```


localhost:8080/employees


```
[{"id":19,"number":"2201","fullname":"Ashan Pathum ","callingname":"Ashan","photo":null,"dobirth":"2001-01-01","nic":null,"address":"Dabulla","mobile":"0779666666","land":null,"doassignment":"2022-01-01","description":"BIT UG","gender":{"id":1,"name":"Male"},"designation":{"id":1,"name":"Demonstrator L1"},"employeestatus":{"id":1,"name":"Active "}},{"id":20,"number":"2202","fullname":"Dileesha
```