# 华东师范大学软件学院实验报告

实验课程：数据库系统实践 实验报告编号：01

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1. **实验环境**

Figma、modao、datagrip、python、MySQL

**二、实验内容与实验步骤**

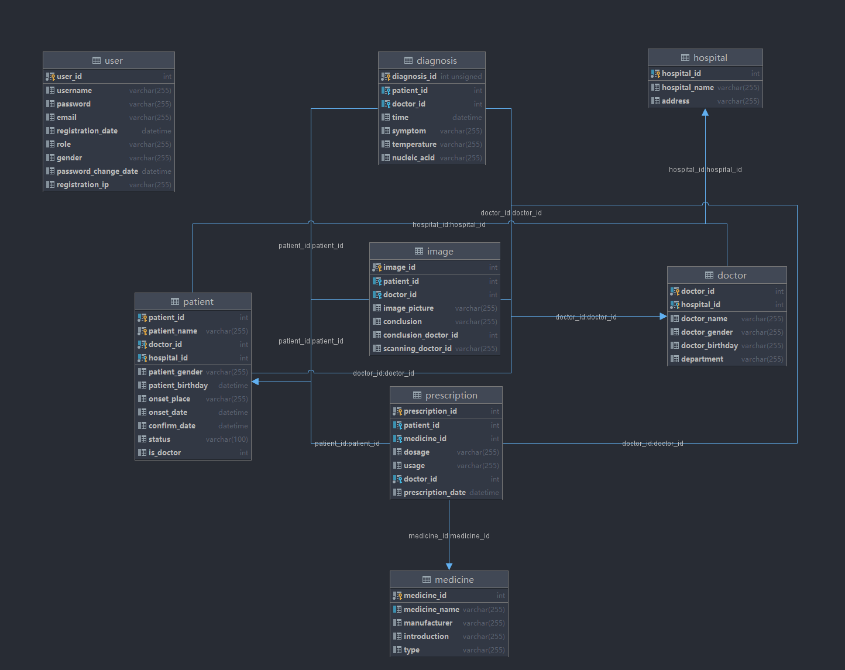
1. Pick your favorite data management application;
2. Design the database schema;
3. Create a sample database using a small dataset;
4. Design a web-based user interface for your application;
5. Write SQL queries that will supply dynamic contents for the web pages you designed;

**三、实验过程与分析**

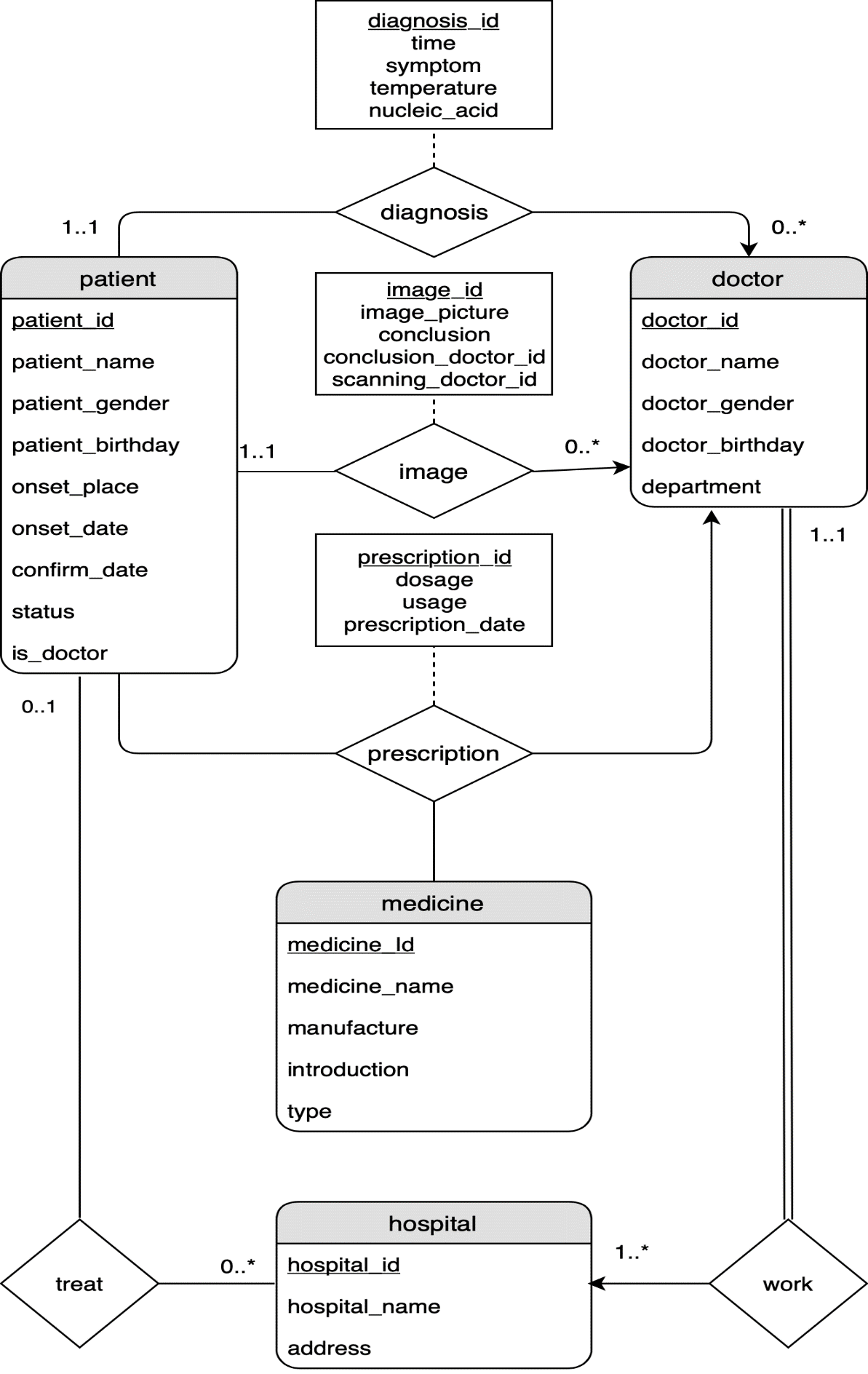
1. Our data management application is about COVID-19

