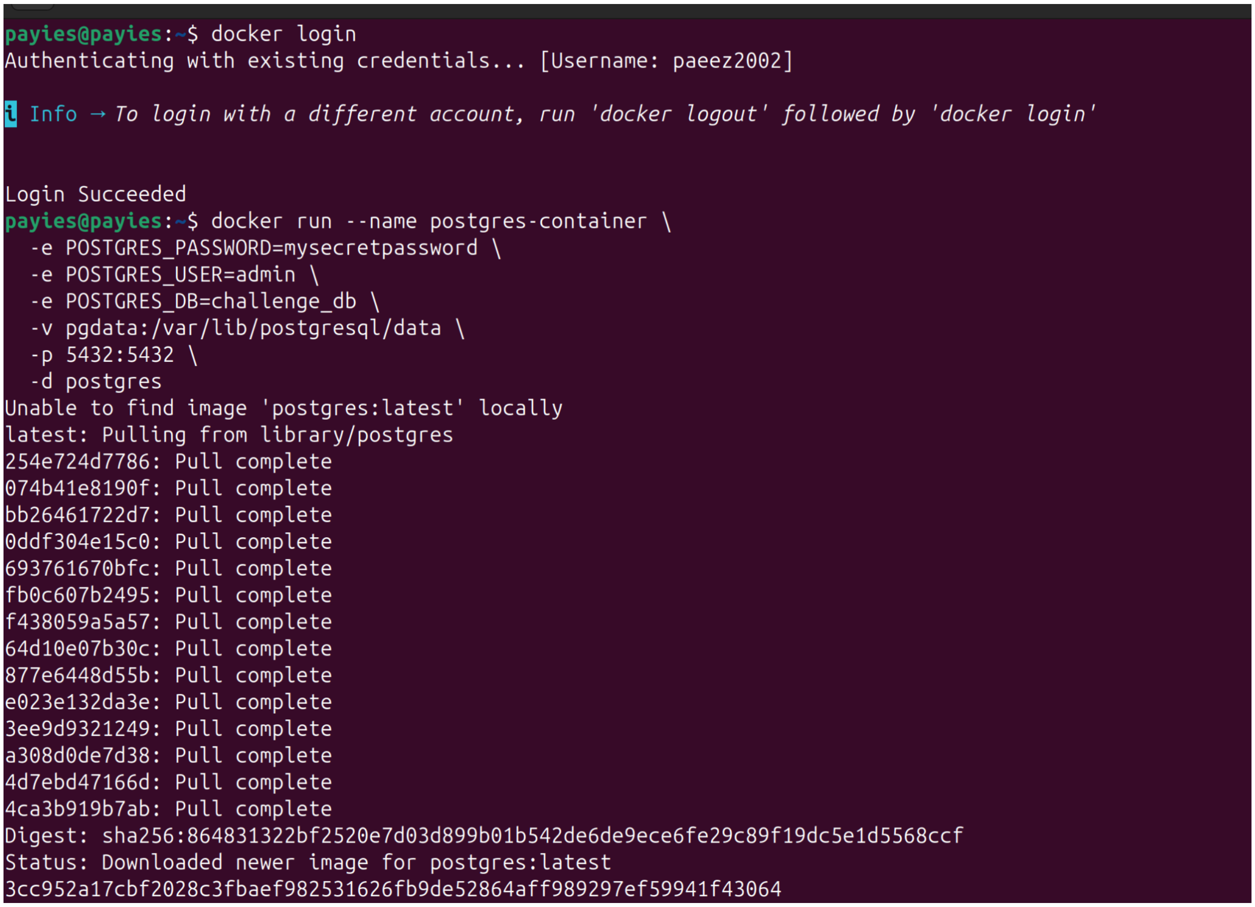
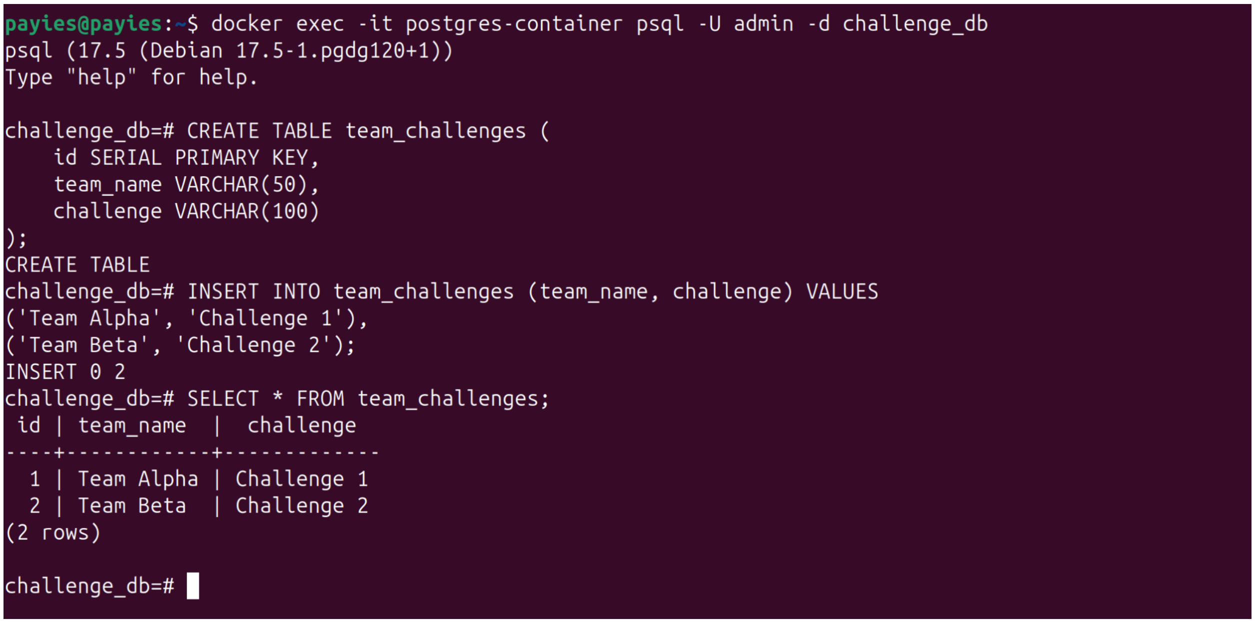


```
payies@payies:~$ docker login
Authenticating with existing credentials... [Username: paeez2002]

i Info → To login with a different account, run 'docker logout' followed by 'docker login'


Login Succeeded
payies@payies:~$ docker run --name postgres-container \
  -e POSTGRES_PASSWORD=mysecretpassword \
  -e POSTGRES_USER=admin \
  -e POSTGRES_DB=challenge_db \
  -v pgdata:/var/lib/postgresql/data \
  -p 5432:5432 \
  -d postgres
Unable to find image 'postgres:latest' locally
latest: Pulling from library/postgres
254e724d7786: Pull complete
074b41e8190f: Pull complete
bb26461722d7: Pull complete
0ddf304e15c0: Pull complete
693761670bfc: Pull complete
fb0c607b2495: Pull complete
f438059a5a57: Pull complete
64d10e07b30c: Pull complete
877e6448d55b: Pull complete
e023e132da3e: Pull complete
3ee9d9321249: Pull complete
a308d0de7d38: Pull complete
4d7ebd47166d: Pull complete
4ca3b919b7ab: Pull complete
Digest: sha256:864831322bf2520e7d03d899b01b542de6de9ece6fe29c89f19dc5e1d5568ccf
Status: Downloaded newer image for postgres:latest
3cc952a17cbf2028c3fbaef982531626fb9de52864aff989297ef59941f43064
```



```
payies@payies:~$ docker exec -it postgres-container psql -U admin -d challenge_db
psql (17.5 (Debian 17.5-1.pgdg120+1))
Type "help" for help.

