Tryton By Example

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Tryton installation & usage
for first time administrators & users

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Installation & Administration

Github - https://github.com/clixwise/tryton-by-example
Version of presentation : 01.02 Dated 5-May-21
Version of Tryton : 5.8
Verified for execution on : Windows 10 & Powershell 7

Author : Marc Rottiers

Foreword

This presentation aims to expedite the process of learning the basics of the TRYTON ERP. It rests on a personal initiative. The content does not replace official TRYTON documentation in any manner.

System administrators and end-users who want to explore this package should benefit. On the other hand, if you practise the system already, the present material will be of little added value. Are described an *installation procedure* as well as some *use cases* by example. There are explicative documents as well as accompanying database samples and execution scripts.

The material relates to TRYTON 5.8 on Windows 10 Home. There is no warranty that the same results will or can be achieved using a different setup. In particular, the author cannot take responsibility for loss or corruption of data that would result from handling processes based on given information. Production-grade system usage will differ from exposed techniques that are meant to keep the explanations as concise as possible.

The author acknowledges documentation that he had the opportunity to analyse for the purpose of creating the present material.

Feedback is appreciated. Please post on https://github.com/clixwise/tryton-by-example

Known Issues

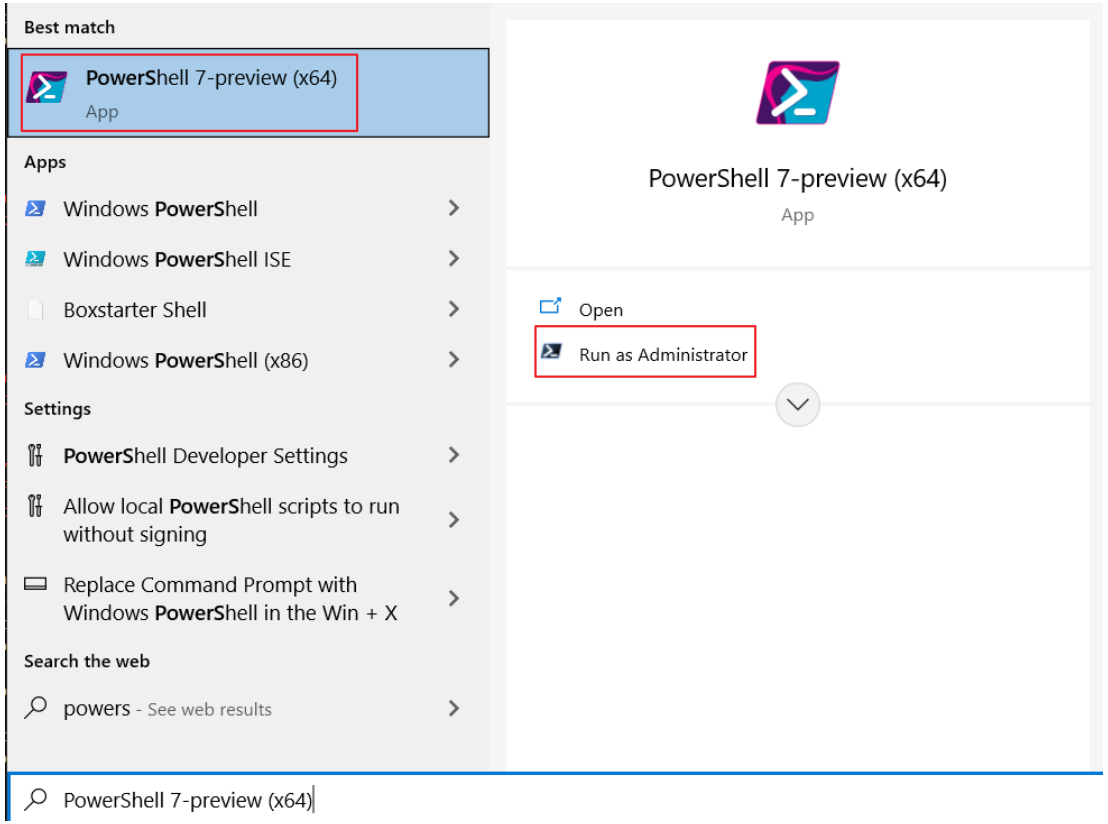
These are unresolved topics that relate to the present documentation, not to the system functioning.

Document	Subject
Tryton 5.8 - Doc 80.01 - Ancillaries	Attaching a document to an item causes an exception
Tryton 5.8 - Doc 15.05 - Sales	When a « Sale » evolves into « Processing », a « Customer Shipment » is produced. Contrarily to a « Customer Invoice », the property « Reference » is not editable. Incidentally, « Reference » in « Customer Invoice » and « Customer Shipment » is not set from « Customer Sale »
Tryton 5.8 - Doc 10.05 - Purchases Tryton 5.8 - Doc 15.05 - Sales	Account Move Lines are generated when « Invoice » into « Validated » state Account Move Lines are not generated when « Invoice » into « Validated » state Examine why
Tryton 5.8 - Doc 10.05 - Purchases	State transition to « Posted » possibly contains erroneous state information
-	Financials>Configuration>Payments>Payment Journals Describe difference with respect to standard journal usage + payment method Clearing account vs Suspense account

Related files & documents

List of scripts related to some of the topics covered in this document

- The « *.ps1 » files are Powershell scripts
- Powershell can be accessed as indicated
- The above scripts need some tuning with respect to the exact operation to be performed
- The scripts are executed as e.g. :
  ./"Tryton 5.8 - Doc 01.01 - Installation & administration.docker.status"



List of scripts related to some of the topics covered in this document

Docker Powershell Commands - Run as ./"..."	
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.status	Query status
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.tryt01.create.permanent	Create « tryt01 » containers Permanent data when containers removed
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.tryt01.create.volatile	Create « tryt01 » containers Volatile data when containers removed
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.tryt01.start	Start « tryt01 » containers
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.tryt01.stop	Stop « tryt01 » containers
Tryton 5.8 - Doc 01.01 - Installation & administration.docker.tryt01.delete	Delete « tryt01 » containers

Database Powershell Commands - Run as ./"..."	
Tryton 5.8 - Doc 01.01 - Installation & administration.database.tryt01.status	Query status
Tryton 5.8 - Doc 01.01 - Installation & administration.database.tryt01.backup	Backup
Tryton 5.8 - Doc 01.01 - Installation & administration.database.tryt01.restore	Restore

Table of Contents

TOC

- In blue essential information relative to TRYTON
- Consider other sections if unfamiliar with Docker or Postgres

Docker Installation

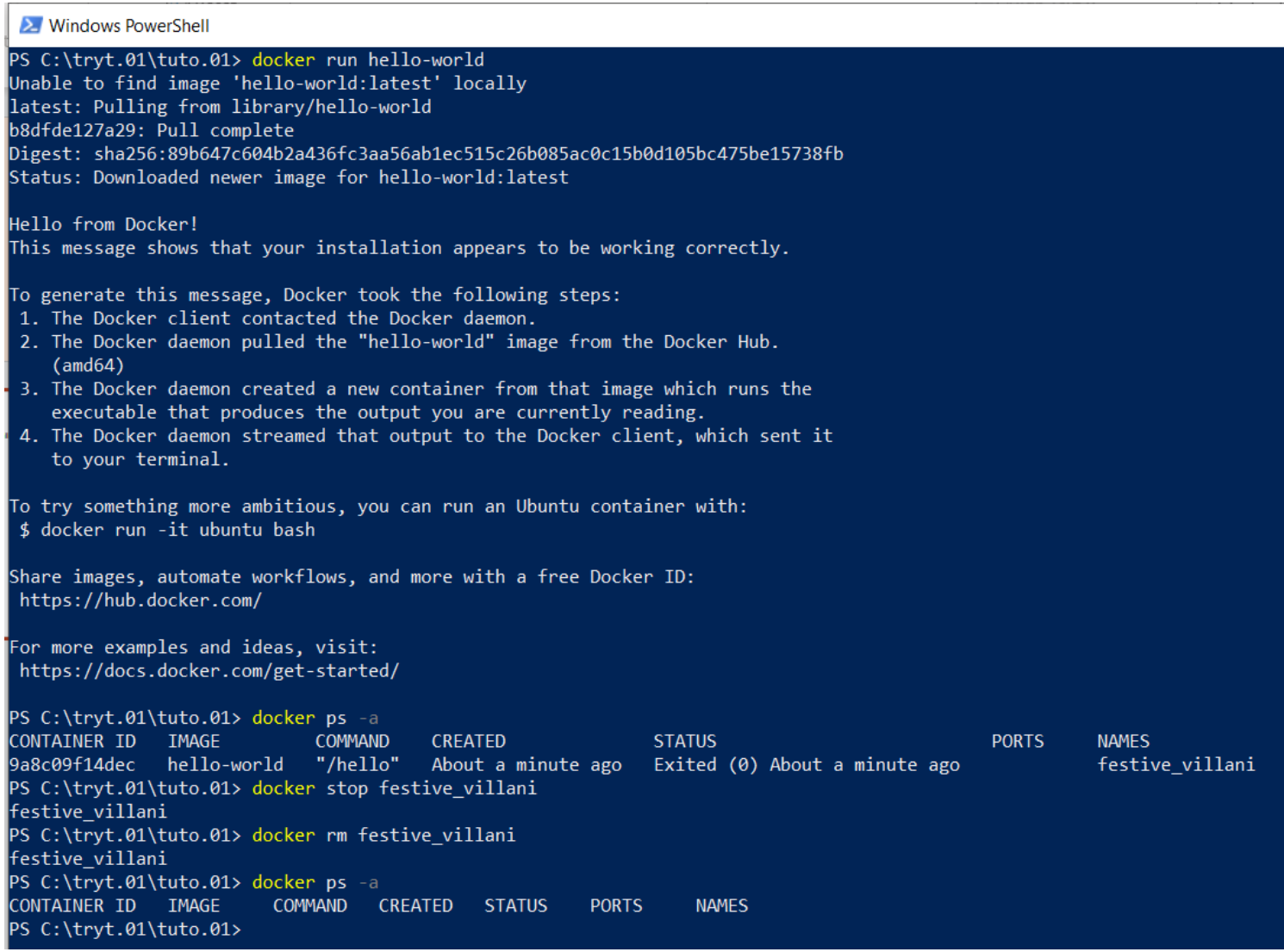
Installation

Context
Windows 10 & Powershell 7

Remark
We do not use WSL2

Download
See https://docs.docker.com/get-docker/

Control
Run « docker run hello-world »



Container Installation

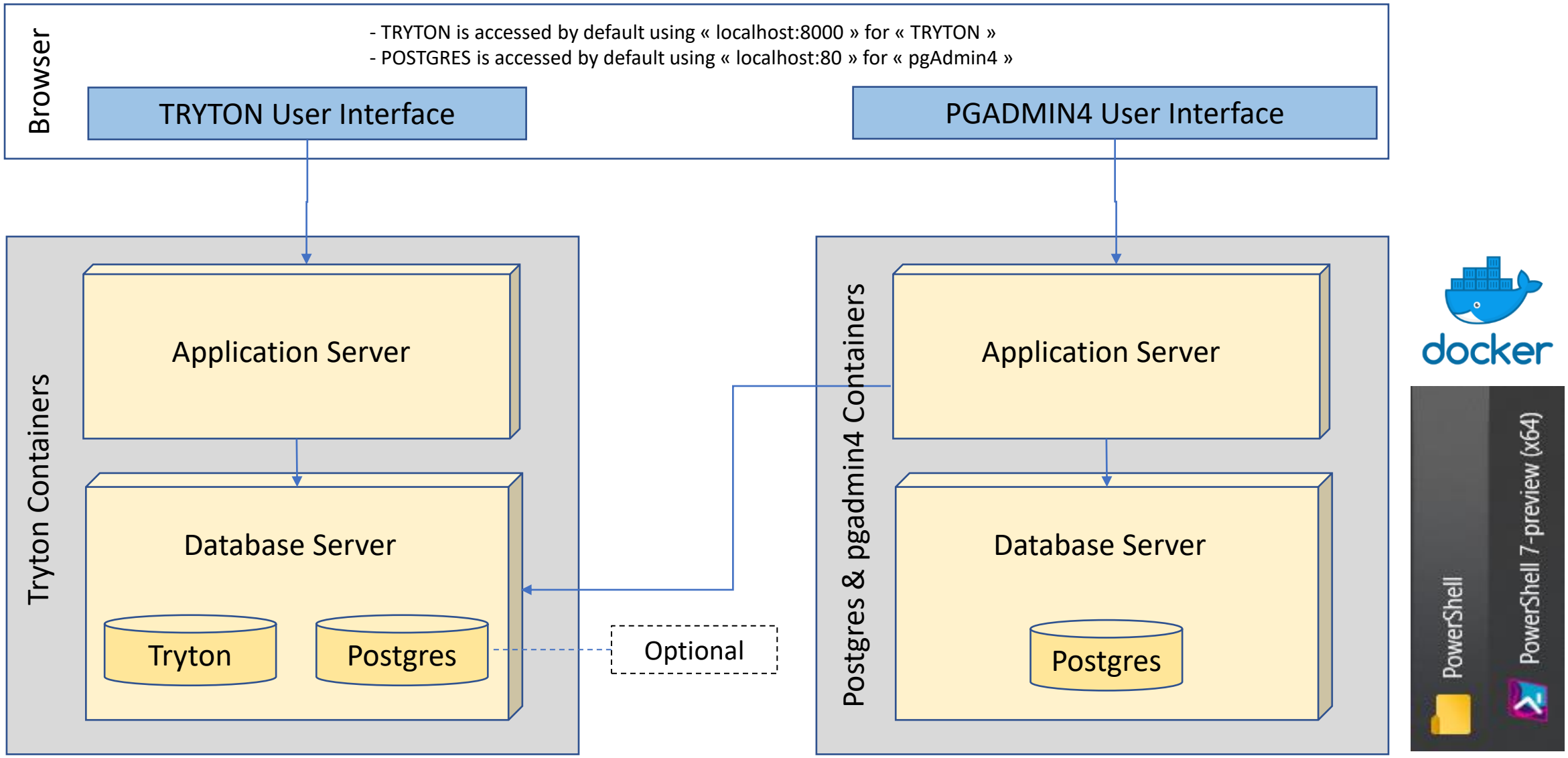
Motivation

We install two series of Docker containers :

- Series 1 is about the TRYTON ERP system : its server application, its database and file systems
- Series 2 is about managing POSTGRES databases and interfacing them using « pgAdmin4 »

- Series 1 is compulsory since it is about the TYTON ERP system : server & database
- Series 2 is optional as its purpose is to use « pgAdmin4 » for direct access to Postgres databases

Motivation



TRYTON Docker Structure

POSTGRES Docker Structure (optional)

Docker and Databases

Installing TRYTON ERP Containers

TRYTON Docker can be installed in one of two ways with respect to its database and files container :

- In a permanent fashion. It means that the database and any « attachment » files will remain available when a Docker container is removed, accidentally or not.
- In a semi-permanent fashion. It means that if we delete the Docker container the TRYTON database will disappear together witn any « attachment » files storing information alongside the database.

Installing POSTGRES Containers (Optional)

The same remark applies.

