

SQL Tutorial: install EMP-DEP, initial sql queries

Fast notes on setting up SQL select where commands

Courses: Database Systems, Databases and Information Analysis

Author: Pedro Furtado, professor at University of Coimbra, Portugal.

In this tutorial we learn how to install EMP-DEP database and to query using select.

Software

PostgreSQL (latest) –(ALREADY INSTALLED) <http://www.postgresql.org/download/>

pgAdmin – (ALREADY INSTALLED) <https://www.pgadmin.org/>

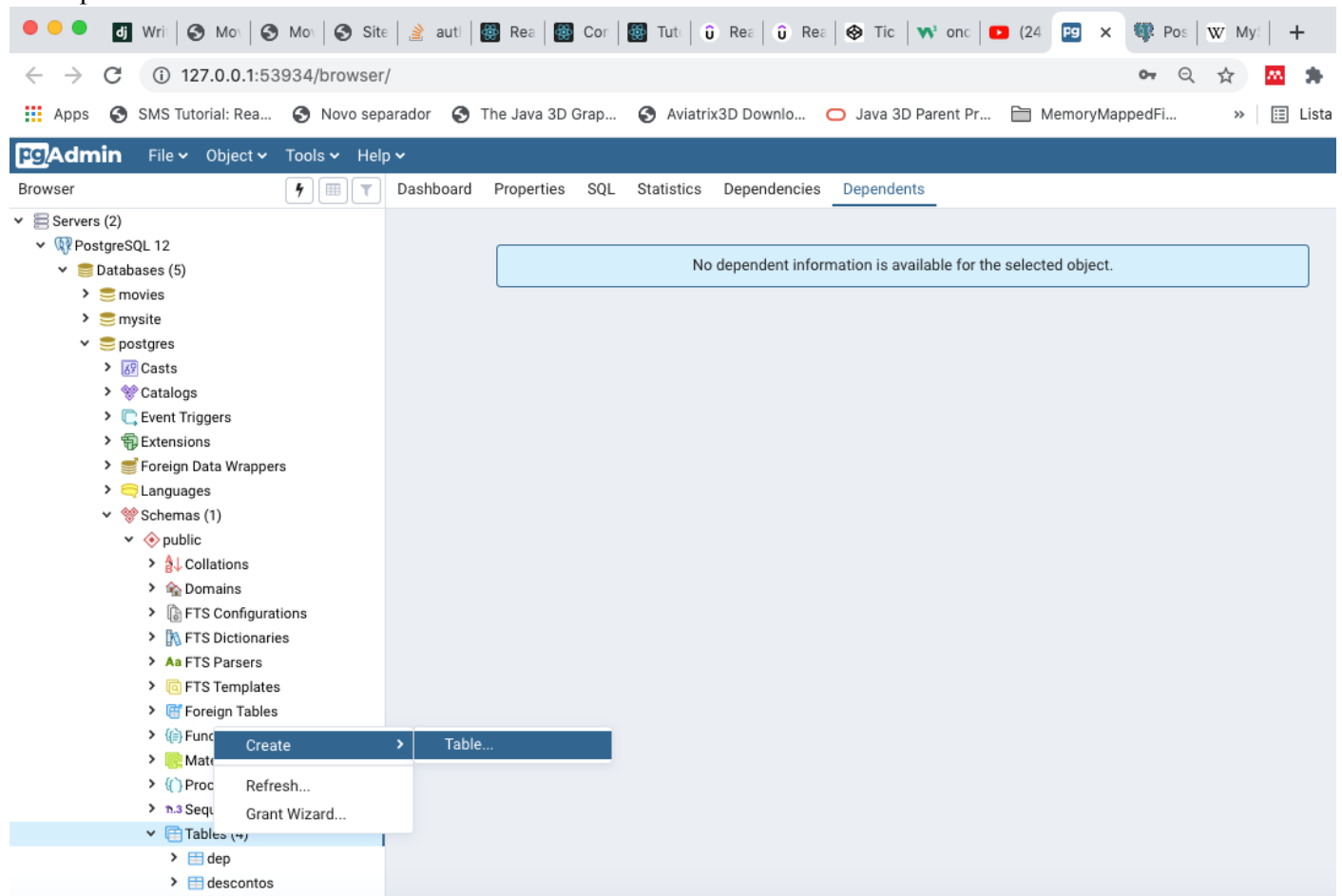
sql scripts to create the tables, sql scripts to insert data into the tables: tabelasBDempdep.zip