我们的数据管理系统关于新冠疫情。

2. Schema



ER图



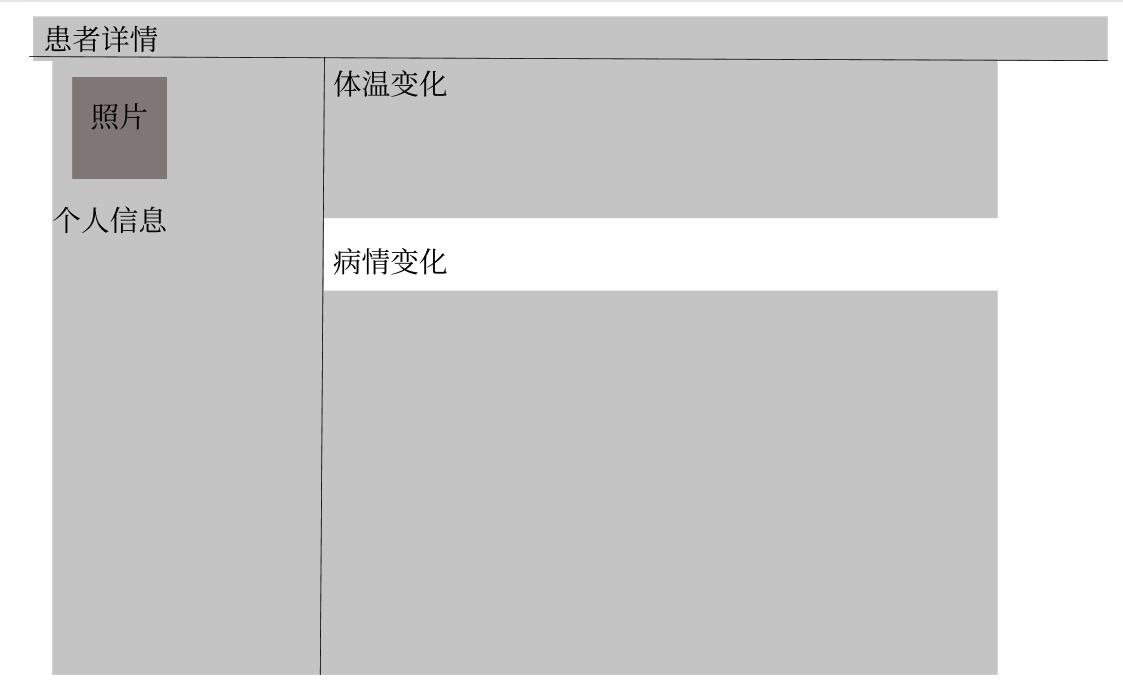
3.