Convention about password names

Everywhere a password is needed we give it the value « Password »

Commands

Most commands have been explored during the installation process.
We repeat them here for convenience

Container commands	
docker run hello-world	Check installation still operational
docker ps -a	List containers
docker stop a_container_name	Stop a container
docker start a_container_name	Start a container
docker rm a_container_name	Remove a stopped container
docker logs a_container_name	Logs
docker system prune	Remove stopped containers, unused networks and volumes

```
PS C:\Users\mrmar> docker ps -a
CONTAINER ID   IMAGE            COMMAND                  CREATED       STATUS          PORTS                              NAMES
8fa35e9a01ee   dpage/pgadmin4   "/entrypoint.sh"         9 days ago    Up 3 days       0.0.0.0:80->80/tcp, 443/tcp        dev-pgadmin
802400de87ff   postgres         "docker-entrypoint.s…"   9 days ago    Up 3 days       0.0.0.0:5432->5432/tcp             dev-postgres
09de820c6944   tryton/tryton    "/entrypoint.sh uwsg…"   12 days ago   Up 3 days       127.0.0.1:8000->8000/tcp           tryton
d0b1b1578223   postgres         "docker-entrypoint.s…"   12 days ago   Up 3 days       0.0.0.0:5433->5432/tcp             tryton-postgres
```

Commands

Volume commands	
docker volume create a_volume_name	Create a volume
docker volume ls	List the volumes
docker volume rm a_volume_name	Remove a volume
docker volume prune	Remove all unused volumes. « Unused » = not container referenced
docker volume inspect a_volume_name	Inspect a volume

Volume commands	
docker network create a_network_name	Create a network
docker network ls	List the networks
docker network rm a_network_name	Remove a network
docker network prune	Remove all unused networks. « Unused » = not container referenced
docker network inspect a_network_name	Inspect a network

```
PS C:\Users\mrmar> docker volume ls
DRIVER    VOLUME NAME
local     9d31bdf883f8072214686e8fdb261a
local     893c5a68307141a60653bbacf5ede7
local     9518b6e333b5dbbbb4321327b70047
local     tryton-data
local     tryton-database
```

```
PS C:\Users\mrmar> docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
33778f0cf5fa   bridge    bridge    local
ceeb96fab0b4   host      host      local
b52953b3bf65   none      null      local
af20b36cba67   tryton    bridge    local
```

Tryton - « Permanent » Data

Motivation

The next slides demonstrate a way of setting up the Tryton environment whereby the database and the files are preserved when the corresponding TRYTON container is « removed ».

Refer to :
[https://discuss.tryton.org/t/how-to-run-tryton-using-docker/3200] with special credits to David Harper
https://stackoverflow.com/questions/18496940/how-to-deal-with-persistent-storage-e-g-databases-in-docker
https://docs.docker.com/storage/volumes/

Execute

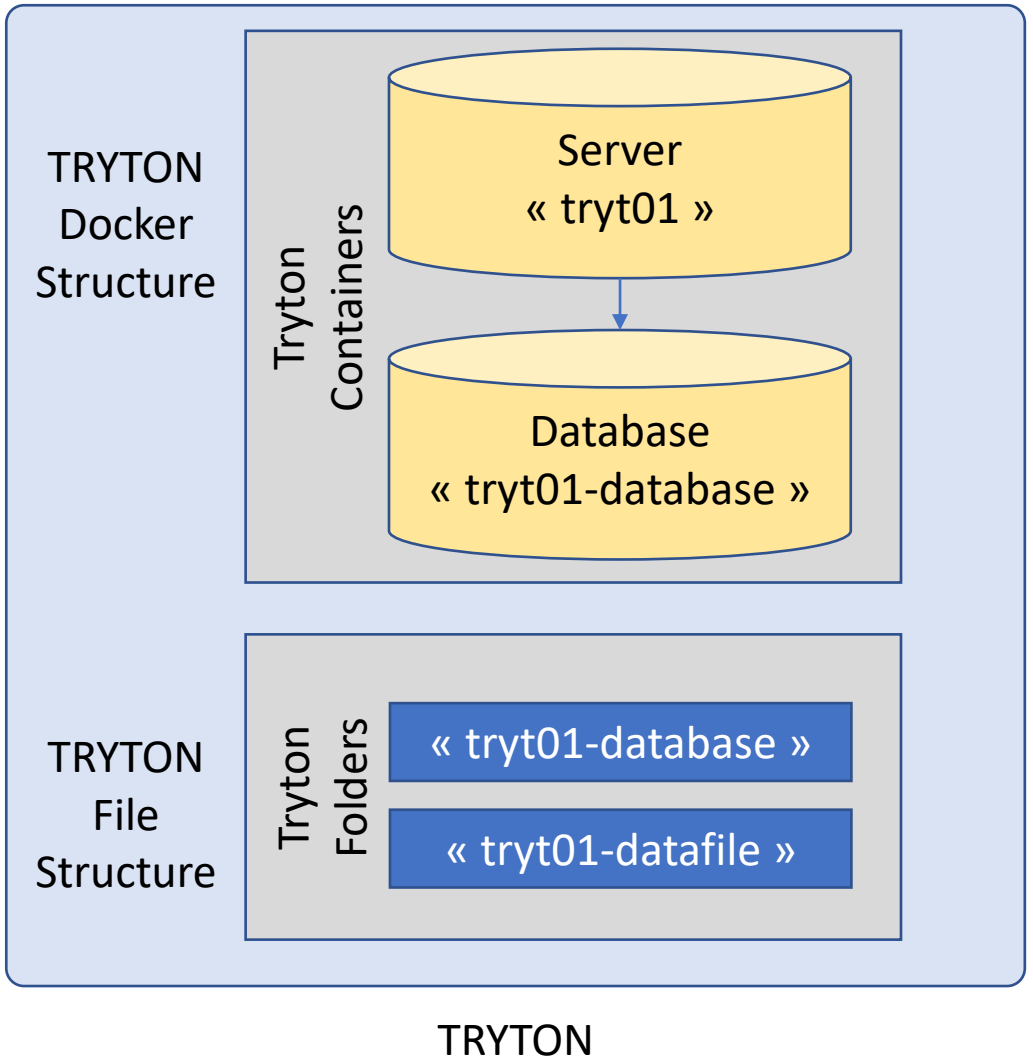
Install :

1. A container « **tryt01-postgres** » from docker image « postgres » ;
   « **-p 5434:** » can be changed (default : 5432)
2. A container « **tryt01** » from docker image « tryton/tryton » ;
   « **-p 8001:** » can be changed (default : 8000)
3. Two volumes : « **tryt01-database** » & « **tryt01-datafile** »
4. One network : « **tryt01-network** »

A nameless container is used to initialize the TRYTON database.

The location where the volumes for the TRYTON database and the TRYTON files (binary attachments) are stored :

- Subfolder « **tryt01-database** » with respect to the directory (Get-Location) where the Powershell script executes
- Subfolder « **tryt01-datafile** » with respect to the directory (Get-Location) where the Powershell script executes



TRYTON

Some useful commands in case of retry
docker stop a_container_name
docker rm a_container_name
docker volume prune
docker network prune
dir env:

Execute - « tryton »

In this script, we use « tryton », the standard name.

```
docker pull tryton/tryton
docker network create tryton-network
$POSTGRES_PASSWORD ="Password"
# Tryton database container – Create
$TRYTON_VOL_DB = (Get-Location).tostring().replace("\","/").replace("C:/","c//") + "/"+"tryton-database"
docker volume create tryton-database
docker run --name tryton-postgres --env PGDATA=/var/lib/postgresql/data/pgdata --env POSTGRES_DB=tryton --env
POSTGRES_PASSWORD=${POSTGRES_PASSWORD} --volume ${TRYTON_VOL_DB}:/var/lib/postgresql/data --network tryton-network -p
5432:5432 --detach postgres
Start-Sleep -Seconds 20 # required to wait for postgres to properly connect
docker exec -tiu postgres tryton-postgres psql -c '\l+'
dir
# Tryton transient container to initialize the tryton database in its container
docker run --env DB_HOSTNAME=tryton-postgres --env DB_PASSWORD=${POSTGRES_PASSWORD} --network tryton-network --interactive --
tty --rm tryton/tryton trytond-admin -d tryton --all
docker exec -tiu postgres tryton-postgres psql -c '\l+'
# Tryton server container
$TRYTON_VOL_FI = (Get-Location).tostring().replace("\","/").replace("C:/","c//") + "/"+"tryton-datafile"
docker volume create tryton-datafile
docker run --name tryton --env DB_HOSTNAME=tryton-postgres --env DB_PASSWORD=${POSTGRES_PASSWORD} --volume
${TRYTON_VOL_FI}:/var/lib/trytond/db --network tryton-network --publish 127.0.0.1:8000:8000 --detach tryton/tryton
dir
# Obtain Gateway address for usage in pgadmin4 - creating server
docker inspect tryton-postgres -f "{{json .NetworkSettings.Networks }}" # "Gateway":"172.18.0.1","IPAddress":"172.18.0.2"
```

Execute - « tryt01 »

In this script, we use « tryt01 » so that it is easy to create a separate « tryt02 » ensemble.

```
docker pull tryton/tryton
docker network create tryt01-network
$POSTGRES_PASSWORD ="Password"
# Tryton database container – Create
$TRYTON_VOL_DB = (Get-Location).tostring().replace("\","/").replace("C:/","c//") + "/"+"tryt01-database"
docker volume create tryt01-database
docker run --name tryt01-postgres --env PGDATA=/var/lib/postgresql/data/pgdata --env POSTGRES_DB=tryt01 --env
POSTGRES_PASSWORD=${POSTGRES_PASSWORD} --volume ${TRYTON_VOL_DB}:/var/lib/postgresql/data --network tryt01-network -p
5433:5432 --detach postgres
Start-Sleep -Seconds 20 # required to wait for postgres to properly connect
docker exec -tiu postgres tryt01-postgres psql -c '\l+'
dir
# Tryton transient container to initialize the tryton database in its container
docker run --env DB_HOSTNAME=tryt01-postgres --env DB_PASSWORD=${POSTGRES_PASSWORD} --network tryt01-network --interactive --
tty --rm tryton/tryton trytond-admin -d tryt01 --all
docker exec -tiu postgres tryt01-postgres psql -c '\l+'
# Tryton server container
$TRYTON_VOL_FI = (Get-Location).tostring().replace("\","/").replace("C:/","c//") + "/"+"tryt01-datafile"
docker volume create tryt01-datafile
docker run --name tryt01 --env DB_HOSTNAME=tryt01-postgres --env DB_PASSWORD=${POSTGRES_PASSWORD} --volume
${TRYTON_VOL_FI}:/var/lib/trytond/db --network tryt01-network --publish 127.0.0.1:8001:8000 --detach tryton/tryton
dir
# Obtain Gateway address for usage in pgadmin4 - creating server
docker inspect tryt01-postgres -f "{{json .NetworkSettings.Networks }}" # "Gateway":"172.18.0.1","IPAddress":"172.18.0.2"
```

Tryton - « Volatile » Data

Motivation

The next slides demonstrate a way of setting up the Tryton environment whereby the database and the files are not preserved when the corresponding TRYTON container is « removed ».

An alternative is documented later. It performs an additional « volume creation » to alleviate the problem.

Execute (1/2)

Pull latest Tryton Docker image (note : occurs automatically when not available locally) :

docker pull tryton/tryton

```
PS C:\tryt.01\tuto.01> docker pull tryton/tryton
Using default tag: latest
latest: Pulling from tryton/tryton
45b42c59be33: Already exists
25e1e74e2827: Pull complete
ecd401ec74b3: Pull complete
7df2dc86d106: Pull complete
ed33375f55fe: Pull complete
73cb71ba644d: Pull complete
7933c55f7184: Pull complete
e3649bc3d410: Pull complete
Digest: sha256:e66cc2434ceff72b857923d81b366527e87430a3bd9a3869a33012d4c22a5eb6
Status: Downloaded newer image for tryton/tryton:latest
docker.io/tryton/tryton:latest
PS C:\tryt.01\tuto.01>
```

Execute (2/2)

```
# Obtain latest version of Tryton
docker pull tryton/tryton

# Tryton database container + database initialization volatile container
docker run --name tryton-postgres -e POSTGRES_PASSWORD=Password -e POSTGRES_DB=tryton -d postgres # Start a PostgreSQL instance
docker run --link tryton-postgres:postgres -e DB_PASSWORD=Password -it tryton/tryton trytond-admin -d tryton --all # Define database tables
# Tryton server containers : tryton & optionally tryton-cron for scheduled actions
docker run --name tryton -p 8000:8000 --link tryton-postgres:postgres -e DB_PASSWORD=Password -d tryton/tryton # Start a Tryton instance
docker run --name tryton-cron --link tryton-postgres:postgres -e DB_PASSWORD=Password -d tryton/tryton trytond-cron -d tryton # Start a cron instance

# Obtain Gateway address for usage in pgadmin4 - creating server
docker inspect tryton-postgres -f "{{json .NetworkSettings.Networks }}" # "Gateway":"172.18.0.1","IPAddress":"172.18.0.2"
```

In blue, container and database variable names that can be choosen
In red, connection points whose external « p:xyz » can be adapted

Execute (3/3)

```
PS C:\tryt.01\tuto.01> docker run --name tryton-postgres -e POSTGRES_PASSWORD=Password -e POSTGRES_DB=tryton -d postgres
29eca77e8ac93d129146a1be0c32ee5c83e6e5ff74c34cfe6aabd21e82bc43cd
PS C:\tryt.01\tuto.01> docker run --link tryton-postgres:postgres -e DB_PASSWORD=Password -it tryton/tryton trytond-admin -d tryton --all
"admin" email for "tryton":                @gmail.com
"admin" password for "tryton":
"admin" password confirmation:
PS C:\tryt.01\tuto.01> docker run --name tryton -p 8000:8000 --link tryton-postgres:postgres -e DB_PASSWORD=Password -d tryton/tryton
5661a59a43f04f8d208949c41ea5314e48c5c69a93d8f905b8b948bb4c71b868
PS C:\tryt.01\tuto.01> docker run --name tryton-cron --link tryton-postgres:postgres -e DB_PASSWORD=Password -d tryton/tryton trytond-cron -d tryton
5a143ce0ee8fdc98254c7ac4f14b77ddaec0eaffee3695186ff8f0e21f8f65ac
PS C:\tryt.01\tuto.01> docker inspect tryton-postgres -f "{{json .NetworkSettings.Networks }}"
{"bridge":{"IPAMConfig":null,"Links":null,"Aliases":null,"NetworkID":"42fdbac4cc4198619ba42832b808f76c68790d1d293913f683607a7951a01d89","EndpointID":"95fddfbb2a1387d1b8c416f9831
312ef3637c4acabb3587970912baac86d74e9","Gateway":"172.17.0.1","IPAddress":"172.17.0.2","IPPrefixLen":16,"IPv6Gateway":"","GlobalIPv6Address":"","GlobalIPv6PrefixLen":0,"MacAddre
ss":"02:42:ac:11:00:02","DriverOpts":null}}
PS C:\tryt.01\tuto.01> docker ps -a
CONTAINER ID   IMAGE           COMMAND                  CREATED          STATUS                          PORTS                    NAMES
5a143ce0ee8f   tryton/tryton   "/entrypoint.sh tryt…"   37 seconds ago   Up 36 seconds                   8000/tcp                 tryton-cron
5661a59a43f0   tryton/tryton   "/entrypoint.sh uwsg…"   54 seconds ago   Up 52 seconds                   0.0.0.0:8000->8000/tcp   tryton
235b0c7a014f   tryton/tryton   "/entrypoint.sh tryt…"   2 minutes ago    Exited (0) About a minute ago                            zealous_noether
29eca77e8ac9   postgres        "docker-entrypoint.s…"   2 minutes ago    Up 2 minutes                    5432/tcp                 tryton-postgres
PS C:\tryt.01\tuto.01> docker rm zealous_noether
zealous_noether
PS C:\tryt.01\tuto.01> docker ps -a
CONTAINER ID   IMAGE           COMMAND                  CREATED              STATUS              PORTS                    NAMES
5a143ce0ee8f   tryton/tryton   "/entrypoint.sh tryt…"   About a minute ago   Up About a minute   8000/tcp                 tryton-cron
5661a59a43f0   tryton/tryton   "/entrypoint.sh uwsg…"   About a minute ago   Up About a minute   0.0.0.0:8000->8000/tcp   tryton
29eca77e8ac9   postgres        "docker-entrypoint.s…"   3 minutes ago        Up 3 minutes        5432/tcp                 tryton-postgres
PS C:\tryt.01\tuto.01>
```

Outcome : the « Gateway":"172.17.0.1" or the "IPAddress":"172.17.0.2" will be used later

Postgres - « Permanent » Data

Motivation

The next slides demonstrate how to set up an empty Postgres database. This allows to experiment with using PSQL commands upon a database inside a Docker container.