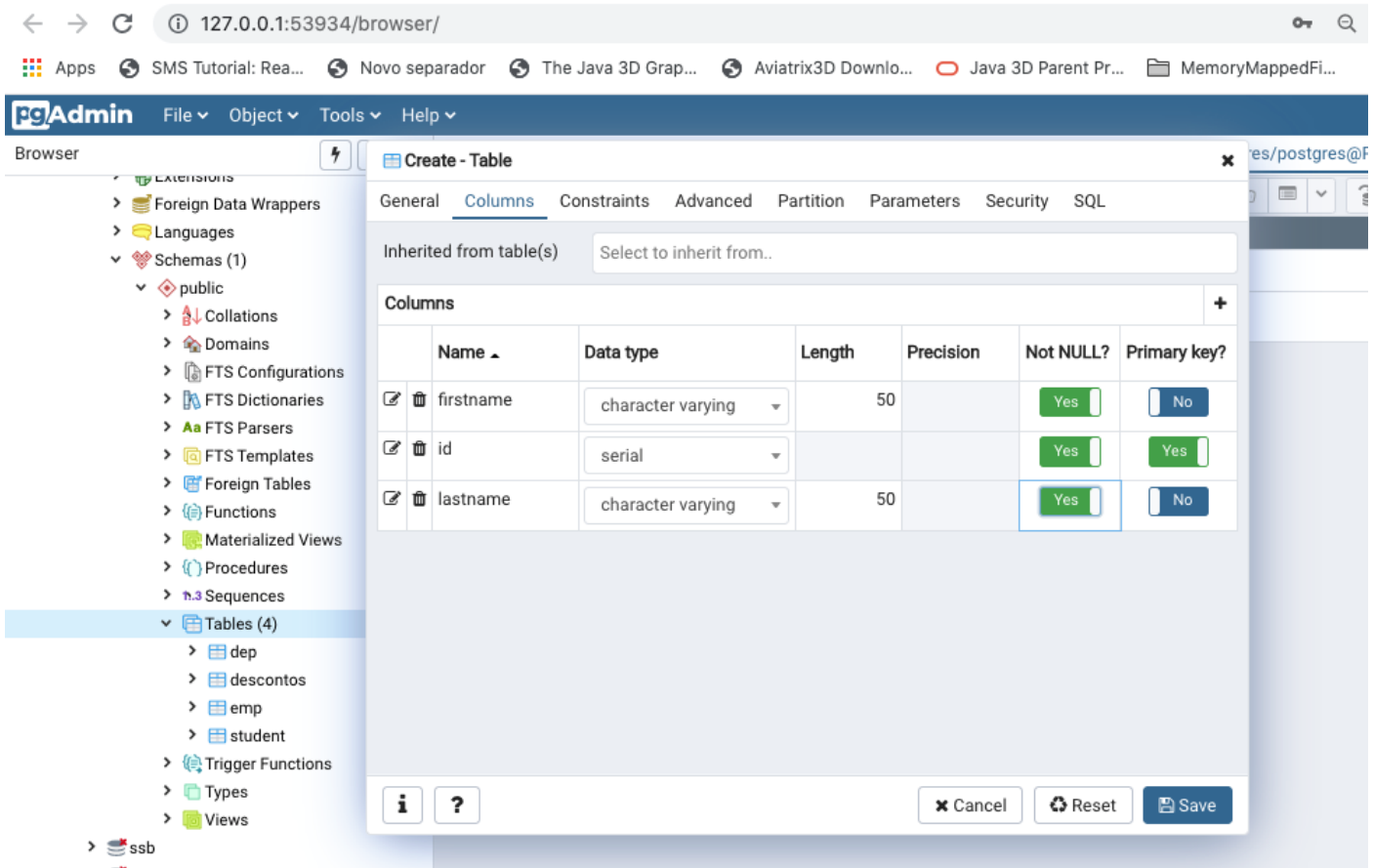
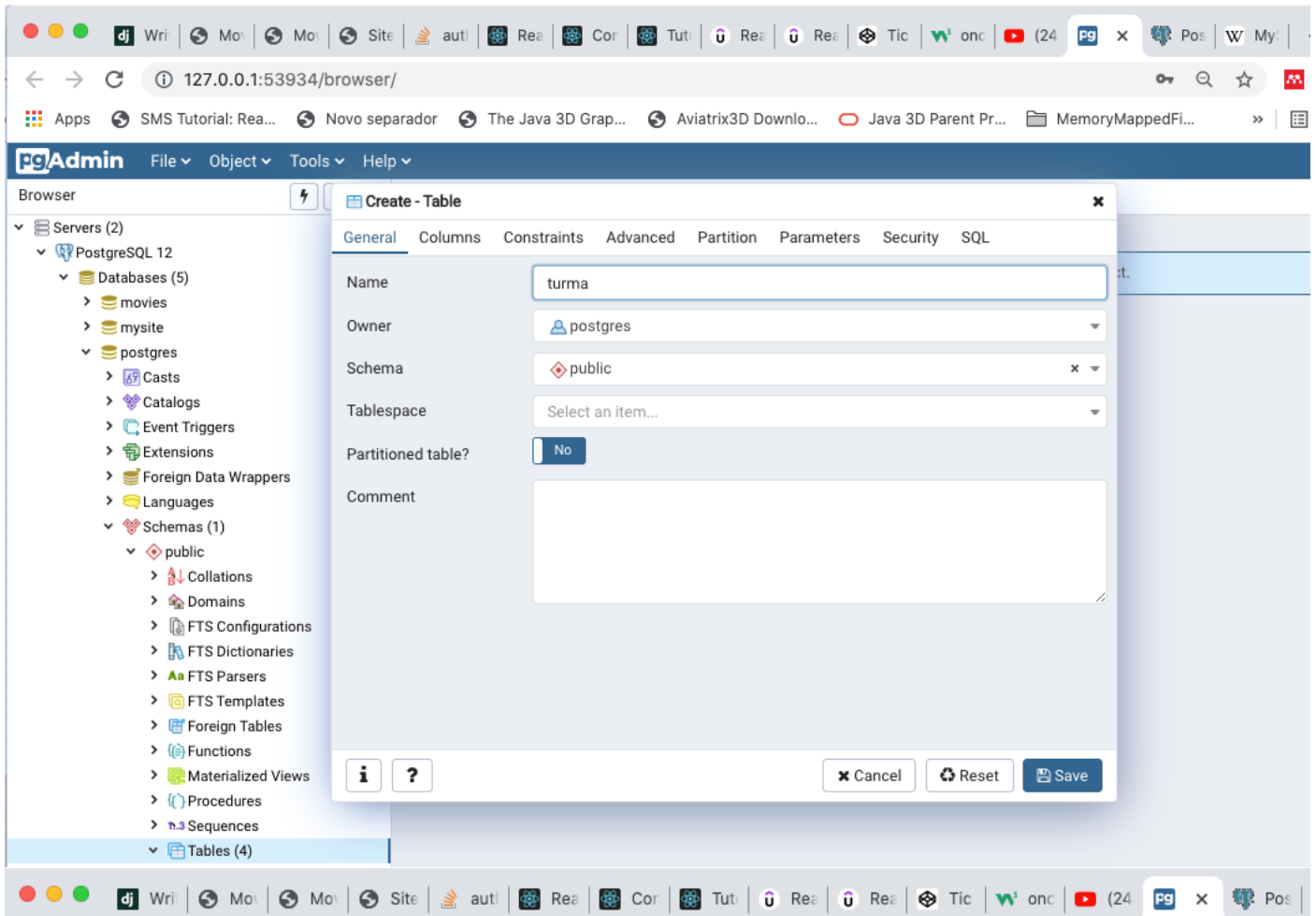
sebenta de SQL: manual_praticas_bd_v4COMEXTRASPERGUNTAS.pdf

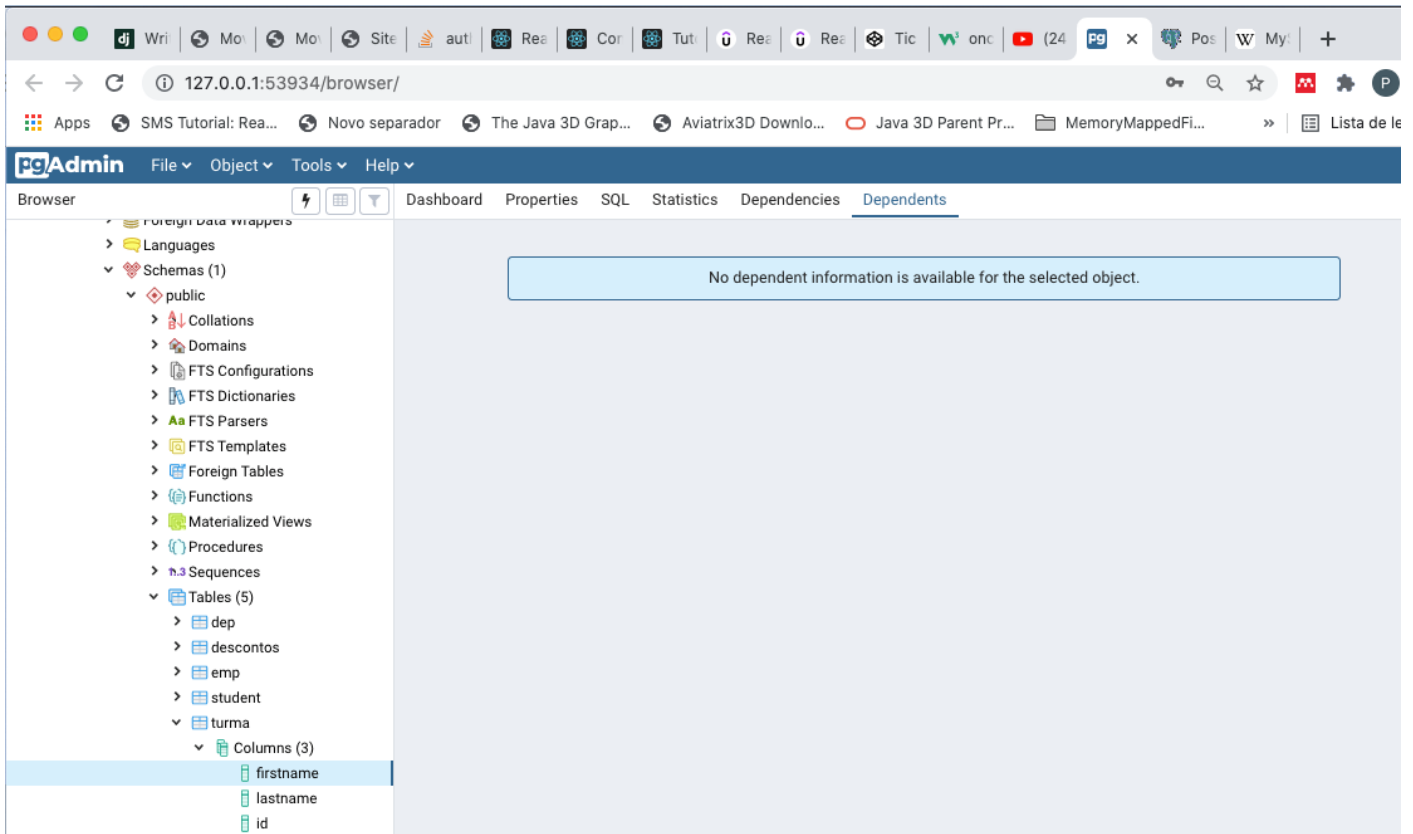
PART 1. Create and add data to turmas

1. Create a new table turma with attributes (id, firstname, lastname), id should be serial.

Serial é uma coluna que contém um inteiro auto-incrementado quando se adiciona uma nova linha à tabela, servindo de chave primária única automática.

