

Part I (MongoDB) version v4.4.5

Task 1

Code:

```
$ mongoimport -d DB_class -c students --type csv --file /Users/patty/GraduateFiles/DBMS/Homework/HW6_r09922063/hw6_student_data.csv --headerline
```

Result:

```
[> db.students.find({學號:"r09922063"}).pretty();
{
    "_id" : ObjectId("60ba03360a6eda1f5a24a924"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922063",
    "姓名" : "鄭筠庭",
}
```

Task 2

Code:

```
> db.students.find({ 系所: "資工系碩士班_一年級" }).pretty();
```

Result:

```
{
    "_id" : ObjectId("60b9c46640b4f93b945b0866"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922056",
    "姓名" : "王柏元",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0867"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922063",
    "姓名" : "鄭筠庭",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0868"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922080",
    "姓名" : "曾尹均",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0869"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922083",
    "姓名" : "阮明皓",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b086a"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922090",
    "姓名" : "王文依",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0870"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922156",
    "姓名" : "李昭妤",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0871"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922167",
    "姓名" : "林琮珉",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b0879"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922155",
    "姓名" : "簡丞珮",
    "日期" : "2021-03-01"
}

{
    "_id" : ObjectId("60b9c46640b4f93b945b087d"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922146",
    "姓名" : "簡辰哲",
    "日期" : "2021-03-01"
}
```

```
{
  "_id" : ObjectId("60b9c46640b4f93b945b086b"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922009",
  "姓名" : "林詩夢",
  "日期" : "2021-03-01"
}

{
  "_id" : ObjectId("60b9c46640b4f93b945b086c"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922095",
  "姓名" : "陳昕璣",
  "日期" : "2021-03-01"
}

{
  "_id" : ObjectId("60b9c46640b4f93b945b086d"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922003",
  "姓名" : "吳政緯",
  "日期" : "2021-03-01"
}

{
  "_id" : ObjectId("60b9c46640b4f93b945b086e"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922111",
  "姓名" : "鍾育昌",
  "日期" : "2021-03-01"
}

{
  "_id" : ObjectId("60b9c46640b4f93b945b086f"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922116",
  "姓名" : "邱聖約",
  "日期" : "2021-03-01"
}
```

Task 3

Code:

```
> db.students.aggregate([
  $group: {
    _id: "$系所",
    number: { $sum : 1 }
  }
]);
```

Result:

```
[> db.student.aggregate([{$group: {_id: "$系所", number: {$sum: 1}} }])
{ "_id" : "資料科學學程碩士班_一年級", "number" : 2 }
{ "_id" : "經濟系碩士班_二年級", "number" : 1 }
{ "_id" : "電機系碩士班_一年級", "number" : 10 }
{ "_id" : "電信所碩士班_一年級", "number" : 5 }
{ "_id" : "生技系_一年級", "number" : 1 }
{ "_id" : "電機系_三年級", "number" : 2 }
{ "_id" : "資工系_三年級", "number" : 8 }
{ "_id" : "網媒所碩士班_一年級", "number" : 1 }
{ "_id" : "電機系碩士班_二年級", "number" : 2 }
{ "_id" : "電機資安碩班碩士班_二年級", "number" : 1 }
{ "_id" : "工科海洋系_三年級", "number" : 1 }
{ "_id" : "資管系_四年級", "number" : 1 }
{ "_id" : "資工系碩士班_二年級", "number" : 2 }
{ "_id" : "機械系_四年級", "number" : 1 }
{ "_id" : "生機系碩士班_二年級", "number" : 1 }
{ "_id" : "財金系_一年級", "number" : 1 }
{ "_id" : "網媒所碩士班_二年級", "number" : 1 }
{ "_id" : "電子所碩士班_四年級", "number" : 1 }
{ "_id" : "資工系碩士班_三年級", "number" : 1 }
{ "_id" : "機械系熟學組碩士班_二年級", "number" : 1 }
Type "it" for more
[> it
{ "_id" : "資工系_四年級", "number" : 7 }
{ "_id" : "電機系_一年級", "number" : 1 }
{ "_id" : "資工系碩士班_一年級", "number" : 14 }
{ "_id" : "資料科學博士班_一年級", "number" : 1 }
{ "_id" : "電信所碩士班_二年級", "number" : 3 }
{ "_id" : "環職所碩士班_二年級", "number" : 1 }
{ "_id" : "生醫電資所碩士班_二年級", "number" : 1 }
{ "_id" : "生機系碩士班_一年級", "number" : 1 }
{ "_id" : "地理系碩士班_三年級", "number" : 1 }
{ "_id" : "電機系_四年級", "number" : 4 }
{ "_id" : "工科海洋系碩士班_一年級", "number" : 3 }
{ "_id" : "材料系_四年級", "number" : 2 }
{ "_id" : "國企系_四年級", "number" : 1 }
```

Task 4

Code:

```
[> db.student.updateMany( {}, { $set: { 日期: "2021-03-01" } }, false, true )
```