The script creates a POSTGRES database whose data rests « outside » the container. Even when the container is (accidentally) removed using « docker rm my_postgres_container_name », the database will persist.

See : [https://dev.to/shree_j/how-to-install-and-run-psql-using-docker-41j2]

It might also be helpful to show folks how to save their data even after running `docker rm <container_id>`. This is how I normally accomplish this:

First, create a local directory to hold the data:

```
mkdir -p /home/<your_user_id_here>/pgdata
```

Then start PostgreSQL using a volume mount so the container will store the data in this newly created local directory:

```
docker run \
  -d \
  --name postgresql-container \
  -p 5432:5432 \
  -e POSTGRES_PASSWORD=somePassword \
  -v /home/<your_user_id_here>/pgdata:/var/lib/postgresql/data \
  postgres
```

Using this method, you can be safe in knowing that even if you accidentally run `docker rm <container_id>` that you can restart PostgreSQL again and have all of you data just as you left it previously

Execute (1/2)

Install :

- A container « **dev-postgres** » from image « postgres » ; « **-p 5432:** » can be changed
- A container « **dev-pgadmin** » from image « dpage/pgadmin4 » ; « **-p 80:** » can be changed

```
# postgres
docker pull postgres
docker run -d --name dev-postgres -e POSTGRES_PASSWORD=Password -v ${HOME}/postgres-data/:/var/lib/postgresql/data -p 5432:5432 postgres
# pgdamin4
docker pull dpage/pgadmin4
docker run -p 80:80 -e 'PGADMIN_DEFAULT_EMAIL=x@gmail.com' -e 'PGADMIN_DEFAULT_PASSWORD=Password' --name dev-pgadmin -d dpage/pgadmin4
# inspection
docker exec dev-postgres ls /var/lib/postgresql/data
docker exec -tiu postgres dev-postgres psql -c '\l+'
docker inspect dev-postgres -f "{{json .NetworkSettings.Networks }}"
docker inspect -f "{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}" dev-postgres
docker inspect -f '{{.Name}} - {{.NetworkSettings.IPAddress }}' $(docker ps -aq)
```

```
PS C:\tryt.01\tuto.01> docker run -d --name dev-postgres -e POSTGRES_PASSWORD=Password -v ${HOME}/postgres-data/:/var/lib/postgresql/data -p 5432:5432 postgres
9c43c4a91932619dea73bab39983556765a62dcdc130ce161ee9be2239f7c6d7
PS C:\tryt.01\tuto.01> docker run -p 80:80 -e 'PGADMIN_DEFAULT_EMAIL=mr.marc.rottiers@gmail.com' -e 'PGADMIN_DEFAULT_PASSWORD=Password' --name dev-pgadmin -d dpage/pgadmin4
5327218f27dce686534a5d794cba4620177a4bd433cc5f9ef344325a61fa3caa
PS C:\tryt.01\tuto.01> docker inspect dev-postgres -f "{{json .NetworkSettings.Networks }}"
{"bridge":{"IPAMConfig":null,"Links":null,"Aliases":null,"NetworkID":"42fdbac4cc4198619ba42832b808f76c68790d1d293913f683607a7951a01d89","EndpointID":"b358d4cd36c77af49b9d5001091
381fa62b7a88830a056a5539160a615d17635","Gateway":"172.17.0.1","IPAddress":"172.17.0.5","IPPrefixLen":16,"IPv6Gateway":"","GlobalIPv6Address":"","GlobalIPv6PrefixLen":0,"MacAddre
ss":"02:42:ac:11:00:05","DriverOpts":null}}
PS C:\tryt.01\tuto.01> docker ps -a
CONTAINER ID   IMAGE            COMMAND                  CREATED          STATUS          PORTS                          NAMES
5327218f27dc   dpage/pgadmin4   "/entrypoint.sh"         24 seconds ago   Up 23 seconds   0.0.0.0:80->80/tcp, 443/tcp    dev-pgadmin
9c43c4a91932   postgres         "docker-entrypoint.s…"   40 seconds ago   Up 39 seconds   0.0.0.0:5432->5432/tcp         dev-postgres
5a143ce0ee8f   tryton/tryton    "/entrypoint.sh tryt…"   4 minutes ago    Up 4 minutes    8000/tcp                       tryton-cron
5661a59a43f0   tryton/tryton    "/entrypoint.sh uwsg…"   5 minutes ago    Up 5 minutes    0.0.0.0:8000->8000/tcp         tryton
29eca77e8ac9   postgres         "docker-entrypoint.s…"   6 minutes ago    Up 6 minutes    5432/tcp                       tryton-postgres
PS C:\tryt.01\tuto.01>
```

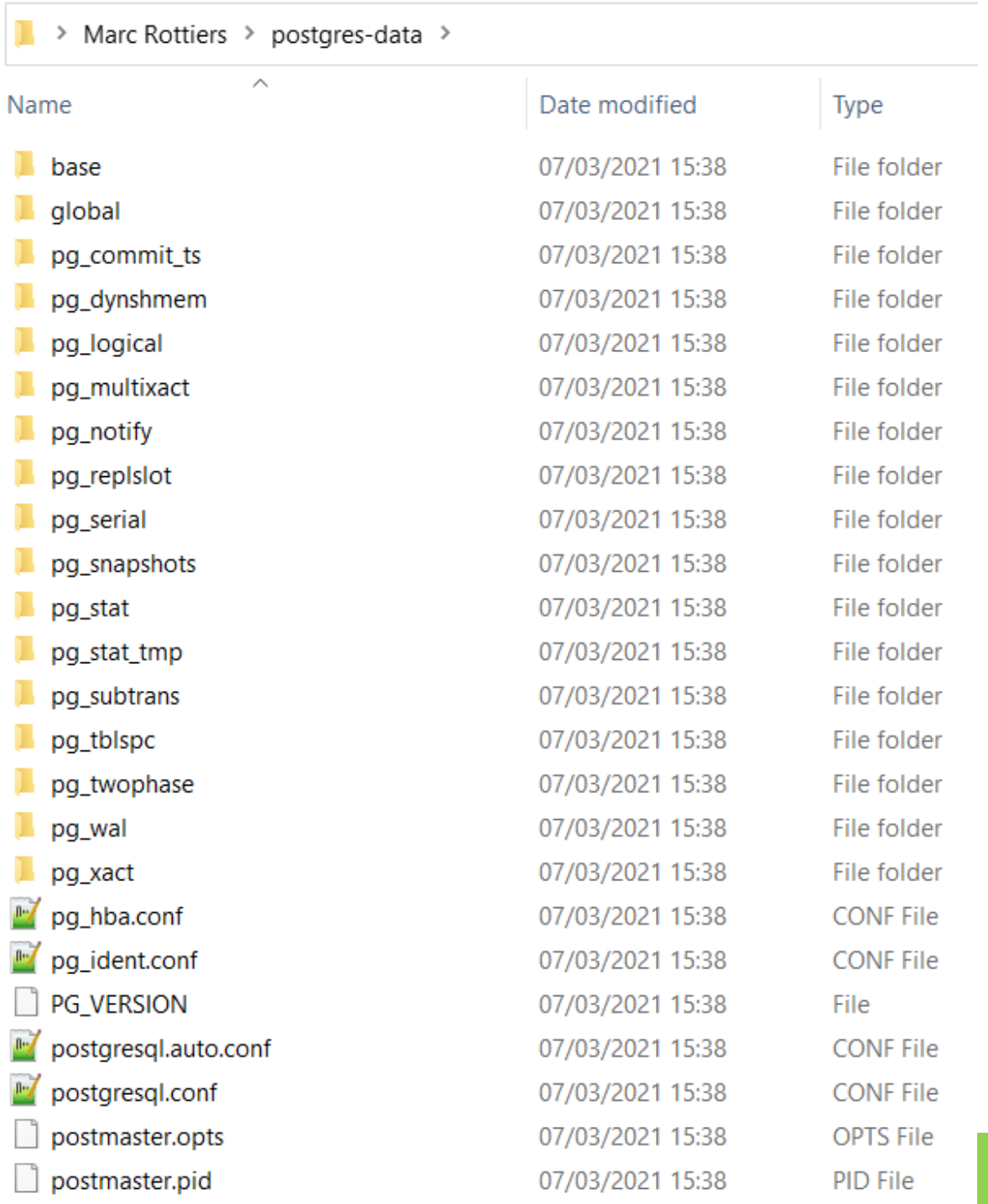
Execute (2/2)

Outcome :

- The « postgres-data » directory is created under my user name home directory and not inside a docker container.

- Hence the database persists even when the docker container is removed or when the docker application itself is eventually removed.

- The « Gateway » "172.17.0.1" or the « IPAddress » "172.17.0.5" (might vary) will be used later in « pgadmin4 » to define the database as part of a server.



Docker Administration

Commands

Commands

Most commands have been explored during the installation process.
We repeat them here for convenience

Container commands	
docker run hello-world	Check installation still operational
docker ps -a	List containers
docker stop a_container_name	Stop a container
docker start a_container_name	Start a container
docker rm a_container_name	Remove a stopped container
docker logs a_container_name	Logs
docker system prune	Remove stopped containers, unused networks and volumes

```
PS C:\Users\mrmar> docker ps -a
CONTAINER ID   IMAGE            COMMAND                  CREATED       STATUS          PORTS                              NAMES
8fa35e9a01ee   dpage/pgadmin4   "/entrypoint.sh"         9 days ago    Up 3 days       0.0.0.0:80->80/tcp, 443/tcp        dev-pgadmin
802400de87ff   postgres         "docker-entrypoint.s…"   9 days ago    Up 3 days       0.0.0.0:5432->5432/tcp             dev-postgres
09de820c6944   tryton/tryton    "/entrypoint.sh uwsg…"   12 days ago   Up 3 days       127.0.0.1:8000->8000/tcp           tryton
d0b1b1578223   postgres         "docker-entrypoint.s…"   12 days ago   Up 3 days       0.0.0.0:5433->5432/tcp             tryton-postgres
```

Commands

Volume commands	
docker volume create a_volume_name	Create a volume
docker volume ls	List the volumes
docker volume rm a_volume_name	Remove a volume
docker volume prune	Remove all unused volumes. « Unused » = container referenced
docker volume inspect a_volume_name	Inspect a volume

Volume commands	
docker network create a_network_name	Create a network
docker network ls	List the networks
docker network rm a_network_name	Remove a network
docker network prune	Remove all unused networks. « Unused » = not container referenced
docker network inspect a_network_name	Inspect a network

```
PS C:\Users\mrmar> docker volume ls
DRIVER    VOLUME NAME
local     9d31bdf883f8072214686e8fdb261a
local     893c5a68307141a60653bbacf5ede7
local     9518b6e333b5dbbbb4321327b70047
local     tryton-data
local     tryton-database
```

```
PS C:\Users\mrmar> docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
33778f0cf5fa   bridge    bridge    local
ceeb96fab0b4   host      host      local
b52953b3bf65   none      null      local
af20b36cba67   tryton    bridge    local
```

Reboot

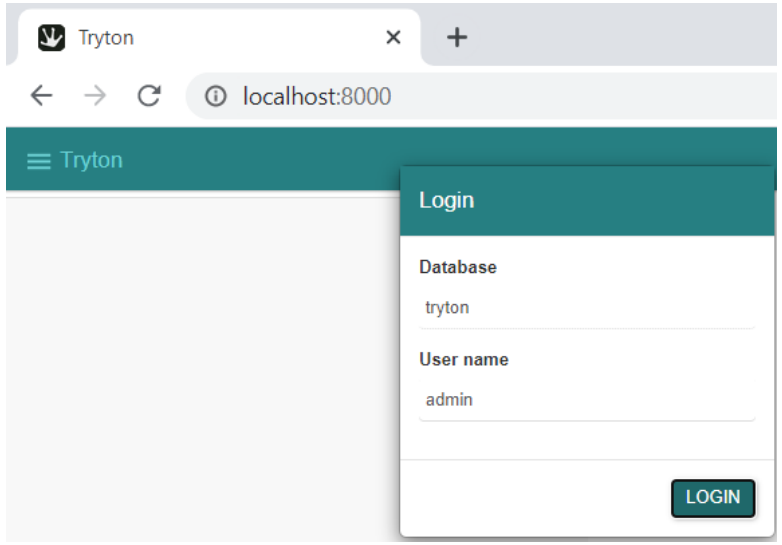
After Reboot

Each time the PC is rebooted, we need to execute the following commands in Powershell
docker ps -a # Control the status

```
PS C:\Users\mrmar> docker ps -a
CONTAINER ID   IMAGE            COMMAND                  CREATED       STATUS
8fa35e9a01ee   dpage/pgadmin4   "/entrypoint.sh"         11 days ago   Exited (255) 10 minutes ago
802400de87ff   postgres         "docker-entrypoint.s…"   11 days ago   Exited (255) 10 minutes ago
09de820c6944   tryton/tryton    "/entrypoint.sh uwsg…"   2 weeks ago   Exited (255) 10 minutes ago
d0b1b1578223   postgres         "docker-entrypoint.s…"   2 weeks ago   Exited (255) 10 minutes ago
```

Start the containers
docker start tryton-postgres tryton tryton-cron
docker start dev-postgres dev-pgadmin

Above commands are unnecessary when the PC is set to “Sleep”



Shell Execution

Execute

Executing commands and shells inside a Docker Container is sometimes necessary. Examples are :

- Executing « psql » inside the « Postgres » Docker Container
- Executing a Windows command like « ls », « mkdir », « cp between container and windows »
- etc.

