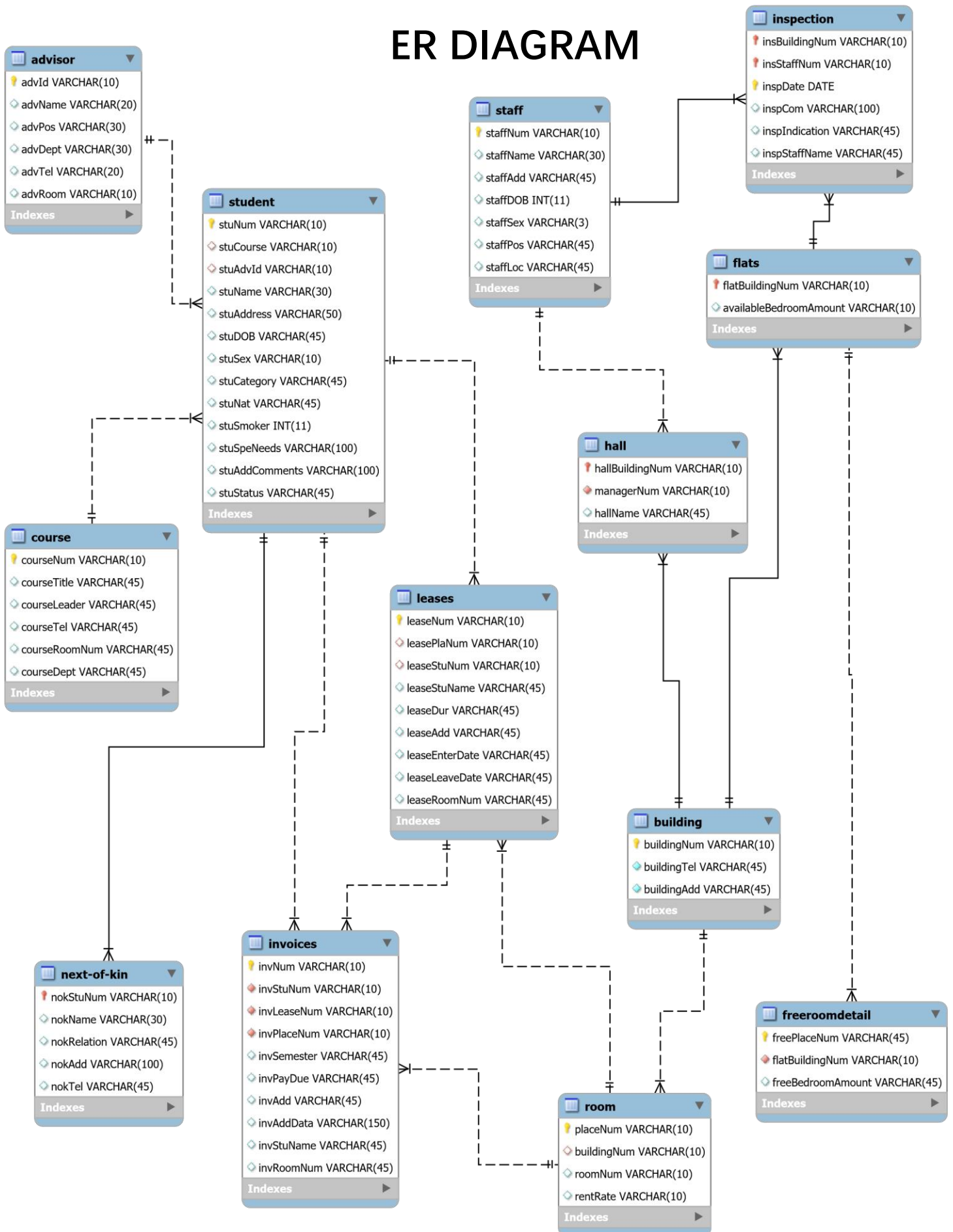# ASSUMPTIONS

1. flat and hall are building. Hall and flat are the subclass of building(superclass).

2. each flat and hall have many rooms. In flat each room may have three, four or five bedrooms. But in hall, each room has only one bedroom.

3. each flat can be inspected by many staff, meanwhile each staff can inspect many flats. But a staff can only inspect a hall once per day.

4. the bedrooms in room of flat have the same rent rate.

5. a hall manager can be responsible to many halls. But one hall can be managed by only one manager.

6. A student only has one course

7. A category can only have one advisor, and different category has just one course different from other category

8. A course is taught in a fixed room, which has a special telephone number.

9. Each hall has a special telephone number.

ER DIAGRAM

advisor
- advId VARCHAR(10)
- advName VARCHAR(20)
- advPos VARCHAR(30)
- advDept VARCHAR(30)
- advTel VARCHAR(20)
- advRoom VARCHAR(10)
- Indexes

student
- stuNum VARCHAR(10)
- stuCourse VARCHAR(10)
- stuAdvId VARCHAR(10)
- stuName VARCHAR(30)
- stuAddress VARCHAR(50)
- stuDOB VARCHAR(45)
- stuSex VARCHAR(10)
- stuCategory VARCHAR(45)
- stuNat VARCHAR(45)
- stuSmoker INT(11)
- stuSpeNeeds VARCHAR(100)
- stuAddComments VARCHAR(100)
- stuStatus VARCHAR(45)
- Indexes

staff
- staffNum VARCHAR(10)
- staffName VARCHAR(30)
- staffAdd VARCHAR(45)
- staffDOB INT(11)
- staffSex VARCHAR(3)
- staffPos VARCHAR(45)
- staffLoc VARCHAR(45)
- Indexes

inspection
- insBuildingNum VARCHAR(10)
- insStaffNum VARCHAR(10)
- inspDate DATE
- inspCom VARCHAR(100)
- inspIndication VARCHAR(45)
- inspStaffName VARCHAR(45)
- Indexes

flats
- flatBuildingNum VARCHAR(10)
- availableBedroomAmount VARCHAR(10)
- Indexes

course
- courseNum VARCHAR(10)
- courseTitle VARCHAR(45)
- courseLeader VARCHAR(45)
- courseTel VARCHAR(45)
- courseRoomNum VARCHAR(45)
- courseDept VARCHAR(45)
- Indexes

hall
- hallBuildingNum VARCHAR(10)
- managerNum VARCHAR(10)
- hallName VARCHAR(45)
- Indexes

leases
- leaseNum VARCHAR(10)
- leasePlaNum VARCHAR(10)
- leaseStuNum VARCHAR(10)
- leaseStuName VARCHAR(45)
- leaseDur VARCHAR(45)
- leaseAdd VARCHAR(45)
- leaseEnterDate VARCHAR(45)
- leaseLeaveDate VARCHAR(45)
- leaseRoomNum VARCHAR(45)
- Indexes

building
- buildingNum VARCHAR(10)
- buildingTel VARCHAR(45)
- buildingAdd VARCHAR(45)
- Indexes

next-of-kin
- nokStuNum VARCHAR(10)
- nokName VARCHAR(30)
- nokRelation VARCHAR(45)
- nokAdd VARCHAR(100)
- nokTel VARCHAR(45)
- Indexes

invoices
- invNum VARCHAR(10)
- invStuNum VARCHAR(10)
- invLeaseNum VARCHAR(10)
- invPlaceNum VARCHAR(10)
- invSemester VARCHAR(45)
- invPayDue VARCHAR(45)
- invAdd VARCHAR(45)
- invAddData VARCHAR(150)
- invStuName VARCHAR(45)
- invRoomNum VARCHAR(45)
- Indexes

room
- placeNum VARCHAR(10)
- buildingNum VARCHAR(10)
- roomNum VARCHAR(10)
- rentRate VARCHAR(10)
- Indexes

freeroomdetail
- freePlaceNum VARCHAR(45)
- flatBuildingNum VARCHAR(10)
- freeBedroomAmount VARCHAR(45)
- Indexes