Result:

```
[> db.student.find({ 系所:"資工系碩士班_一年級", 學號:"r09922063" }).pretty()
{
    "_id" : ObjectId("60b9c46640b4f93b945b0867"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922063",
    "姓名" : "鄭筠庭",
    "日期" : "2021-03-01"
}
```

```
> db.student.find({ 系所:"資工系碩士班_一年級", 學號:{ $ne:"r09922063" } }).sort({ 學號: 1 }).pretty()

{
    "_id" : ObjectId("60b9c46640b4f93b945b086d"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922003",
    "姓名" : "吳政緯",
    "日期" : "2021-03-01"
}
{
    "_id" : ObjectId("60b9c46640b4f93b945b086b"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922009",
    "姓名" : "林詩苓",
    "日期" : "2021-03-01"
}
{
    "_id" : ObjectId("60b9c46640b4f93b945b0866"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922056",
    "姓名" : "王柏元",
    "日期" : "2021-03-01"
}
{
    "_id" : ObjectId("60b9c46640b4f93b945b0868"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922080",
    "姓名" : "曾尹均",
    "日期" : "2021-03-01"
}
{
    "_id" : ObjectId("60b9c46640b4f93b945b0869"),
    "身份" : "校內生",
    "系所" : "資工系碩士班_一年級",
    "學號" : "r09922083",
    "姓名" : "阮明皓",
    "日期" : "2021-03-01"
}
```

```
{  
    "_id" : ObjectId("60b9c46640b4f93b945b086a"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922090",  
    "姓名" : "王文依",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b086c"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922095",  
    "姓名" : "陳昕璣",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b086e"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922111",  
    "姓名" : "鍾育昌",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b086f"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922116",  
    "姓名" : "邱聖約",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b087d"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922146",  
    "姓名" : "簡辰哲",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b0879"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922155",  
    "姓名" : "簡丞珮",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b0870"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922156",  
    "姓名" : "李昭妤",  
    "日期" : "2021-03-01"  
}  
{  
    "_id" : ObjectId("60b9c46640b4f93b945b0871"),  
    "身份" : "校內生",  
    "系所" : "資工系碩士班_一年級",  
    "學號" : "r09922167",  
    "姓名" : "林琮珉",  
    "日期" : "2021-03-01"  
}
```

Task 5

Code:

```
> db.students.insertMany([
  { 日期: "2021-06-02", 身份: "旁聽生", 系所: "歷史系_一年級", 學號: "b09900201", 姓名:
    "小花" },
  { 日期: "2021-06-02", 身份: "校內生", 系所: "歷史系_四年級", 學號: "b06900332", 姓名:
    "小草" },
  { 日期: "2021-06-02", 身份: "校內生", 系所: "機械系_四年級", 學號: "b06502055", 姓名:
    "小天" }
]);
```

Result:

```
> db.student.find({
... $or: [
... { 系所:"資工系碩士班_一年級 ", 學號:"r09922063" },
... { 日期: "2021-06-02" }
... ]
[... ]).pretty();
{
  "_id" : ObjectId("60b9c46640b4f93b945b0867"),
  "身份" : "校內生",
  "系所" : "資工系碩士班_一年級",
  "學號" : "r09922063",
  "姓名" : "鄭筠庭",
  "日期" : "2021-03-01"
}
{
  "_id" : ObjectId("60b9e8079ac75912d1ed7f66"),
  "日期" : "2021-06-02",
  "身份" : "旁聽生",
  "系所" : "歷史系_一年級",
  "學號" : "b09900201",
  "姓名" : "小花"
}
{
  "_id" : ObjectId("60b9e8079ac75912d1ed7f67"),
  "日期" : "2021-06-02",
  "身份" : "校內生",
  "系所" : "歷史系_四年級",
  "學號" : "b06900332",
  "姓名" : "小草"
}
{
  "_id" : ObjectId("60b9e8079ac75912d1ed7f68"),
  "日期" : "2021-06-02",
  "身份" : "校內生",
  "系所" : "機械系_四年級",
  "學號" : "b06502055",
  "姓名" : "小天"
}
```

Task 6

Code:

```
> studentNumber = function(startDate) {
  db.students.aggregate([
    { $match: { 日期: { $lte: startDate } } },
    { $group: { _id: {系所:"$系所"}, count: { $sum: 1 } } },
    { $group: { _id: null, DEPT_GROUP: { $push: { dept: "$_id.系所", number: "$count" } } } },
    { $project: { _id: "tally", dept_group: "$DEPT_GROUP" } },
    { $merge: {
        into: "students",
        whenMatched: "replace",
        whenNotMatched: "insert"
      }
    }
  ]);
};

> studentNumber("2021-03-31");
> studentNumber("2021-06-10");
```