Commands	
docker exec tryton-postgres ls	List content of directory
docker exec tryton-postgres env	List environment variables
docker cp tryton-postgres:/dump.tar .	Copy tar file from inside of container
docker exec –it tryton-postgres /bin/bash	Executes shell in interactive mode

Usefull documentation :
https://martinheinz.dev/blog/3
https://phoenixnap.com/kb/docker-run-command-with-examples

Execute

```
PS C:\Users\mrmar> docker exec -it dev-postgres echo "I'm inside the container"
I'm inside the container
```

```
PS C:\Users\mrmar> docker container exec -it dev-postgres /bin/bash
root@802400de87ff:/# ls
bin  boot  dev  docker-entrypoint-initdb.d  docker-entrypoint.sh  etc
root@802400de87ff:/#
```

```
Usage:  docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
PS C:\Users\mrmar> docker exec tryton-postgres ls
bin
boot
dev
directory
docker-entrypoint-initdb.d
docker-entrypoint.sh
etc
home
lib
lib64
media
mnt
opt
postgres
proc
root
run
sbin
srv
sys
tmp
t.tar
usr
var
PS C:\Users\mrmar>
```

```
PS C:\Users\mrmar> docker exec tryton-postgres ls /var/lib/postgresql/data/pgdata
base
global
pg_commit_ts
pg_dynshmem
pg_hba.conf
pg_ident.conf
pg_logical
pg_multixact
pg_notify
pg_replslot
pg_serial
pg_snapshots
pg_stat
pg_stat_tmp
pg_subtrans
pg_tblspc
pg_twophase
PG_VERSION
pg_wal
pg_xact
postgresql.auto.conf
postgresql.conf
postmaster.opts
postmaster.pid
PS C:\Users\mrmar>
```

Execute

```
PS C:\Users\mrmar> docker exec tryton-postgres ls
bin
boot
dev
directory
docker-entrypoint-initdb.d
docker-entrypoint.sh
etc
FILE1.tar
home
lib
lib64
media
mnt
opt
postgres
proc
root
run
sbin
srv
sys
tmp
t.tar
usr
var
PS C:\Users\mrmar> docker cp  tryton-postgres:/FILE1.tar ./FILE2.tar
PS C:\Users\mrmar> dir fi*


    Directory: C:\Users\mrmar

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----          05/04/2021    16:16                FILE
-a---          05/04/2021    16:34           8704 FILE2.tar
```

```
PS C:\Users\mrmar> docker exec dev-postgres env
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/lib/postgresql/13/bin
HOSTNAME=802400de87ff
POSTGRES_PASSWORD=Password
GOSU_VERSION=1.12
LANG=en_US.utf8
PG_MAJOR=13
PG_VERSION=13.2-1.pgdg100+1
PGDATA=/var/lib/postgresql/data
HOME=/root
PS C:\Users\mrmar> docker exec tryton-postgres env
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/lib/postgresql/13/bin
HOSTNAME=d0b1b1578223
PGDATA=/var/lib/postgresql/data/pgdata
POSTGRES_DB=tryton
POSTGRES_PASSWORD=Password
GOSU_VERSION=1.12
LANG=en_US.utf8
PG_MAJOR=13
PG_VERSION=13.2-1.pgdg100+1
HOME=/root
```

Container Uninstallation

Deleting everything

docker ps -a

```
CONTAINER ID   IMAGE          COMMAND                  CREATED       STATUS              PORTS                     NAMES
132372a60d4b   postgres       "docker-entrypoint.s…"   2 hours ago   Up 2 hours          0.0.0.0:5433->5432/tcp    tryton-postgres
4b6f9e99f6b4   tryton/tryton  "/entrypoint.sh uwsg…"   2 hours ago   Up 2 hours          127.0.0.1:8000->8000/tcp  tryton
5a2d77dfdc68   dpage/pgadmin4 "/entrypoint.sh"         5 hours ago   Up 2 hours          0.0.0.0:80->80/tcp, 443/tcp   dev-pgadmin
f22dca2038de   postgres       "docker-entrypoint.s…"   5 hours ago   Up 2 hours          0.0.0.0:5432->5432/tcp    dev-postgres
```

docker stop tryton-postgres tryton dev-pgadmin dev-postgres

```
tryton-postgres
tryton
dev-pgadmin
dev-postgres
```

docker rm tryton-postgres tryton dev-pgadmin dev-postgres

```
tryton-postgres
tryton
dev-pgadmin
dev-postgres
```

docker network prune

```
WARNING! This will remove all custom networks not used by at least one container.
Are you sure you want to continue? [y/N] y
Deleted Networks:
tryton
```

docker volume prune

```
WARNING! This will remove all local volumes not used by at least one container.
Are you sure you want to continue? [y/N] y
Deleted Volumes:
0c512afd78d327b43b99e350972e65c25fd4d3ae9be0cfdc362f08298254505f
tryton-database
tryton-data
Total reclaimed space: 55.68MB
```

Database Backup

Motivation

- Explaining how to perform database dump and restore for a database inside a container
- Ensuring that these operations preserve UTF8 encoding

Tryton

Tryton - Backup

Note :
- The “tryton-postgres” container contains two databases : “postgres” and “tryton”
- The “dev-postgres” container (if installed) contains one database : “postgres”

Generate backup inside of docker container (choose one of three formats)
docker exec **tryton-postgres** pg_dump -C -c -U postgres -O -f tryton-db-backup.sql **tryton**
docker exec **tryton-postgres** pg_dump -Fc -U postgres -O -f tryton-db-backup.bak **tryton**
docker exec **tryton-postgres** pg_dump -Ft -U postgres -O -f tryton-db-backup.tar **tryton**
Copy backup to outside of docker container
docker exec **tryton-postgres** ls -l
docker cp **tryton-postgres**:/tryton-db-backup.sql tryton-db-backup.sql
docker cp **tryton-postgres**:/tryton-db-backup.bak tryton-db-backup.bak
docker cp **tryton-postgres**:/tryton-db-backup.tar tryton-db-backup.tar
ls -l

In the examples above :
- “tryton-postgres” : name of docker container for tryton database
- “tryton” : name of tryton database

Refer to section “Postgres Backup” hereafter for more details

Postgres

Documentation

List of options	http://manpages.ubuntu.com/manpages/trusty/man1/pg_dump.1.html
	pg_dump --help
How to	http://postgresguide.com/utilities/backup-restore.html
	https://simkimsia.com/how-to-restore-database-dumps-for-postgres-in-docker-container/
	https://stackoverflow.com/questions/24718706/backup-restore-a-dockerized-postgresql-database

« pg_dump » - Redirection incorrectly working

Note :
- The “tryton-postgres” container contains two databases : “postgres” and “tryton”
- The “dev-postgres” container (if installed) contains one database : “postgres”

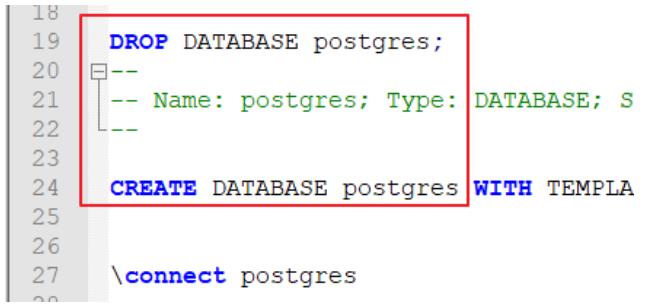
docker exec **tryton-postgres** pg_dump -C -c -U postgres -O **postgres** > postgres-db-backup.sql
docker exec **tryton-postgres** pg_dump -Fc -U postgres -O **postgres** > postgres-db-backup.bak
docker exec **tryton-postgres** pg_dump -Ft -U postgres -O **postgres** > postgres-db-backup.tar

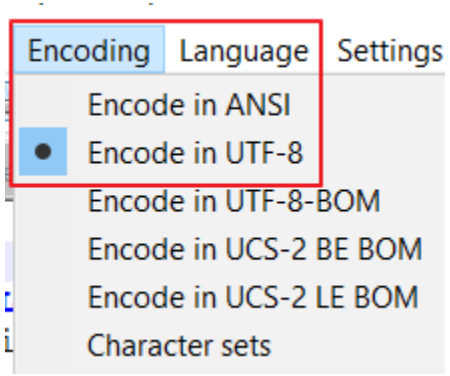
- Above file content redirections generate incorrect results
- File assignment must be used (see hereafter)

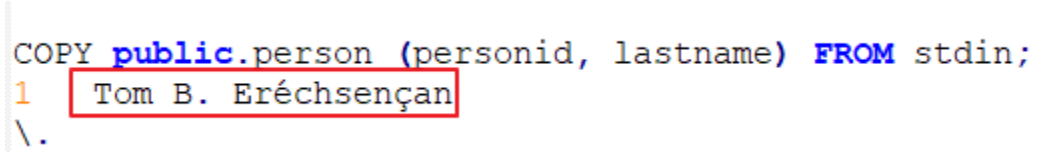
« pg_dump » - Character mode

Generate backup inside of docker container
docker exec **tryton-postgres** pg_dump -C -c -U postgres -O -f postgres-db-backup.sql **postgres**
Copy backup to outside of docker container
docker exec **tryton-postgres** ls -l
docker cp **tryton-postgres**:/postgres-db-backup.sql postgres-db-backup.sql
ls -l

- Generates « drop » and create » « postgres » database commands
- Dumps clear text in « correct » UTF8 (the encoding is taken from the database setting)
- The file is created inside docker container
- If the container is removed, the file is also removed unless it is saved on a persistent volume that is mounted on the container. Alternatively, the file can be copied outside container for preservation.



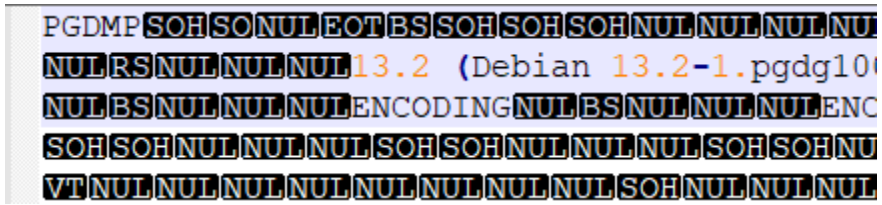




« pg_dump » - Binary Mode

docker exec tryton-postgres pg_dump -Fc -U postgres -O -f postgres-db-backup.bak postgres

docker exec tryton-postgres pg_dump -Ft -U postgres -O -f postgres-db-backup.tar postgres



- « Fc » saves in a binary file
- « Ft » saves in a « tar » file. It is the most condensed version

```
PS C:\Users\mrmar> docker exec tryton-postgres pg_dump -Ft -U postgres -O -f postgres-db-backup.tar postgres
PS C:\Users\mrmar> docker exec tryton-postgres ls -l
total 96
drwxr-xr-x   2 root root 4096 Mar 11 00:00 bin
drwxr-xr-x   2 root root 4096 Jan 30 17:37 boot
drwxr-xr-x   5 root root  340 Apr  4 10:00 dev
drwx------   2 root root 4096 Mar 28 18:19 directory
drwxr-xr-x   2 root root 4096 Mar 12 15:25 docker-entrypoint-initdb.d
lrwxrwxrwx   1 root root   34 Mar 12 15:26 docker-entrypoint.sh -> usr/local/bin/docker-entrypoint.sh
drwxr-xr-x   1 root root 4096 Mar 25 14:31 etc
drwxr-xr-x   2 root root 4096 Jan 30 17:37 home
drwxr-xr-x   1 root root 4096 Mar 12 15:25 lib
drwxr-xr-x   2 root root 4096 Mar 11 00:00 lib64
drwxr-xr-x   2 root root 4096 Mar 11 00:00 media
drwxr-xr-x   2 root root 4096 Mar 11 00:00 mnt
drwxr-xr-x   2 root root 4096 Mar 11 00:00 opt
-rw-r--r--   1 root root 1940 Mar 29 06:37 postgres
-rw-r--r--   1 root root 1151 Apr  6 15:27 postgres-db-backup.sql
-rw-r--r--   1 root root 8704 Apr  6 16:48 postgres-db-backup.tar
dr-xr-xr-x 219 root root    0 Apr  4 10:00 proc
```

Database Restore

Tryton

« pg_restore » - Binary Mode - Example in Context

- Log out the system if you happen to be signed in
- Use « pg_restore » utility, not « psql »

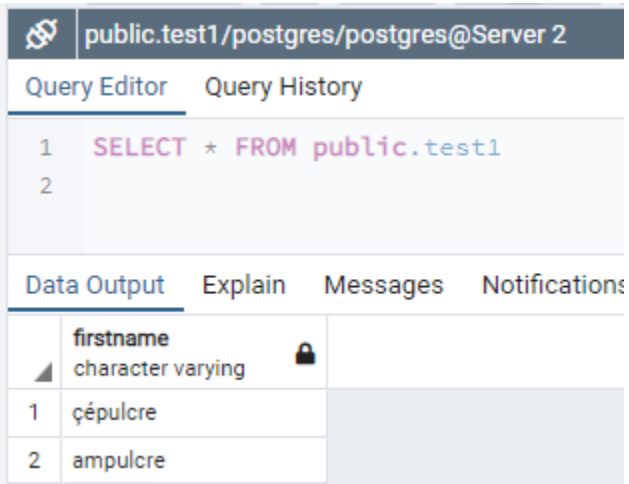
```
# Step 1.1 : dump tryton
docker exec tryton-postgres pg_dump -Ft -U postgres -O -f tryton-db-backup.tar tryton
# Step 1.2 : export outside container (optional ; specifically use if later import in another container)
docker cp tryton-postgres:/tryton-db-backup.tar tryton-db-backup.tar
# Step 2 : docker stop/start containers
docker stop tryton-postgres tryton
docker start tryton-postgres tryton
docker ps -a
# Step 3 : drop and create tryton-copy
docker exec tryton-postgres dropdb -f -U postgres tryton-copy
docker exec tryton-postgres createdb -U postgres -T template0 tryton-copy
# Step 4.1 : import inside container (optional ; function of step 1.2 above)
docker cp tryton-db-backup.tar tryton-postgres:/tryton-db-backup.tar
# Step 4.2 : restore tryton-copy from tryton
docker exec -i tryton-postgres pg_restore -Ft -U postgres -d tryton-copy -v ./tryton-db-backup.tar
```

Postgres

« psql» - Character Mode - Example in Context

- Use « psql » utility, not « pg_restore »
- Use the file variant « *.sql » when restoring to a different data base name
- It does not contain database « drop & create » commands

```
# Step 1.1 : dump tryton
docker exec tryton-postgres pg_dump -C -c -U postgres -O -f postgres-db-backup.sql postgres
# Step 1.2 : export outside container (optional ; specifically use if later import in another container)
docker cp tryton-postgres:/postgres-db-backup.sql postgres-db-backup.sql
# Step 2 : drop and create tryton-copy
docker exec tryton-postgres dropdb -f -U postgres postgres-copy
docker exec tryton-postgres createdb -U postgres -T template0 postgres-copy
# Step 3.2 : import inside container (optional ; function of step 1.2 above)
docker cp postgres-db-backup.sql tryton-postgres:/postgres-db-backup.sql
# Step 3.2 : restore postgres-copy from postgres
docker exec -i tryton-postgres psql -U postgres -f postgres-db-backup.sql postgres-copy
```



« pg_restore » - Binary Mode - Example in Context

Use « pg_restore » utility, not « psql »