RELATIONAL SCHEMA

(using normalization)

1. ADVISOR (**advId,** advName, advPos, advDept, advTel, advRoom)

2. STUDENT (**stuNum,** *stuCategory,* stuName, stuAddress, stuDOB, stuSex, stuNat, stuSmoker, stuSpeNeeds, stuAddComments, stuStatus)

3. STUDENT1(**stuCategory,** *stuCourse, stuAdvId*)

4. COURSE (**courseNum,** *courseRoomNum*, courseTitle, courseLeader, courseDept)

5. Course1(**courseRoomNum,** courseTel)

6. NEXT-OF-KIN (*nokStuNum*, nokName, nokRelation, nokAdd, nokTel)

7. INVOICES (**invNum,** *invLeaseNum*, *invStuNum*, *invPlaNum*, invSemester, invPayDue, invAdd, invAddData)

8. INVOICES1(*invStuNum,* invStuName)

9. INVOICES2(*invPlaNum,* invRoomNum)

10. LEASES (**leaseNum,** *leaseStuNum*, *leasePlaNum*, leaseDur, leaseAdd, leaseRoomNum, leaseEnterDate, leaseLeaveDate)

11. LEASES (*leaseStuNum,* leaseName)

12. INSPECTION (**inspDate,** *insBuildingNum,* *inspStaffNum*, inspCom, inspIndication, inspStaffName)

13. ROOM (**placeNum,** rentRate)

14. ROOM1(**placeNum,** *buildingNum,* roomNum)

15. STAFF (**staffNum,** *staffPos*, staffName, staffAdd, staffDOB, staffSex)

16. STAFF1(**staffPos**, staffLoc)

17. HALL (*buildingNum*, *buildingTel*)

18. HALL1(**buildingTel,** *managerNum,* buildingAdd, hallName)

19. FLATS (*flatbuildingNum*, *buildingTel*)

20. FLATS (**buildingTel,** buildingAdd, availableBedroomAmount)

21. FREEROOMDETAIL (**freeplaceNum,** *flatBuildingNum*,)

22. FREEROOMDETAIL1(***flatBuildingNum***, freeBedroomAmount)

Note: underline and bold means primary key, italic and bold means foreign key.

These relations are in 4th Normal Form since there isn't partial dependency(2NF) and transitive dependency(3NF). Meanwhile every determinant is a candidate key, so it is a BCNF. Last but not least, each relation contains no nontrivial multivalued dependencies. So they are in 4NF.

e.g.

FREEROOMDETAIL (**freeplaceNum,** ***flatBuildingNum***, freeBedroomAmount)

fd1: **freeplaceNum->*flatBuildingNum***, freeBedroomAmount (primary key)

fd2: ***flatBuildingNum->***freeBedroomAmount (transitive dependency)

no partial dependency means it has already in 2NF

FREEROOMDETAIL (**freeplaceNum,** ***flatBuildingNum***,)

FREEROOMDETAIL1(***flatBuildingNum***, freeBedroomAmount)

It is in 3NF.

Every determinant is a candidate key, so it is a BCNF. And each relation contains no nontrivial multivalued dependencies. So they are in 4NF.

SAMPLE TEST DATA

advisor

advId	advName	advPos	advDept	advTel	advRoom
1	YinzeLi	advisor	iot	12345	101
2	BozhiTian	advisor	ce	54321	101
3	JunYan	TA	cs	34567	203
4	BobYu	TA	ee	98765	303

building

buildingNum	buildingTel	buildingAdd
1	83881	Benbu
2	83882	Benbu
3	83883	Shahe
4	83884	Shahe

course

courseNum	courseTitle	courseLeader	courseTel	courseRoomNum	courseDept
ebu001	English	JingChen	33000	3-303	language
ebu002	Math	WenboZhang	31000	4-110	science
ebu003	Java	JohnWood	56002	4-120	computer
ebu004	Cpp	KeXu	76002	3-533	computer

flats

flatBuildingNum	availableBedroomAmount
1	10
2	8

freeroomdetail

freePlaceNum	flatBuildingNum	freeBedroomAmount
1101	1	4
1102	1	0
1103	1	6
2101	2	0
2102	2	4
2103	2	4

hall

hallBuildingNum	managerNum	hallName
3	9001	Yanbei
4	9002	Yannan

inspection

insBuildingNum	insStaffNum	inspDate	inspCom	inspIndication	inspStaffName
1	9003	2018/12/8	well	yes	YiYong
1	9004	2018/11/30	clean	yes	PengShen
2	9004	2017/1/1	tidy	no	PengShen

invoices

invNum	invStuNum	invLeaseNum	invPlaceNum	invSemester	invPayDue	invAdd	invAddData	invStuName	invRoomNum
201800101	201601	2018001	1102	1	2018/2/1	3600	cash	HaoChuan	102
201800102	201601	2018001	1102	2	2018/10/1	3600	alipay	HaoChuan	102
201800201	201602	2018002	1102	1	2018/2/1	3600	visa	GuanZhou	102
201800202	201602	2018002	1102	2	2018/10/1	3600	no	GuanZhou	102
201800301	201603	2018003	1102	1	2018/2/1	3600	cash	MikeLee	102
201800302	201603	2018003	1102	s	2018/7/1	1800	cash	MikeLee	102
201800303	201603	2018003	1102	2	2018/10/1	3600	cash	MikeLee	102
201800401	201604	2018004	2101	1	2018/2/1	4000	alipay	JohnChen	101
201800402	201604	2018004	2101	2	2018/10/1	4000	visa	JohnChen	101
201800403	201604	2018004	2101	s	2018/7/1	2000	cash	JohnChen	101
201800501	201701	2018005	2101	1	2018/2/1	4000	visa	JingFu	101
201800502	201701	2018005	2101	s	2018/7/1	2000	cash	JingFu	101
201800601	201710	2018006	2101	2	2018/10/1	4000	alipay	WenXi	101
201800602	201710	2018006	2101	s	2018/7/1	2000	alipay	WenXi	101
201800701	201711	2018007	3101	2	2018/10/1	8000	cash	DongXu	101
201800702	201711	2018007	3101	s	2018/7/1	4000	visa	DongXu	101
201800801	201801	2018008	3102	s	2018/7/1	4200	visa	LuYan	102
201800901	201802	2018009	3103	1	2018/2/1	8400	cash	LinXing	103
201800902	201802	2018009	3103	2	2018/10/1	8400	alipay	LinXing	103
201801001	201803	2018010	4101	1	2018/2/1	9600	visa	GuoHao	101
20180	20180	201801	4101	2	2018/	9600	alipay	GuoH	101

1002	3	0			10/1			ao	
20180 1101	20180 4	201801 1	4102	2	2018/ 10/1	1200 0	cash	FanCh en	102

leases

lease Num	leasePl aNum	leaseSt uNum	leaseStu Name	lease Dur	lease Add	leaseEnt erDate	leaseLea veDate	leaseRoo mNum
2018 001	1102	201601	HaoChu an	12	Benb u	2018010 1	2018122 1	102
2018 002	1102	201602	GuanZh ou	12	Benb u	NULL	NULL	102
2018 003	1102	201603	MikeLee	12s	Benb u	NULL	NULL	102
2018 004	2101	201604	JohnChe n	12s	Benb u	NULL	NULL	101
2018 005	2101	201701	JingFu	1s	Benb u	NULL	NULL	101
2018 006	2101	201710	WenXi	2s	Benb u	NULL	NULL	101
2018 007	3101	201711	DongXu	2s	Shah e	NULL	NULL	101
2018 008	3102	201801	LuYan	s	Shah e	NULL	NULL	102
2018 009	3103	201802	LinXing	12	Shah e	NULL	NULL	103
2018 010	4101	201803	GuoHao	12	Shah e	NULL	NULL	101
2018 011	4102	201804	FanChe n	2	Shah e	NULL	NULL	102

next-of-kin

nokStuNum	nokName	nokRelation	nokAdd	nokTel
201601	PengYang	Mother	Beijing	16511
201701	HanLi	Father	Tianjing	19811
201801	FenLiu	Sister	Beijing	10001

room

placeNum	buildingNum	roomNum	rentRate
1101	1	101	1000
1102	1	102	900
1103	1	103	1200
2101	2	101	1000
2102	2	102	1100
2103	2	103	850
3101	3	101	2000
3102	3	102	2100