challenge_db=# CREATE TABLE team_challenges (
    id SERIAL PRIMARY KEY,
    team_name VARCHAR(50),
    challenge VARCHAR(100)
);
CREATE TABLE
challenge_db=# INSERT INTO team_challenges (team_name, challenge) VALUES
('Team Alpha', 'Challenge 1'),
('Team Beta', 'Challenge 2');
INSERT 0 2
challenge_db=# SELECT * FROM team_challenges;
 id | team_name  |  challenge
----+------------+-------------
  1 | Team Alpha | Challenge 1
  2 | Team Beta  | Challenge 2
(2 rows)

challenge_db=# █
```

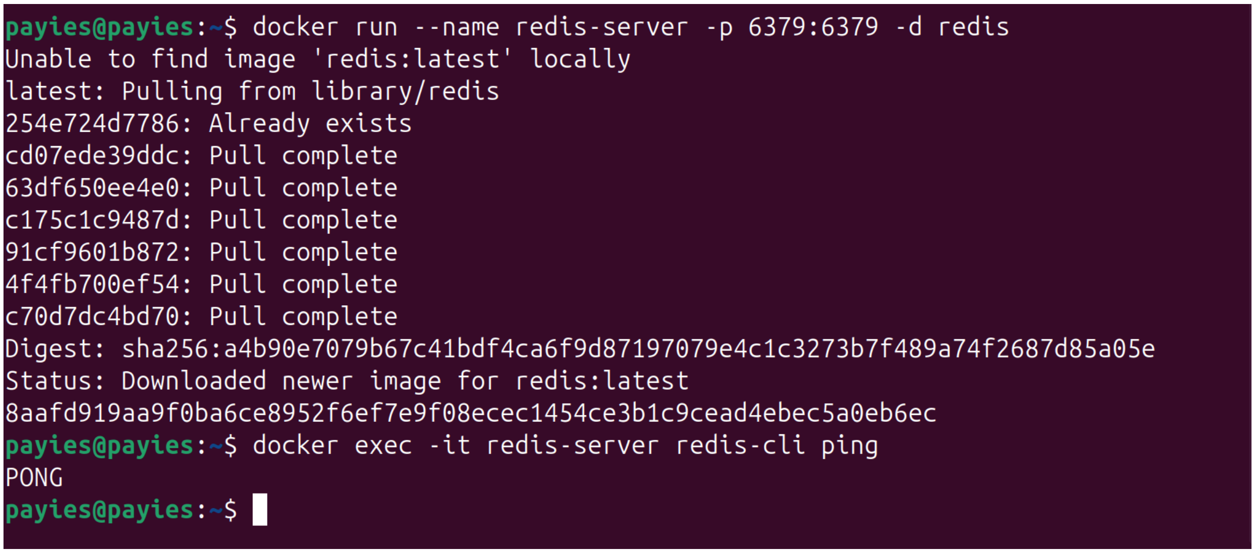
Docker volumes (`pgdata`) for persistence, as they are easier to manage and portable.

Named container for clarity.

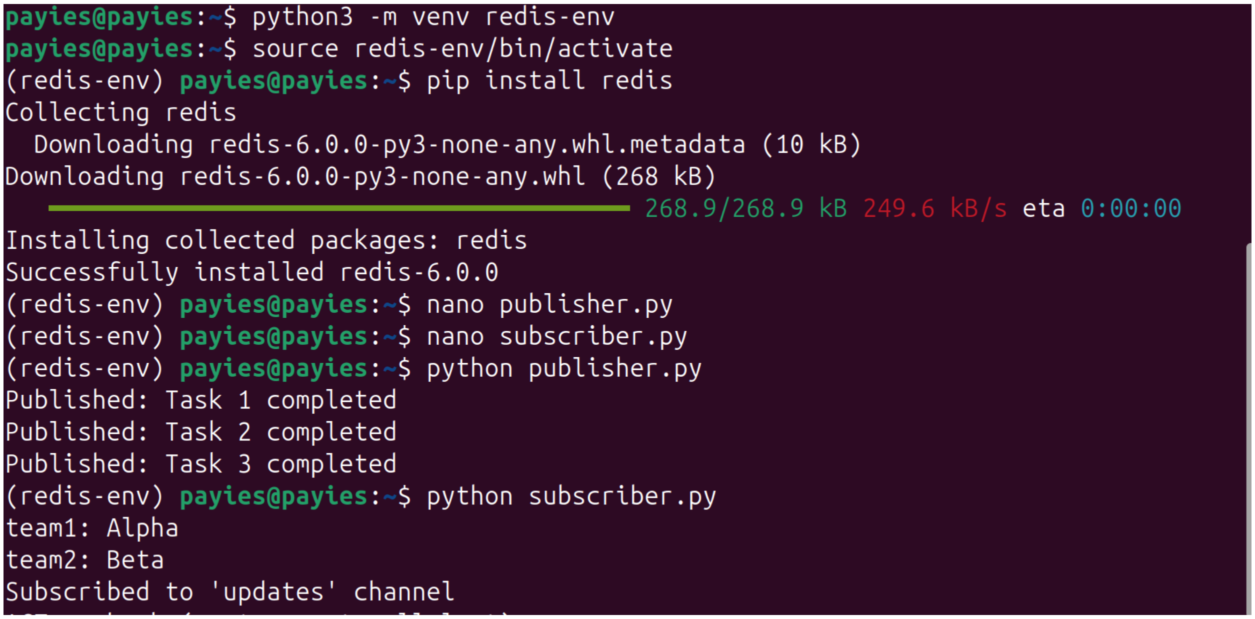
Default PostgreSQL port 5432 exposed for access.