- Before restoring the TRYTON database using the following script, log out the system if you happen to be using it.
- See section hereafter about TRYTON Login / Logout

```
# Step 1.1 : dump tryton
docker exec tryton-postgres pg_dump -Ft -U postgres -O -f postgres-db-backup.tar postgres
# Step 1.2 : export outside container (optional ; specifically use if later import in another container)
docker cp tryton-postgres:/postgres-db-backup.tar postgres-db-backup.tar
# Step 2 : drop and create tryton-copy
docker exec tryton-postgres dropdb -f -U postgres postgres-copy
docker exec tryton-postgres createdb -U postgres -T template0 postgres-copy
# Step 3.2 : import inside container (optional ; function of step 1.2 above)
docker cp postgres-db-backup.tar tryton-postgres:/postgres-db-backup.tar
# Step 3.2 : restore postgres-copy from postgres
docker exec -i tryton-postgres pg_restore -Ft -U postgres -d postgres-copy -v ./postgres-db-backup.tar
```

```
PS C:\Users\mrmar> docker exec tryton-postgres dropdb -f -U postgres postgres-copy
PS C:\Users\mrmar> docker exec tryton-postgres createdb -U postgres -T template0 postgres-copy
PS C:\Users\mrmar> docker exec -i tryton-postgres pg_restore -Ft -U postgres -d postgres-copy -v ./postgres-db-backup.tar
pg_restore: connecting to database for restore
pg_restore: creating TABLE "public.test"
pg_restore: creating TABLE "public.test1"
pg_restore: processing data for table "public.test"
pg_restore: processing data for table "public.test1"
```

Database Operations

Tryton

List tables of database « tryton »

Exec in Powershell format (exec.ps1)

```
Write-Host "Database Tryton - Schema 'Public' - All Tables - Number of Rows"
Write-Host "init"
docker cp inpu.sql tryton-postgres:/inpu.sql
docker exec -it tryton-postgres psql -d tryton -U postgres -P pager=off -f inpu.sql -o outp.txt
docker cp tryton-postgres:/outp.txt outp.txt
Write-Host "fini"
```

SQL statements (inpu.sql)

```
-- Data base schema 'public' - All tables - Number of rows
with tbl as (
		SELECT table_schema, table_name
		FROM information_schema.tables
		where table_name not like 'pg_%' and table_schema in ('public')
)
SELECT table_schema, table_name,
(
xpath( '/row/c/text()', query_to_xml( format('select count(*) as c from %I.%I', table_schema, table_name), false, true, '' ))
)[1]::text::int as rows_nmbr
from tbl
ORDER BY 3 DESC, 2; /* ORDER BY 3 DESC; */ /* ORDER BY 2; */
```

List tables of database « tryton »

Marc Rottiers > tryt01

Name	Date modified	Type
exec.ps1	21/02/2021 10:54	Windows PowerSh...
inpu.sql	21/02/2021 10:44	SQL File
outp.txt	21/02/2021 10:55	TXT File

outp.txt

```
 table_schema |                table_name                | rows_nmbr
--------------+------------------------------------------+-----------
 public       | ir_translation                           |      2439
 public       | ir_model_field                           |      1965
 public       | ir_model_data                            |      1464
                                                         |       643
                                                         |       274
                                                         |       182
                                                         |       177
                                                         |       169
                                                         |       155
                                                         |       151
 public       | ir_action                                |       147
 public       | ir_action_keyword                        |       135
 public       | ir_ui_menu                               |       121
 public       | ir_action_act_window                     |       102
 public       | party_address_format                     |        69
 public       | ir_rule                                  |        50
 public       | ir_ui_menu-res_group                     |        49
 public       | ir_rule_group                            |        38
 public       | ir_action_wizard                         |        36
 public       | ir_model_button                          |        25
 public       | ir_lang                                  |        23
 public       | ir_cache                                 |        16
 public       | ir_ui_icon                               |        16
 public       | account account type template           |        16
```

exec.ps1

```
Write-Host "Database Tryton - Schema 'Public' - All Tables - Number of Rows"
Write-Host "init"
docker cp inpu.sql tryton-postgres:/inpu.sql
docker exec -it tryton-postgres psql -d tryton -U postgres -P pager=off -f inpu.sql | Out-File -Encoding utf8 outp.txt
Write-Host "fini"
```

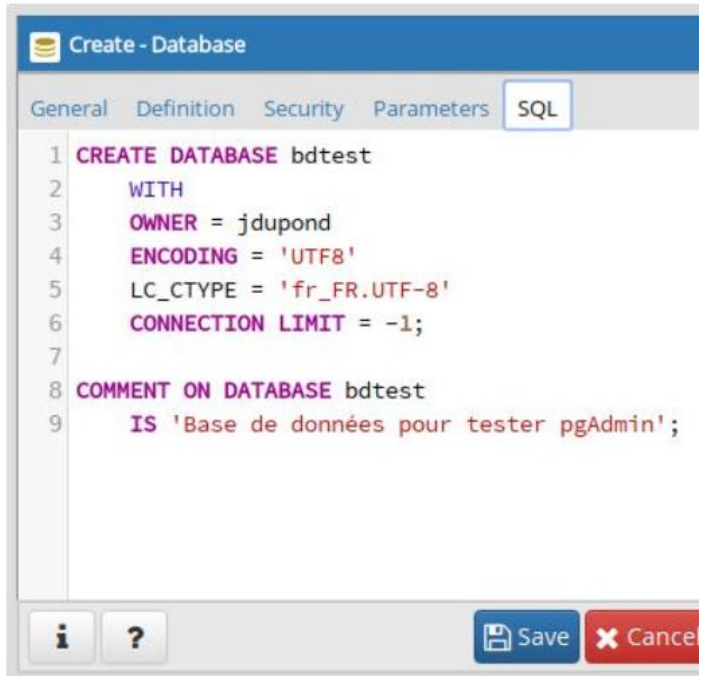
inpu.sql

```
-- Data base schema 'public' - All tables - Number of rows

with tbl as (
    SELECT  table_schema,
            table_name
    FROM information_schema.tables
    where table_name not like 'pg_%' and table_schema in ('public')
)
select  table_schema,
        table_name,
        (
            xpath(
                '/row/c/text()',
                query_to_xml(
                format('select count(*) as c from %I.%I', table_schema, table_name), false, true, ''
                )
            )
        )[1]::text::int as rows_nmbr
from tbl
ORDER BY 3 DESC; /* ORDER BY 3 DESC; */ /* ORDER BY 2; */
```

Postgres

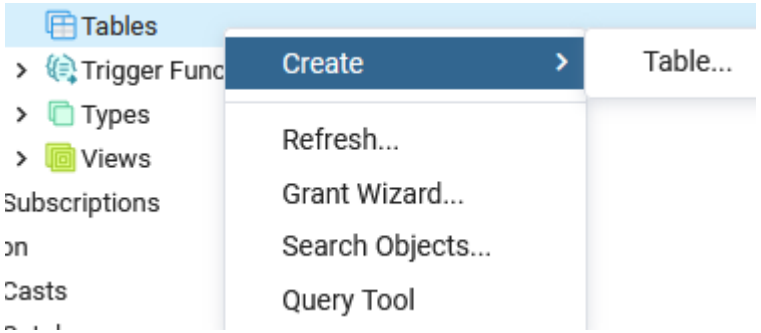
Database creation

```
PS C:\Users\mrmar> docker exec -tiu postgres dev-postgres psql -c '\l+'
                                                                 List of databases
   Name    |  Owner   | Encoding |  Collate   |   Ctype    |   Access privileges   |
-----------+----------+----------+------------+------------+-----------------------+-
 postgres  | postgres | UTF8     | en_US.utf8 | en_US.utf8 |                       |
 template0 | postgres | UTF8     | en_US.utf8 | en_US.utf8 | =c/postgres          +|
           |          |          |            |            | postgres=CTc/postgres |
 template1 | postgres | UTF8     | en_US.utf8 | en_US.utf8 | =c/postgres          +|
           |          |          |            |            | postgres=CTc/postgres |
```

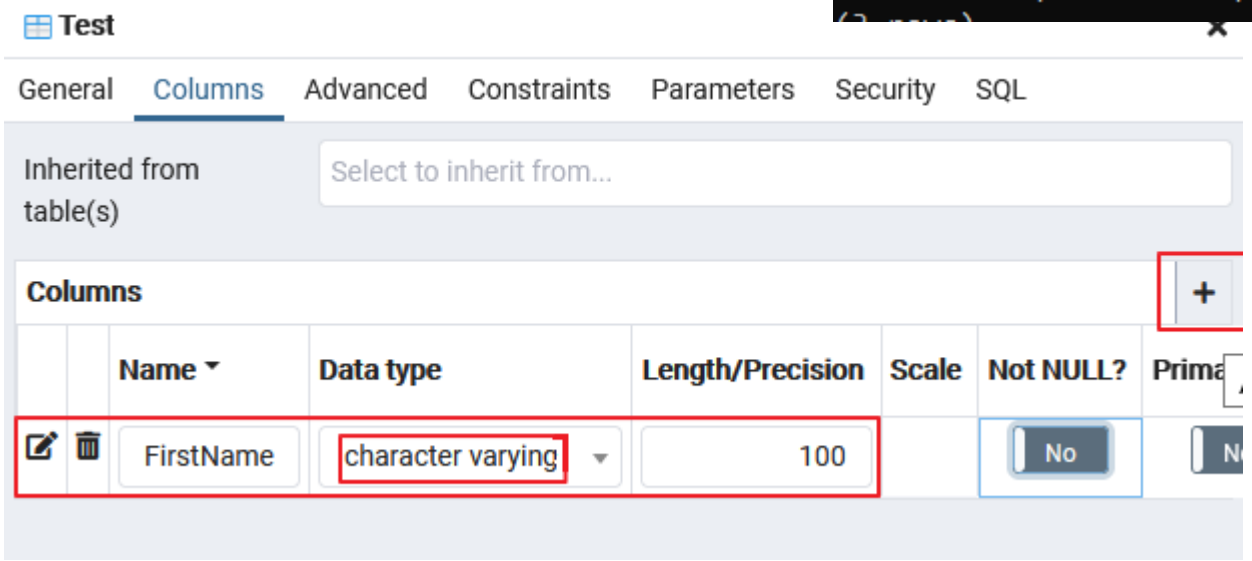



```
CREATE DATABASE test1
  WITH
  OWNER = postgres
  ENCODING = 'UTF8'
  LC_COLLATE = 'en_US.UTF-8'
  LC_CTYPE = 'en_US.UTF-8'
  TABLESPACE = pg_default
  CONNECTION LIMIT = -1;
```

Table creation

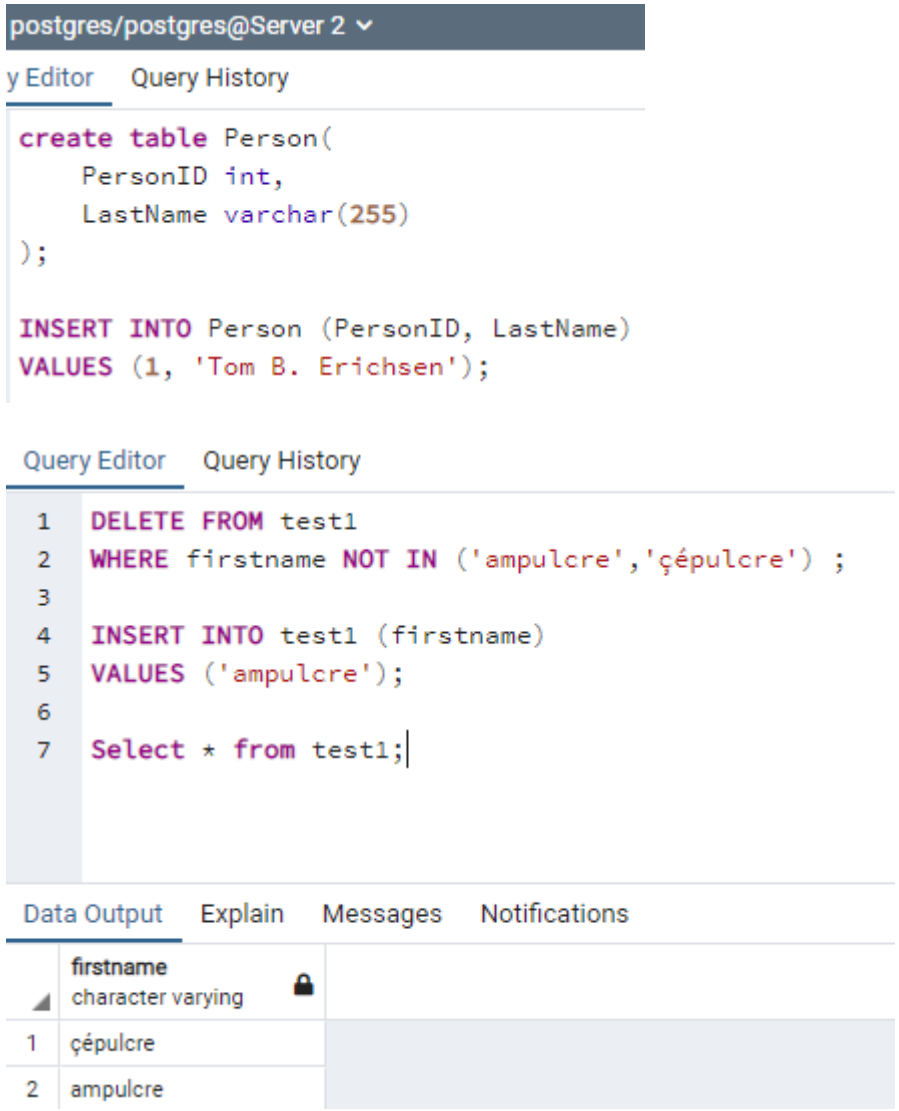



```
PS C:\Users\mrmar> docker exec -tiu postgres dev-postgres psql -c '\l+'
                                                                    List of databases
   Name    |  Owner   | Encoding |  Collate   |   Ctype    |   Access privileges   |
-----------+----------+----------+------------+------------+-----------------------+
 postgres  | postgres | UTF8     | en_US.utf8 | en_US.utf8 |                       |
 template0 | postgres | UTF8     | en_US.utf8 | en_US.utf8 | =c/postgres          +|
           |          |          |            |            | postgres=CTc/postgres |
 template1 | postgres | UTF8     | en_US.utf8 | en_US.utf8 | =c/postgres          +|
           |          |          |            |            | postgres=CTc/postgres |
```