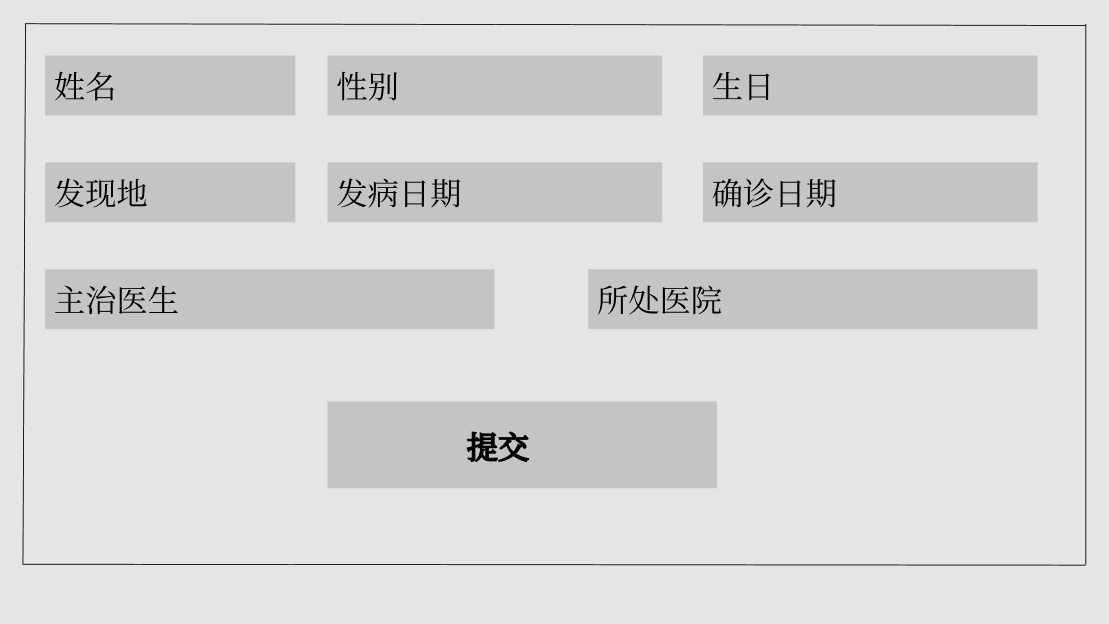
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 患者编号 | 患者姓名 | 患者性别 | 患者生日 | 发病地点 | 确诊日期 |
| 1 | 陈峰 | 男 | 1987-05-05 | 广东省杭州县长寿合肥街Z座 101524 | 2021-04-19 |
| 2 | 姜刚 | 男 | 1977-05-14 | 内蒙古自治区潮州市清浦阎路w座 413536 | 2021-08-20 |
| 3 | 高波 | 女 | 2021-03-12 | 湖南省柳州县东城胡路r座 523689 | 2021-06-26 |
| 4 | 张淑英 | 男 | 2021-02-23 | 新疆维吾尔自治区永安市东丽哈尔滨路u座 931085 | 2021-11-26 |
| 5 | 朱芳 | 男 | 2014-04-01 | 甘肃省淑珍市西峰陆路X座 204088 | 2020-02-20 |
| 6 | 张秀珍 | 女 | 2005-07-13 | 湖南省雪梅县徐汇廖街Z座 896331 | 2021-04-04 |
| 7 | 张桂芳 | 男 | 1999-07-30 | 云南省萍县高坪张街q座 806613 | 2020-01-21 |
| 8 | 刘宇 | 女 | 1988-05-15 | 上海市斌市大兴永安街A座 573544 | 2020-08-07 |
| 9 | 汤桂花 | 男 | 1971-09-13 | 新疆维吾尔自治区岩县梁平朱路i座 570838 | 2020-01-22 |
| 10 | 陈玲 | 男 | 1990-08-15 | 香港特别行政区凤兰县白云汪路j座 981026 | 2020-02-18 |
| 11 | 金兵 | 女 | 1992-11-11 | 重庆市乌鲁木齐市沙湾谢街c座 994306 | 2020-11-29 |
| 12 | 杨峰 | 男 | 1970-07-26 | 青海省秀荣市吉区萧街E座 184432 | 2020-09-14 |
| 13 | 张丹丹 | 男 | 2011-08-19 | 西藏自治区六盘水市蓟州吴路R座 984511 | 2021-04-20 |
| 14 | 郑峰 | 男 | 1987-04-05 | 陕西省香港市高港李街C座 273714 | 2021-04-02 |
| 15 | 杨林 | 女 | 1986-03-28 | 海南省关岭市锡山兰州路s座 516053 | 2021-06-21 |
| 16 | 刘军 | 女 | 1997-06-25 | 海南省淮安市长寿刘街F座 971467 | 2020-07-01 |
| 17 | 吕小红 | 男 | 2004-12-13 | 新疆维吾尔自治区阳市长寿澳门路Y座 360591 | 2020-03-09 |
| 18 | 王颖 | 男 | 1999-11-26 | 内蒙古自治区雪梅市海陵马街o座 909502 | 2020-12-03 |
| 19 | 彭林 | 男 | 1991-07-07 | 台湾省南京市六枝特马鞍山路V座 608682 | 2021-02-05 |
| 20 | 赵勇 | 女 | 1993-06-23 | 福建省红市大东郑州路V座 671771 | 2021-04-28 |
| 21 | 侯阳 | 男 | 1987-07-31 | 河南省广州市和平海门路d座 749483 | 2020-02-11 |
| 22 | 赖雪 | 男 | 2010-01-15 | 湖北省东莞县闵行南宁路R座 788961 | 2020-01-23 |
| 23 | 谭英 | 男 | 1985-01-11 | 湖南省宜都市梁平邹路Q座 291989 | 2021-05-04 |
| 24 | 孟健 | 男 | 2015-04-29 | 广西壮族自治区梧州县沈北新王路E座 422941 | 2021-01-07 |
| 25 | 胡想 | 男 | 1984-10-26 | 福建省楠县涪城辽阳街N座 914968 | 2021-07-25 |
| 26 | 王健 | 男 | 1981-09-11 | 海南省秀华市沙市王街A座 456520 | 2021-10-14 |
| 27 | 张军 | 男 | 1981-01-13 | 台湾省海门县翔安南京街a座 227781 | 2021-03-12 |
| 28 | 张波 | 女 | 1971-04-18 | 北京市拉萨县牧野张路V座 101432 | 2020-04-12 |
| 29 | 李琳 | 男 | 2009-12-27 | 黑龙江省成都县大东毛路A座 589902 | 2021-02-31 |
| 30 | 刘阳 | 男 | 2012-12-31 | 宁夏回族自治区六安县秀英李路T座 214388 | 2020-08-21 |
| 31 | 王桂兰 | 男 | 2018-10-14 | 香港特别行政区荣县静安重庆街u座 945524 | 2020-06-24 |
| 32 | 王华 | 女 | 1995-04-10 | 辽宁省淑珍市梁平宋街M座 458242 | 2021-04-26 |