Result:

```
|> db.students.find({_id: "tally"}).pretty();
{
  "_id" : "tally",
  "dept_group" : [
    {
      "dept" : "資工系_三年級",
      "number" : 8
    },
    {
      "dept" : "地理系碩士班_三年級",
      "number" : 1
    },
    {
      "dept" : "國企系_四年級",
      "number" : 1
    },
    {
      "dept" : "資料科學學程碩士班_一年級",
      "number" : 2
    },
    {
      "dept" : "材料系_四年級",
      "number" : 2
    },
    {
      "dept" : "電機系_四年級",
      "number" : 4
    },
    {
      "dept" : "工科海洋系碩士班_一年級",
      "number" : 3
    },
    {
      "dept" : "資工系_四年級",
      "number" : 7
    },
    {
      "dept" : "電機系_一年級",
      "number" : 1
    },
    {
      "dept" : "資工系碩士班_三年級",
      "number" : 1
    },
    {
      "dept" : "機械系熱學組碩士班_二年級",
      "number" : 1
    },
    {
      "dept" : "生機系碩士班_一年級",
      "number" : 1
    },
    {
      "dept" : "電信所碩士班_二年級",
      "number" : 3
    },
    {
      "dept" : "生醫電資所碩士班_二年級",
      "number" : 1
    },
    {
      "dept" : "資工系碩士班_一年級",
      "number" : 14
    },
    {
      "dept" : "資料科學博士班_一年級",
      "number" : 1
    },
    {
      "dept" : "環職所碩士班_二年級",
      "number" : 1
    },
    {
      "dept" : "資管系_四年級",
      "number" : 1
    },
    {
      "dept" : "資工系碩士班_二年級",
      "number" : 2
    },
    {
      "dept" : "工科海洋系_三年級",
      "number" : 1
    },
    {
      "dept" : "電子所碩士班_四年級",
      "number" : 1
    }
  ]
}
```

```
{
    "dept" : "財金系_一年級",
    "number" : 1
},
{
    "dept" : "網媒所碩士班_二年級",
    "number" : 1
},
{
    "dept" : "生機系碩士班_二年級",
    "number" : 1
},
{
    "dept" : "機械系_四年級",
    "number" : 1
},
{
    "dept" : "電機系碩士班_一年級",
    "number" : 10
},
{
    "dept" : "電信所碩士班_一年級",
    "number" : 5
},
{
    "dept" : "生技系_一年級",
    "number" : 1
},
{
    "dept" : "經濟系碩士班_二年級",
    "number" : 1
},
{
    "dept" : "網媒所碩士班_一年級",
    "number" : 1
},
{
    "dept" : "電機系碩士班_二年級",
    "number" : 2
},
{
    "dept" : "電機資安碩士班_二年級",
    "number" : 1
},
{
    "dept" : "電機系_三年級",
    "number" : 2
}
```

Second Result:

```
[> db.students.find({_id: "tally"})
{ "_id" : "tally", "dept_group" : [ { "dept" : "經濟系碩士班_二年級", "number" : 1 }, { "dept" : "電機系碩士班_一年級", "number" : 10 }, { "dept" : "電機系碩士班_二年級", "number" : 2 }, { "dept" : "電機資安碩士班_二年級", "number" : 1 }, { "dept" : "電信所碩士班_一年級", "number" : 5 }, { "dept" : "網媒所碩士班_一年級", "number" : 1 }, { "dept" : "生技系_一年級", "number" : 1 }, { "dept" : "電機系_三年級", "number" : 2 }, { "dept" : "資工系_三年級", "number" : 8 }, { "dept" : "歷史系_四年級", "number" : 1 }, { "dept" : "工科海洋系_三年級", "number" : 1 }, { "dept" : "資管系_四年級", "number" : 1 }, { "dept" : "網媒所碩士班_二年級", "number" : 1 }, { "dept" : "資工系碩士班_二年級", "number" : 2 }, { "dept" : "財金系_一年級", "number" : 1 }, { "dept" : "電子所碩士班_四年級", "number" : 1 }, { "dept" : "機械系_四年級", "number" : 2 }, { "dept" : "生機系碩士班_二年級", "number" : 1 }, { "dept" : "資工系_四年級", "number" : 7 }, { "dept" : "電機系_一年級", "number" : 1 }, { "dept" : "資工系碩士班_三年級", "number" : 1 }, { "dept" : "機械系熱學組碩士班_二年級", "number" : 1 }, { "dept" : "生機系碩士班_一年級", "number" : 1 }, { "dept" : "資料科學博士班_一年級", "number" : 1 }, { "dept" : "環職所碩士班_二年級", "number" : 1 }, { "dept" : "資工系碩士班_一年級", "number" : 14 }, { "dept" : "電信所碩士班_二年級", "number" : 3 }, { "dept" : "生醫電資所碩士班_二年級", "number" : 1 }, { "dept" : "地理系碩士班_三年級", "number" : 1 }, { "dept" : "歷史系_一年級", "number" : 1 }, { "dept" : "材料系_四年級", "number" : 2 }, { "dept" : "國企系_四年級", "number" : 1 }, { "dept" : "電機系_四年級", "number" : 4 }, { "dept" : "工科海洋系碩士班_一年級", "number" : 3 }, { "dept" : "資料科學學程碩士班_一年級", "number" : 2 } ] }
```

