Assignment1 Report

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一、 作业要求

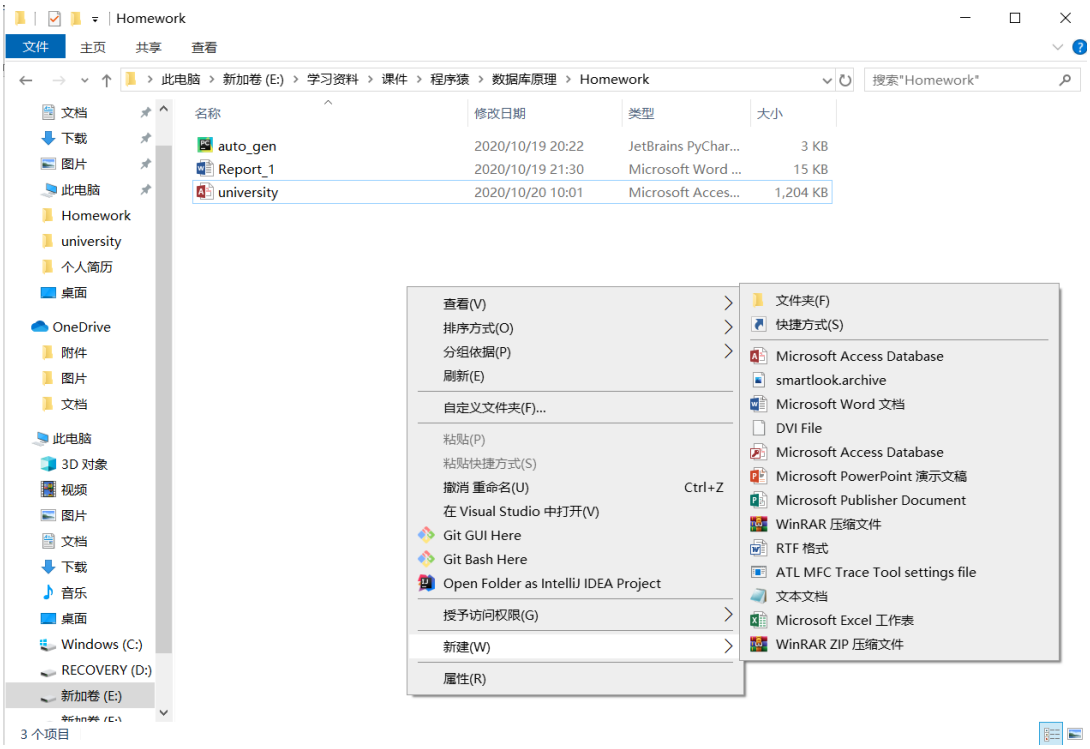
- ✧ 熟悉 MS Access 工具
- ✧ 建立一个 university.accdb 数据库
- ✧ 将文本文档的数据导入到 university.accdb 中去
- ✧ 将 5000 多个随即元组插入到 Students 表中

二、 使用平台和工具

- ✧ Windows 10
- ✧ MS Access 2019
- ✧ Conda 开源软件包管理系统
- ✧ Visual Studio Code 中 Python 编程