| 33 | 何萍 | 女 | 2005-08-08 | 福建省嘉禾县长寿李街D座 978104 | 2020-01-14 |
| 34 | 辛秀兰 | 女 | 1974-11-12 | 河南省贵阳市高明陈街T座 813190 | 2020-08-11 |
| 35 | 张东 | 男 | 1972-01-13 | 安徽省兴安盟县怀柔重庆路N座 405398 | 2021-02-07 |
| 36 | 李桂花 | 男 | 2012-06-22 | 吉林省武汉市璧山谭路e座 100233 | 2021-07-04 |
| 37 | 萧宇 | 女 | 1973-01-20 | 河南省惠州市白云倪街q座 367275 | 2020-08-16 |
| 38 | 蒋丽丽 | 男 | 1972-02-28 | 香港特别行政区璐县淄川台北路K座 782543 | 2021-10-22 |
| 39 | 汪秀芳 | 男 | 1979-04-27 | 浙江省玉市翔安兴城街m座 941427 | 2020-01-24 |
| 40 | 陆冬梅 | 男 | 1993-09-26 | 吉林省永安县静安李路K座 614608 | 2020-10-05 |
| 41 | 谢燕 | 男 | 1985-06-25 | 西藏自治区英市普陀郭街l座 466142 | 2021-11-31 |
| 42 | 钟婷婷 | 男 | 1990-02-11 | 上海市银川市山亭宁路T座 888141 | 2020-12-20 |
| 43 | 张龙 | 男 | 2004-02-20 | 北京市凤英县沈北新合山路J座 345737 | 2020-02-16 |
| 44 | 韦春梅 | 男 | 2020-09-15 | 山东省龙市萧山伍街R座 467982 | 2020-11-04 |
| 45 | 谢桂芳 | 男 | 2018-04-28 | 陕西省龙市清城西宁街K座 763475 | 2021-01-06 |
| 46 | 龚娟 | 女 | 2018-02-09 | 吉林省建平县吉区周街x座 352374 | 2020-05-05 |
| 47 | 王莉 | 男 | 2017-11-08 | 浙江省红梅县徐汇林街A座 317904 | 2021-03-01 |
| 48 | 黎荣 | 女 | 1998-05-03 | 云南省嘉禾市清城济南路f座 230100 | 2021-05-30 |
| 49 | 王璐 | 男 | 2013-07-13 | 青海省宜都市长寿赵街G座 765063 | 2021-08-09 |
| 50 | 徐桂花 | 男 | 1975-10-13 | 内蒙古自治区玉梅市平山汕尾街C座 949668 | 2021-08-06 |
| 51 | 林玉兰 | 男 | 1984-02-08 | 澳门特别行政区汕尾县翔安北京街w座 135922 | 2021-09-25 |
| 52 | 韦刚 | 男 | 2021-02-05 | 陕西省合肥市沙湾汪街y座 359335 | 2021-04-18 |
| 53 | 林玉兰 | 女 | 2014-10-02 | 安徽省巢湖县平山拉萨街g座 447128 | 2020-03-17 |
| 54 | 王秀兰 | 女 | 2003-11-03 | 海南省南昌县合川邹街O座 970950 | 2021-05-10 |
| 55 | 董秀荣 | 女 | 2006-02-04 | 黑龙江省文市门头沟李路d座 811310 | 2021-04-22 |
| 56 | 饶凯 | 男 | 2007-04-14 | 湖北省秀珍市牧野张路p座 121411 | 2021-10-11 |
| 57 | 马桂珍 | 男 | 1990-08-27 | 内蒙古自治区兴安盟县平山东莞路B座 286717 | 2020-05-09 |
| 58 | 蔡丽丽 | 女 | 1992-07-14 | 辽宁省汕尾市淄川陈路g座 100433 | 2021-07-16 |
| 59 | 林健 | 女 | 1985-05-18 | 广西壮族自治区旭县海港娄街E座 924758 | 2021-02-24 |
| 60 | 孔宇 | 男 | 2012-10-09 | 河北省慧市安次王街C座 867401 | 2020-11-20 |
| 61 | 唐超 | 女 | 1974-12-12 | 福建省石家庄县怀柔张路N座 560557 | 2020-03-12 |
| 62 | 丁玉珍 | 女 | 2020-09-30 | 河南省重庆县璧山合肥路Y座 314069 | 2021-11-27 |
| 63 | 陈柳 | 女 | 1971-06-30 | 台湾省柳州市高明银川路i座 270633 | 2020-07-28 |
| 64 | 夏东 | 女 | 1980-10-29 | 云南省辽阳市金平广州路g座 773235 | 2020-04-20 |
| 65 | 张琳 | 女 | 1995-01-04 | 四川省秀云市龙潭吴街E座 665454 | 2021-08-24 |