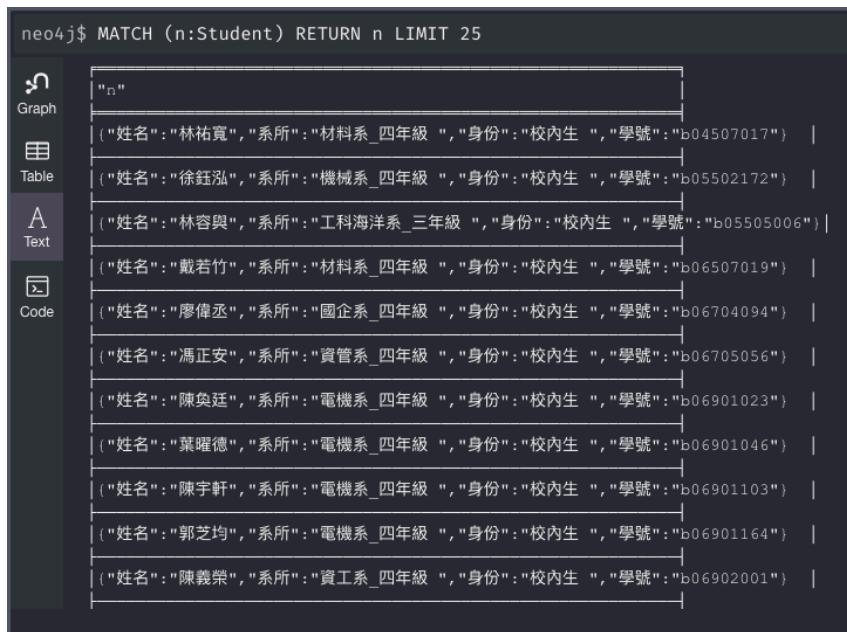
Part II (Graph DB Basic)

Task 1

Code:

```
$ LOAD CSV WITH HEADERS FROM "file:///hw6_student_data.csv" AS csvLine
CREATE (s:Student {身份: csvLine.身份, 系所: csvLine.系所, 學號: csvLine.學號, 姓名: csvLine.姓名})
```

Result:



The screenshot shows the Neo4j browser interface with the following details:

- Left sidebar: Graph, Table, Text, Code.
- Code input field: `neo4j$ MATCH (n:Student) RETURN n LIMIT 25`
- Result table:

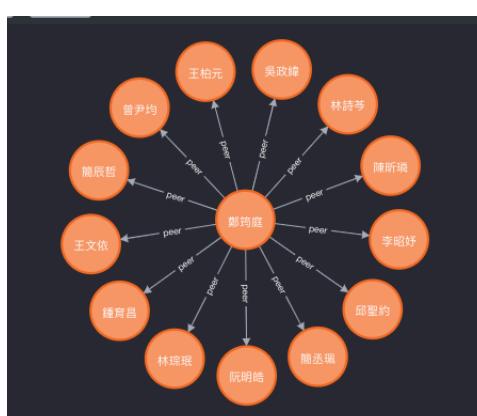
n
{"姓名": "林祐寬", "系所": "材料系_四年級", "身份": "校內生", "學號": "b04507017"}
{"姓名": "徐鈺泓", "系所": "機械系_四年級", "身份": "校內生", "學號": "b05502172"}
{"姓名": "林容與", "系所": "工科海洋系_三年級", "身份": "校內生", "學號": "b05505006"}
{"姓名": "戴若竹", "系所": "材料系_四年級", "身份": "校內生", "學號": "b06507019"}
{"姓名": "廖偉丞", "系所": "國企系_四年級", "身份": "校內生", "學號": "b06704094"}
{"姓名": "馮正安", "系所": "資管系_四年級", "身份": "校內生", "學號": "b06705056"}
{"姓名": "陳奐廷", "系所": "電機系_四年級", "身份": "校內生", "學號": "b06901023"}
{"姓名": "葉曜德", "系所": "電機系_四年級", "身份": "校內生", "學號": "b06901046"}
{"姓名": "陳宇軒", "系所": "電機系_四年級", "身份": "校內生", "學號": "b06901103"}
{"姓名": "郭芝均", "系所": "電機系_四年級", "身份": "校內生", "學號": "b06901164"}
{"姓名": "陳義榮", "系所": "資工系_四年級", "身份": "校內生", "學號": "b06902001"}

Task 2

Code:

```
$ MATCH (a:Student {學號: 'r09922063'}),(b:Student {系所: '資工系碩士班_一年級'})
WHERE b.學號 <> 'r09922063'
CREATE (a)-[r:peer]->(b)
RETURN type(r)
```

Result:

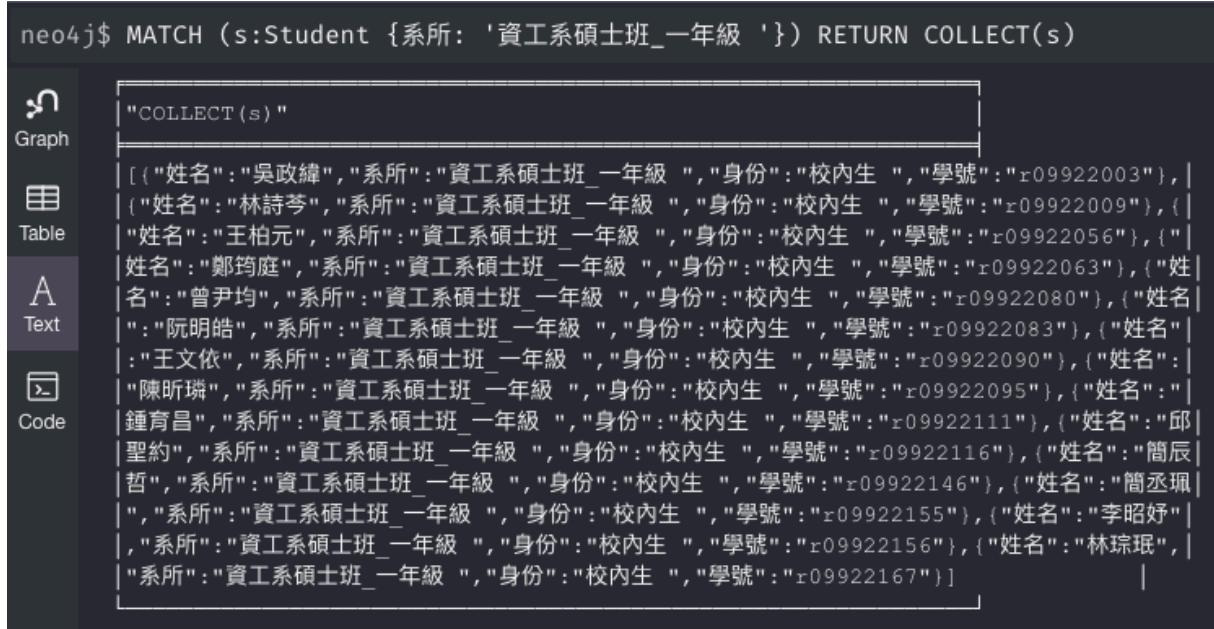


Task 3

Code:

```
$ MATCH (s:Student {系所: '資工系碩士班_一年級 '})  
RETURN COLLECT(s)
```

Result:



```
neo4j$ MATCH (s:Student {系所: '資工系碩士班_一年級 '}) RETURN COLLECT(s)  
"COLLECT(s)"  
[("姓名": "吳政緯", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922003"),  
 ("姓名": "林詩夢", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922009"),  
 ("姓名": "王柏元", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922056"),  
 ("姓名": "鄭筠庭", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922063"),  
 ("姓名": "曾尹均", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922080"),  
 ("姓名": "阮明皓", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922083"),  
 ("姓名": "王文依", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922090"),  
 ("姓名": "陳昕璘", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922095"),  
 ("姓名": "鍾育昌", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922111"),  
 ("姓名": "邱聖約", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922116"),  
 ("姓名": "簡辰哲", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922146"),  
 ("姓名": "簡丞珮", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922155"),  
 ("姓名": "李昭妤", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922156"),  
 ("姓名": "林琮珉", "系所": "資工系碩士班_一年級 ", "身份": "校內生 ", "學號": "r09922167")]
```

Part III 2 (Graph DB Advanced)