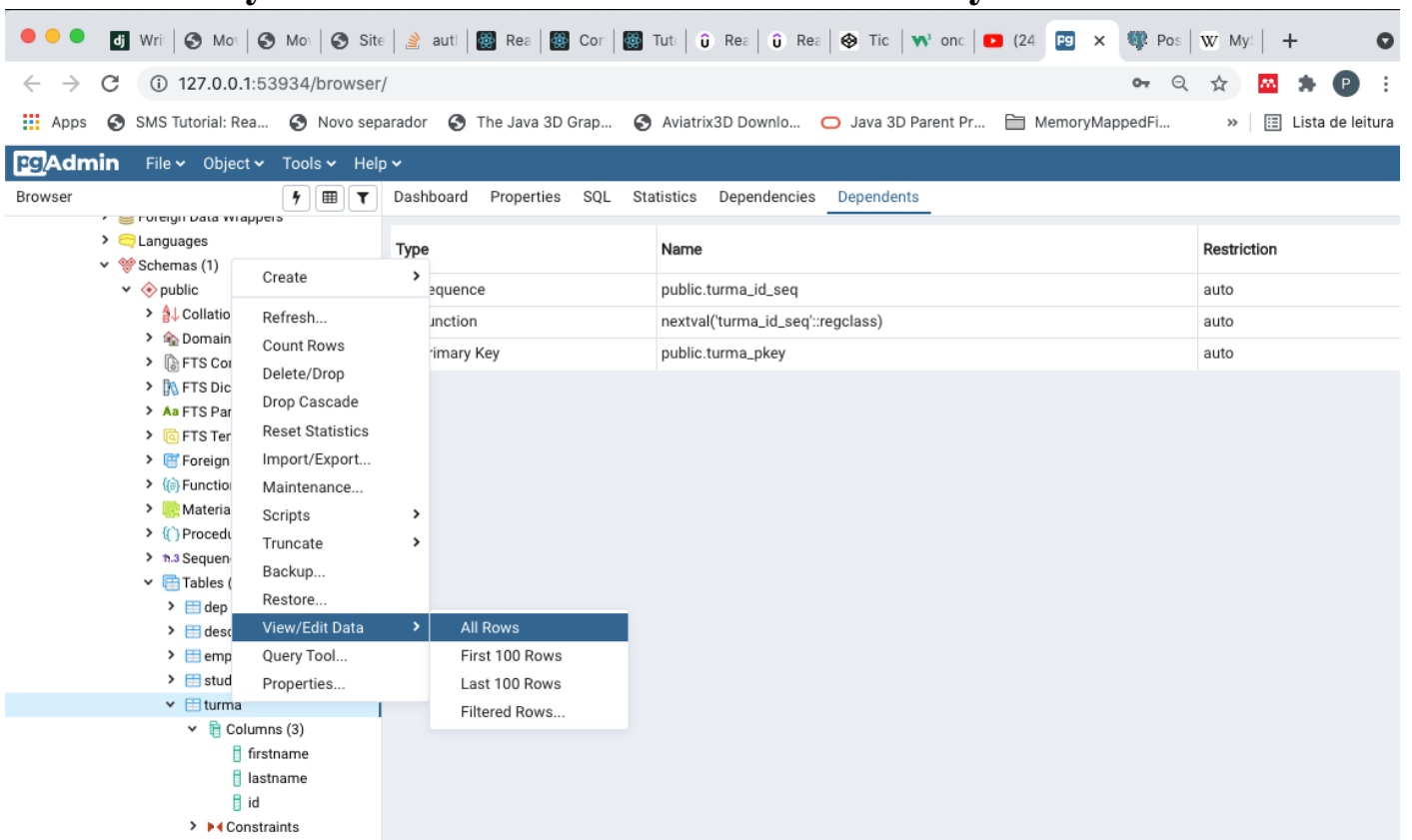


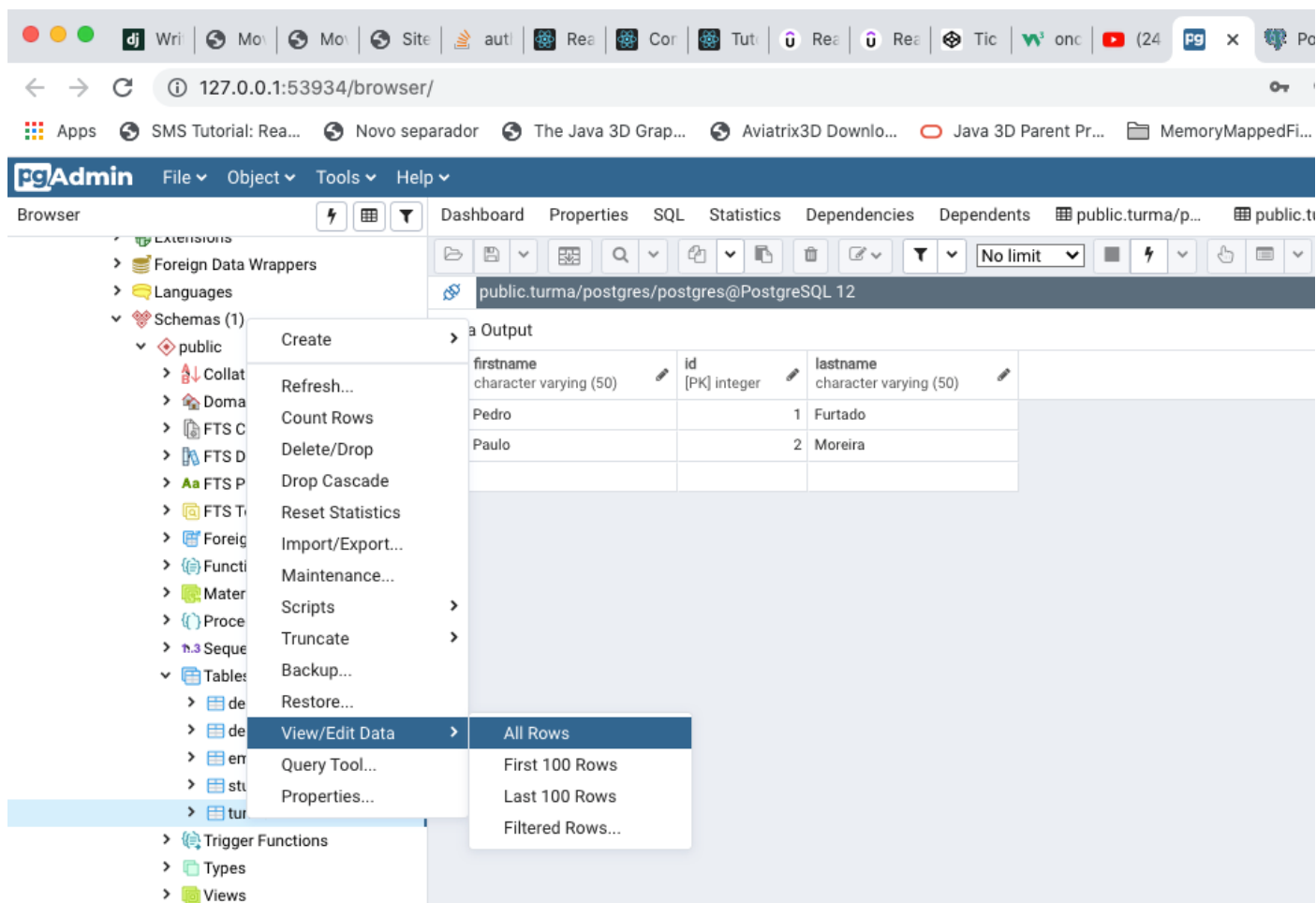




2. Insert into turma two rows, one with your name and another with the name of the person seating next to you.

3. Show that you were able to insert the data correctly.

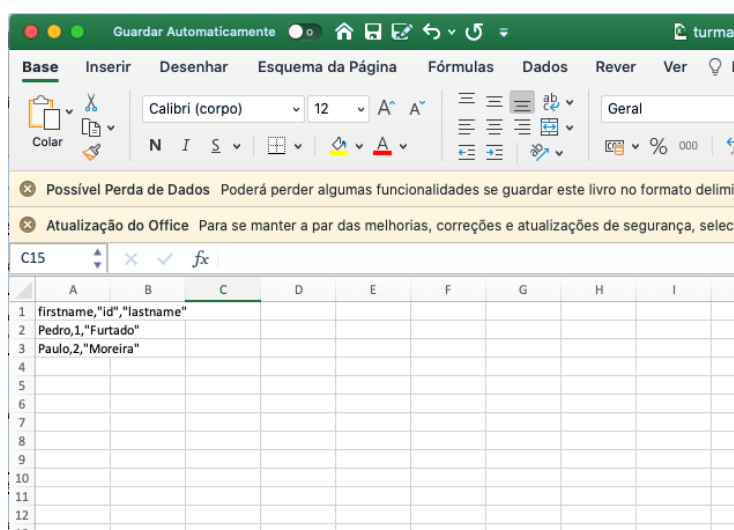




4. Download the table into a csv file.

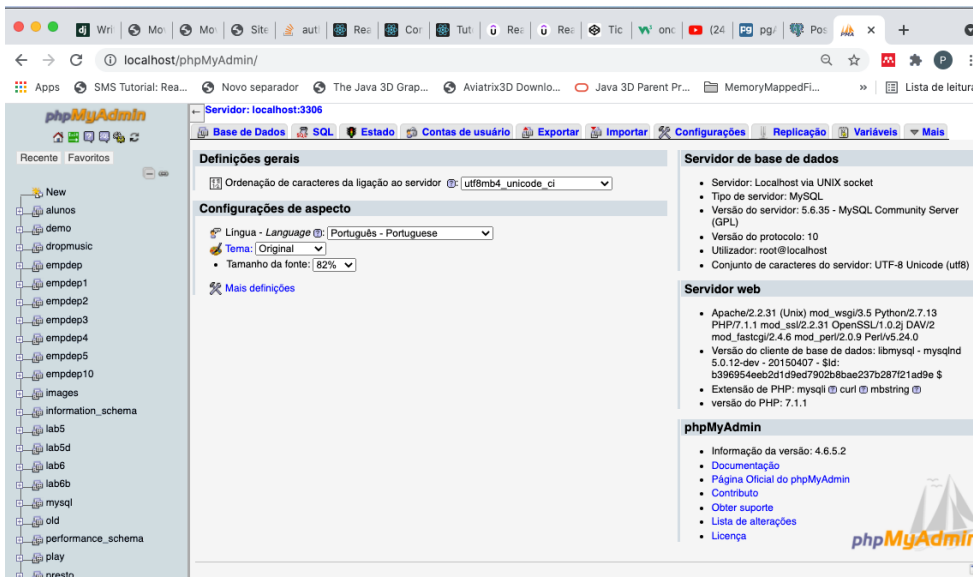


5. Open the csv file in excel or google sheets and see the contents there.



6. Do all the same steps to create turmas and insert data and view results in mySQL database

<http://localhost/phpMyAdmin/>



7. Create a MySQL database turmas, a table turma inside of it with id, firstname and lastname

AutoIncrement é o equivalente a Serial: é uma coluna que contém um inteiro auto-incrementado quando se adiciona uma nova linha à tabela, servindo de chave primária única automática.

localhost/phpMyAdmin/server_databases.php?db=&lang=pt&collation_connection=utf8mb4_unicode_ci&token

phpMyAdmin

Recente Favoritos

- New
- alunos
- demo
- dropmusic
- empdep
- empdep1
- empdep2
- empdep3
- empdep4
- empdep5
- empdep10
- images

Servidor: localhost:3306

Base de Dados SQL Estado Contas de usuário Exportar Importar Configurações

Base de Dados

Criar base de dados

Nome da base de dado: Agrupamento (Collation) Criar

Base de Dados	Agrupamento (Collation)	Ações
<input type="checkbox"/> alunos	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> demo	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> dropmusic	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep1	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep2	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep3	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep4	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> empdep5	utf8_general_ci	Verificar Privilégios
<input type="checkbox"/> emnden10	utf8_general_ci	Verificar Privilégios

localhost/phpMyAdmin/server_databases.php?db=&lang=pt&collation_connection=utf8

phpMyAdmin

Recente Favoritos

- New
- alunos
- demo
- droomusic

Servidor: localhost:3306

Base de Dados SQL Estado Contas de usuário Exportar Im

Base de Dados

Criar base de dados

turma Agrupamento (Collation) Criar

Base de Dados	Agrupamento (Collation)	Ações
<input type="checkbox"/> alunos	utf8_general_ci	Verificar Privilégios

localhost/phpMyAdmin/server_databases.php?db=&lang=pt&collation_connection=utf8mb4_unico