| 66 | 高华 | 男 | 1972-01-11 | 天津市西宁县清浦庄街H座 328318 | 2021-10-02 |
| 67 | 罗刚 | 女 | 2003-10-02 | 台湾省石家庄市海陵广州路n座 871939 | 2020-02-05 |
| 68 | 裴建 | 女 | 1971-05-15 | 宁夏回族自治区海门市长寿龚街l座 722052 | 2020-04-30 |
| 69 | 荣娜 | 女 | 1977-09-23 | 广西壮族自治区洋市城东合山路K座 645186 | 2021-03-17 |
| 70 | 蔡雪梅 | 女 | 2005-03-02 | 内蒙古自治区瑜市海陵曹路c座 347847 | 2021-07-05 |
| 71 | 管亮 | 女 | 2016-12-04 | 重庆市阜新县山亭黄街w座 863332 | 2021-10-22 |
| 72 | 林龙 | 男 | 1989-10-08 | 重庆市济南县新城赵路k座 310824 | 2020-04-09 |
| 73 | 彭帆 | 男 | 1975-03-21 | 云南省丹丹市清城陈路s座 505829 | 2020-03-02 |
| 74 | 谭佳 | 男 | 2009-10-25 | 澳门特别行政区宇县房山张街p座 355863 | 2020-04-24 |
| 75 | 张桂芝 | 男 | 2002-06-07 | 黑龙江省辉市大东辽阳街J座 404452 | 2021-09-14 |
| 76 | 孟亮 | 男 | 2016-10-20 | 浙江省西宁县永川王街t座 858382 | 2020-07-02 |
| 77 | 李建国 | 女 | 1985-11-22 | 山西省凯市普陀澳门路r座 168326 | 2020-01-16 |
| 78 | 金雷 | 男 | 1998-04-28 | 甘肃省淮安市朝阳麻街P座 903346 | 2021-07-13 |
| 79 | 向丹 | 男 | 2006-07-14 | 安徽省秀华县西夏殷街u座 806097 | 2020-08-11 |
| 80 | 冯梅 | 女 | 1991-10-25 | 山东省香港县涪城哈尔滨街Z座 786889 | 2021-01-02 |
| 81 | 林丹丹 | 男 | 1990-10-30 | 贵州省帅县龙潭朱街J座 690578 | 2020-09-10 |
| 82 | 靳玉兰 | 男 | 1970-06-27 | 新疆维吾尔自治区石家庄市沈河吴路p座 824790 | 2020-03-15 |
| 83 | 彭洁 | 男 | 1995-02-05 | 湖南省桂珍县城东通辽街X座 325031 | 2021-06-05 |
| 84 | 陈梅 | 男 | 1999-05-25 | 广西壮族自治区明县上街太原街O座 738700 | 2020-01-21 |
| 85 | 张英 | 女 | 1991-07-17 | 江苏省波县秀英卢街H座 196283 | 2021-07-25 |
| 86 | 梁岩 | 男 | 1974-11-23 | 香港特别行政区淑华市永川刘路g座 427524 | 2020-12-12 |
| 87 | 莫莉 | 男 | 1977-04-26 | 山西省沈阳县花溪刘路K座 207899 | 2021-06-06 |
| 88 | 孟玉英 | 男 | 2006-11-22 | 河南省合肥市孝南南昌路z座 864537 | 2021-10-07 |
| 89 | 高红霞 | 男 | 2010-05-02 | 山西省健县房山马鞍山路F座 509457 | 2021-05-27 |
| 90 | 赵鑫 | 男 | 1983-02-20 | 北京市合山市长寿荆门街L座 867880 | 2021-03-13 |
| 91 | 喻红霞 | 女 | 2008-09-17 | 山东省丹丹县房山关岭街b座 854234 | 2020-05-15 |
| 92 | 冯桂英 | 男 | 2021-01-05 | 浙江省瑞县海陵赵街f座 286809 | 2021-09-18 |
| 93 | 梁婷 | 男 | 2003-01-12 | 陕西省六安县清河杨路t座 961057 | 2021-02-05 |
| 94 | 王宁 | 女 | 2004-01-17 | 西藏自治区红县孝南长春路V座 160444 | 2020-04-17 |
| 95 | 陈想 | 女 | 1989-08-19 | 西藏自治区太原县永川张街T座 986878 | 2021-09-01 |
| 96 | 邬平 | 男 | 1993-01-12 | 吉林省马鞍山市吉区南昌路M座 159302 | 2021-10-17 |
| 97 | 洪龙 | 女 | 1987-05-08 | 湖北省香港县浔阳汕尾路Q座 514415 | 2020-01-26 |
| 98 | 王超 | 女 | 2014-04-21 | 内蒙古自治区深圳市友好陈路o座 832167 | 2020-09-21 |
| 99 | 张桂兰 | 男 | 1999-05-26 | 重庆市杭州市华龙张路b座 860711 | 2020-07-30 |