Task 1

儲存方式是學生各自是一個 node，而興趣也各自是一個 node。

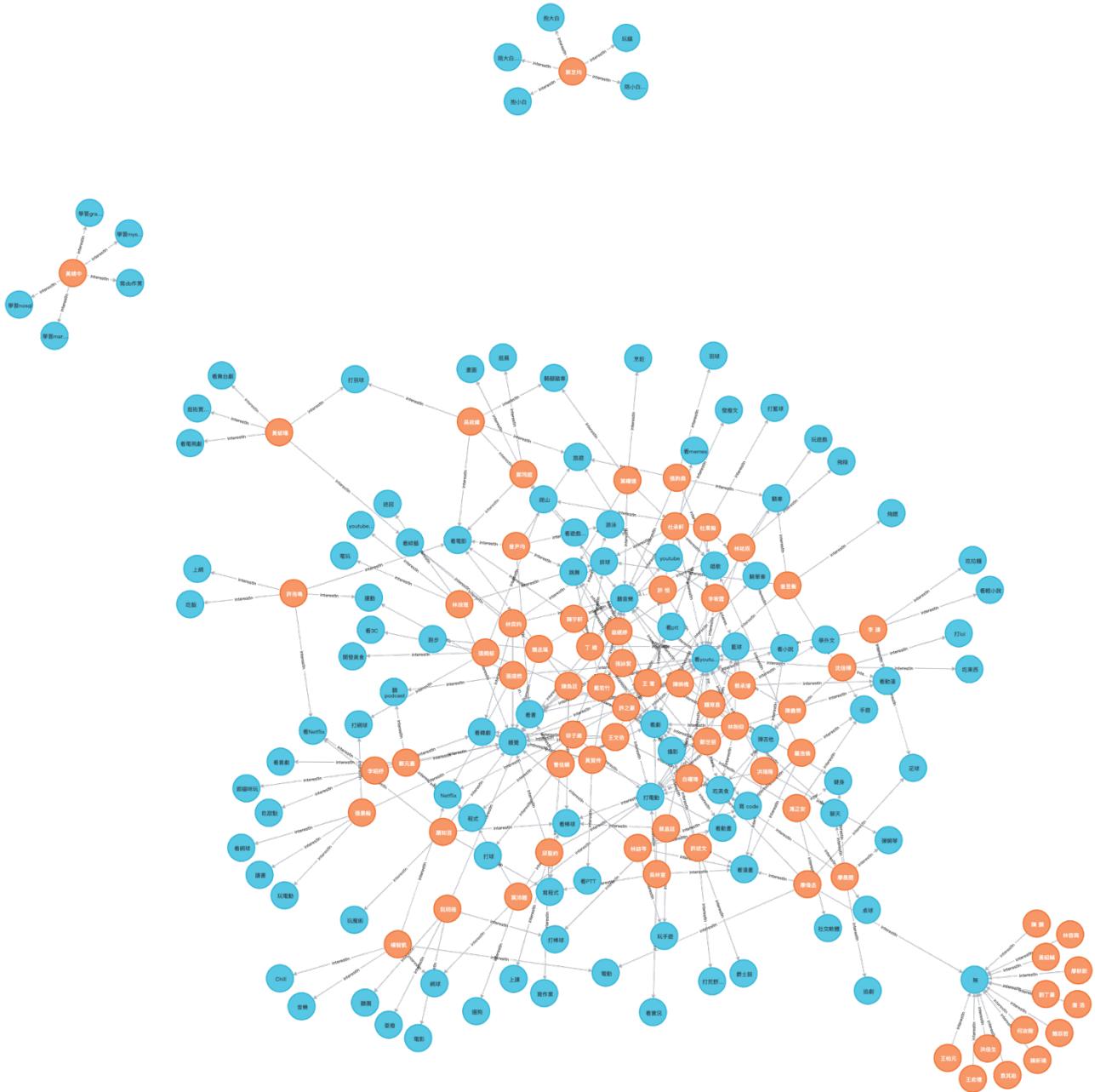
Code:

```
$ LOAD CSV WITH HEADERS FROM "file:///hw6_hobbies.csv" AS csvLine  
MERGE (a:Hobby {hobby: csvLine.hobby1})  
MERGE (b:Hobby {hobby: csvLine.hobby2})  
MERGE (c:Hobby {hobby: csvLine.hobby3})  
MERGE (d:Hobby {hobby: csvLine.hobby4})  
MERGE (e:Hobby {hobby: csvLine.hobby5})  
  
$ LOAD CSV WITH HEADERS FROM "file:///hw6_hobbies.csv" AS csvLine  
CREATE (:Student {學號: csvLine.學號, 姓名: csvLine.姓名})  
  
$ LOAD CSV WITH HEADERS FROM "file:///hw6_hobbies.csv" AS csvLine  
MATCH (s:Student {學號: csvLine.學號}), (h:Hobby {hobby: csvLine.hobby1})  
MERGE (s)-[r:interestIn]->(h)
```

從 csv 檔中讀取五個興趣，並分別存入獨立的 Hobby node，Hobby node 並不會有 duplicate。

讀取學生名稱與學號存入 Student node，並將 Student 與他所擁有的 Hobby 連接，relationship 的名稱為 interestIn。

Result:

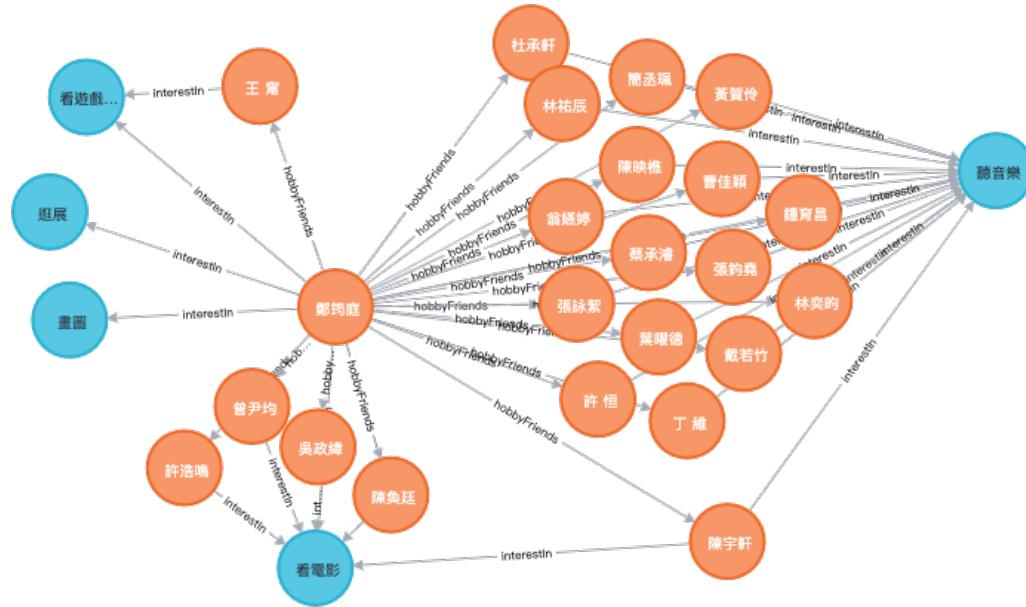


Before Task 2

Code:

```
$ MATCH (me:Student {學號: 'r09922063'})--(myh:Hobby)
MATCH (friend:Student)--(friendh:Hobby)
WHERE myh.hobby = friendh.hobby AND friend.學號 <> 'r09922063'
MERGE (me)-[r:hobbyFriends]-(friend)
```

利用 relationship 與 match 找到跟我有相同興趣的人，加上新的 relationship。

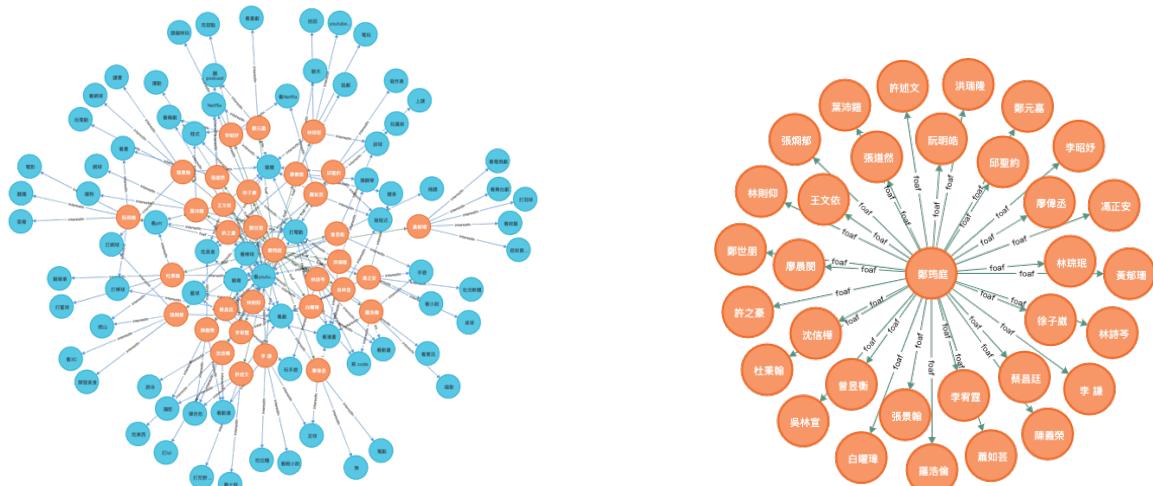


Code:

```
$ MATCH (me:Student {學號: 'r09922063'})-[rHobbyF:hobbyFriends]->(friend:Student)--(friendh:Hobby)
MATCH (foaf:Student)--(foahf:Hobby)
WHERE foahf.hobby = friendh.hobby AND foaf.學號 <> 'r09922063' AND NOT (me)-[:hobbyFriends]->(foaf)
MERGE (me)-[r:foaf]->(foaf)
```

把朋友的朋友與我加上 foaf 的 relationship，會去除掉我自己以及已經是 hobby friends 的人。

印出所有 foaf 跟他們的興趣。這邊並非 task 2 最終答案，因為我自己也被印出來了。



Task 2

Code:

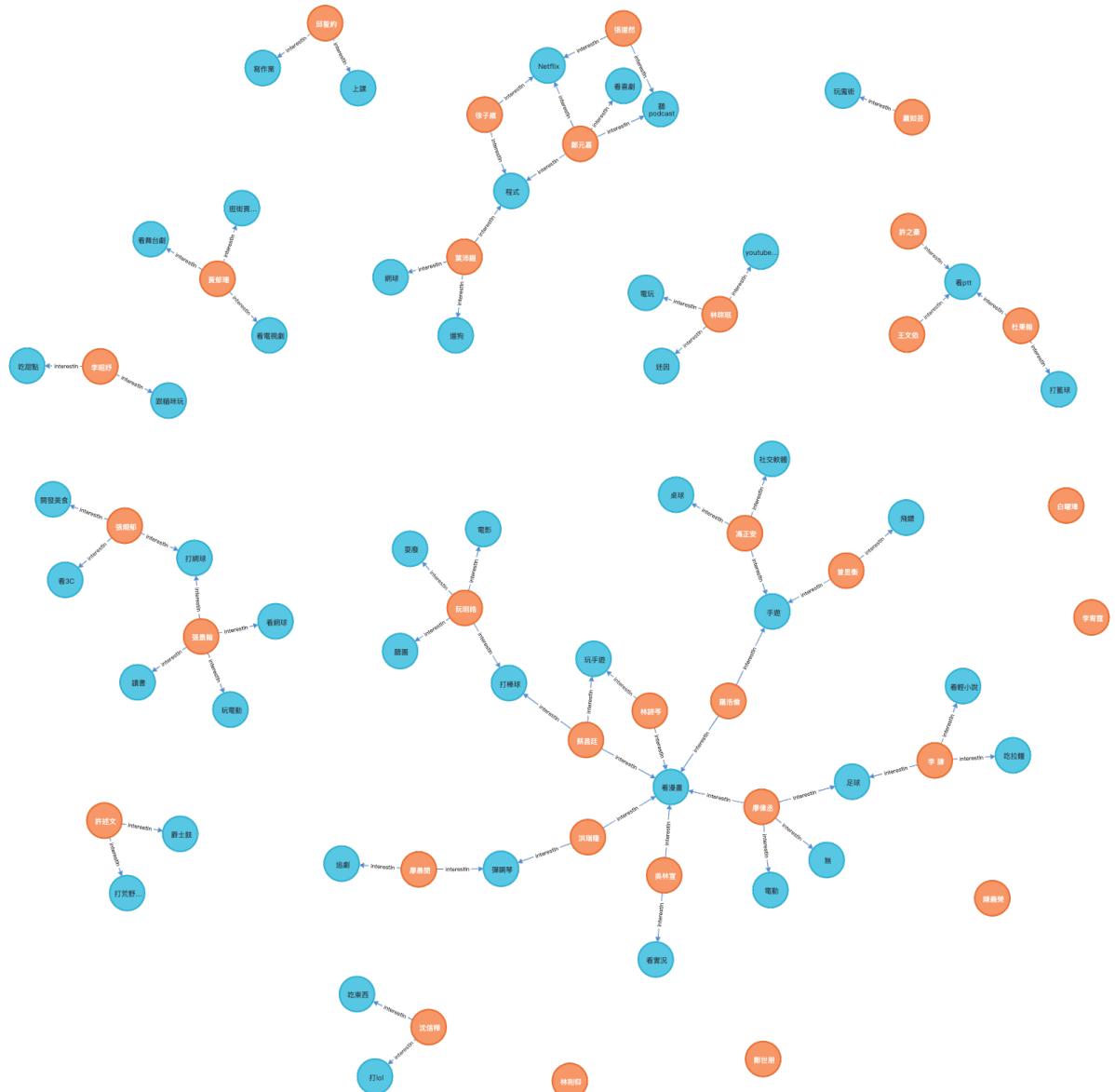
```
$ MATCH (a:Student {學號: 'r09922063'})-[r:foaf]->(ff)--(h:Hobby)  
RETURN ff,h
```

這段 code 會印出我的 foaf 與他們的興趣，但是作業要求我的 hobby friend 的興趣也不能出現在裡面。這裡會印出 75 個興趣。

```
$ MATCH (s1:Student {學號: 'r09922063'})-[r1:hobbyFriends]->(hf)--(h1:Hobby)  
WITH collect(distinct h1) as hobbies1  
MATCH (s2:Student {學號: 'r09922063'})-[r2:foaf]->(ff)--(h2:Hobby)  
WITH hobbies1, ff, h2, collect(distinct h2) AS hobbies2  
WHERE NONE (h2 in hobbies2 where h2 in hobbies1)  
MATCH ()-[r3:foaf]->(myfoaf:Student)  
RETURN hobbies2,myfoaf
```

得到 foaf 的興趣，用 WHERE NONE 去除 hobby friend 的興趣，再印出 foaf 跟興趣。這裡會印出 47 個興趣、32 位學生。

Result:



Task 3

Code:

微調 Task 2 的 code，只印出 foaf 的興趣。

```
$ MATCH (s1:Student {學號:'r09922063'})-[r1:hobbyFriends]->(hf)--(h1:Hobby)
WITH collect(distinct h1) as hobbies1
MATCH (s2:Student {學號:'r09922063'})-[r2:foaf]->(ff)--(h2:Hobby)
WITH hobbies1, ff, h2, collect(distinct h2) AS hobbies2
WHERE NONE (h2 in hobbies2 where h2 in hobbies1)
RETURN hobbies2
```

Result: 共 47 個新興趣

