

# Assignment 2

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Name: 卫焱滨 (Wei Yanbin)

SID: 11710823

## Problem 1 Overwatch

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1. Find all people who are taller than 170(the unit here is irrelevant).

$$\sigma_{height > 170} (People)$$

2. Find all people who have girlfriend(s)/boyfriend(s) online.

$$\sigma(People) \bowtie_{pid} (\sigma_{qq=qq1 \vee qq=qq2} (\sigma(QQnumber) \bowtie \sigma(isCoupleOnline)))$$

3. Find all SUSTechers who are famous for “High GPA”(text type).

$$\sigma(People) \bowtie_{pid} \sigma(SUSTech) \bowtie_{pid} \sigma_{famous\_for = \text{“High GPA”}} (FamousPeople)$$

4. Find all SUSTechers who are famous for “Low GPA”(text type), but whose GPA  $\geq 3.9$ .

$$\sigma(People) \bowtie_{pid} \sigma_{GPA \geq 3.9} (SUSTech) \bowtie_{pid} \sigma_{famous\_for = \text{“Low GPA”}} (FamousPeople)$$

5. Find all SUSTechers whose GPA  $\geq 3.9$  and have boyfriend(s)/girlfriend(s).

$$\sigma(People) \bowtie_{pid} \sigma_{pid=pid1 \vee pid=pid2} (\sigma_{GPA \geq 3.9} (SUSTech) \bowtie \sigma(isCouple))$$

6. Find all famous people who are born in a city of “Guangdong” with a local specialty called “Chang Fen”.

$$\sigma(FamousPeople) \bowtie_{pid} \sigma(People) \bowtie_{cityid} (\sigma_{local\_specialty="ChangFen"} (Cities) \bowtie_{provinceid} \sigma_{name="Guangdong"} (Provinces))$$

## Problem

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1. Find all memberid and serverid pairs in which the member has time and skill to sabotage the server while it is without guard. (The member must have the same skill as the server type, and the available time of Member should match the guardofftime of Server)

$$\prod_{memberid, severid} \sigma_{guardofftime=availabletime \wedge skill=severtype} (\sigma(Member) \bowtie \sigma(Server))$$

2. Find all netid of the nets which contains at least one server with weak password.

$$\prod_{netid} \sigma(Net) \bowtie_{severid} \sigma(WeakPassword)$$

3. Find all servers whose administrator’s department is not “Computer Science”.

$$\sigma(Sever) \bowtie_{adminid} \sigma_{department \neq "Computer Science"} (Administrator)$$

4. Find all the server that has a weak password and the weak password is its administrator’s birth date or “admin” or “123456”.

$$\sigma(Server) \bowtie_{adminid} \sigma_{weak\_password="123456" \vee weak\_password="admin" \vee weak\_password=birth\_date} \sigma(Administrtror) \bowtie \sigma(WeakPassword)$$