spring Spring MVC 與 JdbcTemplate 段維瀚 老師

Session

- StringMVC 配置 JdbcTemplate
- 一對多資料表建立
- 一對多資料查詢-RowMapper
- 一對多資料查詢-SimpleFlatMapper
- Lab 實作練習

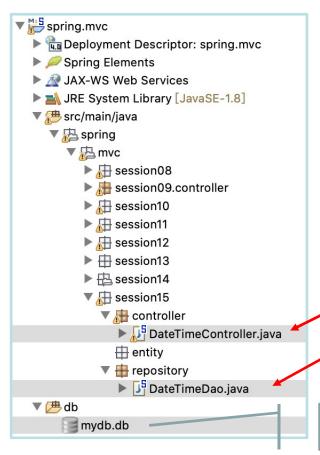


StringMVC 配置 JdbcTemplate

- pom.xml
 - 參考配置連結
- WEB-INF/springmvc-servlet.xml
 - 參考配置連結



測試



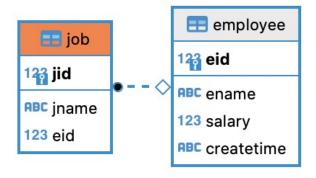
SQL 語法: select datetime('now', '+8 hour') +8 hour 表示將格林威治時區轉換成東八區



寫一個 DateTimeController.java 與 DateTimeDao.java 進行測試

若測試成功會系統會自動建立 mydb.db 資料庫

E-R Model



```
-- 建立 Employee 資料表
create table IF NOT EXISTS employee (
    eid integer PRIMARY KEY, -- 主鍵 , 員工 id (自行產生序號: 1, 2, 3, ...)
    ename text, -- 員工姓名
    salary integer, -- 員工薪資
    createtime datetime default current_timestamp -- 建檔時間
);

-- 建立 Job 資料表
create table IF NOT EXISTS job(
    jid integer PRIMARY KEY, -- 主鍵 , 工作 id
    jname text, -- 工作名稱
    eid integer not null, -- 員工 id
    foreign key(eid) references employee(eid) -- 外鍵關聯
);
```

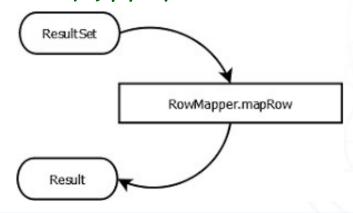
建立範例資料

```
insert into employee(ename, salary) values('John', 40000);
insert into employee(ename, salary) values('Mary', 50000);
insert into employee(ename, salary) values('Bobo', 60000);
insert into employee(ename, salary) values('Mark', 70000);

-- 建立 Job 範例資料
insert into job(jname, eid) values('Job A', 1);
insert into job(jname, eid) values('Job B', 1);
insert into job(jname, eid) values('Job C', 2);
insert into job(jname, eid) values('Job D', 2);
insert into job(jname, eid) values('Job E', 4);
insert into job(jname, eid) values('Job F', 4);
insert into job(jname, eid) values('Job G', 4);
insert into job(jname, eid) values('Job G', 4);
```

一對多資料查詢-RowMapper

- ORM Mapper
 - Spring 提供 RowMapper 可將查詢結果封 裝於Domain物件中。



```
// 使用 BeanPropertyRowMapper
public List<Job> queryAll() {
    String sql = "select j.jid, j.jname, j.eid from job j";
    List<Job> jobs = jdbcTemplate.query(sql, new BeanPropertyRowMapper(Job.class));
    return jobs;
}
```

```
// 實作 RowMapper
/* public interface RowMapper<T> {
      T mapRow(ResultSet rs, int rowNum) throws SQLException;
* }
 * */
public List<Job> queryAll2() {
    String sql = "select j.jid, j.jname, j.eid from job j";
    RowMapper<Job> rm = (ResultSet rs, int rowNum) -> {
        Job job = new Job();
        job.setJid(rs.getInt("jid"));
        job.setJname(rs.getString("jname"));
        job.setEid(rs.getInt("eid"));
        // 再根據 eid 查詢 employee
        String sql2 = "select e.eid, e.ename, e.salary, e.createtime from employee e where e.eid=?";
        Employee employee = jdbcTemplate.queryForObject(
                sql2,
                new Object[] {job.getEid()},
                new BeanPropertyRowMapper<Employee>(Employee.class));
        job.setEmployee(employee);
        return job;
    }:
    List<Job> jobs = jdbcTemplate.query(sql, rm);
    return jobs:
}
```

比較查詢結果

/jdbc/job/query_json employee 無資料

```
(i):/jdbc/job/query_json (f)
- {
    jid: 1,
    jname: "Job A",
     eid: 1,
     employee: null,
    jid: 2,
    jname: "Job B",
    eid: 1,
     employee: null,
 },
     jid: 3,
    jname: "Job C",
    eid: 2,
     employee: null,
```