3103	3	103	2100
4101	4	101	2400
4102	4	102	3000
4103	4	103	1900

staff

staffNum	staffName	staffAdd	staffDOB	staffSex	staffPos	staffLoc
9001	ZongFan	Dalin-Chonqing-800001	19900707	f	Hall Manager	Hall
9002	FengJiang	Renmin-Harbin-440921	19890909	m	Hall Manager	Hall
9003	YiYong	Haiyang-Qingdao-786925	19870909	f	Assistant	Office
9004	PengShen	Putong-Guiyang-232348	19790111	m	Officer	Office
9005	JingFu	Moon-Mars-123456	19880817	f	Hall Manager	Hall

student

stuNum	stuCourse	stuAdvId	stuName	stuAddress	stuDOB	stuSex	stuCategory	stuNat	stuSmoker	stuSpeNeeds	stuAddComments	stuStatus
201601	ebu004	4	Hao-Chuan	Main-London-00001	19981109	f	2p	UK	1	NULL	NULL	p
201602	ebu001	1	Guan-Zhou	Yingze-Taiyuan-03001	19980101	m	3u	China	0	disability	NULL	p
201603	ebu003	3	Mike-Lee	Kao-Seattle-90001	19970904	f	3u	US	1	NULL	NULL	p
201604	ebu004	4	John-Chen	Uing-LA-20001	19960606	m	4u	US	1	NULL	NULL	p
201701	ebu002	2	Jing-Fu	Xitucheng-Beijing-010001	19990301	f	2u	China	1	NULL	NULL	p
201710	ebu001	4	Wen-Xi	Big-Newyork-090091	20001010	m	1u	US	0	NULL	NULL	p
20	ebu	3	Do	Ying-	199	f	4u	Jap	0	NUL	lazy	p

17 11	002		ng-Xu	Tokyo-890301	908 08			an		L		
20 18 01	ebu 004	1	Lu-Yan	Jiefang-Tianjin-789011	199 706 05	f	3u	Chi na	0	NUL L	NULL	p
20 18 02	ebu 001	1	Lin -Xin g	Chi-Hefei-654701	199 802 02	m	3u	Chi na	1	NUL L	hardw orking	p
20 18 03	ebu 003	3	Gu o-Ha o	Renmin-Shanghai-654301	199 712 12	m	1p	Chi na	1	NUL L	NULL	p
20 18 04	ebu 003	2	Fan -Che n	Binhai-Dalian-123467	199 909 09	m	4p	Chi na	0	NUL L	NULL	p
20 18 05	ebu 002	2	Yua n-Yao	Xiangyang-Shenzhen-089701	199 704 04	f	1u	Chi na	1	NUL L	NULL	w

SQL QUERIES

a. Present a report listing the Manager's name and telephone number for each

    hall of residence.

    create view question_a as select staffName, buildingTel

    from building join hall on building.buildingNum=hall.hallBuildingNum

    join staff on hall.managerNum=staff.staffNum;

    select * from question_a;

b. Present a report listing the names and student numbers of students with the

    details of their lease agreements.

    select *from leases;

c. Display the details of lease agreements that include the Summer Semester.

> select *from leases
>
> where leaseDur like '%s%';

leaseNum	leasePlaNum	leaseStuNum	leaseStuName	leaseDur	leaseAdd	leaseEnterDate	leaseLeaveDate	leaseRoomNum
2018003	01102	201603	MikeLee	12s	Benbu	NULL	NULL	102
2018004	02101	201604	JohnChen	12s	Benbu	NULL	NULL	101
2018005	02101	201701	JingFu	1s	Benbu	NULL	NULL	101
2018006	02101	201710	WenXi	2s	Benbu	NULL	NULL	101
2018007	03101	201711	DongXu	2s	Shahe	NULL	NULL	101
2018008	03102	201801	LuYan	s	Shahe	NULL	NULL	102
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

d. Display the details of the total rent paid by a given student.

> select sum(invAdd), invStuNum, invNum, invLeaseNum, invPlaceNum
>
> from invoices
>
> where invStuNum='201601';

e. Present a report on students that have not paid their invoices by a given date.

> select *from invoices
>
> where unix_timestamp ('2018-03-01')<unix_timestamp (invPayDue);

```
15    -- e
16 •  select *from invoices
17    where unix_timestamp('2018-03-01')<unix_timestamp(invPayDue);
18    -- f
```

invNum	invStuNum	invLeaseNum	invPlaceNum	invSemester	invPayDue	invAdd	invAddData	invStuName	invRoomNum
201800102	201601	2018001	01102	2	2018-10-01	3600	alipav	HaoChuan	102
201800202	201602	2018002	01102	2	2018-10-01	3600	no	GuanZhou	102
201800302	201603	2018003	01102	s	2018-07-01	1800	cash	MikeLee	102
201800303	201603	2018003	01102	2	2018-10-01	3600	cash	MikeLee	102
201800402	201604	2018004	02101	2	2018-10-01	4000	visa	JohnChen	101
201800403	201604	2018004	02101	s	2018-07-01	2000	cash	JohnChen	101
201800502	201701	2018005	02101	s	2018-07-01	2000	cash	JingFu	101
201800601	201710	2018006	02101	2	2018-10-01	4000	alipav	WenXi	101
201800602	201710	2018006	02101	s	2018-07-01	2000	alipav	WenXi	101
201800701	201711	2018007	03101	2	2018-10-01	8000	cash	DonaXu	101
201800702	201711	2018007	03101	s	2018-07-01	4000	visa	DonaXu	101
201800801	201801	2018008	03102	s	2018-07-01	4200	visa	LuYan	102
201800902	201802	2018009	03103	2	2018-10-01	8400	alipav	LinXina	103
201801002	201803	2018010	04101	2	2018-10-01	9600	alipav	GuoHao	101
201801101	201804	2018011	04102	2	2018-10-01	12000	cash	FanChen	102
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

f. Display the details of flat inspections where the property was found to be in an unsatisfactory condition.

    select *from inspection

    where inspIndication='no';

g. Present a report of the names and student numbers of students with their room number and place number in a particular hall of residence.

    select leaseStuNum, leaseStuName, leasePlaNum, leaseRoomNum

    from hall join room on room.buildingNum=hall.hallBuildingNum

    join leases on leases.leasePlaNum=room.placeNum;
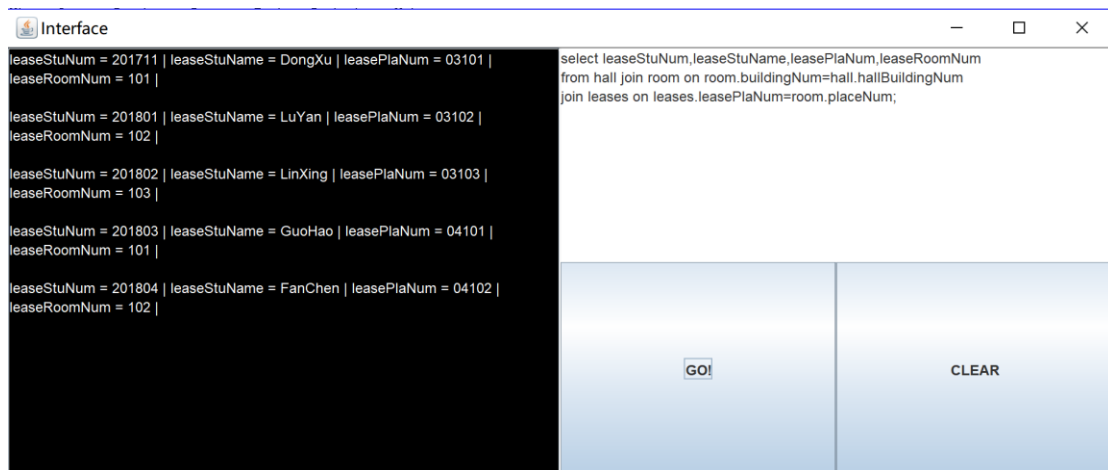
h. Present a report listing the details of all students currently on the waiting list for accommodation, that is, not placed.