Apps SMS Tutorial: Rea... Novo separador The Java 3D Grap... Aviatrix3D Downlo... Java 3D Parent Pr

phpMyAdmin

Recente Favoritos

Type to filter these, Enter to s: X

- empdep10
- images
- information_schema
- lab5
- lab5d
- lab6
- lab6b
- mysql
- old
- performance_schema
- play
- presto
- spine
- spotlight
- ssb
- talenddemo
- teste
- testeSQLNov2017
- tpch
- tpch2
- turma

Servidor: localhost:3306 » Base de Dados: turma

Estrutura SQL Pesquisar Pesquisa por formulário Exportar Importar

Nenhuma tabela encontrada na base de dados.

Criar tabela

Nome: turma Número de colunas: 3

Consola

localhost/phpMyAdmin/server_databases.php?db=&lang=pt&collation_connection=utf8mb4_unicode_ci&token=93258...

Apps SMS Tutorial: Rea... Novo separador The Java 3D Grap... Aviatrix3D Downlo... Java 3D Parent Pr... MemoryMappedFi... Lista de leitura

phpMyAdmin

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Table name: turma Adicionar 1 column(s) Executar

Nome	Tipo	Tamanho/Valores*	Predefinido	Agrupamento (Collation)	Atributos	Nulo	Índice	A.I.	Comentário
id	INT		None			<input type="checkbox"/>	PRIMARY	<input checked="" type="checkbox"/>	
firstname	VARCHAR	50	None			<input type="checkbox"/>		<input type="checkbox"/>	
lastname	VARCHAR	50	None			<input type="checkbox"/>		<input type="checkbox"/>	

Comentários da tabela:

Collation: Motor de armazenamento: InnoDB

PARTITION definition:

Partition by: (Expression or column list)

Partitions:

Pré-visualização SQL Guarda

localhost/phpMyAdmin/server_databases.php?db=&lang=pt&collation_connection=utf8mb4_unicode_ci&token=93258...

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Table name: turma Adicionar 1 column(s) Executar

Nome	Tipo	Tamanho/Valores*	Predefinido	Agrupamento (Collation)	Atributos	Nulo	Índice	A.I.	Comentário
id	INT		None			<input type="checkbox"/>	PRIMARY	<input checked="" type="checkbox"/>	
firstname	VARCHAR	50	None			<input type="checkbox"/>			
lastname	VARCHAR	50	None			<input type="checkbox"/>			

Comentários da tabela: Collation: Motor de armazenamento: InnoDB

PARTITION definition: Partition by: Partitions:

Pré-visualização SQL

```
CREATE TABLE `turma`.`turma` ( `id` INT NOT NULL AUTO INCREMENT, `firstname` VARCHAR(50) NOT NULL, `lastname` VARCHAR(50) NOT NULL, PRIMARY KEY (`id`)) ENGINE = InnoDB;
```

Fechar

localhost/phpMyAdmin/db_structure.php?token=932580c05142032645d4f4ac4b22e9fd&server=1&db=turma&table=t...

