Part I – How to install and set PostgreSQL and Pgadmin4.
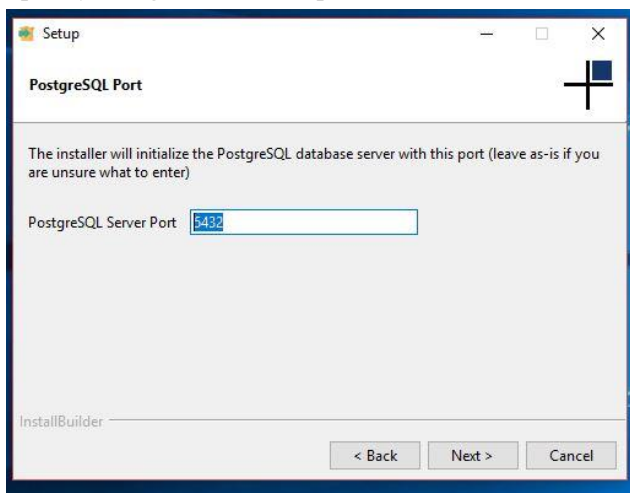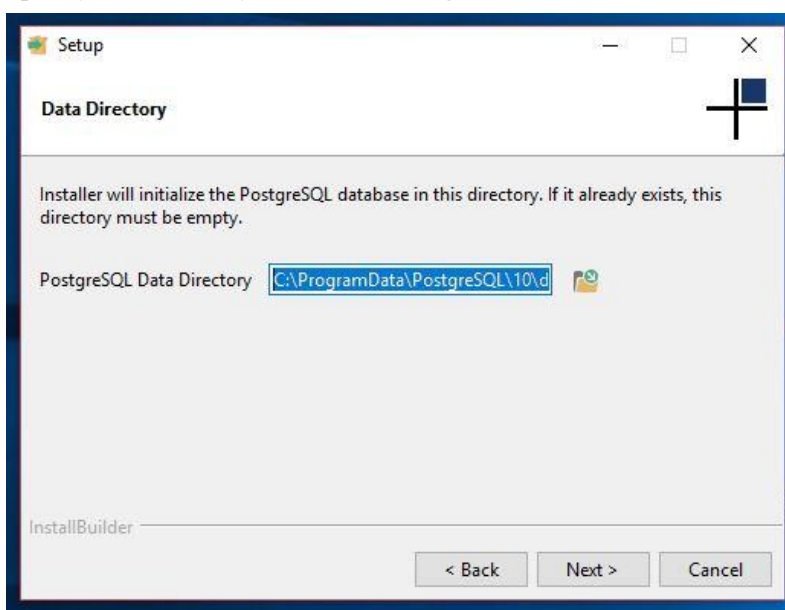
PostgreSQL:

1. Download Postgres Installer here.
2. Click on the executable file to run the installer.
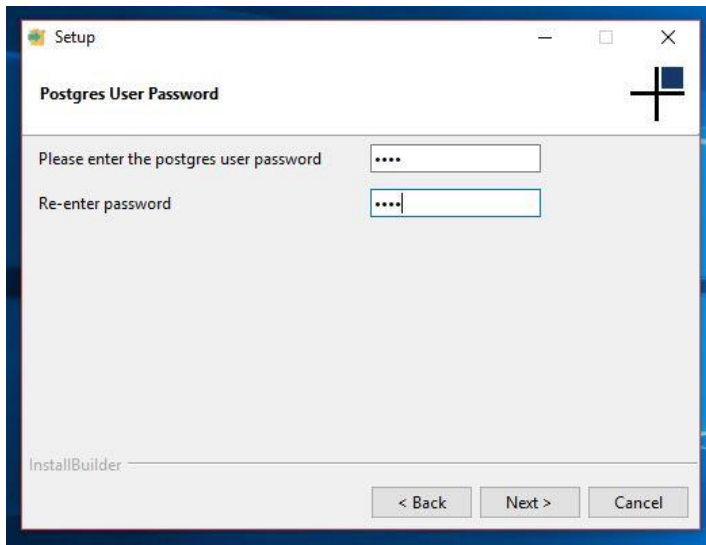3. Select your preferred language.