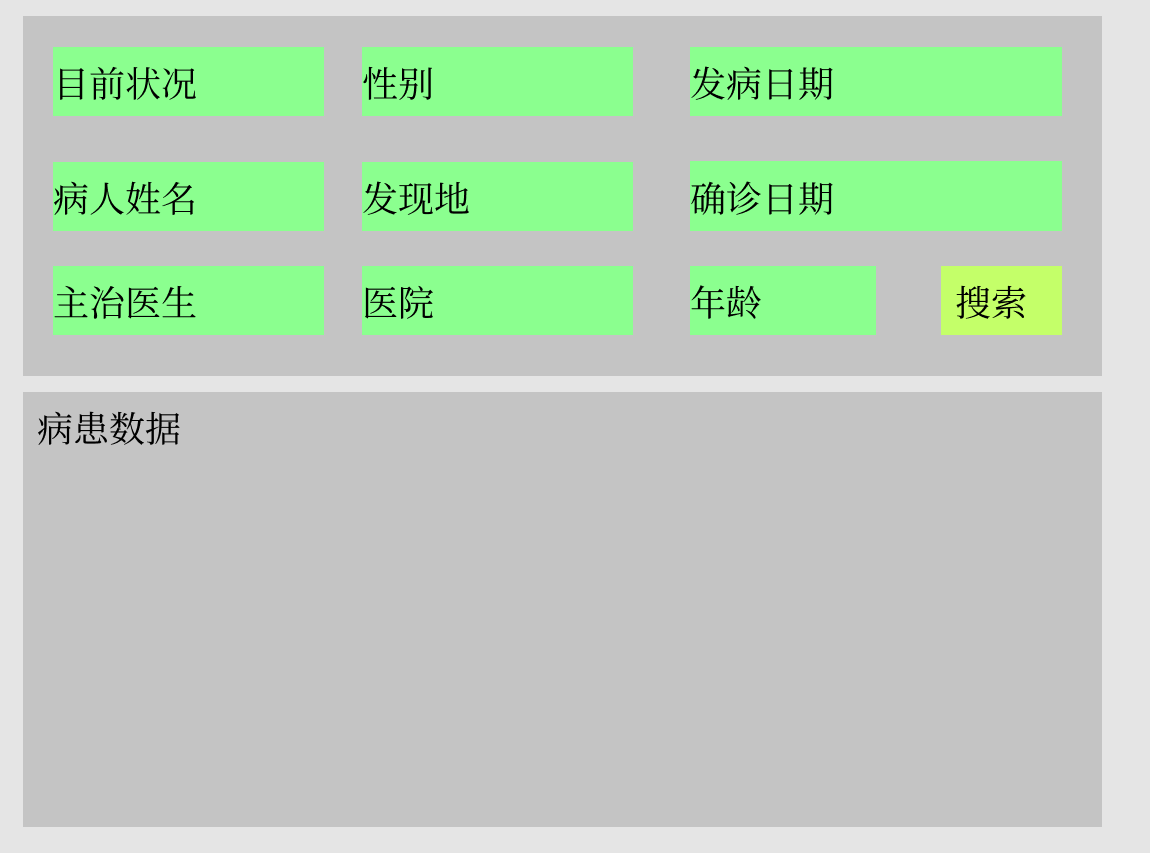
4. Part of the interfaces of the initial version are as following (though it hasn’t been colored or decided)