> select *from student
> where stuStatus = 'w';

i. Display the total number of students in each student category.

> select stuCategory , count(*) as 'number'
> from student
> group by stuCategory;

j. Present a report of the names and student numbers for all students who

have not supplied details of their next-of-kin.

select stuNum, stuName from student

where stuNum not in(select nokStuNum from `next-of-kin`);

```
Interface                                                    —    □    ×

stuNum = 201602 | stuName = Guan-Zhou |        select stuNum,stuName from student
                                               where stuNum not in(select nokStuNum from `next-of-kin`);
stuNum = 201603 | stuName = Mike-Lee |

stuNum = 201604 | stuName = John-Chen |

stuNum = 201710 | stuName = Wen-Xi |

stuNum = 201711 | stuName = Dong-Xu |

stuNum = 201802 | stuName = Lin-Xing |

stuNum = 201803 | stuName = Guo-Hao |

stuNum = 201804 | stuName = Fan-Chen |

stuNum = 201805 | stuName = Yuan-Yao |              GO!              CLEAR
```
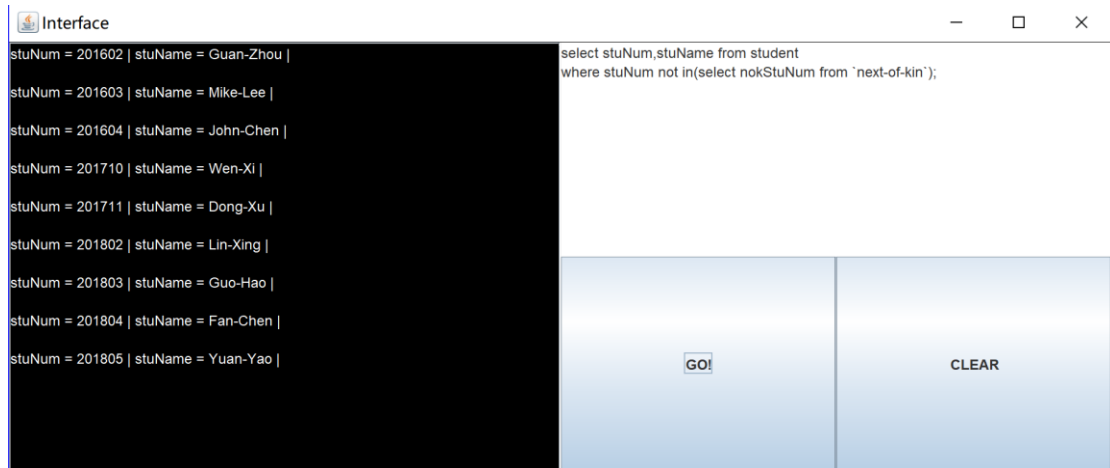
k. Display the name and internal telephone number of the Advisor of Studies

for a particular student.

select advName, advTel from advisor

where advId =(select stuAdvId from student where stuNum='201601');

```
Interface                                                    —    □    ×

advName = BobYu | advTel = 98765 |             select advName,advTel from advisor
                                               where advId =(select stuAdvId from student where stuNum='201601');




                                                   GO!              CLEAR
```
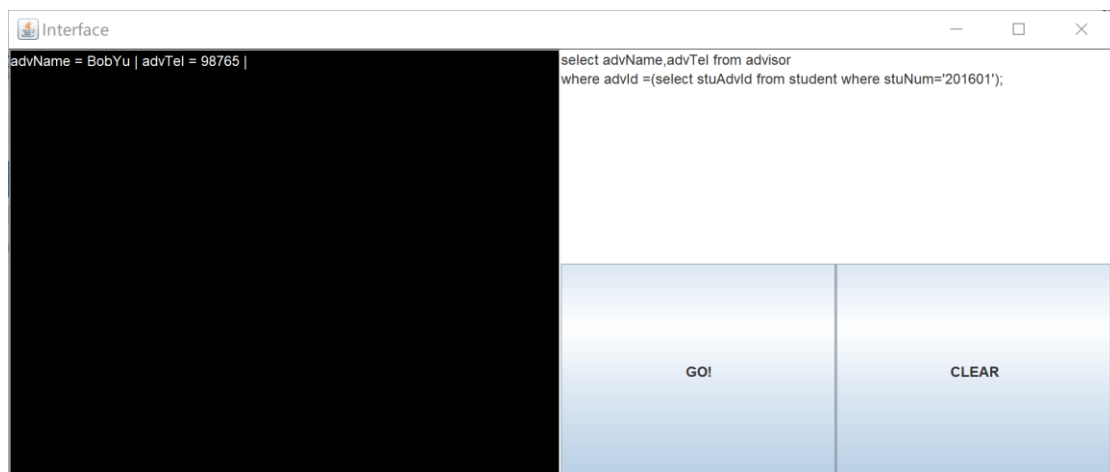
l. Display the minimum, maximum, and average monthly rent for rooms in

halls of residence.

select max(rentRate),min(rentRate),avg(rentRate)

from room, hall

where room.buildingNum=hall.hallBuildingNum;
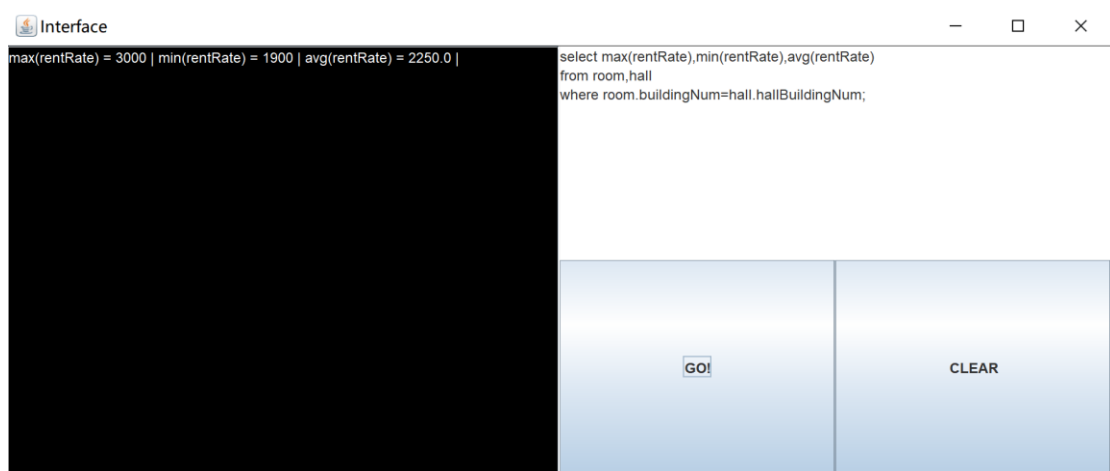
m. Display the total number of places in each hall of residence.