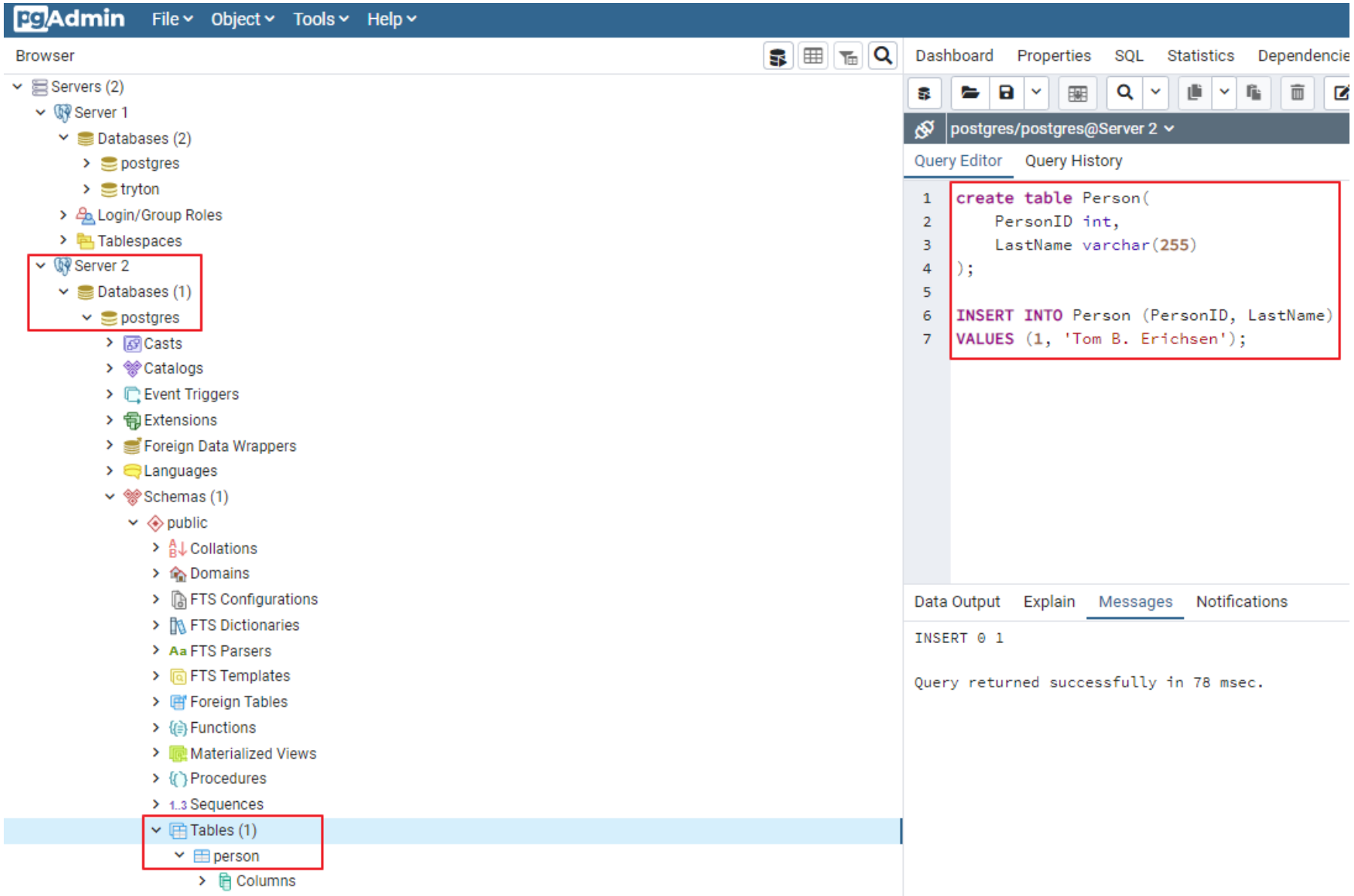


Populate a sample UTF8 table

```
CREATE TABLE person(
    personID int,
    firstname varchar(255)
);

INSERT INTO person (personID, firstname)
VALUES (1, 'Tom B. Erichsençé’);

DELETE FROM person
WHERE firstname NOT IN
('ampulcre','çépulcre') ;

INSERT INTO person (personID, firstname)
VALUES (2, 'ampulcrê');

SELECT * from person;
```



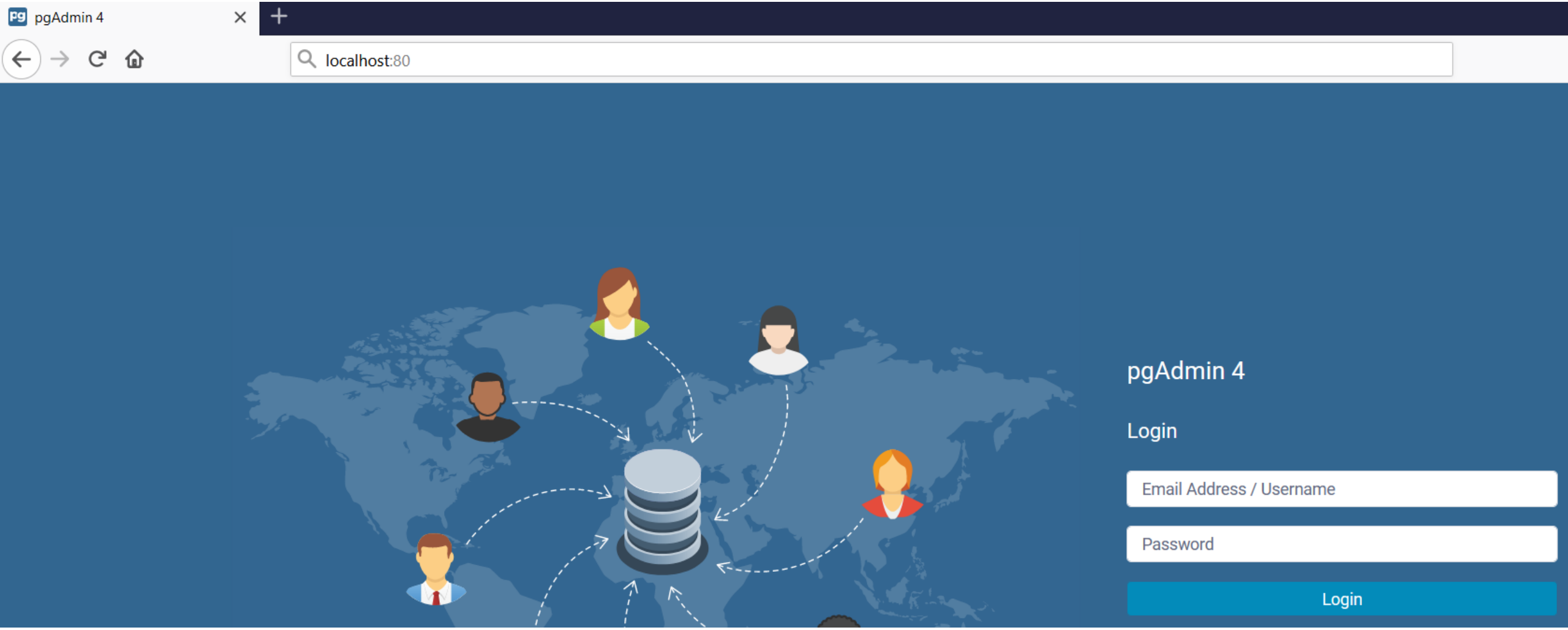
« pgadmin4 » view on Server Databases



User Interface

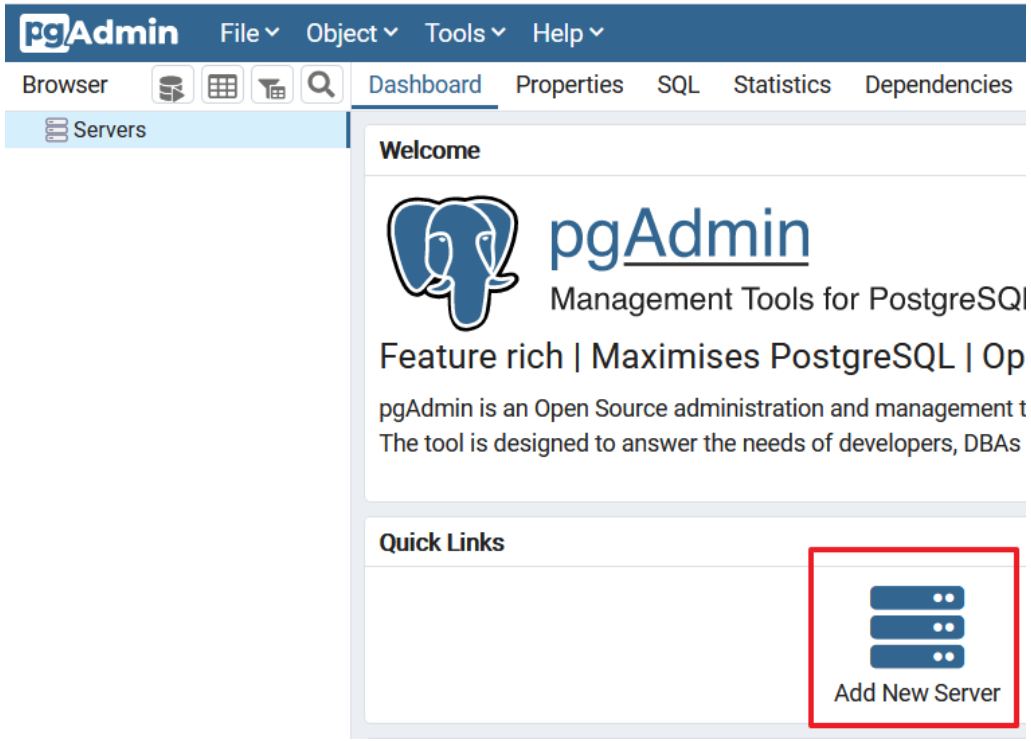
PgAdmin4

pgAdmin4



Note : We use « Password » as value everywhere a password is required

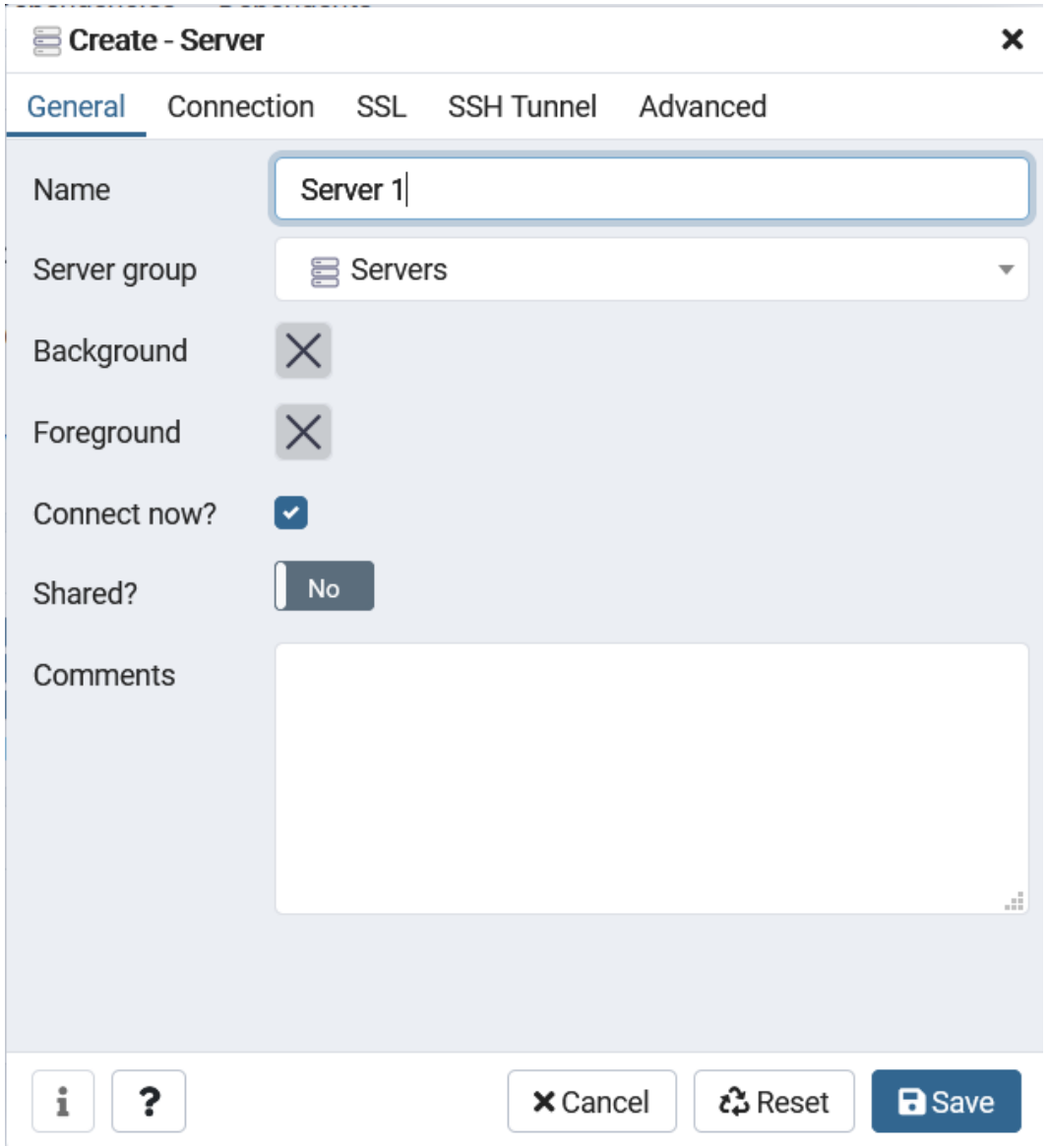
Create servers to connect to the databases

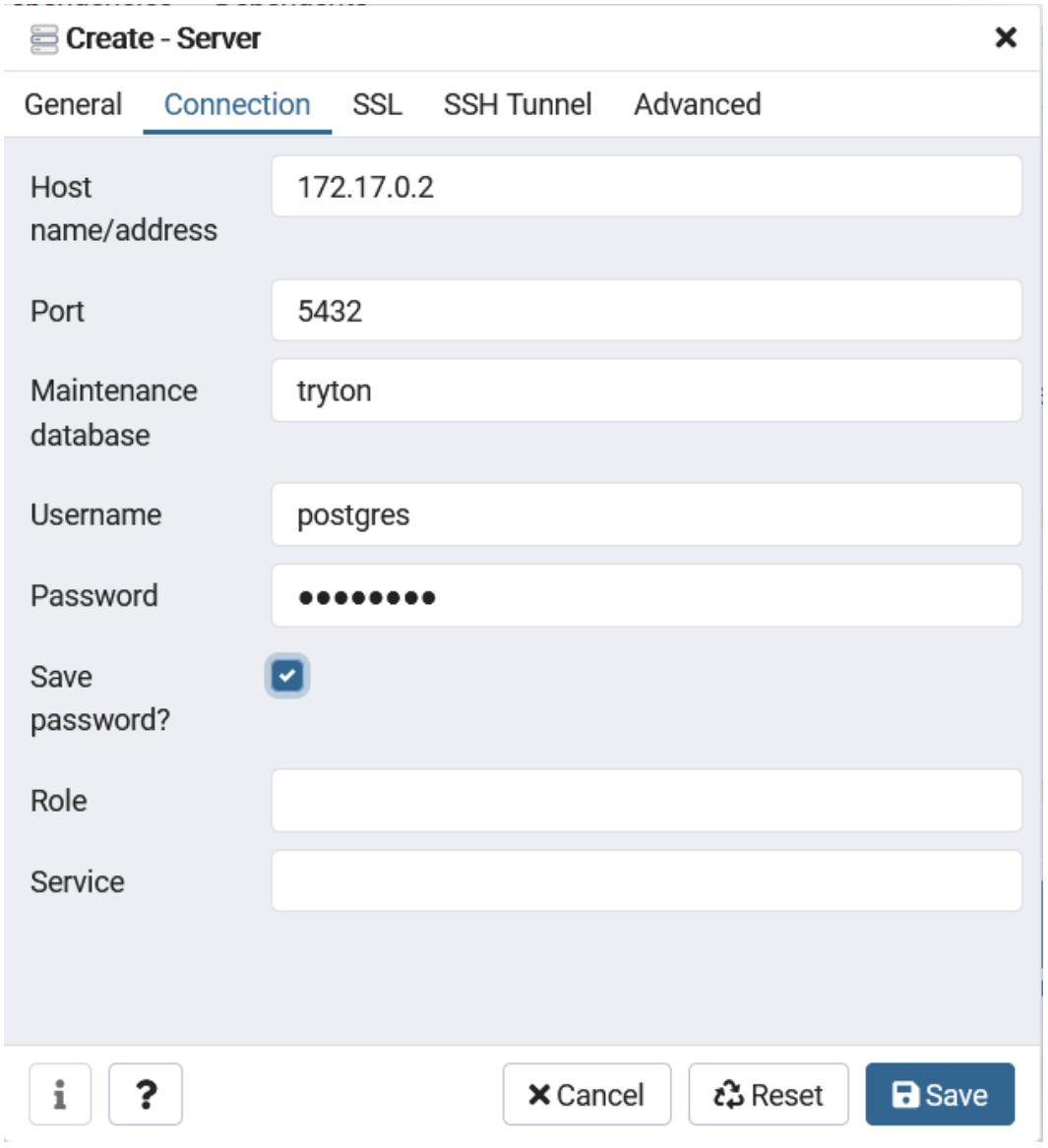



```
PS C:\tryt.01\tryton\tryton.create.backup.restore> docker run --name tryton-postgres --env PGDATA=/var/lib/postgre
sql/data/pgdata --env POSTGRES_DB=tryton --env POSTGRES_PASSWORD=${env:POSTGRES_PASSWORD} --mount source=tryton-da
tabase,target=/var/lib/postgresql/data --network tryton -p 5433:5432 --detach postgres
```

