|  |
| --- |
| Time |
| +year: unsigned int  +month: unsigned int  +day: unsigned int  +hour: unsigned int  +minute: unsigned int  +second: unsigned int |

2

1

|  |
| --- |
| College\_Student |
| +student\_ID: string  +book\_ID: string  +borrow\_time: Time  +return\_time: Time  +balance: double |

二者是共享聚集关系，菱形应该是空心的。

|  |
| --- |
| Time |
| +year: unsigned int  +month: unsigned int  +day: unsigned int  +hour: unsigned int  +minute: unsigned int  +second: unsigned int |

2

1

|  |
| --- |
| Book |
| +book\_ID: string  +state: State  +borrowed\_time: Time  +returned\_time: Time  +count: unsigned int  +total\_num: unsigned int  +rest\_num: unsigned int |

二者是共享聚集关系，菱形应该是空心的。

|  |
| --- |
| Administrator |
| +administrator\_ID: string |

//借书和还书似乎没有图书馆管理员的参与，在国科大，通过机器扫描书本和校园卡，

学生自主借书和还书。

|  |
| --- |
| Time |
| +year: unsigned int  +month: unsigned int  +day: unsigned int  +hour: unsigned int  +minute: unsigned int  +second: unsigned int |

1

1

|  |
| --- |
| Factory\_Car |
| +car\_ID: string  +model: Fac\_Model  +state: State  +produced\_time: Time  +cost: double  +price: unsigned int  +produced\_num: unsigned int  +sold\_num: unsigned int |

二者是共享聚集关系，菱形应该是空心的。

|  |
| --- |
| Time |
| +year: unsigned int  +month: unsigned int  +day: unsigned int  +hour: unsigned int  +minute: unsigned int  +second: unsigned int |

1

1

|  |
| --- |
| Factory\_Car |
| +license\_plate: string  +owner\_model: Owner\_Model  +price: unsigned int  +bought\_time: Time  +oil: double  +path: unsigned int  +speed: double |

二者是共享聚集关系，菱形应该是空心的。

|  |
| --- |
| Time |
| +year: unsigned int  +month: unsigned int  +day: unsigned int  +hour: unsigned int  +minute: unsigned int  +second: unsigned int |

|  |
| --- |
| Drive\_License |
| +name: string  +score: int  +ID:string  +get\_time: Time |

|  |
| --- |
| ID\_Card |
| +name: string  +ID: string  +birthday: Time  +birth\_place: string  +gender: Gender  .... |

|  |
| --- |
| TCO\_Car |
| +license\_plate: string  +checked\_year: unsigned int  +id: ID  +drive\_license: Drive\_License |

车管所的车和驾照是组成聚集，菱形为实心。车管所的车和身份证是共享聚集，菱形为空心。

1. 以“图书换借书、还书”为背景
2. 大学里的学生

class Time{

public: unsigned int year;

unsigned int month;

unsigned int day;

unsigned int hour;

unsigned int minute;

unsigned int second;

};

class College\_Student

{

public: string student\_ID; //学生学号

string book\_ID; //图书编号

Time borrow\_time; //借书时间

Time return\_time; //还书时间

double balance; //学生卡账户余额

};

1. 图书

enum State{STAY, BORROW}; //图书在图书馆或者被借走的状态

class Book

{

public: string book\_ID; //图书编号

State state;

Time borrowed\_time; //被借的时间

Time returned\_time; //被归还的时间

unsigned int count; //被借的次数

unsigned int total\_num; //该书在图书馆的总数量

unsigned int rest\_num; //当前该书在图书馆的数量

};

1. 图书馆的管理员

Class Administrator{

Public: string administrator\_ID; //图书馆管理员的编号

};//借书和还书似乎没有图书馆管理员的参与，在国科大，通过机器扫描书本和校园卡，学生自主借书和还书。

1. 从“厂家”的角度

enum Fac\_Model{...}; //对于一个车辆制造商，车辆的大品牌是固定的，但是大品牌下分许多小品牌，小品牌又分许多车型，可通过枚举来列出车辆的车型信息。

enum State{ QUALIFIED, UNQUALIFIED}; //车辆的合格或不合格状态

class Factory\_Car{

public: string car\_ID; //车辆编号

Fac\_Model model;

State state;

Time produced\_time;

double cost; //成本

unsigned int price; //售价

unsigned int produced\_num; //目前生产总量

unsigned int sold\_num; //目前卖出总量

};

1. 从“车主”的角度

enum Owner\_Model{...}; //在车主的角度，他/她所选择的大品牌不止一种，所以这里的车型和上述的车型不同。

class Owner\_Car{

public: string license\_plate; //车牌号

Owner\_Model owner\_model;

unsigned int price; //价格

Time bought\_time; //购买时间

unsigned int path; // 跑的公里数

double oil; //油量

double speed; //速度

};

1. 从“交管所”的角度

class ID{

...

};//身份证类

class Drive\_License{

..

}; //驾驶证类，包含驾照分，取得驾照年份，驾驶人姓名等

class Drive\_License

{

public: string name;

...

};

class TCO\_Car{

public: string license\_plate; //车牌号

unsigned int checked\_year; //车检年份

ID id;

Drive\_License drive\_license;

};