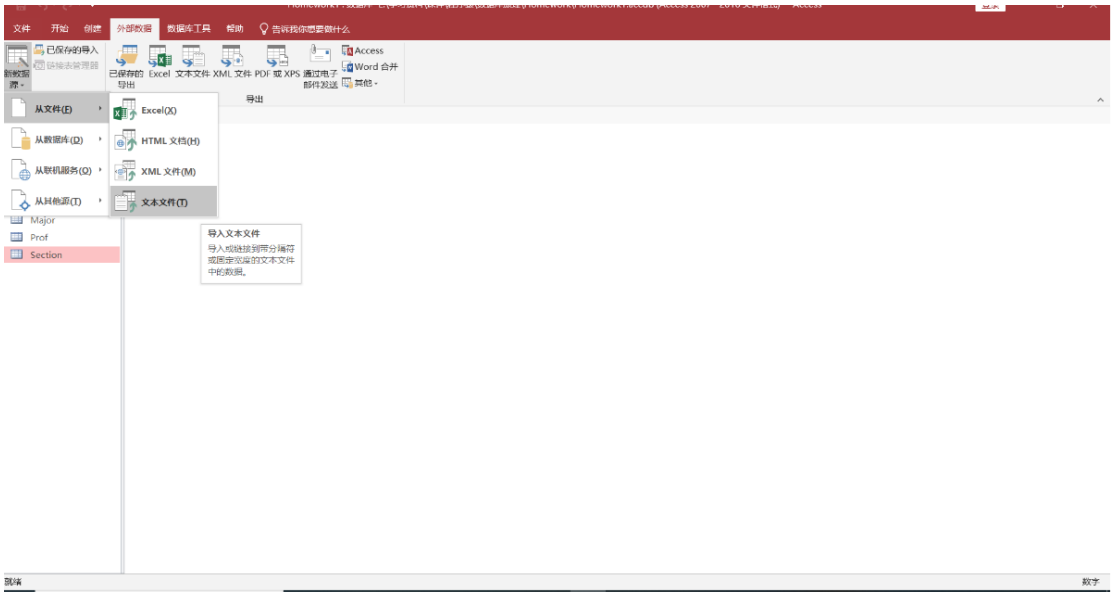
三、 实现方案

- ✧ **建立一个数据库**

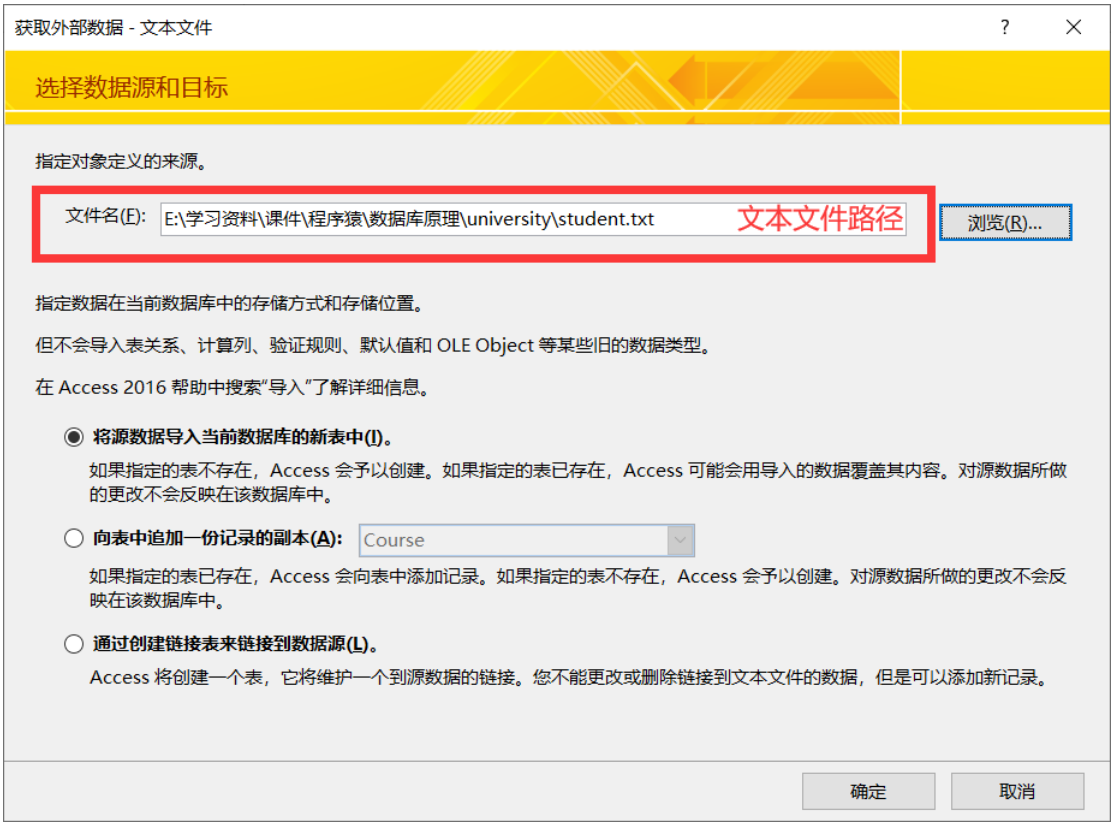


1. **右击文件夹空白处，选择新建 Microsoft Access Database 文件**
2. **输入文件名 university.accdb**
3. **完成数据库建立，打开数据库**