4. Specify the directory where you want to install PostgreSQL.
5. Specify PostgreSQL server port. You can leave this as default if you're unsure what to enter.
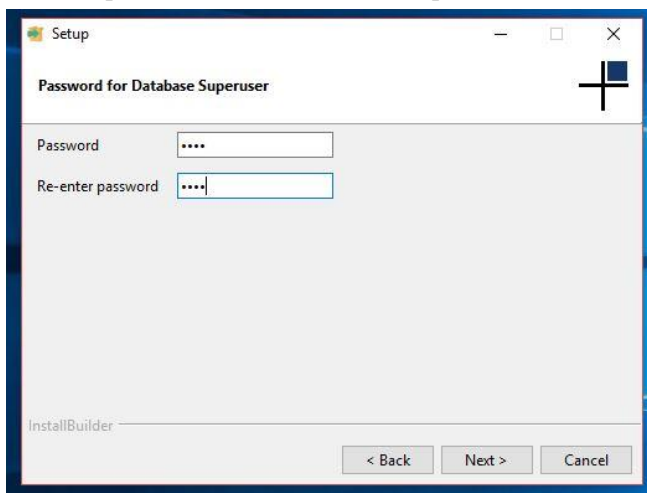

6. Specify data directory to initialize PostgreSQL database.

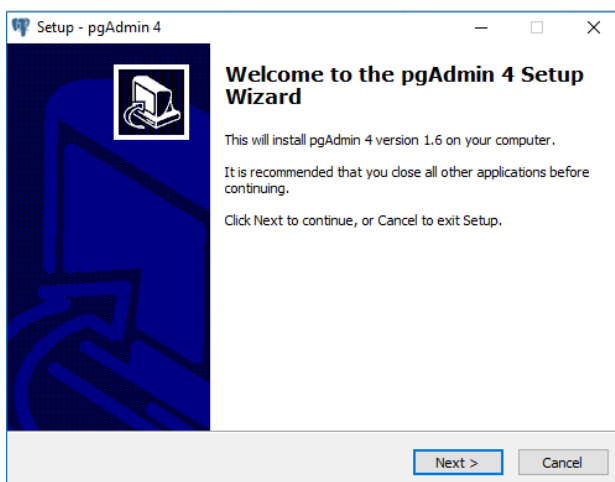7. Create a PostgreSQL user password.

8. Create a password for the database Superuser.

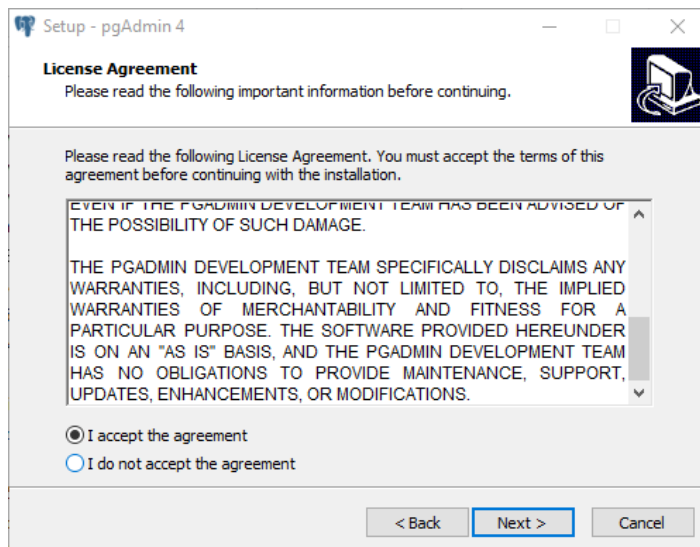
9. Click next to begin PostgreSQL installation.