select buildingNum, count(*) as 'number of palaces'

from hall join room on room.buildingNum=hall.hallBuildingNum

group by buildingNum;
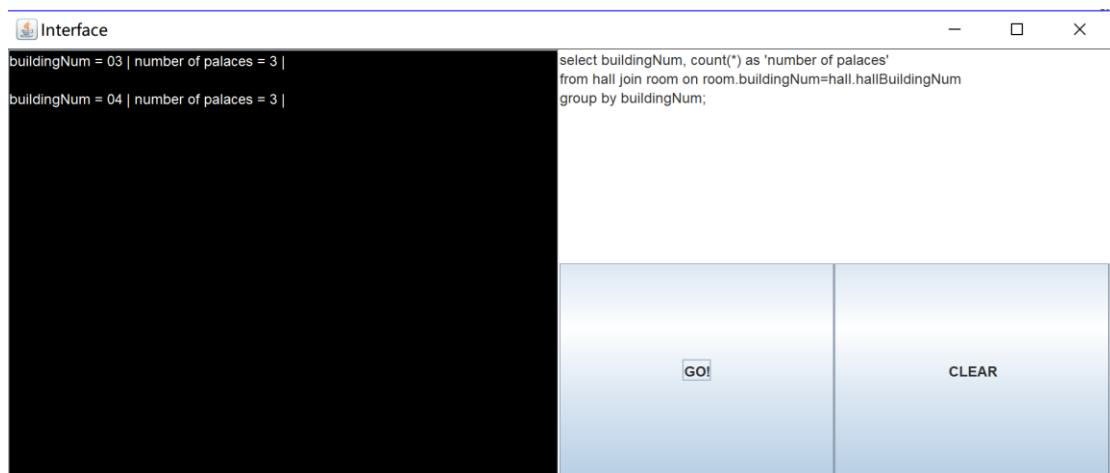
n. Display the staff number, name, age, and current location of all members of

the accommodation staff who are over 60 years old today.

select staffNum, staffName, floor(2018-staffDOB/10000) as 'age',

staffLoc

from staff

where staffLoc = 'Office'

Interface   —   □   ×

staffNum = 9003 | staffName = YiYong | age = 30 | staffLoc = Office |

staffNum = 9004 | staffName = PengShen | age = 38 | staffLoc = Office |

select staffNum, staffName, floor(2018-staffDOB/10000) as 'age', staffLoc
from staff
where staffLoc = 'Office'

GO!   CLEAR

ALL CODES

1. **Build database**
   ```
   -- MySQL Workbench Forward Engineering

   SET                @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS,
   UNIQUE_CHECKS=0;
   SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS,
   FOREIGN_KEY_CHECKS=0;
   SET                       @OLD_SQL_MODE=@@SQL_MODE,
   SQL_MODE='TRADITIONAL,ALLOW_INVALID_DATES';


   -- -----------------------------------------------------
   -- Schema mydb
   -- -----------------------------------------------------

   -- -----------------------------------------------------
   -- Schema coursework
   -- -----------------------------------------------------

   -- -----------------------------------------------------
   -- Schema coursework
   -- -----------------------------------------------------
   CREATE SCHEMA IF NOT EXISTS `coursework` DEFAULT
   CHARACTER SET utf8 ;
   USE `coursework` ;

   -- -----------------------------------------------------
   -- Table `coursework`.`advisor`
   -- -----------------------------------------------------
   CREATE TABLE IF NOT EXISTS `coursework`.`advisor` (
     `advId` VARCHAR(10) NOT NULL,
     `advName` VARCHAR(20) NULL DEFAULT NULL,
     `advPos` VARCHAR(30) NULL DEFAULT NULL,
     `advDept` VARCHAR(30) NULL DEFAULT NULL,
     `advTel` VARCHAR(20) NULL DEFAULT NULL,
     `advRoom` VARCHAR(10) NULL DEFAULT NULL,
     PRIMARY KEY (`advId`))
   ```

```sql
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`building`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `coursework`.`building` (
  `buildingNum` VARCHAR(10) NOT NULL,
  `buildingTel` VARCHAR(45) NOT NULL,
  `buildingAdd` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`buildingNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`course`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `coursework`.`course` (
  `courseNum` VARCHAR(10) NOT NULL,
  `courseTitle` VARCHAR(45) NULL DEFAULT NULL,
  `courseLeader` VARCHAR(45) NULL DEFAULT NULL,
  `courseTel` VARCHAR(45) NULL DEFAULT NULL,
  `courseRoomNum` VARCHAR(45) NULL DEFAULT NULL,
  `courseDept` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`courseNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`flats`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `coursework`.`flats` (
  `flatBuildingNum` VARCHAR(10) NOT NULL,
  `availableBedroomAmount` VARCHAR(10) NULL DEFAULT NULL,
  PRIMARY KEY (`flatBuildingNum`),
  CONSTRAINT `fk_FLATS_BUILDING1`
```

```sql
    FOREIGN KEY (`flatBuildingNum`)
    REFERENCES `coursework`.`building` (`buildingNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`freeroomdetail`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `coursework`.`freeroomdetail` (
  `freePlaceNum` VARCHAR(45) NOT NULL,
  `flatBuildingNum` VARCHAR(10) NOT NULL,
  `freeBedroomAmount` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`freePlaceNum`),
  INDEX `fk_FREEROOMDETAIL_FLATS1_idx` (`flatBuildingNum` ASC),
  CONSTRAINT `fk_FREEROOMDETAIL_FLATS1`
    FOREIGN KEY (`flatBuildingNum`)
    REFERENCES `coursework`.`flats` (`flatBuildingNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`staff`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `coursework`.`staff` (
  `staffNum` VARCHAR(10) NOT NULL,
  `staffName` VARCHAR(30) NULL DEFAULT NULL,
  `staffAdd` VARCHAR(45) NULL DEFAULT NULL,
  `staffDOB` INT(11) NULL DEFAULT NULL,
  `staffSex` VARCHAR(3) NULL DEFAULT NULL,
  `staffPos` VARCHAR(45) NULL DEFAULT NULL,
  `staffLoc` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`staffNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-- Table `coursework`.`hall`
```

```
-- -------------------------------------------------------

-- 

CREATE TABLE IF NOT EXISTS `coursework`.`hall` (
  `hallBuildingNum` VARCHAR(10) NOT NULL,
  `managerNum` VARCHAR(10) NOT NULL,
  `hallName` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`hallBuildingNum`),
  INDEX `fk_HALL_STAFF1_idx` (`managerNum` ASC),
  CONSTRAINT `fk_HALL_BUILDING1`
    FOREIGN KEY (`hallBuildingNum`)
    REFERENCES `coursework`.`building` (`buildingNum`),
  CONSTRAINT `fk_HALL_STAFF1`
    FOREIGN KEY (`managerNum`)
    REFERENCES `coursework`.`staff` (`staffNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -------------------------------------------------------

-- 

-- Table `coursework`.`inspection`
-- -------------------------------------------------------

-- 

CREATE TABLE IF NOT EXISTS `coursework`.`inspection` (
  `insBuildingNum` VARCHAR(10) NOT NULL,
  `insStaffNum` VARCHAR(10) NOT NULL,
  `inspDate` DATE NOT NULL,
  `inspCom` VARCHAR(100) NULL DEFAULT NULL,
  `inspIndication` VARCHAR(45) NULL DEFAULT NULL,
  `inspStaffName` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`insBuildingNum`, `insStaffNum`, `inspDate`),
  INDEX `fk_INSPECTION_STAFF1_idx` (`insStaffNum` ASC),
  INDEX `fk_INSPECTION_FLATS1_idx` (`insBuildingNum` ASC),
  CONSTRAINT `fk_INSPECTION_FLATS1`
    FOREIGN KEY (`insBuildingNum`)
    REFERENCES `coursework`.`flats` (`flatBuildingNum`),
  CONSTRAINT `fk_INSPECTION_STAFF1`
    FOREIGN KEY (`insStaffNum`)
    REFERENCES `coursework`.`staff` (`staffNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -------------------------------------------------------

-- 

-- Table `coursework`.`room`
```

```sql
-- -------------------------------------------------------
-
CREATE TABLE IF NOT EXISTS `coursework`.`room` (
  `placeNum` VARCHAR(10) NOT NULL,
  `buildingNum` VARCHAR(10) NULL DEFAULT NULL,
  `roomNum` VARCHAR(10) NULL DEFAULT NULL,
  `rentRate` VARCHAR(10) NULL DEFAULT NULL,
  PRIMARY KEY (`placeNum`),
  INDEX `fk_buildingNum_idx` (`buildingNum` ASC),
  CONSTRAINT `fk_buildingNum`
    FOREIGN KEY (`buildingNum`)
    REFERENCES `coursework`.`building` (`buildingNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -------------------------------------------------------
-
-- Table `coursework`.`student`
-- -------------------------------------------------------
-
CREATE TABLE IF NOT EXISTS `coursework`.`student` (
  `stuNum` VARCHAR(10) NOT NULL,
  `stuCourse` VARCHAR(10) NULL DEFAULT NULL,
  `stuAdvId` VARCHAR(10) NULL DEFAULT NULL,
  `stuName` VARCHAR(30) NULL DEFAULT NULL,
  `stuAddress` VARCHAR(50) NULL DEFAULT NULL,
  `stuDOB` VARCHAR(45) NULL DEFAULT NULL,
  `stuSex` VARCHAR(10) NULL DEFAULT NULL,
  `stuCategory` VARCHAR(45) NULL DEFAULT NULL,
  `stuNat` VARCHAR(45) NULL DEFAULT NULL,
  `stuSmoker` INT(11) NULL DEFAULT NULL,
  `stuSpeNeeds` VARCHAR(100) NULL DEFAULT NULL,
  `stuAddComments` VARCHAR(100) NULL DEFAULT NULL,
  `stuStatus` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`stuNum`),
  INDEX `fk_courseNum_idx` (`stuCourse` ASC),
  INDEX `fk_advId_idx` (`stuAdvId` ASC),
  CONSTRAINT `fk_advId`
    FOREIGN KEY (`stuAdvId`)
    REFERENCES `coursework`.`advisor` (`advId`),
  CONSTRAINT `fk_courseNum`
    FOREIGN KEY (`stuCourse`)
    REFERENCES `coursework`.`course` (`courseNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