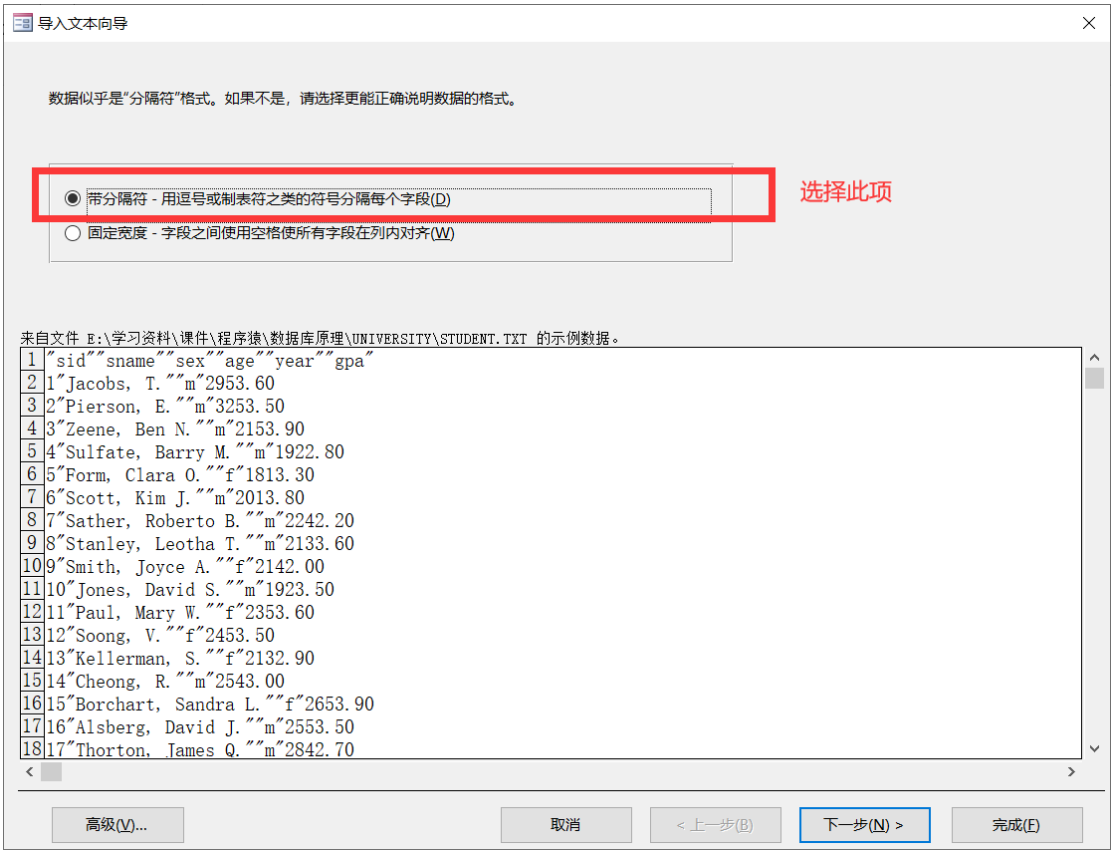
- ✧ **导入文本文件**



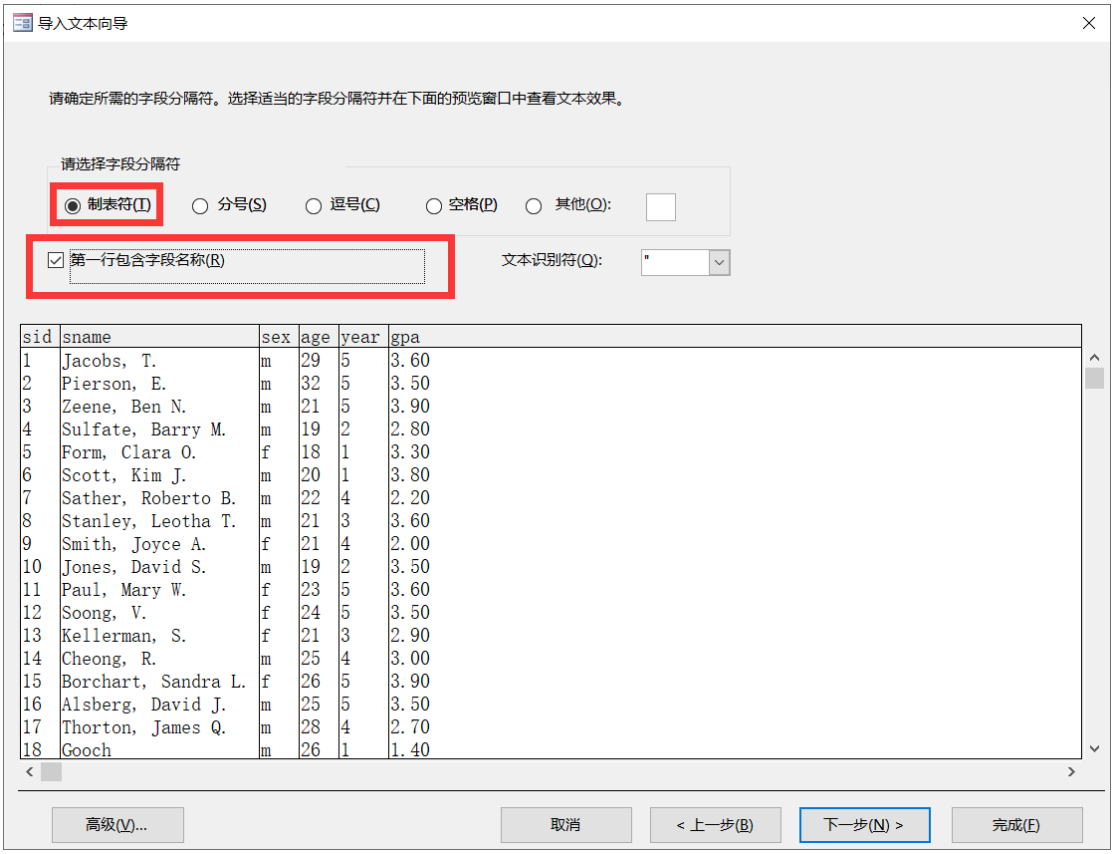
1. 选择外部数据→新数据源→从文件→文本文件



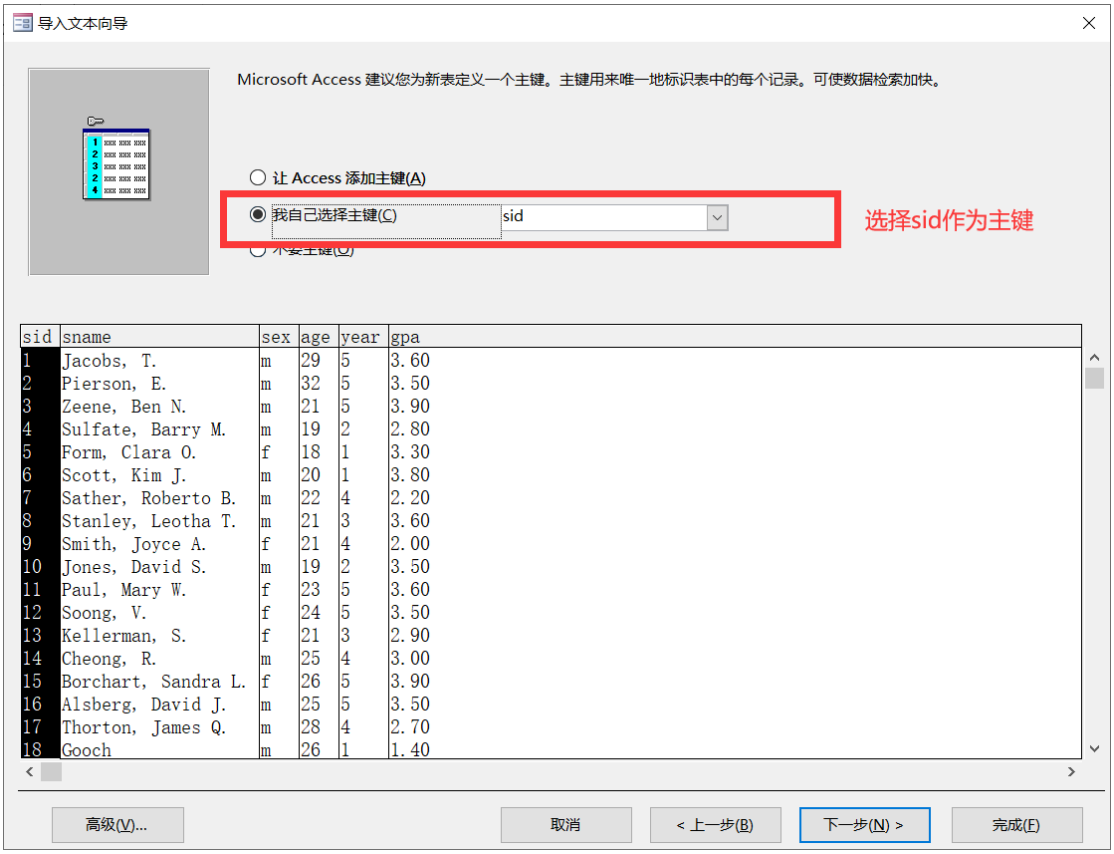
2. 指定文本文件路径



3. 指定数据为分隔符格式

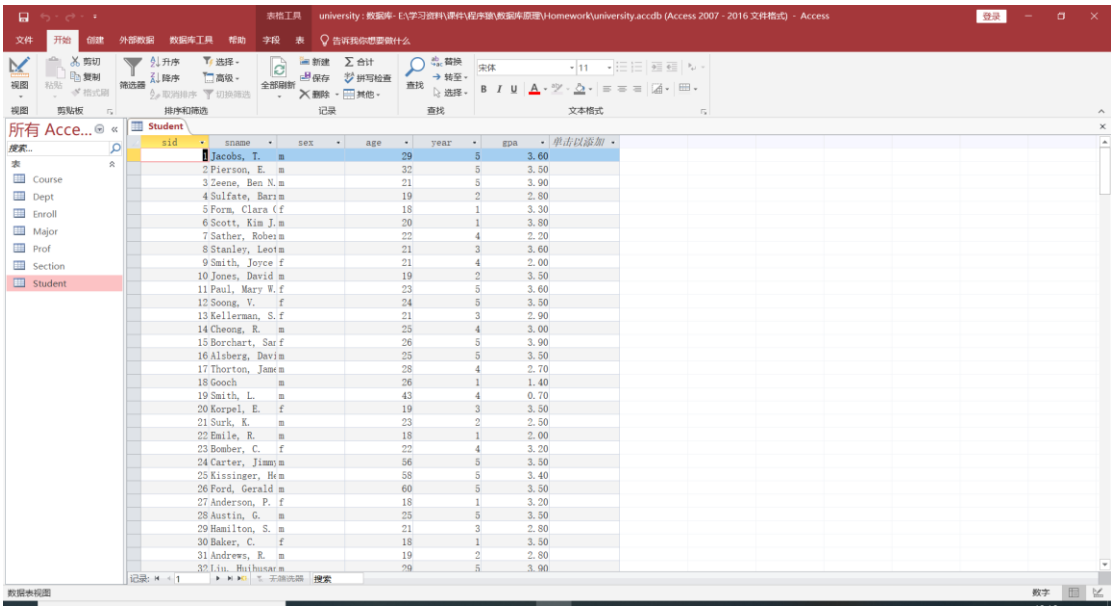


4. 勾选制表符，第一行包含字段名



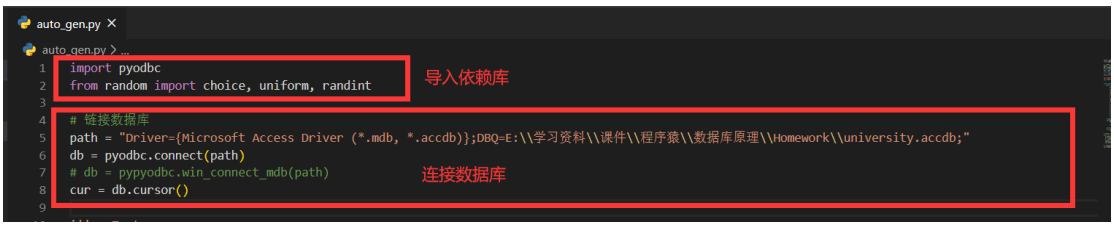
sid	sname	sex	age	year	gpa
1	Jacobs, T.	m	29	5	3.60
2	Pierson, E.	m	32	5	3.50
3	Zeene, Ben N.	m	21	5	3.90
4	Sulfate, Barry M.	m	19	2	2.80
5	Form, Clara O.	f	18	1	3.30
6	Scott, Kim J.	m	20	1	3.80
7	Sather, Roberto B.	m	22	4	2.20
8	Stanley, Leotha T.	m	21	3	3.60
9	Smith, Joyce A.	f	21	4	2.00
10	Jones, David S.	m	19	2	3.50
11	Paul, Mary W.	f	23	5	3.60
12	Soong, V.	f	24	5	3.50
13	Kellerman, S.	f	21	3	2.90