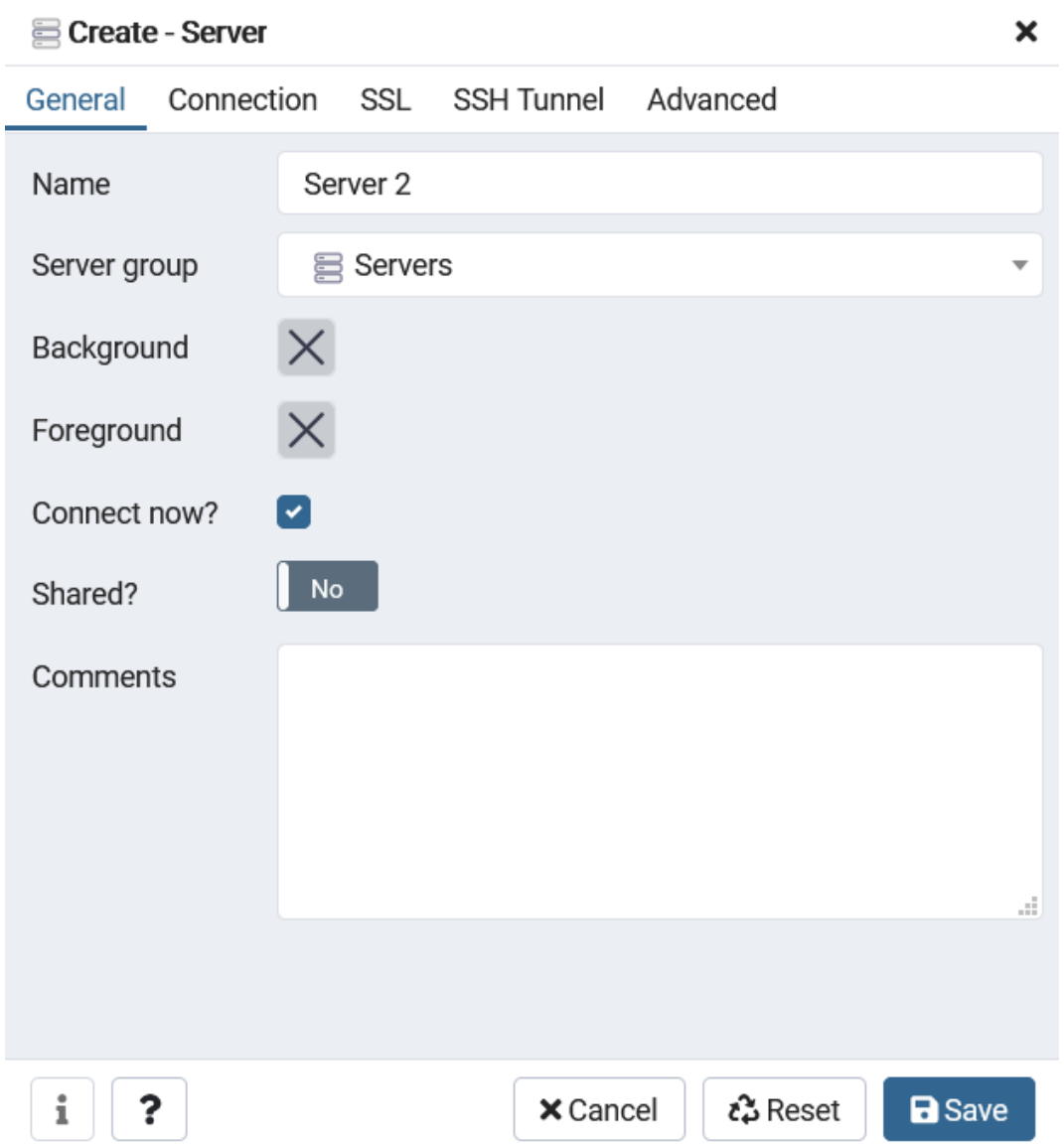
```
PS C:\tryt.01\tryton\tryton.create.backup.restore> docker inspect tryton-postgres -f "{{json .NetworkSettings.Netw
orks }}"
{"tryton":{"IPAMConfig":null,"Links":null,"Aliases":["132372a60d4b"],"NetworkID":"c762438d99a763276487b1cf5abfa8b4
0fdfd13bcf091f3fe1be54fd57273550","EndpointID":"69be5cb1492545d2fbad8caef953f18c9dd8c2794eb9b41a3a761f8e09ae0f3c",
"Gateway":"172.18.0.1","IPAddress":"172.18.0.2","IPPrefixLen":16,"IPv6Gateway":"","GlobalIPv6Address":"","GlobalIP
v6PrefixLen":0,"MacAddress":"02:42:ac:12:00:02","DriverOpts":null}}
```

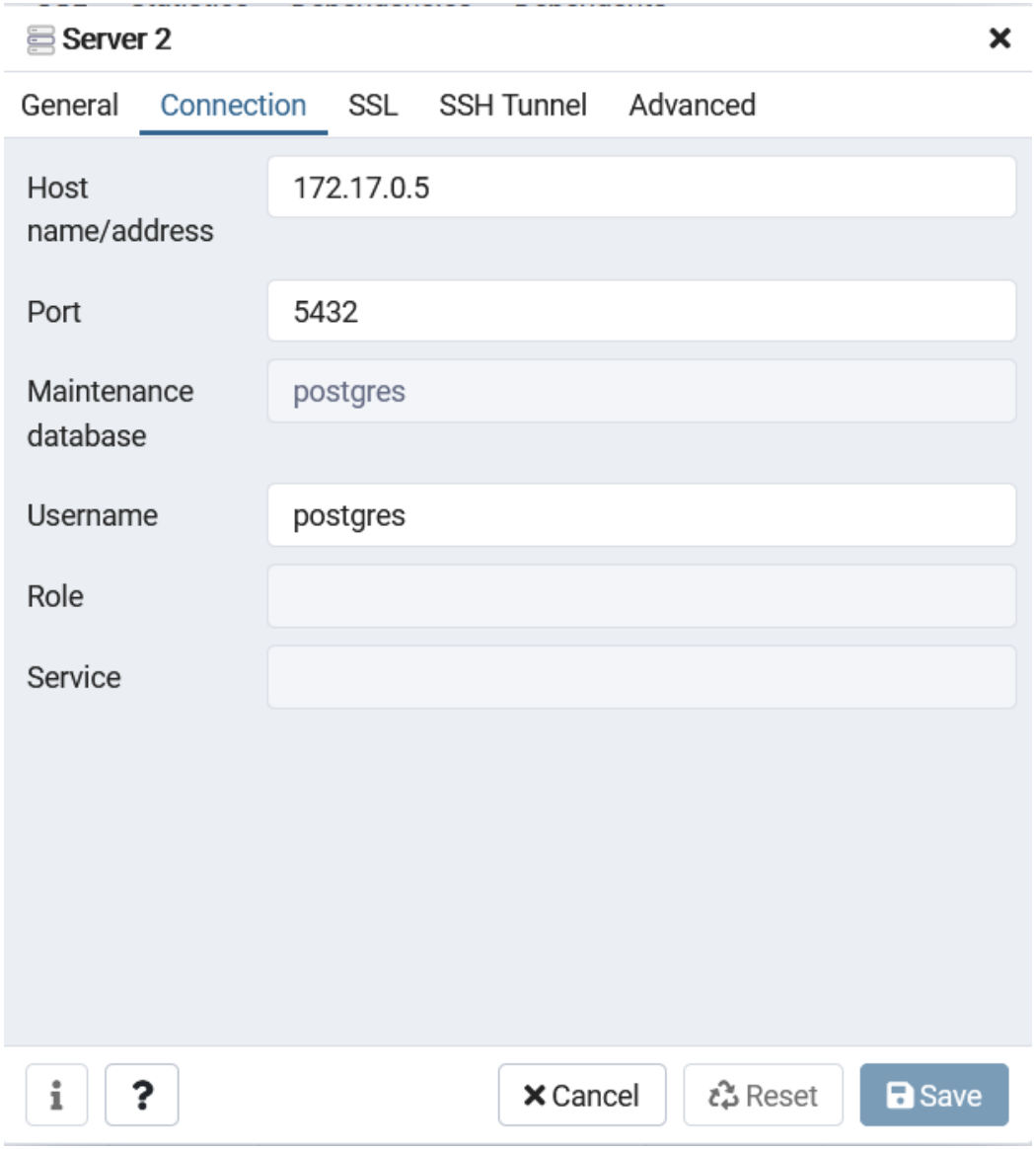
Create servers to connect to the databases





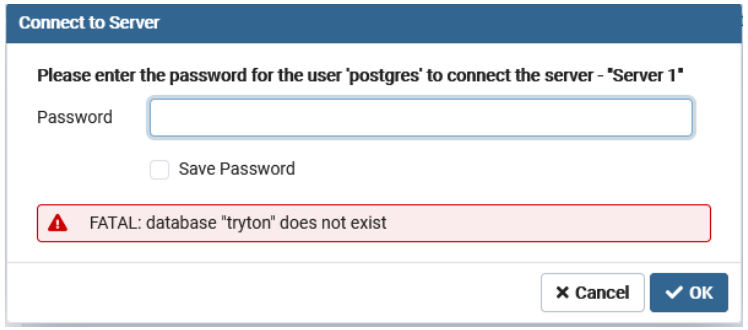
Create servers to connect to the databases

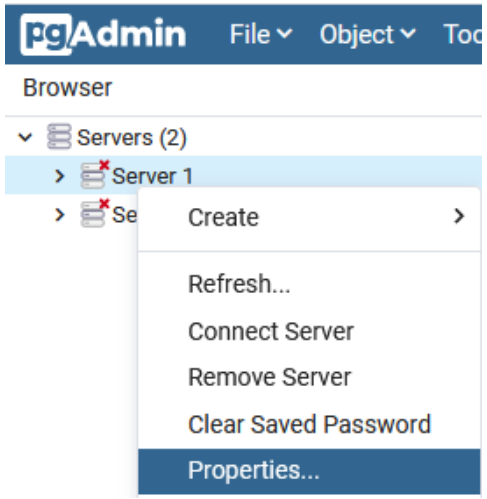


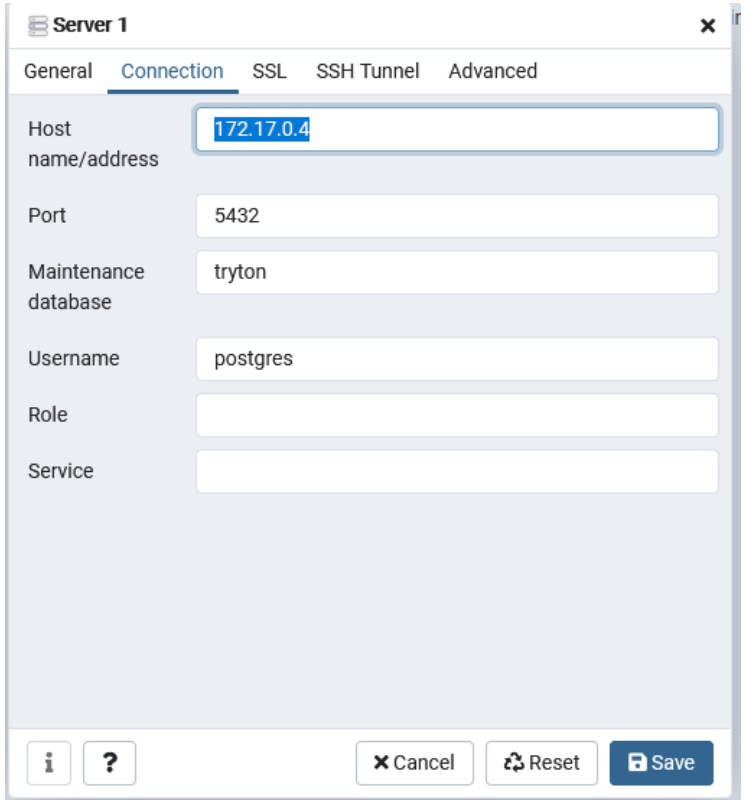


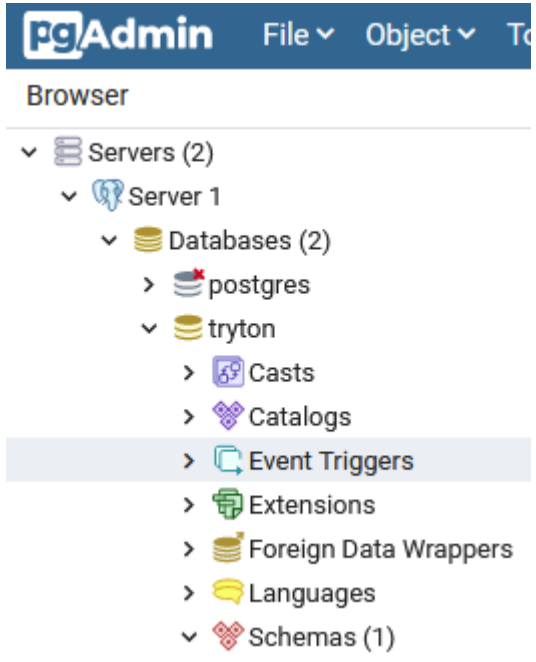
Create servers to connect to the databases - Stability of IP Address