Pgadmin4 installation:

1. Download Pgadmin4 Installer here.
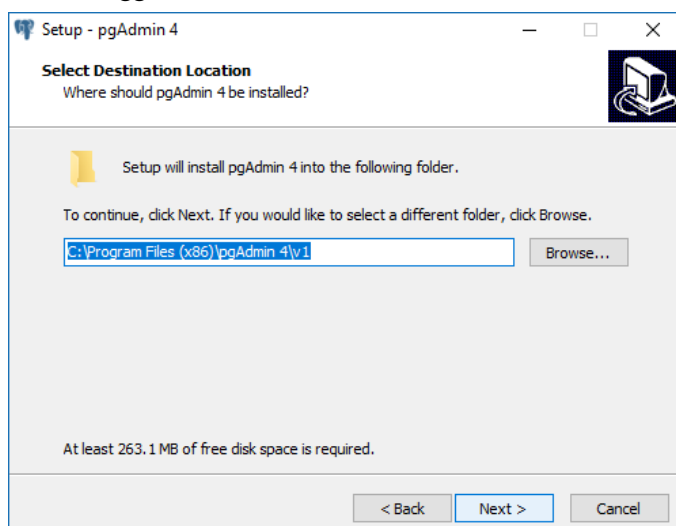2. Now the pgAdmin 4 installer is up. Click Next:

3. The wizard will then ask you to read over the license agreement. You should agree and accept.
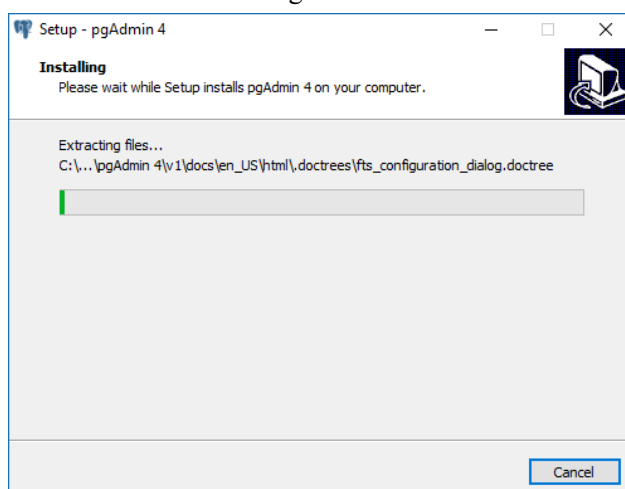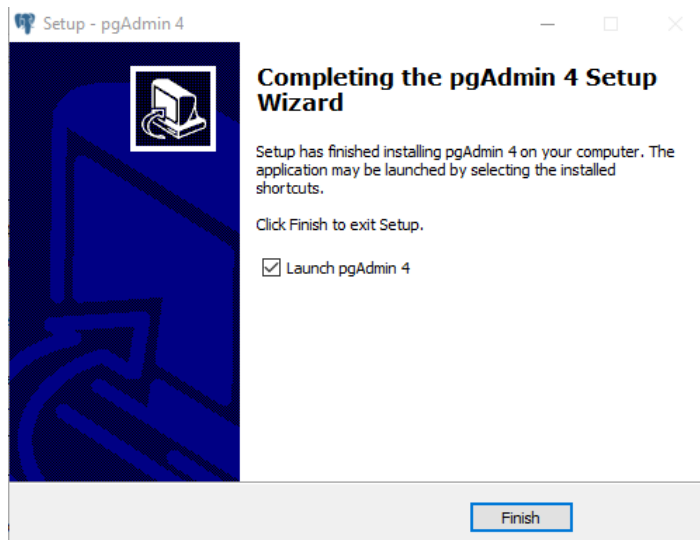
Then click next.