初版本基础页面如下（未上色且未定稿）









5.

-- SELECT

SELECT \* from diagnosis where diagnosis\_id=#{diagnosis\_id};

SELECT count(\*) from diagnosis;

SELECT \* from diagnosis where patient\_id = #{patient\_id} and doctor\_id like #{doctor\_id} and time like concat('%',#{time},'%') and temperature like concat('%',#{temperature},'%') and symptom like concat('%',#{symptom},'%') and nucleic\_acid LIKE #{nucleic\_acid};

SELECT \* from doctor where doctor\_id=#{doctor\_id};

SELECT \* from doctor NATURAL JOIN hospital where doctor\_id=#{doctor\_id};

SELECT \* from doctor where doctor\_name like #{doctor\_name} and doctor\_gender like concat('%',#{doctor\_gender},'%') and doctor\_birthday like concat('%',#{doctor\_birthday},'%') and department like concat('%',#{department},'%') and hospital\_id like #{hospital\_id};

SELECT \* from hospital where hospital\_id=#{hospital\_id};

SELECT \* from hospital where hospital\_name like concat('%',#{hospital\_name},'%') and address like concat('%',#{address},'%');

SELECT \* from image where image\_id=#{image\_id};

SELECT \* from image where patient\_id like concat('%',#{patient\_id},'%') and scanning\_doctor\_id like concat('%',#{scanning\_doctor\_id},'%') and image\_picture like concat('%',#{image\_picture},'%') and conclusion like concat('%',#{conclusion},'%') and conclusion\_doctor\_id like #{conclusion\_doctor\_id};

SELECT \* from medicine where medicine\_id=#{medicine\_id};

SELECT \* from medicine where medicine\_name like concat('%',#{medicine\_name},'%') and manufacturer like concat('%',#{manufacturer},'%') and introduction like concat('%',#{introduction},'%') and type like concat('%',#{type},'%');

SELECT \* from patient where patient\_id=#{patient\_id};

SELECT \* from patient NATURAL JOIN hospital NATURAL JOIN doctor where patient\_id=#{patient\_id};

SELECT \* from patient NATURAL JOIN hospital NATURAL JOIN doctor where patient\_gender like concat('%',#{patient\_gender},'%') and patient\_birthday like concat('%',#{patient\_birthday},'%') and onset\_date like concat('%',#{onset\_date},'%') and confirm\_date like concat('%',#{confirm\_date},'%') and status like concat('%',#{status},'%') and doctor\_id like #{doctor\_id} and hospital\_id like #{hospital\_id} and is\_doctor like #{is\_doctor} and (patient\_name like concat('%',#{patient\_name},'%') or onset\_place like concat('%',#{patient\_name},'%')) and onset\_place like concat('%',#{onset\_place},'%');

SELECT \* from patient where patient\_name like concat('%',#{patient\_name},'%') and patient\_gender like concat('%',#{patient\_gender},'%') and patient\_birthday like concat('%',#{patient\_birthday},'%') and onset\_place like concat('%',#{onset\_place},'%') and onset\_date like concat('%',#{onset\_date},'%') and confirm\_date like concat('%',#{confirm\_date},'%') and status like concat('%',#{status},'%') and doctor\_id like #{doctor\_id} and hospital\_id like #{hospital\_id} and is\_doctor like #{is\_doctor};

SELECT \* from prescription where prescription\_id=#{prescription\_id};

SELECT count(\*) from prescription;

SELECT \* from prescription natural join doctor natural join medicine where patient\_id=#{patient\_id};

SELECT \* from prescription where patient\_id like concat('%',#{patient\_id},'%')and medicine\_id like concat('%',#{medicine\_id},'%')and dosage like concat('%',#{dosage},'%') and `usage` like concat('%',#{usage},'%')and doctor\_id like concat('%',#{doctor\_id},'%');

SELECT \* FROM prescription WHERE patient\_id = #{patient\_id};