```
-- -----------------------------------------------------
-
-- Table `coursework`.`leases`
-- -----------------------------------------------------
-
CREATE TABLE IF NOT EXISTS `coursework`.`leases` (
  `leaseNum` VARCHAR(10) NOT NULL,
  `leasePlaNum` VARCHAR(10) NULL DEFAULT NULL,
  `leaseStuNum` VARCHAR(10) NULL DEFAULT NULL,
  `leaseStuName` VARCHAR(45) NULL DEFAULT NULL,
  `leaseDur` VARCHAR(45) NULL DEFAULT NULL,
  `leaseAdd` VARCHAR(45) NULL DEFAULT NULL,
  `leaseEnterDate` VARCHAR(45) NULL DEFAULT NULL,
  `leaseLeaveDate` VARCHAR(45) NULL DEFAULT NULL,
  `leaseRoomNum` VARCHAR(45) NULL DEFAULT NULL,
  PRIMARY KEY (`leaseNum`),
  INDEX `fk_stuNum_idx` (`leaseStuNum` ASC),
  INDEX `fk_plaNum_idx` (`leasePlaNum` ASC),
  CONSTRAINT `fk_plaNum`
    FOREIGN KEY (`leasePlaNum`)
    REFERENCES `coursework`.`room` (`placeNum`),
  CONSTRAINT `fk_stuNum`
    FOREIGN KEY (`leaseStuNum`)
    REFERENCES `coursework`.`student` (`stuNum`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;


-- -----------------------------------------------------
-
-- Table `coursework`.`invoices`
-- -----------------------------------------------------
-
CREATE TABLE IF NOT EXISTS `coursework`.`invoices` (
  `invNum` VARCHAR(10) NOT NULL,
  `invStuNum` VARCHAR(10) NOT NULL,
  `invLeaseNum` VARCHAR(10) NOT NULL,
  `invPlaceNum` VARCHAR(10) NOT NULL,
  `invSemester` VARCHAR(45) NULL DEFAULT NULL,
  `invPayDue` VARCHAR(45) NULL DEFAULT NULL,
  `invAdd` VARCHAR(45) NULL DEFAULT NULL,
  `invAddData` VARCHAR(150) NULL DEFAULT NULL,
  `invStuName` VARCHAR(45) NULL DEFAULT NULL,
  `invRoomNum` VARCHAR(45) NULL DEFAULT NULL,
```

```sql
      PRIMARY KEY (`invNum`),
      INDEX `fk_INVOICES_LEASES1_idx` (`invLeaseNum` ASC),
      INDEX `fk_INVOICES_STUDENT1_idx` (`invStuNum` ASC),
      INDEX `fk_INVOICES_ROOM1_idx` (`invPlaceNum` ASC),
      CONSTRAINT `fk_INVOICES_LEASES1`
        FOREIGN KEY (`invLeaseNum`)
        REFERENCES `coursework`.`leases` (`leaseNum`),
      CONSTRAINT `fk_INVOICES_ROOM1`
        FOREIGN KEY (`invPlaceNum`)
        REFERENCES `coursework`.`room` (`placeNum`),
      CONSTRAINT `fk_INVOICES_STUDENT1`
        FOREIGN KEY (`invStuNum`)
        REFERENCES `coursework`.`student` (`stuNum`))
  ENGINE = InnoDB
  DEFAULT CHARACTER SET = utf8;


  -- -----------------------------------------------------
  -- Table `coursework`.`next-of-kin`
  -- -----------------------------------------------------
  CREATE TABLE IF NOT EXISTS `coursework`.`next-of-kin` (
    `nokStuNum` VARCHAR(10) NOT NULL,
    `nokName` VARCHAR(30) NULL DEFAULT NULL,
    `nokRelation` VARCHAR(45) NULL DEFAULT NULL,
    `nokAdd` VARCHAR(100) NULL DEFAULT NULL,
    `nokTel` VARCHAR(45) NULL DEFAULT NULL,
    PRIMARY KEY (`nokStuNum`),
    CONSTRAINT `fk_NEXT-OF-KIN_STUDENT1`
      FOREIGN KEY (`nokStuNum`)
      REFERENCES `coursework`.`student` (`stuNum`))
  ENGINE = InnoDB
  DEFAULT CHARACTER SET = utf8;


  SET SQL_MODE=@OLD_SQL_MODE;
  SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS;
SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS;
```

2. **Insert data**

```sql
  --
  -- Dumping data for table `advisor`
  --

  LOCK TABLES `advisor` WRITE;
```

```
/*!40000 ALTER TABLE `advisor` DISABLE KEYS */;
INSERT INTO `advisor` (`advId`, `advName`, `advPos`, `advDept`,
`advTel`,                    `advRoom`)                    VALUES
('001','YinzeLi','advisor','iot','12345','101');
INSERT INTO `advisor` (`advId`, `advName`, `advPos`, `advDept`,
`advTel`,                    `advRoom`)                    VALUES
('002','BozhiTian','advisor','ce','54321','101');
INSERT INTO `advisor` (`advId`, `advName`, `advPos`, `advDept`,
`advTel`, `advRoom`) VALUES ('003','JunYan','TA','cs','34567','203');
INSERT INTO `advisor` (`advId`, `advName`, `advPos`, `advDept`,
`advTel`, `advRoom`) VALUES ('004','BobYu','TA','ee','98765','303');
/*!40000 ALTER TABLE `advisor` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Dumping data for table `building`
--