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Estrutura da tabela Relation view

#	Nome	Tipo	Agrupamento (Collation)	Atributos	Nulo	Predefinido	Comentários	Extra	Acções
1	id	int(11)			Não	None		AUTO_INCREMENT	Muda Elimina Primária Único Mais
2	firstname	varchar(50)	utf8_general_ci		Não	None			Muda Elimina Primária Único Mais
3	lastname	varchar(50)	utf8_general_ci		Não	None			Muda Elimina Primária Único Mais

Check all Com os seleccionados: Procurar Muda Elimina Primária Único Índice

Imprimir Propor uma estrutura de tabela Move columns Improve table structure

Add 1 column(s) after lastname Executar

8. Insert your name and the name of the person seating next to you in the class. See the result as a table.

localhost/phpMyAdmin/tbl_change.php?db=turma&table=turma&token=932580c05142032645d4f4ac4b22e9fd

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Recente Favoritos Type to filter

- information
- lab5
- lab5d
- lab6
- lab6b
- mysql
- old
- performance
- play
- presto
- spine
- spotlight
- ssb
- talenddemo
- teste
- testeSQLN
- tpch
- tpch2
- turma
 - New
 - turma

Coluna	Tipo	Funções	Nulo	Valor
id	int(11)			
firstname	varchar(50)			Pedro
lastname	varchar(50)			Furtado

Executar

☒ Ignora

Coluna	Tipo	Funções	Nulo	Valor
id	int(11)			
firstname	varchar(50)			
lastname	varchar(50)			

Executar

Inserir como novo registro and then Voltar atrás

Executar Pré-visualização SQL Limpa

Continue insertion with 2 rows

Consola

localhost/phpMyAdmin/tbl_change.php?db=turma&table=turma&token=932580c05142032645d4f4ac4b22e9fd

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Recente Favoritos

1 linha inserida.
Inserted row id: 2

```
INSERT INTO `turma` (`id`, `firstname`, `lastname`) VALUES (NULL, 'Paulo', 'Furtado');
```

[Edit inline] [Edita] [Criar código PHP]

Run SQL query/queries on table **turma.turma**:

```
1 INSERT INTO `turma` (`id`, `firstname`, `lastname`) VALUES (NULL, 'Paulo', 'Furtado');
```

Columns
id
firstname
lastname

SELECT * SELECT INSERT UPDATE DELETE Limpar Formato Get auto-saved query

☐ Bind parameters

[Delimiter: ;] ☒ Mostrar de novo aqui este comando ☐ Reter a caixa da consulta (query) ☐ Rollback when finished ☒ Enable foreign key checks

Executar

localhost/phpMyAdmin/tbl_change.php?db=turma&table=turma&token=932580c05142032645d4f4ac4b22e9fd

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Procurar Estrutura SQL Pesquisar Inserir Exportar Importar Privilégios Operações Acionadores

Recente Favoritos

1 linha inserida.
Inserted row id: 1

```
INSERT INTO `turma` (`id`, `firstname`, `lastname`) VALUES (NULL, 'Pedro', 'Furtado');
```

[Edit inline] [Edita] [Criar código PHP]

Run SQL query/queries on table **turma.turma**:

```
1 INSERT INTO `turma` (`id`, `firstname`, `lastname`) VALUES (NULL, 'Pedro', 'Furtado');
```

Columns
id
firstname
lastname

SELECT * SELECT INSERT UPDATE DELETE Limpar Formato Get auto-saved query

☐ Bind parameters

[Delimiter: ;] ☒ Mostrar de novo aqui este comando ☐ Reter a caixa da consulta (query) ☐ Rollback when finished ☒ Enable foreign key checks

Executar

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Mostrar critérios de busca

✓ A mostrar registros de 0 - 1 (2 total, A consulta demorou 0.0005 segundos.)

```
SELECT * FROM `turma`
```

Mostrar tudo | Número de registros: 25 | Filtrar registros: Pesquisar esta tabela | Ordenar por chave: Nenhum

+ Opções

		id	firstname	lastname
<input type="checkbox"/>	✎ Edita	1	Pedro	Furtado
<input type="checkbox"/>	✎ Edita	2	Paulo	Furtado

Check all Com os selecionados: ✎ Edita ✎ Copiar ✕ Apagar 📄 Exportar

Mostrar tudo | Número de registros: 25 | Filtrar registros: Pesquisar esta tabela | Ordenar por chave: Nenhum

Operações resultantes das consultas

🖨 Imprimir 📄 Copy to clipboard 📄 Exportar 📊 Mostrar gráfico 📄 Criar visualização

9. Export the data into a csv file and open it in excel or google sheets.

Servidor: localhost:3306 » Base de Dados: turma » Tabela: turma

Exportando as linhas da tabela "turma"

Export method:

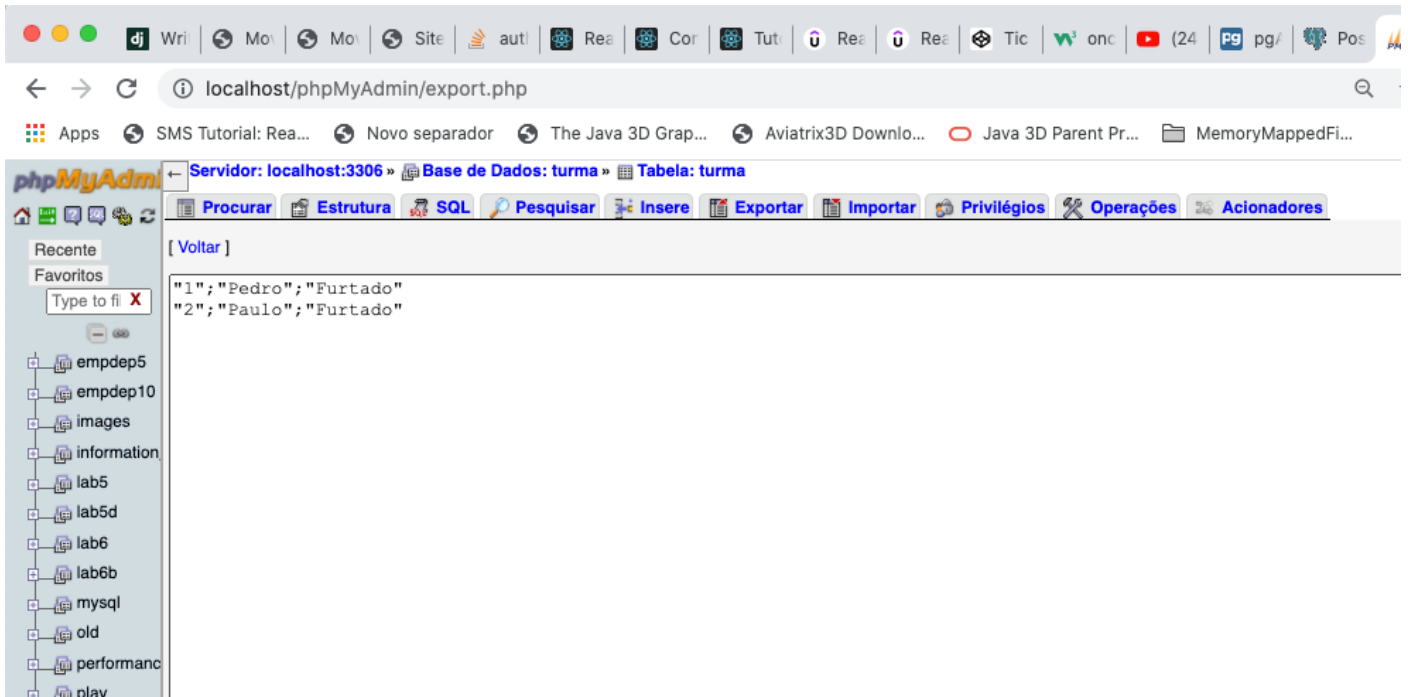
☒ Rápido - exibe o mínimo de opções

☐ Personalizado - exibe todas as opções possíveis

Formato:

CSV for MS Excel

Executar



PART 2. Install EMP-DEP

10. Open file “1 - criaTabelas.sql” and explain how you create a table and indicate the attributes and their types in SQL