Environment variables to pre-configure the database and user.

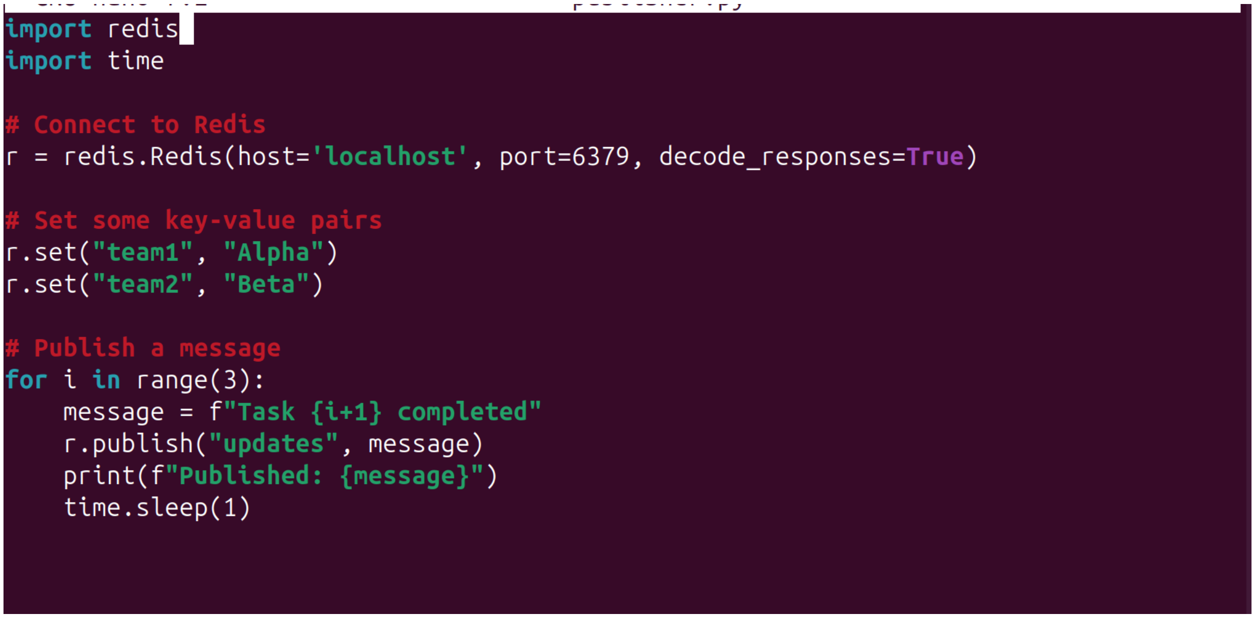
2)



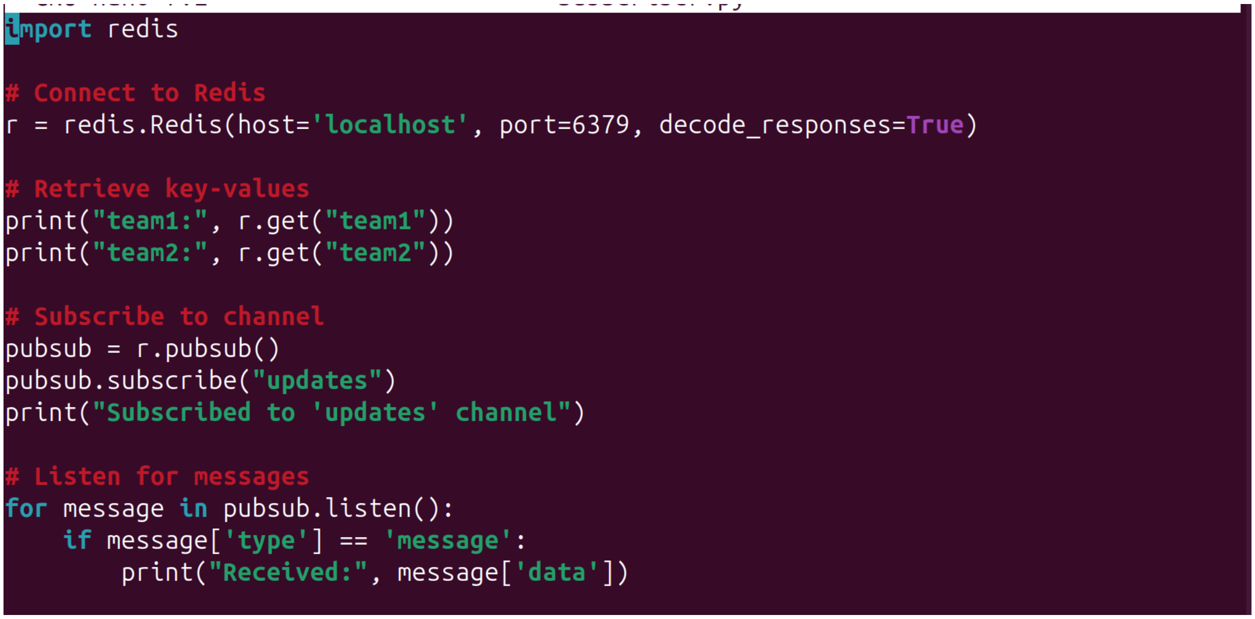
```
payies@payies:~$ docker run --name redis-server -p 6379:6379 -d redis
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
254e724d7786: Already exists
cd07ede39ddc: Pull complete
63df650ee4e0: Pull complete
c175c1c9487d: Pull complete
91cf9601b872: Pull complete
4f4fb700ef54: Pull complete
c70d7dc4bd70: Pull complete
Digest: sha256:a4b90e7079b67c41bdf4ca6f9d87197079e4c1c3273b7f489a74f2687d85a05e
Status: Downloaded newer image for redis:latest
8aafd919aa9f0ba6ce8952f6ef7e9f08ecec1454ce3b1c9cead4ebec5a0eb6ec
payies@payies:~$ docker exec -it redis-server redis-cli ping
PONG
payies@payies:~$ 
```



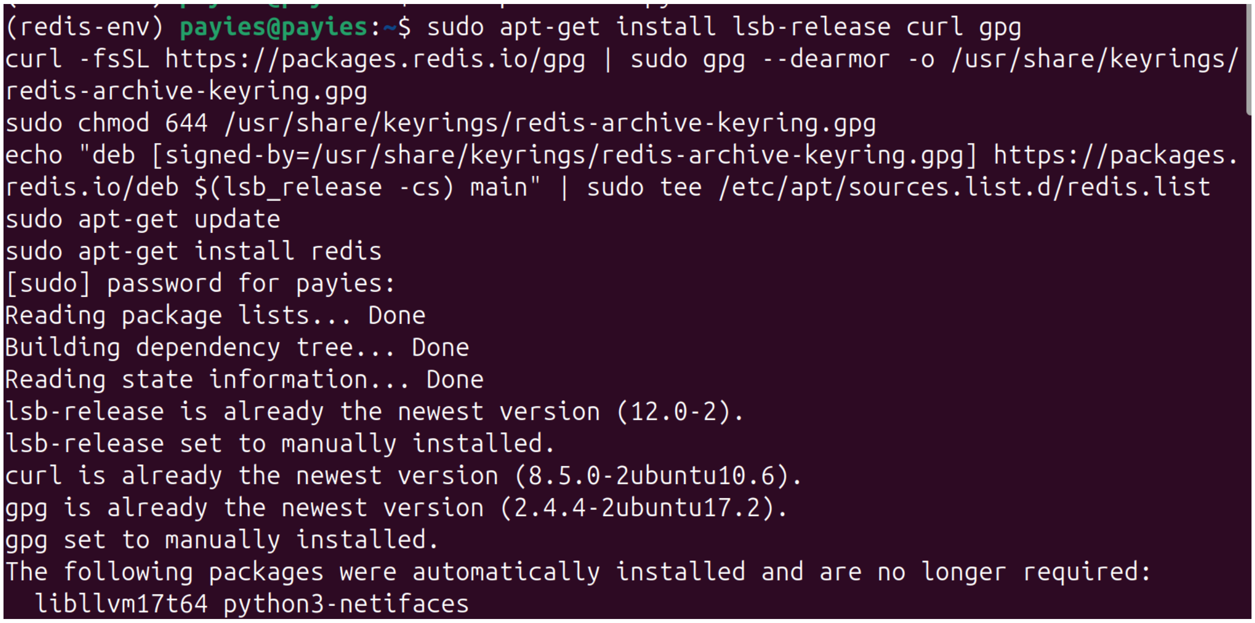
```
payies@payies:~$ python3 -m venv redis-env
payies@payies:~$ source redis-env/bin/activate