14	Cheong, R.	m	25	4	3.00
15	Borchart, Sandra L.	f	26	5	3.90
16	Alsberg, David J.	m	25	5	3.50
17	Thorton, James Q.	m	28	4	2.70
18	Gooch	m	26	1	1.40

5. 选择 sid 作为自定义主键，完成创建



6. 依次完成所有文本文件导入，得到最终数据库 university.accdb

✧ **编写 Python 程序（附录提供源码 auto_gen.py）**



1. 导入依赖库，完成数据库连接

```python
class student:
    def __init__(self):
        super().__init__()
        # 姓氏list
        self.firstname = ["Abigail", "Ada", "Adela", "Adelaide", "Afra", "Agatha", "Agens", "Alberta",
        "Alexia", "Alice", "Alma", "Althea","Alva", "Amanda", "Amelia", "Amy", "Anastasia", "Andrea",
        "Barbara", "Belinda", "Bella", "Bella", "Belle", "Bernice", "Bertha", "Beryl", "Bess", "Besty",
        "Betty", "Bealuah", "Beverly", "Blanche", "Bonnie", "Candice", "Cara", "Christine", "Claire",
        "Clara", "Dana", "Daphne", "Elizabeth", "Emma", "David", "Edward", "Eric", "Fred", "Garfield", "Gavin"]
        # 名字list
        self.lastname = ["Smith", "Miller", "Johnson", "Brown", "Jones", "Williams", "Black", "Longfellow", "Turner", "Hall",
        "Kent", "Brook", "Hill", "Field", "Green", "Wood", "Brown", "Longman", "Sharp","Fonng",
        "Back", "Finger", "Bird", "Bush", "Cotton", "Stock", "Hawk", "Reed", "George"]
        # 性别list
        self.sex = choice(['f' , 'm'])
        # 学生姓名
        self.studentName = self.getname()
        # 随机生成年龄
        self.age = randint(18, 25)
        # 随机生成年级
        self.year = randint(1, 5)
        # 随机生成GPA
        self.gpa = round(uniform(0.00, 4.00), 1)

    # 生成姓名
    def getname(self):
        studentName = choice(self.firstname) + ', ' + choice(self.lastname) + '.'

        return studentName

    # 返回学生信息
    def toString(self):
        return "'" + self.studentName + "','" + self.sex + "'," + str(self.age) + "," + str(self.year) + ",'" + str('%.2f'%self.gpa) + "'"
```

随机信息生成

2. 创建 student 类，完成类的定义(包括各字段信息的随机生成信息)

```python
# INSERT Database
for i in range(105, 5016):
    # 生成学生对象
    S = student()
    # 插入学生信息
    insert_str = "INSERT INTO Student VALUES({0},{1})".format(str(i), S.toString())
    cur.execute(insert_str)

# 完成提交
cur.commit()
```