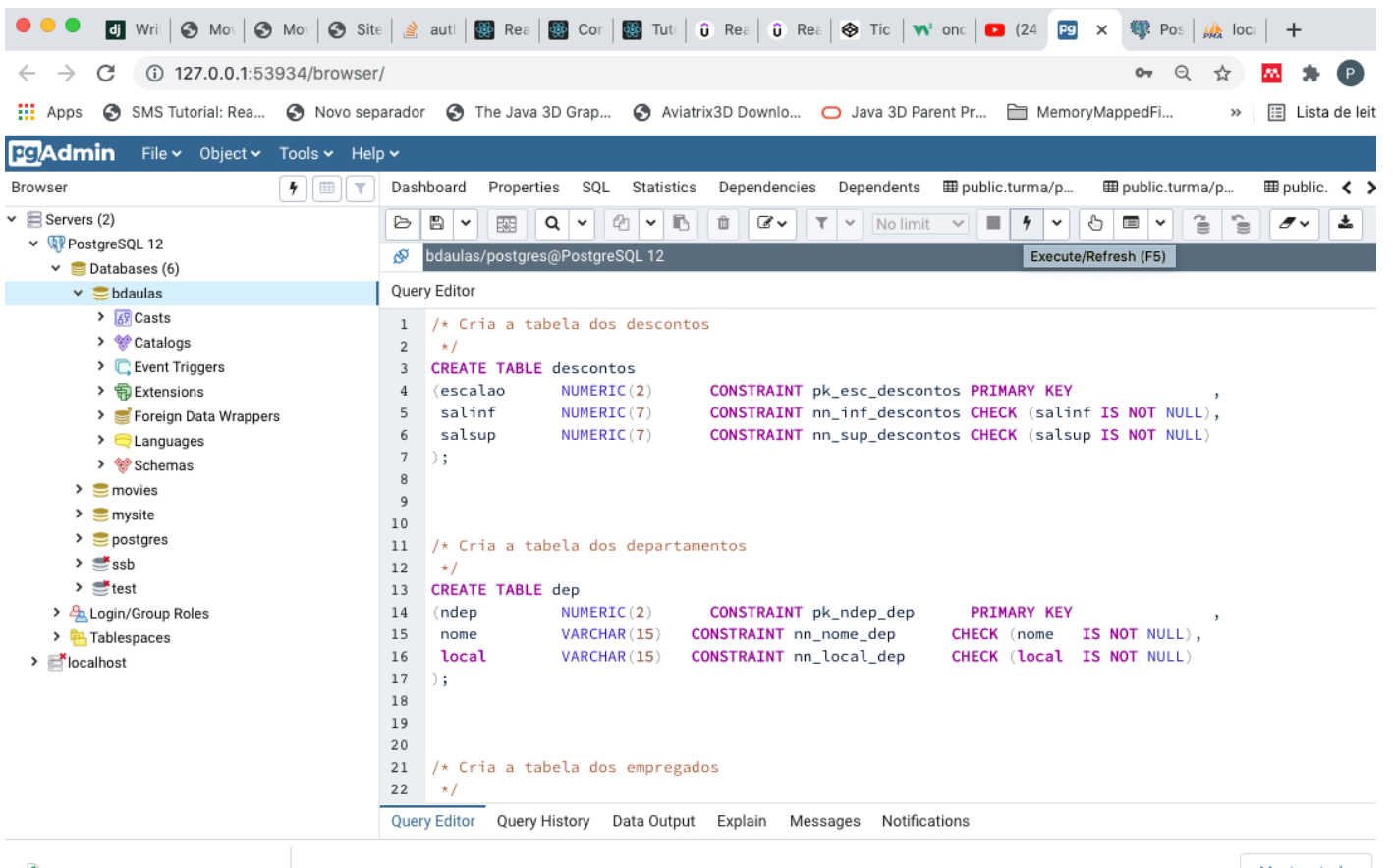
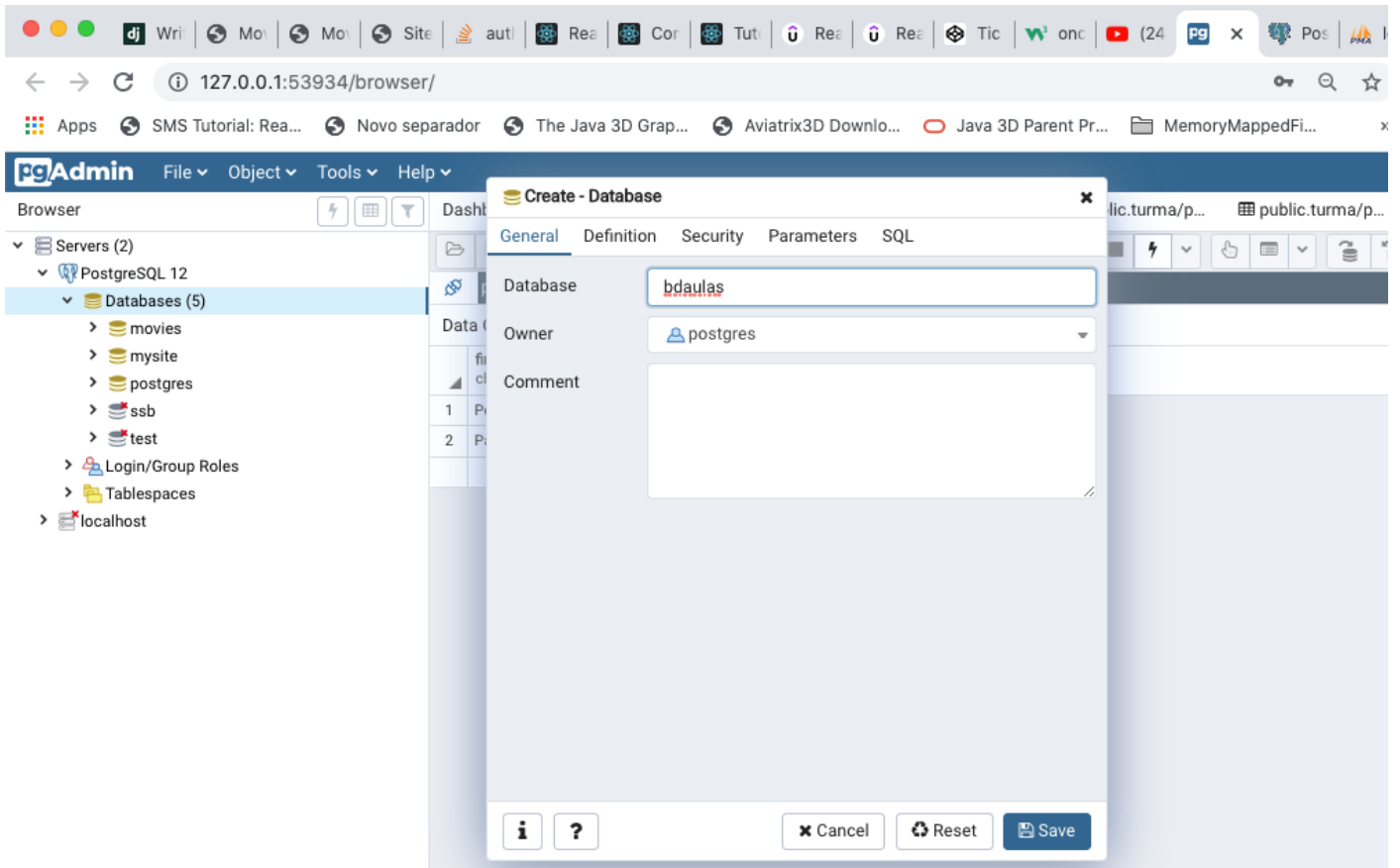
11. Create the tables in postgresSQL using the script.