SELECT \* from user where user\_id=#{user\_id};

SELECT \* from user where username=#{username};

SELECT \* from user where email=#{email};

-- INSERT

insert into diagnosis(patient\_id, doctor\_id, time, symptom, temperature, nucleic\_acid) values (#{patient\_id}, #{doctor\_id}, #{time}, #{symptom}, #{temperature}, #{nucleic\_acid});

insert into doctor(doctor\_name, doctor\_gender, doctor\_birthday, department, hospital\_id) values (#{doctor\_name}, #{doctor\_gender}, #{doctor\_birthday}, #{department}, #{hospital\_id});

insert into hospital(hospital\_name, address) values (#{hospital\_name}, #{address});

insert into image(patient\_id, scanning\_doctor\_id, image\_picture, conclusion, conclusion\_doctor\_id) values (#{patient\_id}, #{scanning\_doctor\_id}, #{image\_picture}, #{conclusion}, #{conclusion\_doctor\_id});

insert into medicine(medicine\_name, manufacturer, introduction, type) values (#{medicine\_name}, #{manufacturer}, #{introduction}, #{type});

insert into patient(patient\_name, patient\_gender, patient\_birthday, onset\_place, onset\_date, confirm\_date, status, doctor\_id, hospital\_id, is\_doctor) values (#{patient\_name}, #{patient\_gender}, #{patient\_birthday}, #{onset\_place}, #{onset\_date}, #{confirm\_date}, #{status}, #{doctor\_id}, #{hospital\_id}, #{is\_doctor});

insert into prescription(patient\_id, medicine\_id, doctor\_id,dosage, `usage`) values (#{patient\_id}, #{medicine\_id}, #{doctor\_id}, #{dosage}, #{usage});

insert into user(username, email, password, registration\_ip, registration\_date, password\_change\_date, role, gender) values (#{username}, #{email}, #{password}, #{registration\_ip}, CURRENT\_TIMESTAMP(), CURRENT\_TIMESTAMP(), #{role}, #{gender});

-- UPDATE

Update diagnosis set patient\_id=#{patient\_id}, doctor\_id=#{doctor\_id}, time=#{time}, symptom=#{symptom}, temperature=#{temperature}, nucleic\_acid=#{nucleid\_acid} where diagnosis\_id=#{diagnosis\_id};

Update doctor set doctor\_name=#{doctor\_name}, doctor\_gender=#{doctor\_gender}, doctor\_birthday=#{doctor\_birthday}, department=#{department}, hospital\_id=#{hospital\_id} where doctor\_id=#{doctor\_id};

Update hospital set hospital\_name=#{hospital\_name}, address=#{address} where hospital\_id=#{hospital\_id};

Update image set patient\_id=#{patient\_id}, scanning\_doctor\_id=#{scanning\_doctor\_id}, image\_picture=#{image\_picture}, conclusion=#{conclusion}, conclusion\_doctor\_id=#{conclusion\_doctor\_id} where hospital\_id=#{hospital\_id};

Update medicine set medicine\_name=#{medicine\_name}, manufacturer=#{manufacturer}, introduction=#{introduction}, type=#{type} where medicine\_id=#{medicine\_id};

Update patient set patient\_name=#{patient\_name}, patient\_gender=#{patient\_gender}, patient\_birthday=#{patient\_birthday}, onset\_place=#{onset\_place}, onset\_date=#{onset\_date}, confirm\_date=#{confirm\_date}, status=#{status}, doctor\_id=#{doctor\_id}, hospital\_id=#{hospital\_id}, is\_doctor=#{is\_doctor} where patient\_id=#{patient\_id};

Update prescription set patient\_id=#{patient\_id}, medicine\_id=#{medicine\_id}, doctor\_id=#{doctor\_id}, dosage=#{dosage}, `usage`=#{usage}, where prescription\_id=#{prescription\_id};

Update user set username=#{username}, email=#{email}, password=#{password}, password\_change\_date=#{password\_change\_date, jdbcType = VARCHAR}, role=#{role}, gender=#{gender} where user\_id=#{user\_id};

-- DELETE

delete from diagnosis where diagnosis\_id = #{diagnosis\_id};

delete from doctor where doctor\_id = #{doctor\_id};

delete from hospital where hospital\_id = #{hospital\_id};

delete from image where image\_id = #{image\_id};

delete from medicine where medicine\_id = #{medicine\_id};

delete from patient where patient\_id = #{patient\_id};

delete from prescription where prescription\_id = #{prescription\_id};

1. **实验结果总结**

In this experiment, we have picked data management application and designed the database schema. What’s more, we have created a sample database using a small dataset to test SQL queries. Finally, we have designed an easy web-based user interface for our application.

**五、附录**