4. It will then ask where you want to save your program files for pgAdmin 4. I keep it in the default/suggested folder. Once done, select next:
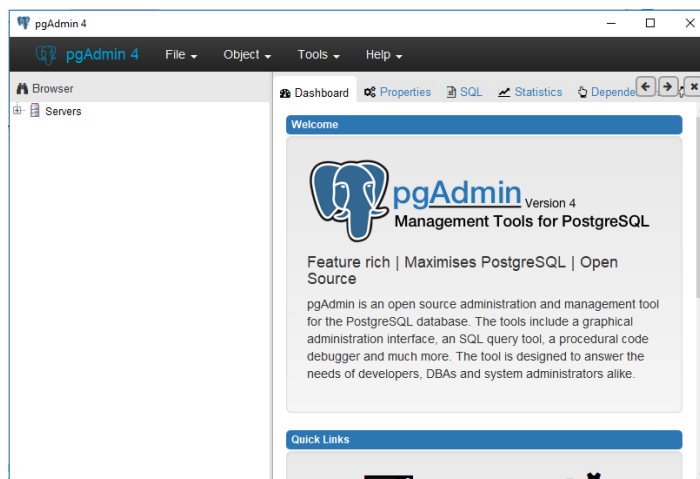

5. Now it will start installing

6. When it's done installing, you can select Launch pgAdmin 4 and Finish

7. pgAdmin 4 may take some time to launch, and when it does, it will look something like this:

8. There will be a default PostgreSQL server on your system. You can access it on pgAdmin. On the left-hand Browser, click the + next to Servers, and it will show the server. It will name something like PostgreSQL xx.xx. Type in the password(Already done before).
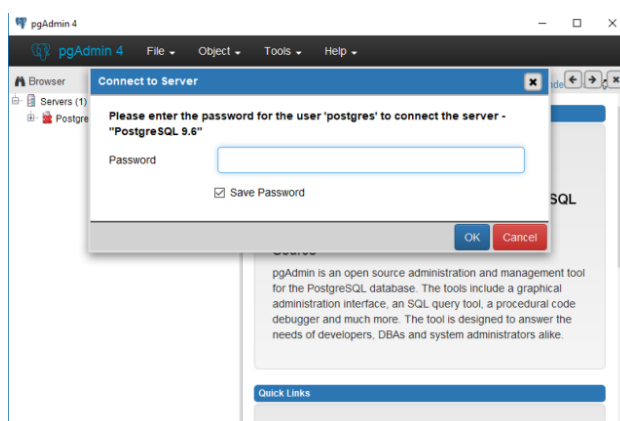
9. Using pgAdmin 4, you can now explore your PostgreSQL server that hosts your database. It will be pretty empty.