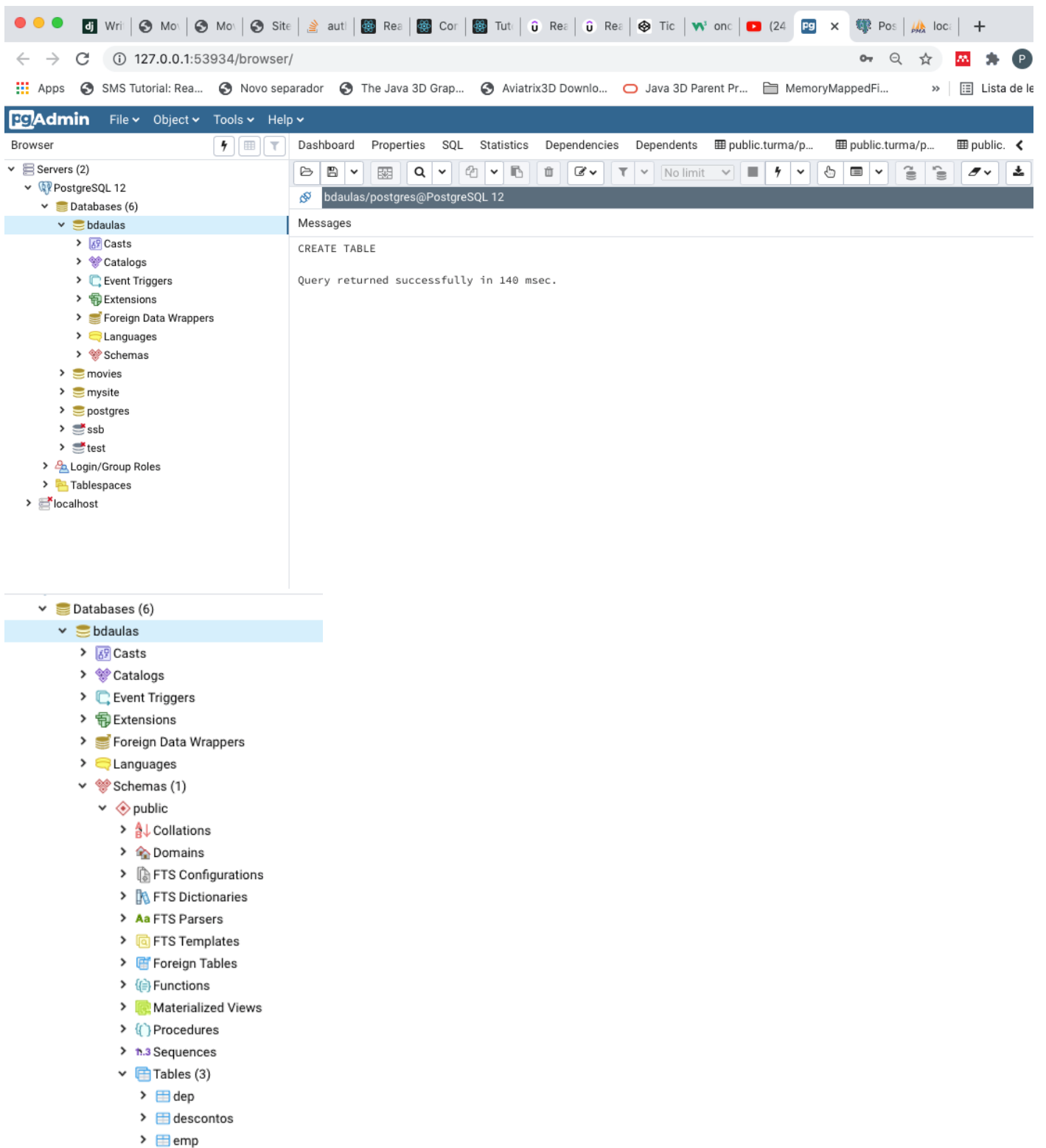
Copy-paste the commands in the script to the postgresSQL query tool – query editor.

Remove the drop table statements at the beginning of the script... they are there to remove the tables when you wish to rebuild them, but the drops without tables return an error and the script exits.

Run the commands.

Check that the tables were created.





12. Open the 2- insereDados.sql script and explain how you write an SQL statement to add a row into a table. Also explain how you do to deal with dates.

13. Run the 2- insereDados.sql script the same way you did with the other script. Verify that you were able to insert all rows into the table

127.0.0.1:53934/browser/

Apps SMS Tutorial: Rea... Novo separador The Java 3D Grap... Aviatrix3D Downlo... Java 3D Parent Pr... MemoryMappedFi...

pgAdmin File Object Tools Help

Browser Servers (2) PostgreSQL 12 Databases (6) bdaulas

- Cas Create
- Cat Refresh...
- Eve Delete/Drop
- Ext CREATE Script
- For Disconnect Database...
- Lan Maintenance...
- Sch Backup...
- Restore...
- Grant Wizard...
- Query Tool...
- Properties...
- FTS Templates
- Foreign Tables
- Functions
- Materialized Views
- Procedures
- Sequences
- Tables (3)
 - dep
 - descontos

Dashboard Properties SQL Statistics Dependencies Dependents public.turma/p... public.turma/p...

bdaulas/postgres@PostgreSQL 12

Messages

CREATE TABLE

Query returned successfully in 140 msec.

Query Editor Query History Data Output Explain Messages Notifications

127.0.0.1:53934/browser/

Apps SMS Tutorial: Rea... Novo separador The Java 3D Grap... Aviatrix3D Downlo... Java 3D Parent Pr... MemoryMappedFi...

pgAdmin File Object Tools Help

Browser Servers (2) PostgreSQL 12 Databases (6) bdaulas

- Cast
- Catalogs
- Event Triggers
- Extensions
- Foreign Data Wrappers
- Languages
- Schemas (1)
 - public
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Procedures
 - Sequences
 - Tables (3)
 - dep
 - descontos

Dashboard Properties SQL Statistics Dependencies Dependents public.turma/p... public.turma/p... pu

bdaulas/postgres@PostgreSQL 12

Query Editor

```
1 /*
2  Fazer copy-paste deste ficheiro
3  para um terminal de SQL e executar.
4  */
5
6  /* Insere os departamentos
7  */
8  INSERT INTO dep VALUES (10, 'Contabilidade', 'Condeixa');
9  INSERT INTO dep VALUES (20, 'Investigação', 'Mealhada');
10 INSERT INTO dep VALUES (30, 'Vendas', 'Coimbra');
11 INSERT INTO dep VALUES (40, 'Planeamento', 'Montemor');
12
13
14
15 /* Insere os descontos
16 */
17 INSERT INTO descontos VALUES (1, 55000, 99999);
18 INSERT INTO descontos VALUES (2, 100000, 210000);
19 INSERT INTO descontos VALUES (3, 210001, 350000);
20 INSERT INTO descontos VALUES (4, 350001, 550000);
21 INSERT INTO descontos VALUES (5, 550001, 999999);
22
```

Query Editor Query History Data Output Explain Messages Notifications

127.0.0.1:53934/browser/

pgAdmin File Object Tools Help

Browser

- Collations
- Domains
- FTS Configurations
- FTS Dictionaries
- FTS Parsers
- FTS Templates
- Foreign Tables
- Functions
- Materialized Views
- Procedures
- Sequences
- Tables (3)
 - dep
 - descontos
 - emp
 - Trigger Functions
 - Types
 - Views
- movies
- mysite
- postgres

Dashboard Properties SQL Statistics Dependencies Dependents public.turma/p... public.tur...

public.dep/bdaulas/postgres@PostgreSQL 12

Data Output

	ndep [PK] numeric (2)	nome character varying (15)	local character varying (15)
1		10 Contabilidade	Condeixa
2		20 Investigação	Mealhada
3		30 Vendas	Coimbra
4		40 Planeamento	Montemor

127.0.0.1:53934/browser/

pgAdmin File Object Tools Help

Browser

- Collations
- Domains
- FTS Configurations
- FTS Dictionaries
- FTS Parsers
- FTS Templates
- Foreign Tables
- Functions
- Materialized Views
- Procedures
- Sequences
- Tables (3)
 - dep
 - descontos
 - emp
 - Trigger Functions
 - Types
 - Views
- movies
- mysite
- postgres
- ssb
- test
- Login/Group Roles
- Tablespaces

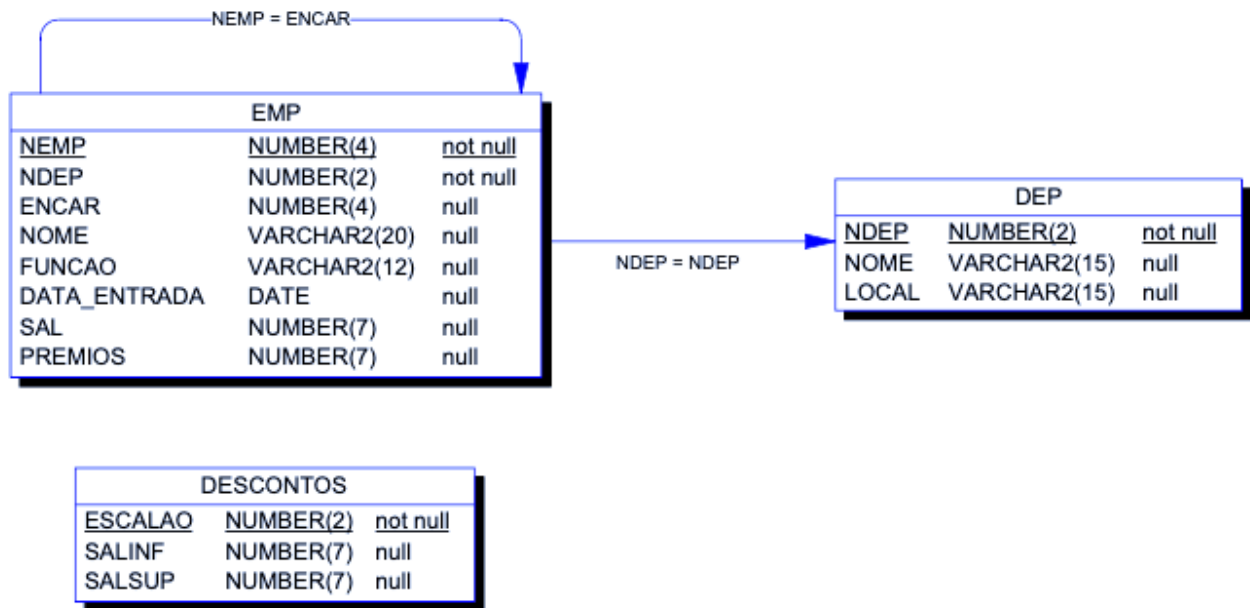
Dashboard Properties SQL Statistics Dependencies Dependents public.turma/p... public.turma/p... public. < > x