LOCK TABLES `building` WRITE;
/*!40000 ALTER TABLE `building` DISABLE KEYS */;
INSERT    INTO    `building`    (`buildingNum`,    `buildingTel`,
`buildingAdd`) VALUES ('01','83881','Benbu');
INSERT    INTO    `building`    (`buildingNum`,    `buildingTel`,
`buildingAdd`) VALUES ('02','83882','Benbu');
INSERT    INTO    `building`    (`buildingNum`,    `buildingTel`,
`buildingAdd`) VALUES ('03','83883','Shahe');
INSERT    INTO    `building`    (`buildingNum`,    `buildingTel`,
`buildingAdd`) VALUES ('04','83884','Shahe');
/*!40000 ALTER TABLE `building` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Dumping data for table `room`
--

LOCK TABLES `room` WRITE;
/*!40000 ALTER TABLE `room` DISABLE KEYS */;
INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('01101','01','101','1000');
INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('01102','01','102','900');
INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('01103','01','103','1200');
INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
```

```sql
`rentRate`) VALUES ('02101','02','101','1000');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('02102','02','102','1100');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('02103','02','103','850');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('03101','03','101','2000');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('03102','03','102','2100');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('03103','03','103','2100');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('04101','04','101','2400');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('04102','04','102','3000');
      INSERT INTO `room` (`placeNum`, `buildingNum`, `roomNum`,
`rentRate`) VALUES ('04103','04','103','1900');
      /*!40000 ALTER TABLE `room` ENABLE KEYS */;
      UNLOCK TABLES;


      --
      -- Dumping data for table `staff`
      --

      LOCK TABLES `staff` WRITE;
      /*!40000 ALTER TABLE `staff` DISABLE KEYS */;
      INSERT INTO `staff` (`staffNum`, `staffName`, `staffAdd`,
`staffDOB`, `staffSex`, `staffPos`, `staffLoc`) VALUES
('9001','ZongFan','Dalin-Chonqing-800001',19900707,'f','Hall
Manager','Hall');
      INSERT INTO `staff` (`staffNum`, `staffName`, `staffAdd`,
`staffDOB`, `staffSex`, `staffPos`, `staffLoc`) VALUES
('9002','FengJiang','Renmin-Harbin-440921',19890909,'m','Hall
Manager','Hall');
      INSERT INTO `staff` (`staffNum`, `staffName`, `staffAdd`,
`staffDOB`, `staffSex`, `staffPos`, `staffLoc`) VALUES
('9003','YiYong','Haiyang-Qingdao-
786925',19870909,'f','Assistant','Office');
      INSERT INTO `staff` (`staffNum`, `staffName`, `staffAdd`,
`staffDOB`, `staffSex`, `staffPos`, `staffLoc`) VALUES
('9004','PengShen','Putong-Guiyang-
232348',19790111,'m','Officer','Office');
      INSERT INTO `staff` (`staffNum`, `staffName`, `staffAdd`,
`staffDOB`, `staffSex`, `staffPos`, `staffLoc`) VALUES
('9005','JingFu','Moon-Mars-123456',19880817,'f','Hall
```

```
Manager','Hall');
/*!40000 ALTER TABLE `staff` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Dumping data for table `course`
--

LOCK TABLES `course` WRITE;
/*!40000 ALTER TABLE `course` DISABLE KEYS */;
INSERT INTO `course` (`courseNum`, `courseTitle`, `courseLeader`,
`courseTel`,    `courseRoomNum`,    `courseDept`)    VALUES
('ebu001','English','JingChen','33000','3-303','language');
INSERT INTO `course` (`courseNum`, `courseTitle`, `courseLeader`,
`courseTel`,    `courseRoomNum`,    `courseDept`)    VALUES
('ebu002','Math','WenboZhang','31000','4-110','science');
INSERT INTO `course` (`courseNum`, `courseTitle`, `courseLeader`,
`courseTel`,    `courseRoomNum`,    `courseDept`)    VALUES
('ebu003','Java','JohnWood','56002','4-120','computer');
INSERT INTO `course` (`courseNum`, `courseTitle`, `courseLeader`,
`courseTel`,    `courseRoomNum`,    `courseDept`)    VALUES
('ebu004','Cpp','KeXu','76002','3-533','computer');
/*!40000 ALTER TABLE `course` ENABLE KEYS */;
UNLOCK TABLES;



--
-- Dumping data for table `flats`
--

LOCK TABLES `flats` WRITE;
/*!40000 ALTER TABLE `flats` DISABLE KEYS */;
INSERT        INTO        `flats`        (`flatBuildingNum`,
`availableBedroomAmount`) VALUES ('01','10');
INSERT        INTO        `flats`        (`flatBuildingNum`,
`availableBedroomAmount`) VALUES ('02','8');
/*!40000 ALTER TABLE `flats` ENABLE KEYS */;
UNLOCK TABLES;



--
-- Dumping data for table `freeroomdetail`
--

LOCK TABLES `freeroomdetail` WRITE;
/*!40000 ALTER TABLE `freeroomdetail` DISABLE KEYS */;
```

```sql
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('01101','01','4');
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('01102','01','0');
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('01103','01','6');
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('02101','02','0');
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('02102','02','4');
INSERT INTO `freeroomdetail` (`freePlaceNum`, `flatBuildingNum`,
`freeBedroomAmount`) VALUES ('02103','02','4');
/*!40000 ALTER TABLE `freeroomdetail` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Dumping data for table `hall`
--

LOCK TABLES `hall` WRITE;
/*!40000 ALTER TABLE `hall` DISABLE KEYS */;
INSERT INTO `hall` (`hallBuildingNum`, `managerNum`,
`hallName`) VALUES ('03','9001','Yanbei');
INSERT INTO `hall` (`hallBuildingNum`, `managerNum`,
`hallName`) VALUES ('04','9002','Yannan');
/*!40000 ALTER TABLE `hall` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Dumping data for table `inspection`
--

LOCK TABLES `inspection` WRITE;
/*!40000 ALTER TABLE `inspection` DISABLE KEYS */;
INSERT INTO `inspection` (`insBuildingNum`, `insStaffNum`,
`inspDate`, `inspCom`, `inspIndication`, `inspStaffName`) VALUES
('01','9003','2018-12-08','well','yes','YiYong');
INSERT INTO `inspection` (`insBuildingNum`, `insStaffNum`,
`inspDate`, `inspCom`, `inspIndication`, `inspStaffName`) VALUES
('01','9004','2018-11-30','clean','yes','PengShen');
INSERT INTO `inspection` (`insBuildingNum`, `insStaffNum`,
`inspDate`, `inspCom`, `inspIndication`, `inspStaffName`) VALUES
('02','9004','2017-01-01','tidy','no','PengShen');
/*!40000 ALTER TABLE `inspection` ENABLE KEYS */;
```

UNLOCK TABLES;

--
-- Dumping data for table `student`
--

```sql
LOCK TABLES `student` WRITE;
/*!40000 ALTER TABLE `student` DISABLE KEYS */;
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201601','ebu004','004','Hao-Chuan','Main-London-
00001','19981109','f','2p','UK',1,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201602','ebu001','001','Guan-Zhou','Yingze-Taiyuan-
03001','19980101','m','3u','China',0,'disability',NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201603','ebu003','003','Mike-Lee','Kao-Seattle-
90001','19970904','f','3u','US',1,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201604','ebu004','004','John-Chen','Uing-LA-
20001','19960606','m','4u','US',1,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201701','ebu002','002','Jing-Fu','Xitucheng-Beijing-
010001','19990301','f','2u','China',1,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201710','ebu001','004','Wen-Xi','Big-Newyork-
090091','20001010','m','1u','US',0,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES
('201711','ebu002','003','Dong-Xu','Ying-Tokyo-
890301','19990808','f','4u','Japan',0,NULL,'lazy','p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`,
`stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`,
```