10. Create a new database, right-click it, select backup:
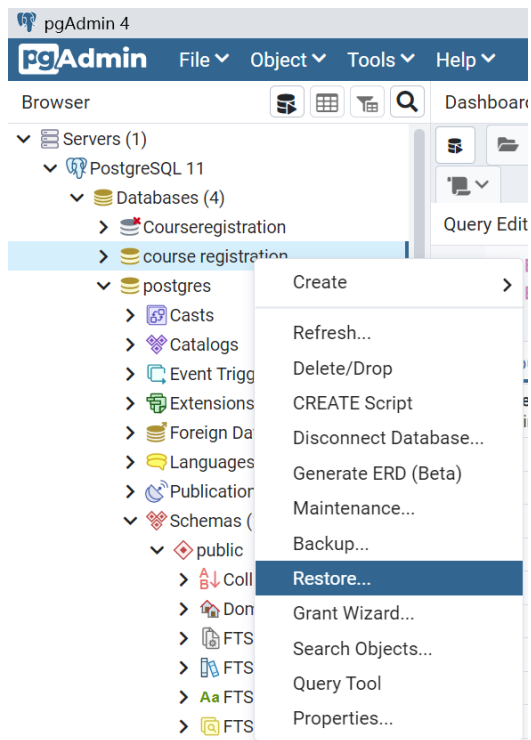
11. Click the ...right after Filename:
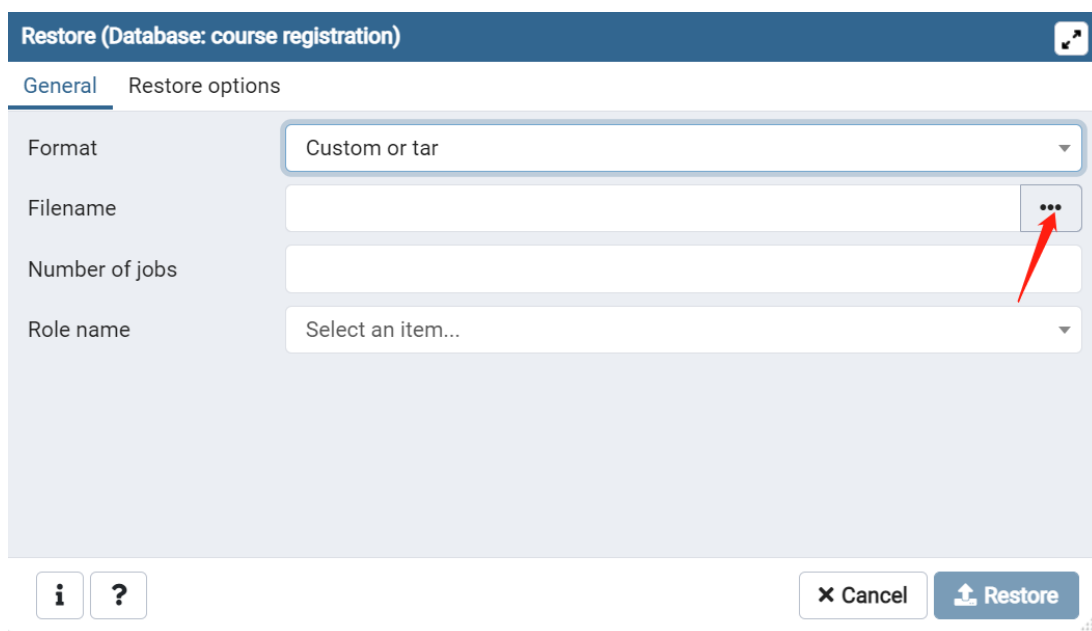
12. Select the file courseregistration.sql, and then we are done.

Part II– Tables

College**: Includes college ID, college names, and college addresses as follows:

⊞ college							✕

General **Columns** Advanced Constraints Parameters Security SQL

Inherited from table(s)	Select to inherit from...

Columns +

		Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?
✎	🗑	collegeid	integer ▼			Yes	Yes
✎	🗑	collegename	character varying ▼			Yes	No
✎	🗑	address	character varying ▼			Yes	No

Query Editor Query History

```
1  SELECT * FROM public.college
2  ORDER BY collegeid ASC
```

Data Output Explain Messages Notifications

|	collegeid [PK] integer	collegename character varying	address character varying
1	101	College of Computing	Watson Tower
2	102	College of Electrical an…	Hamilton Tower
3	103	College of Mathematics	Smith Tower

Department: Includes department IDs, department names and corresponding college IDs, a college contains at least one department.

⊞ department							✕

General **Columns** Advanced Constraints Parameters Security SQL

Inherited from table(s)	Select to inherit from...

Columns +

		Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?
✎	🗑	departmentid	character varying ▼	20		Yes	Yes
✎	🗑	deptname	character varying ▼	50		Yes	No
✎	🗑	collegeid	integer ▼			Yes	No

Query Editor Query History

```
1  SELECT * FROM public.department
2  ORDER BY departmentid ASC
```

Data Output Explain Messages Notifications

	departmentid [PK] character varying (20)	deptname character varying (50)	collegeid integer
1	AM	Applied Mathematics	103
2	CE	Computer Engineering	102
3	CS	Computer Science	101
4	EE	Electrical Engineering	102
5	INTM	The Industrial Technology a…	101
6	IT	Information Technology	101

Course: Shows courses' information. Includes course IDs, names of these courses, credits and hours per semester:

Student: Shows students' information which includes student IDs, students' names and their ages.