public.emp/bdaulas/postgres@PostgreSQL 12

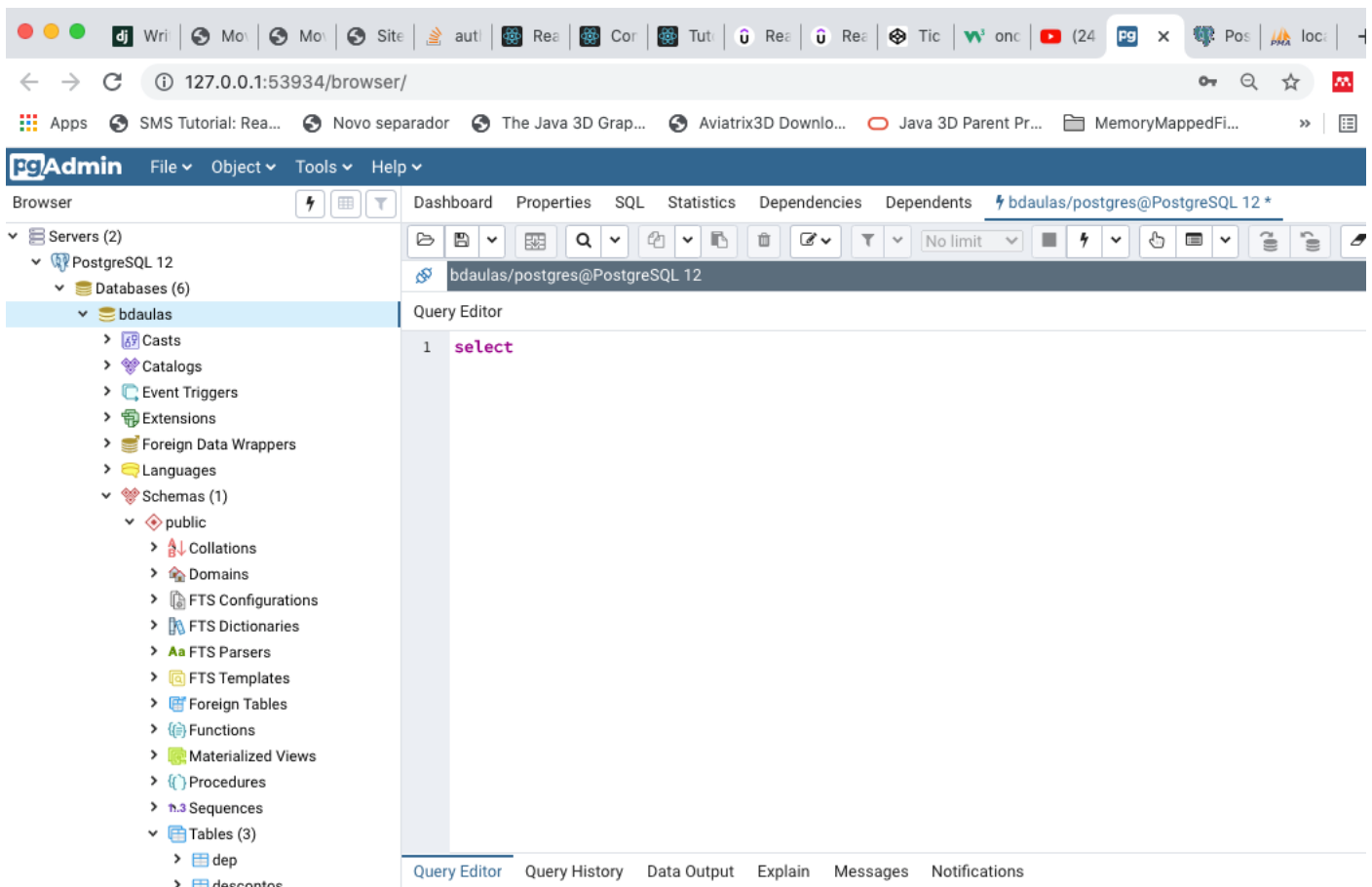
Data Output

	nemp [PK] numeric (4)	nome character varying (20)	funcao character varying (12)	encar numeric	data_entrada date	sal numeric (7)	premios numeric (7)
1	1839	Jorge Sampaio	Presidente	[null]	1984-02-11	890000	[null]
2	1566	Augusto Reis	Encarregado	1839	1985-02-13	450975	[null]
3	1698	Duarte Guedes	Encarregado	1839	1991-11-25	380850	[null]
4	1782	Silvia Teles	Encarregado	1839	1986-11-03	279450	[null]
5	1788	Maria Dias	Analista	1566	1982-11-07	565000	[null]
6	1902	Catarina Silva	Analista	1566	1993-04-13	435000	[null]
7	1499	Joana Mendes	Vendedor	1698	1984-10-04	145600	56300
8	1521	Nelson Neves	Vendedor	1698	1983-02-27	212250	98500
9	1654	Ana Rodrigues	Vendedor	1698	1990-12-17	221250	81400
10	1844	Manuel Madeira	Vendedor	1698	1985-04-21	157800	0
11	1900	Tome Ribeiro	Continuo	1698	1994-03-05	56950	[null]
12	1876	Rita Pereira	Continuo	1788	1996-02-07	65100	[null]
13	1934	Olga Costa	Continuo	1782	1986-06-22	68300	[null]
14	1369	Antonio Silva	Continuo	1902	1996-12-22	70800	[null]

14. You have just created the schema shown below. Now, looking at the schema shown, what does EMP stand for, what does DEP stand for and what does DESCONTOS stand for? What data do you have in each table, what does it mean and how are each pair of tables related among them?



15. Now you want to see all employees and you want to see all departments. Try to do that in SQL. What is the command, and how do you submit it?



Data Output

	nemp [PK] numeric (4)	nome character varying (20)	funcao character varying (12)	encar numeric	data_entrada date	sal numeric (7)	premios numeric (7)
1	1839	Jorge Sampaio	Presidente	[null]	1984-02-11	890000	[null]
2	1566	Augusto Reis	Encarregado	1839	1985-02-13	450975	[null]
3	1698	Duarte Guedes	Encarregado	1839	1991-11-25	380850	[null]
4	1782	Silvia Teles	Encarregado	1839	1986-11-03	279450	[null]
5	1788	Maria Dias	Analista	1566	1982-11-07	565000	[null]
6	1902	Catarina Silva	Analista	1566	1993-04-13	435000	[null]
7	1499	Joana Mendes	Vendedor	1698	1984-10-04	145600	56300
8	1521	Nelson Neves	Vendedor	1698	1983-02-27	212250	98500
9	1654	Ana Rodrigues	Vendedor	1698	1990-12-17	221250	81400
10	1844	Manuel Madeira	Vendedor	1698	1985-04-21	157800	0
11	1900	Tome Ribeiro	Continuo	1698	1994-03-05	56950	[null]
12	1876	Rita Pereira	Continuo	1788	1996-02-07	65100	[null]
13	1934	Olga Costa	Continuo	1782	1986-06-22	68300	[null]
14	1369	Antonio Silva	Continuo	1902	1996-12-22	70800	[null]

16. How can you discover the department of employee ‘Jorge Sampaio’ by looking at the tables data directly?

17. One crucial aspect of relational databases is that they enforce completely avoiding redundant (repeated) information. Take tables EMP and DEP, where do you see that avoidance of repetition in these two tables, how is it achieved?

18. Now repeat the steps for the MySQL server that we installed in the previous lab class.

THE END