```sql
`stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES ('201801','ebu004','001','Lu-Yan','Jiefang-Tianjin-789011','19970605','f','3u','China',0,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`, `stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`, `stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES ('201802','ebu001','001','Lin-Xing','Chi-Hefei-654701','19980202','m','3u','China',1,NULL,'hardworking','p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`, `stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`, `stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES ('201803','ebu003','003','Guo-Hao','Renmin-Shanghai-654301','19971212','m','1p','China',1,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`, `stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`, `stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES ('201804','ebu003','002','Fan-Chen','Binhai-Dalian-123467','19990909','m','4p','China',0,NULL,NULL,'p');
INSERT INTO `student` (`stuNum`, `stuCourse`, `stuAdvId`, `stuName`, `stuAddress`, `stuDOB`, `stuSex`, `stuCategory`, `stuNat`, `stuSmoker`, `stuSpeNeeds`, `stuAddComments`, `stuStatus`) VALUES ('201805','ebu002','002','Yuan-Yao','Xiangyang-Shenzhen-089701','19970404','f','1u','China',1,NULL,NULL,'w');
/*!40000 ALTER TABLE `student` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Dumping data for table `leases`
--

LOCK TABLES `leases` WRITE;
/*!40000 ALTER TABLE `leases` DISABLE KEYS */;
INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`, `leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`, `leaseLeaveDate`, `leaseRoomNum`) VALUES ('2018001','01102','201601','HaoChuan','12','Benbu','20180101','20181221','102');
INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`, `leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`, `leaseLeaveDate`, `leaseRoomNum`) VALUES ('2018002','01102','201602','GuanZhou','12','Benbu',NULL,NULL,'102');
INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`, `leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`, `leaseLeaveDate`, `leaseRoomNum`) VALUES ('2018003','01102','201603','MikeLee','12s','Benbu',NULL,NULL,'102');
INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
```

```sql
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018004','02101','201604','JohnChen','12s','Benbu',NULL,NULL,'101'
);
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018005','02101','201701','JingFu','1s','Benbu',NULL,NULL,'101');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018006','02101','201710','WenXi','2s','Benbu',NULL,NULL,'101');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018007','03101','201711','DongXu','2s','Shahe',NULL,NULL,'101');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018008','03102','201801','LuYan','s','Shahe',NULL,NULL,'102');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018009','03103','201802','LinXing','12','Shahe',NULL,NULL,'103');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018010','04101','201803','GuoHao','12','Shahe',NULL,NULL,'101');
    INSERT INTO `leases` (`leaseNum`, `leasePlaNum`, `leaseStuNum`,
`leaseStuName`, `leaseDur`, `leaseAdd`, `leaseEnterDate`,
`leaseLeaveDate`, `leaseRoomNum`) VALUES
('2018011','04102','201804','FanChen','2','Shahe',NULL,NULL,'102');
    /*!40000 ALTER TABLE `leases` ENABLE KEYS */;
    UNLOCK TABLES;


    --
    -- Dumping data for table `invoices`
    --

    LOCK TABLES `invoices` WRITE;
    /*!40000 ALTER TABLE `invoices` DISABLE KEYS */;
    INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`, `invRoomNum`) VALUES
('201800101','201601','2018001','01102','1','2018-02-
```

01','3600','cash','HaoChuan','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800102','201601','2018001','01102','2','2018-10-01','3600','alipay','HaoChuan','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800201','201602','2018002','01102','1','2018-02-01','3600','visa','GuanZhou','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800202','201602','2018002','01102','2','2018-10-01','3600','no','GuanZhou','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800301','201603','2018003','01102','1','2018-02-01','3600','cash','MikeLee','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800302','201603','2018003','01102','s','2018-07-01','1800','cash','MikeLee','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800303','201603','2018003','01102','2','2018-10-01','3600','cash','MikeLee','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800401','201604','2018004','02101','1','2018-02-01','4000','alipav','JohnChen','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800402','201604','2018004','02101','2','2018-10-01','4000','visa','JohnChen','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201800403','201604','2018004','02101','s','2018-07-01','2000','cash','JohnChen','101');

```sql
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800501','201701','2018005','02101','1','2018-02-
01','4000','visa','JingFu','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800502','201701','2018005','02101','s','2018-07-
01','2000','cash','JingFu','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800601','201710','2018006','02101','2','2018-10-
01','4000','alipav','WenXi','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800602','201710','2018006','02101','s','2018-07-
01','2000','alipav','WenXi','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800701','201711','2018007','03101','2','2018-10-
01','8000','cash','DongXu','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800702','201711','2018007','03101','s','2018-07-
01','4000','visa','DongXu','101');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800801','201801','2018008','03102','s','2018-07-
01','4200','visa','LuYan','102');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800901','201802','2018009','03103','1','2018-02-
01','8400','cash','LinXing','103');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`,
`invStuName`,            `invRoomNum`)           VALUES
('201800902','201802','2018009','03103','2','2018-10-
01','8400','alipay','LinXing','103');
INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`,
```

`invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201801001','201803','2018010','04101','1','2018-02-01','9600','visa','GuoHao','101');

    INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201801002','201803','2018010','04101','2','2018-10-01','9600','alipay','GuoHao','101');

    INSERT INTO `invoices` (`invNum`, `invStuNum`, `invLeaseNum`, `invPlaceNum`, `invSemester`, `invPayDue`, `invAdd`, `invAddData`, `invStuName`, `invRoomNum`) VALUES ('201801101','201804','2018011','04102','2','2018-10-01','12000','cash','FanChen','102');

    /*!40000 ALTER TABLE `invoices` ENABLE KEYS */;
    UNLOCK TABLES;

    --
    -- Dumping data for table `next-of-kin`
    --

    LOCK TABLES `next-of-kin` WRITE;
    /*!40000 ALTER TABLE `next-of-kin` DISABLE KEYS */;
    INSERT INTO `next-of-kin` (`nokStuNum`, `nokName`, `nokRelation`, `nokAdd`, `nokTel`) VALUES ('201601','PengYang','Mother','Beijing','16511');

    INSERT INTO `next-of-kin` (`nokStuNum`, `nokName`, `nokRelation`, `nokAdd`, `nokTel`) VALUES ('201701','HanLi','Father','Tianjing','19811');

    INSERT INTO `next-of-kin` (`nokStuNum`, `nokName`, `nokRelation`, `nokAdd`, `nokTel`) VALUES ('201801','FenLiu','Sister','Beijing','10001');

    /*!40000 ALTER TABLE `next-of-kin` ENABLE KEYS */;
    UNLOCK TABLES;

3. **Sample queries**

```
use coursework;
-- a
create view question_a as select staffName, buildingTel
from building join hall on building.buildingNum=hall.hallBuildingNum
join staff on hall.managerNum=staff.staffNum;

select * from question_a;
-- b
select *from leases;
-- c
```

```sql
select *from leases
where leaseDur like '%s%';
-- d
select sum(invAdd), invStuNum, invNum, invLeaseNum, invPlaceNum
from invoices
where invStuNum='201601';
-- e
select *from invoices
where unix_timestamp('2018-03-01')<unix_timestamp(invPayDue);
-- f
select *from inspection
where inspIndication='no';
-- g
select leaseStuNum, leaseStuName, leasePlaNum, leaseRoomNum
from hall join room on room.buildingNum=hall.hallBuildingNum
join leases on leases.leasePlaNum=room.placeNum;
-- h
select *from student
where stuStatus = 'w';
-- i
select stuCategory , count(*) as 'number'
from student
group by stuCategory;
-- j
select stuNum, stuName from student
where stuNum not in(select nokStuNum from `next-of-kin`);
-- k
select advName, advTel from advisor
where advId =(select stuAdvId from student where stuNum='201601');
-- l
select max(rentRate),min(rentRate),avg(rentRate)
from room, hall
where room.buildingNum=hall.hallBuildingNum;
-- m
select buildingNum, count(*) as 'number of palaces'
from hall join room on room.buildingNum=hall.hallBuildingNum
group by buildingNum;
-- n
select staffNum, staffName, floor(2018-staffDOB/10000) as 'age', staffLoc
from staff
where staffLoc = 'Office'
```