/jdbc/job/query_json2 employee 有資料

```
(i) /jdbc/job/query_json2 (i)
聽用程式 🗎 聖經  巨匠真人講師登入
- {
     jid: 1,
     jname: "Job A",
     eid: 1
   - employee: {
        eid: 1,
         ename: "John",
         salary: 40000,
        createtime: "2022-02-16 03:33:29",
         jobs: null,
     jid: 2,
     jname: "Job B",
     eid: 1,
   - employee: {
         eid: 1,
         ename: "John",
        createtime: "2022-02-16 03:33:29",
        jobs: null,
 },
- {
     jid: 3,
     jname: "Job C",
     eid: 2,
   - employee: {
         eid: 2,
         ename: "Mary",
         salary: 50000,
         createtime: "2022-02-16 03:33:29",
        jobs: null,
    },
 },
```

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一對多資料查詢-SimpleFlatMapper

- 簡單數據庫映射
 - https://simpleflatmapper.org/

SQL 查詢

第一張表

第二張表的欄位別名要加上 employee_

```
1<sup>o</sup> select
         j.jid, j.jname, j.eid,
         e.eid as employee_eid, e.ename as employee_ename, e.salary as employee_salary,
         e.createtime as employee_createtime
    from
          job j, employee e
    where j.eid = e.eid
job(+) 1 X
123 jid 📆 RBC jname 🏋 123 eid 🏋 123 employee_eid 🏋 RBC employee_ename 🏋 123 employee_salary 🏋
                                                                            1 Job A
                         1 🗹
                                          1 John
                                                                       40,000 2022-02-16 03:33:29
                                                                       40,000 2022-02-16 03:33:29
2
         2 Job B
                         1 🗹
                                          1 John
3
         3 Job C
                         2 🗹
                                          2 Mary
                                                                       50,000 2022-02-16 03:33:29
         4 Job D
                         2 🗹
                                                                       50,000 2022-02-16 03:33:29
                                          2 Mary
         5 Job E
                         4 🗹
                                          4 Mark
                                                                       70.000 2022-02-16 03:33:29
         6 Job F
                         4 🗹
                                                                       70,000 2022-02-16 03:33:29
                                          4 Mark
                         4 🗹
                                                                       70,000 2022-02-16 03:33:29
         7 Job G
                                         4 Mark
```

Job

Employee

多對一資料查詢-SimpleFlatMapper

查詢結果

/jdbc/job/query_json3 employee 亦有資料

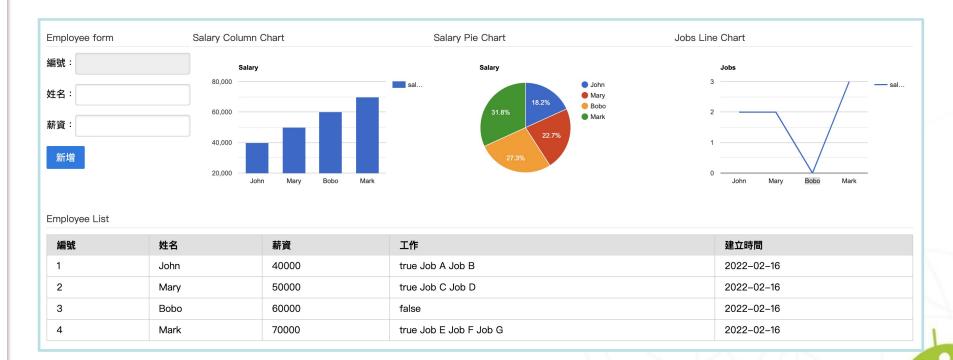
```
← → C û c/jdbc/job/query_json3 û
                                  » 量 其他書
應用程式 🗎 聖經
     jid: 1,
     jname: "Job A",
     eid: 1,
     employee: {
        ename: "John",
        salary: 40000,
        createtime: "2022-02-16 03:33:29",
        jobs: null,
     jid: 2,
     jname: "Job B",
     eid: 1,
   - employee: {
        eid: 1,
        ename: "John",
        salary: 40000,
        createtime: "2022-02-16 03:33:29",
        jobs: null,
     },
 },
- {
     jid: 3,
     jname: "Job C",
     eid: 2,
   - employee: {
        eid: 2,
        ename: "Mary",
        salary: 50000,
        createtime: "2022-02-16 03:33:29",
        jobs: null,
     },
  },
```

一對多查詢 Lab

• 查詢 Employee 連同 Job 也一並查出

```
eid: 1,
 ename: "John",
 salary: 40000,
 createtime: "2022-02-16 03:33:29",
- jobs: [
   - {
         jid: 1,
         jname: "Job A",
         eid: 1,
         employee: null,
         jid: 2,
         jname: "Job B",
         eid: 1,
         employee: null,
     },
  ],
```

結合 Google Chart



Google Chart:

https://developers-dot-devsite-v2-prod.appspot.com/chart/interactive/docs/gallery/piechart.html

程式碼參考:

https://github.com/vincenttuan/SpringMVCExpert2022/blob/main/src/main/webapp/WEB-INF/views/session15/employee.jsp