Section: The table section describes the detailed information of courses for students to choose, which includes section IDs, classrooms and dates/time for courses, and corresponding courses' IDs and instructors' IDs.

Registration: This shows the registration status of students. Contains registration IDs, type of the students(student/audit), student IDs and section IDs.

Part III– How to do queries by PgAdmin 4:

1. **Find tables, right-click it and select Query Tool:**
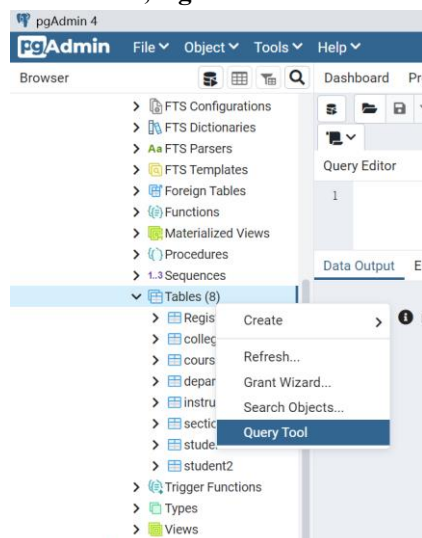
2. **Type in query commands in the Query Editor section.**

For example, If you want to select all the fields available in the table student, use the following command, and then click the execute button as the red arrow point at:

| Dashboard | Properties | SQL | Statistics | Dependencies | ⊞ public.student… | 🗄 postgres/postg… |

Query Editor

```
1  SELECT * FROM student;
```

Then we can see the whole table student:

Data Output   Explain   Messages   Notifications

studentid [PK] integer	name character varying (50)	age integer
1	Fried	18
2	Tim	19
3	Tom	20
4	Peter	21
5	Reid	23
6	Creighton	24
7	Ryan	22
8	Martin	20
9	Linda	19
10	Peter	20

3. **More query examples:**

Delete all the students with ages above 20 from student2(which was a copy of table student):

Data Output   Explain   Messages   Notifications

studentid [PK] integer	name character varying (50)	age integer
1	Fried	18
2	Tim	19
3	Tom	20
4	Peter	21
5	Reid	23
6	Creighton	24
7	Ryan	22
8	Martin	20
9	Linda	19
10	Peter	20

```
1  DELETE FROM STUDENT2 WHERE AGE IN (SELECT AGE FROM STUDENT
2     WHERE AGE > 20 );
3  SELECT*FROM STUDENT2;
```

Data Output   Explain   Messages   Notifications

studentid [PK] integer	name character varying (50)	age integer
1	Fried	18
2	Tim	19
3	Tom	20
8	Martin	20
9	Linda	19
10	Peter	20

UPDATE student2(change name Tom into Thomas):

Query Editor   Query History

```
1  UPDATE student2
2  SET name = 'Thomas' WHERE name = 'Tom';
3  SELECT * FROM public.student2 ORDER BY studentid ASC
```

Data Output   Explain   Messages   Notifications

	studentid [PK] integer	name character varying (50)	age integer
1	1	Fried	18
2	2	Tim	19
3	3	Thomas	20
4	8	Martin	20
5	9	Linda	19
6	10	Peter	20

List courses with credits larger than Database Organization:

Query Editor   Query History

```
1  SELECT *FROM course where
2  credit>(select credit from course where coursename='Database Organization');
```

Data Output   Explain   Messages   Notifications

	courseid [PK] integer	credit integer	coursename character varying (50)	hour integer
1	2	3	Data Structure	22
2	4	4	Computer Architecture	26
3	5	5	Operating Systems	24
4	6	3	Software Engineering	20
5	8	4	Theory of Computation	16
6	9	3	Advanced OS	28