3. 循环随机生成学生对象，插入数据库

✧ 运行 Python 程序，完成 5000 条随机学生信息插入

Student

sid	sname	sex	age	year	gpa	单击以添加
1	Jacobs, T.	m	29	5	3.60	
2	Pierson, E.	m	32	5	3.50	
3	Zeene, Ben N.	m	21	5	3.90	
4	Sulfate, Bari	m	19	2	2.80	
5	Form, Clara (	f	18	1	3.30	
6	Scott, Kim J.	m	20	1	3.80	
7	Sather, Robei	m	22	4	2.20	
8	Stanley, Leot	m	21	3	3.60	
9	Smith, Joyce	f	21	4	2.00	
10	Jones, David	m	19	2	3.50	
11	Paul, Mary W.	f	23	5	3.60	
12	Soong, V.	f	24	5	3.50	
13	Kellerman, S.	f	21	3	2.90	
14	Cheong, R.	m	25	4	3.00	
15	Borchart, Sar	f	26	5	3.90	
16	Alsberg, Davi	m	25	5	3.50	
17	Thorton, Jame	m	28	4	2.70	
18	Gooch	m	26	1	1.40	
19	Smith, L.	m	43	4	0.70	
20	Korpel, E.	f	19	3	3.50	
21	Surk, K.	m	23	2	2.50	
22	Emile, R.	m	18	1	2.00	
23	Bomber, C.	f	22	4	3.20	
24	Carter, Jimmy	m	56	5	3.50	

附录

```
// 随机学生信息插入代码 auto_gen.py
import pyodbc
from random import choice, uniform, randint

# 链接数据库
path = "Driver={Microsoft Access Driver (*.mdb, *.accdb)};DBQ=E:\\学习资料\\课件\\程序猿\\数据库原理\\Homework\\university.accdb;"
db = pyodbc.connect(path)
# db = pypyodbc.win_connect_mdb(path)
cur = db.cursor()

'''     Test
insert_str = "INSERT INTO Student VALUES(1,'叶宏庭','男',22,3,3.7)"

cur.execute(insert_str)
cur.commit()
'''

class student:
    def __init__(self):
        super().__init__()
        # 姓氏 list
        self.firstname = ["Abigail", "Ada", "Adela", "Adelaide", "Afra", "Agatha", "Agens", "Alberta",
                          "Alexia", "Alice", "Alma", "Althea","Alva", "Amanda", "Amelia", "Amy", "Anastasia", "Andrea",
                          "Barbara", "Belinda", "Bella", "Bella", "Belle", "Bernice", "Bertha", "Beryl", "Bess", "Besty",
                          "Betty", "Bealuah", "Beverly", "Blanche", "Bonnie", "Candice", "Cara", "Christine", "Claire",
                          "Clara", "Dana", "Daphne", "Elizabeth", "Emma", "David", "Edward", "Eric", "Fred", "Garfield", "Gavin"]
        # 名字 list
        self.lastname = ["Smith", "Miller", "Johnson", "Brown", "Jones", "Williams", "Black", "Longfellow", "Turner", "Hall",
                         "Kent", "Brook", "Hill", "Field", "Green", "Wood", "Brown", "Longman", "Sharp","Fonng",
                         "Back", "Finger", "Bird", "Bush", "Cotton", "Stock", "Hawk", "Reed", "George"]
        # 性别 list
        self.sex = choice(['f' , 'm'])
        # 学生姓名
```

```
            self.studentName = self.getname()
            # 随机生成年龄
            self.age = randint(18, 25)
            # 随机生成年级
            self.year = randint(1, 5)
            # 随机生成 GPA
            self.gpa = round(uniform(0.00, 4.00), 1)

        # 生成姓名
        def getname(self):
            studentName = choice(self.firstname) + ', ' + choice(self.lastname) + '.'

            return studentName

        # 返回学生信息
        def toString(self):
            return "'" + self.studentName + "','" + self.sex + "'," + str(self.age) + "," + str(self.year) +
"','" + str('%.2f'%self.gpa) + "'"

# INSERT Database
for i in range(105, 5016):
    # 生成学生对象
    S = student()
    # 插入学生信息
    insert_str = "INSERT INTO Student VALUES({0},{1})".format(str(i), S.toString())
    cur.execute(insert_str)

# 完成提交
cur.commit()
```