It might be necessary to « adjust » the IP address from time to time in « pgAdmin4 »



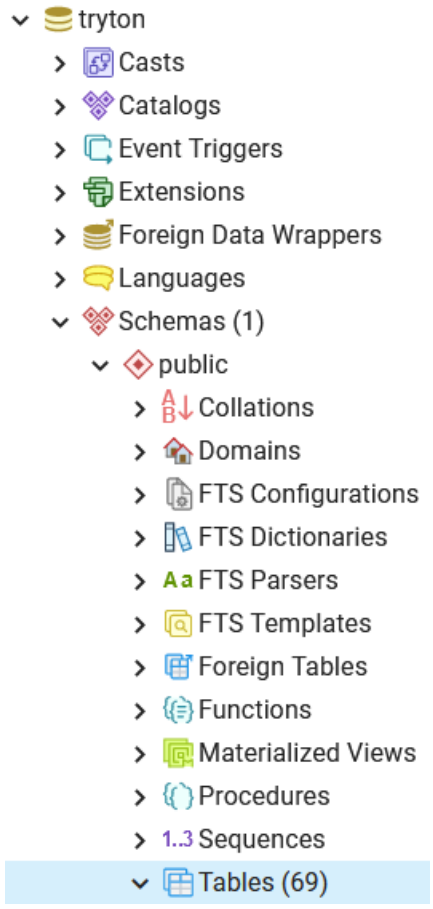


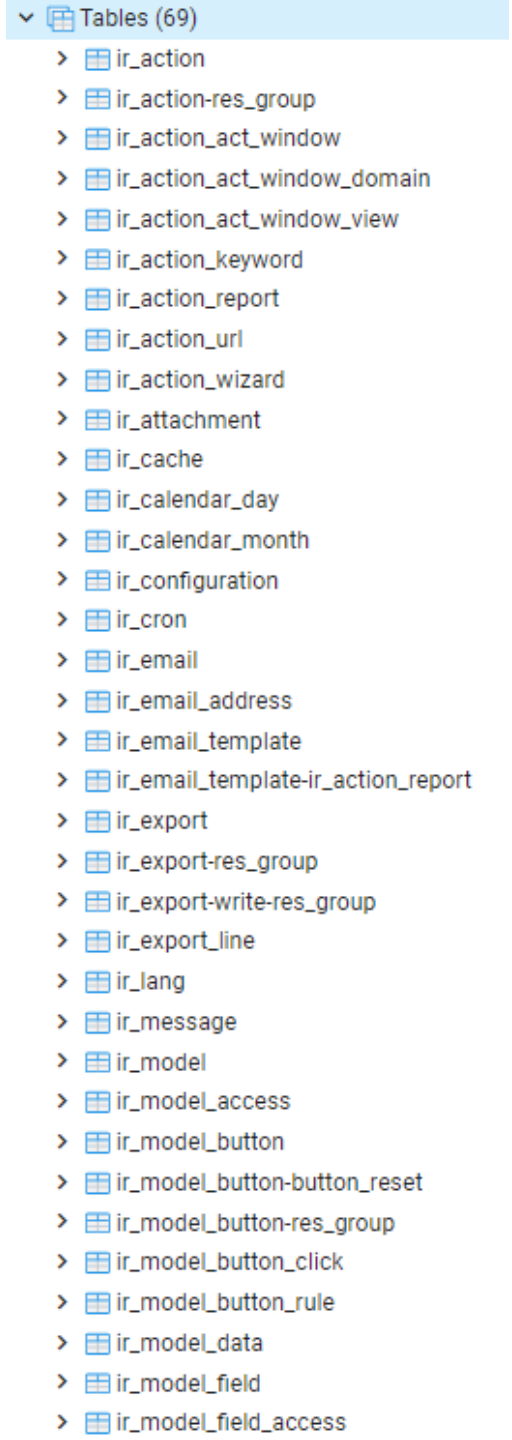


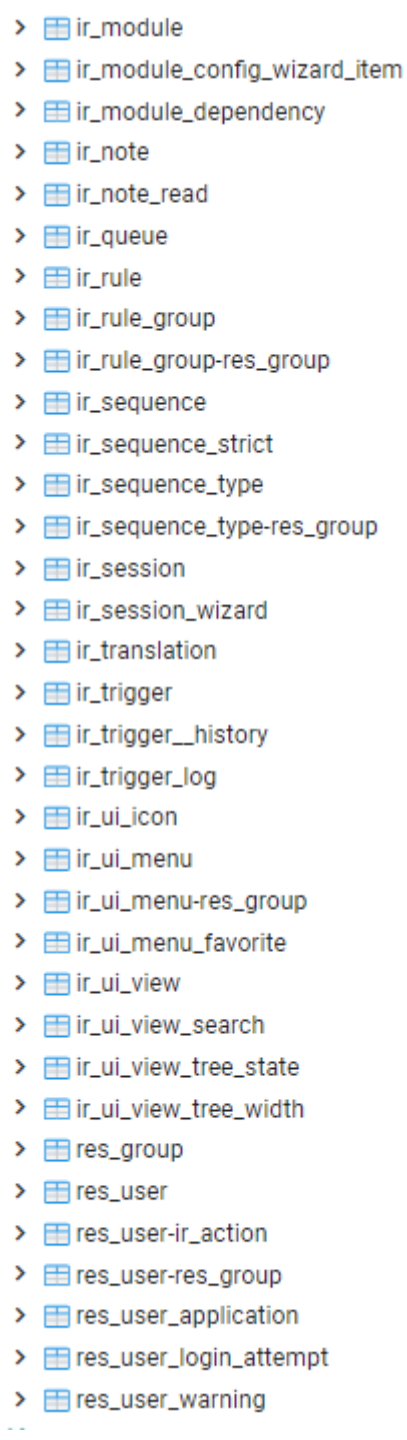


« Tryton » - Database Result

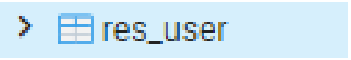
Only « ir » & « res » tables are installed







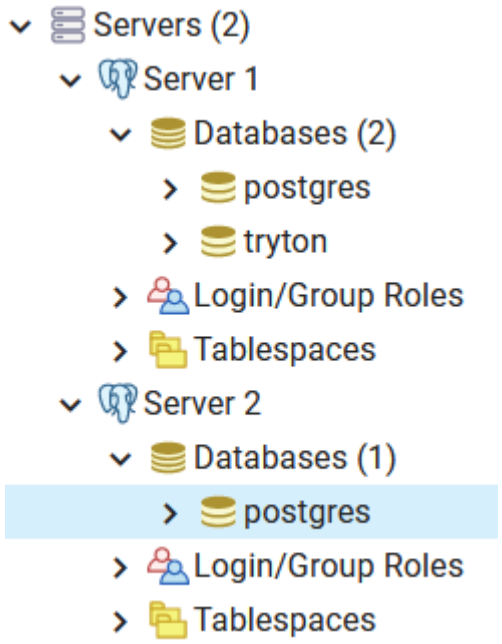
« Tryton » - Database Result

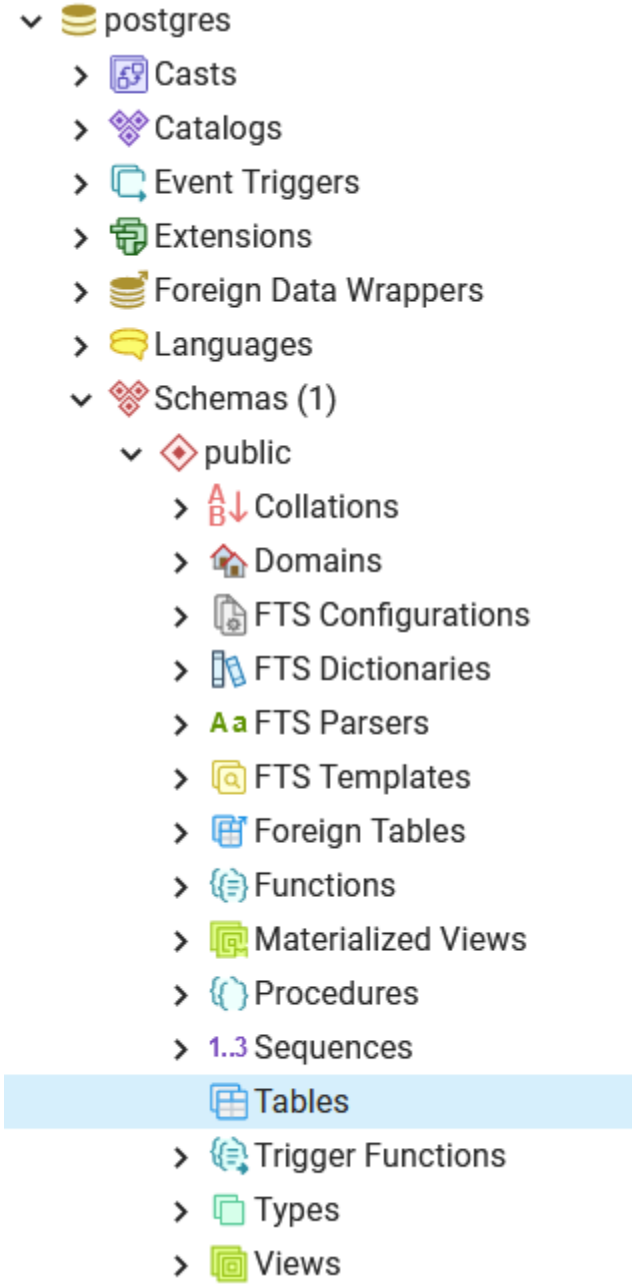


Data Output | Explain | Messages | Notifications

	id [PK] integer	name character varying	active boolean	login character varying	password character varying	create_date timestamp without time zone	create_uid integer	email character varying	language integer	menu integer	password_hash character varying
1	0	Root	false	root	[null]	2021-03-07 14:58:18.230466	0	[null]	[null]	2	[null]
2	1	Administrator	true	admin	[null]	2021-03-07 14:58:17.920657	0	@gmai...	[null]	2	$2b$12$7RE0EAyOog8...

« Postgres » - Result

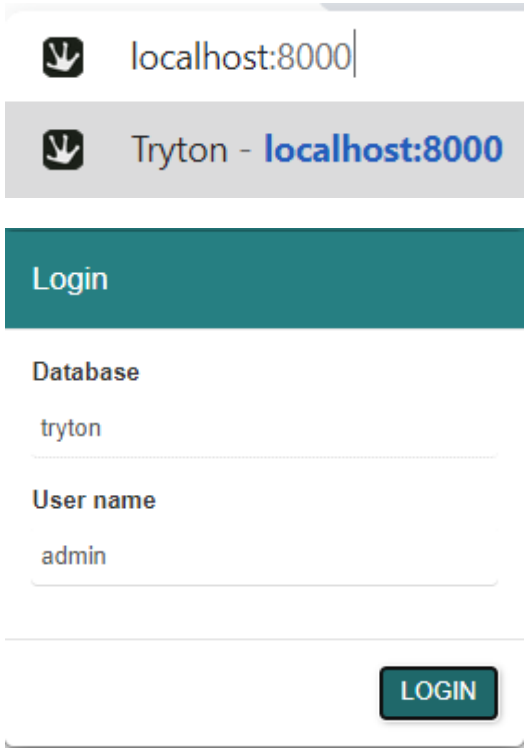




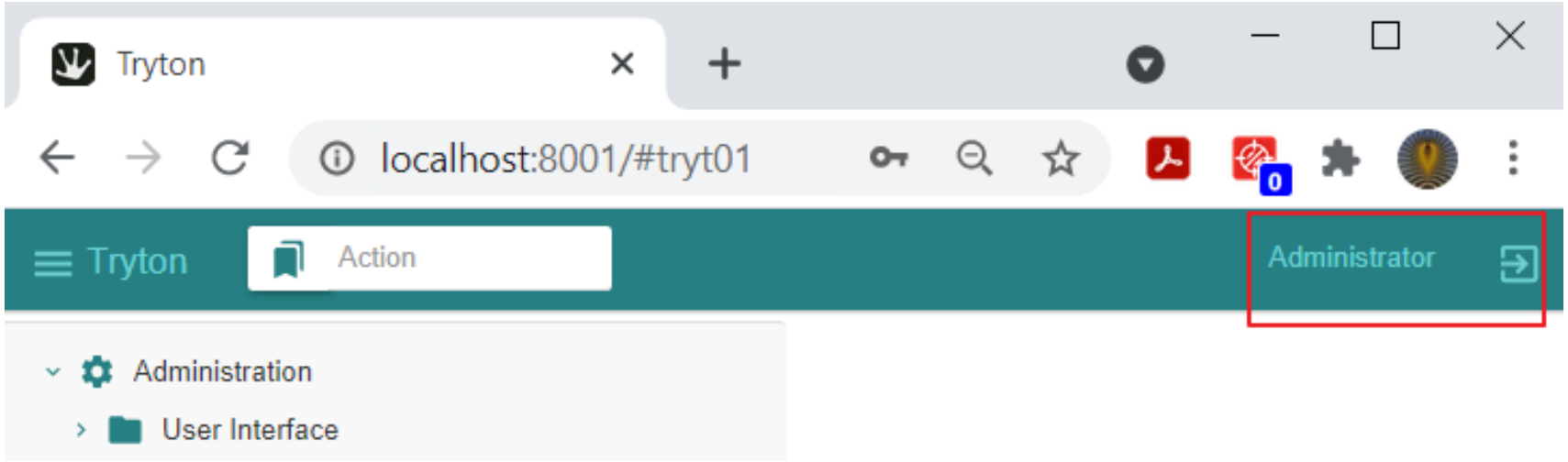
Tryton

Login / Logout

Login into Tryton



In this introductory document, all operations are performed with user « admin » and password « Password » at login.



Usage

Using Tryton

The follow-up document « Tryton 5.8 - Doc 05.01 - Basic Entities » explains how to use Tryton

References

Various sources of documentation

Documentation Latest
[https://docs.tryton.org/en/latest]

Docker Installation
https://hub.docker.com/r/tryton/tryton/

Classic Installation
[https://blog.lordvan.com/blog/tryton-setup-config/]
[https://www.akarei.cz/tryton/]

Administration Manual
[https://readthedocs.org/projects/tryton-administration-manual/downloads/pdf/latest/]
[https://tryton-administration-manual.readthedocs.io/_/downloads/en/latest/pdf/]

List of Modules
[https://discuss.tryton.org/t/list-of-modules-and-what-they-do/2675/7]

Stock
[https://groups.google.com/g/tryton/c/H4ZqsJq37M8/m/W1TaVWu0AQAJ]
[https://docs.tryton.org/en/latest/stock.html#index-stock]

Various sources of documentation

Trytond Documentation
[https://readthedocs.org/projects/trytond/downloads/pdf/latest/]

[https://trytond.readthedocs.io/en/latest/]
[https://tryton.readthedocs.io/en/latest/]
[http://hg.tryton.org/readthedocs/]
[https://docs.readthedocs.io/en/latest/subprojects.html]
[https://docs.readthedocs.io/en/latest/alternate_domains.html]

Other sources

Github
[https://github.com/tryton]

Downloads
[https://downloads.tryton.org/]