(redis-env) payies@payies:~$ pip install redis
Collecting redis
  Downloading redis-6.0.0-py3-none-any.whl.metadata (10 kB)
Downloading redis-6.0.0-py3-none-any.whl (268 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 268.9/268.9 kB 249.6 kB/s eta 0:00:00
Installing collected packages: redis
Successfully installed redis-6.0.0
(redis-env) payies@payies:~$ nano publisher.py
(redis-env) payies@payies:~$ nano subscriber.py
(redis-env) payies@payies:~$ python publisher.py
Published: Task 1 completed
Published: Task 2 completed
Published: Task 3 completed
(redis-env) payies@payies:~$ python subscriber.py
team1: Alpha
team2: Beta
Subscribed to 'updates' channel
```



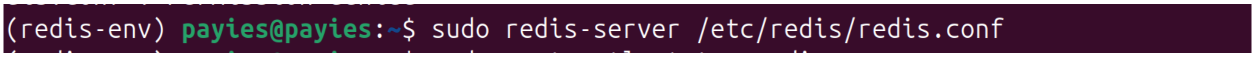
```python
import redis
import time

# Connect to Redis
r = redis.Redis(host='localhost', port=6379, decode_responses=True)

# Set some key-value pairs
r.set("team1", "Alpha")
r.set("team2", "Beta")

# Publish a message
for i in range(3):
    message = f"Task {i+1} completed"
    r.publish("updates", message)
    print(f"Published: {message}")
    time.sleep(1)
```



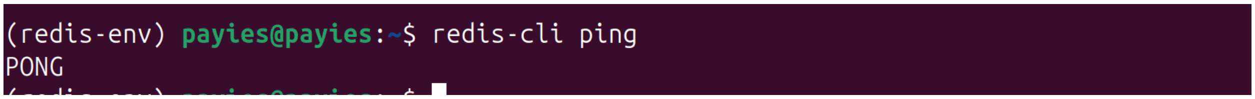
```python
import redis

# Connect to Redis
r = redis.Redis(host='localhost', port=6379, decode_responses=True)

# Retrieve key-values
print("team1:", r.get("team1"))
print("team2:", r.get("team2"))

# Subscribe to channel
pubsub = r.pubsub()
pubsub.subscribe("updates")
print("Subscribed to 'updates' channel")

# Listen for messages
for message in pubsub.listen():
    if message['type'] == 'message':
        print("Received:", message['data'])
```



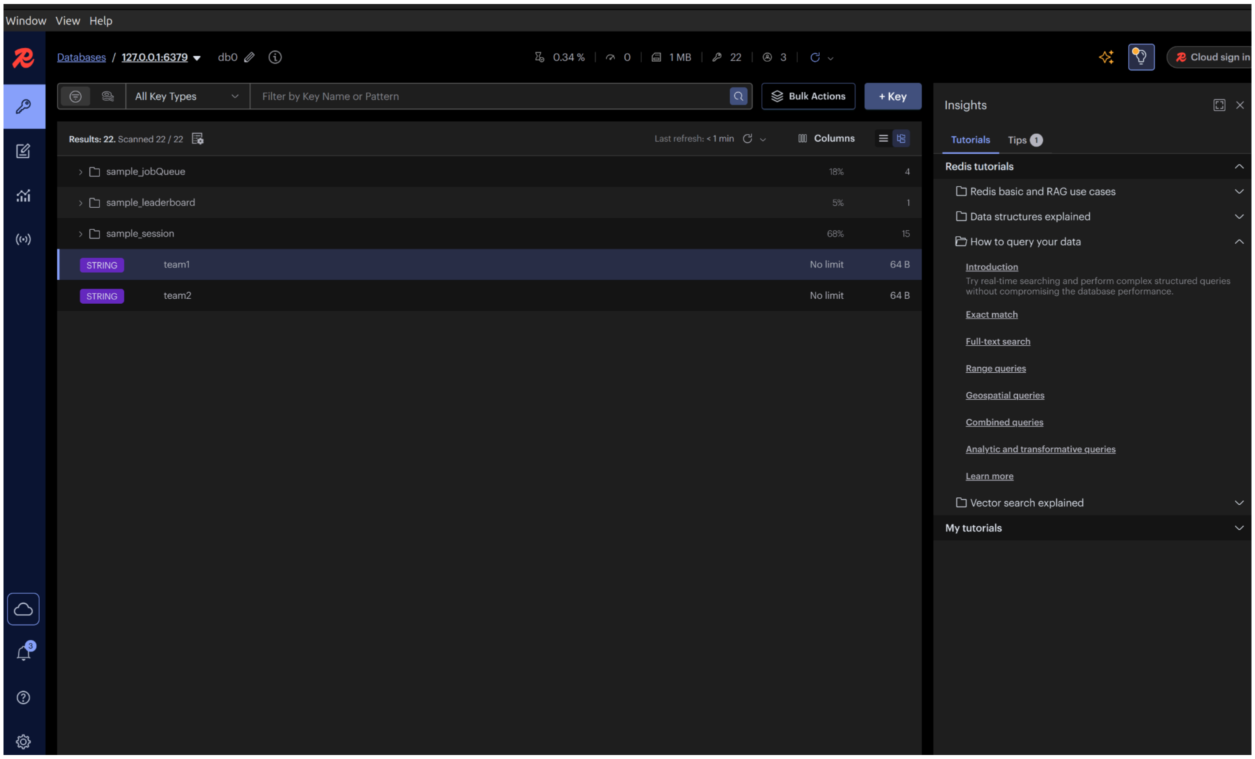
```
(redis-env) payies@payies:~$ sudo apt-get install lsb-release curl gpg
curl -fsSL https://packages.redis.io/gpg | sudo gpg --dearmor -o /usr/share/keyrings/
redis-archive-keyring.gpg
sudo chmod 644 /usr/share/keyrings/redis-archive-keyring.gpg
echo "deb [signed-by=/usr/share/keyrings/redis-archive-keyring.gpg] https://packages.
redis.io/deb $(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/redis.list
sudo apt-get update
sudo apt-get install redis
[sudo] password for payies:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lsb-release is already the newest version (12.0-2).
lsb-release set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.6).
gpg is already the newest version (2.4.4-2ubuntu17.2).
gpg set to manually installed.
The following packages were automatically installed and are no longer required:
  libllvm17t64 python3-netifaces
```



```
(redis-env) payies@payies:~$ sudo redis-server /etc/redis/redis.conf
```



```
(redis-env) payies@payies:~$ redis-cli ping
PONG
```



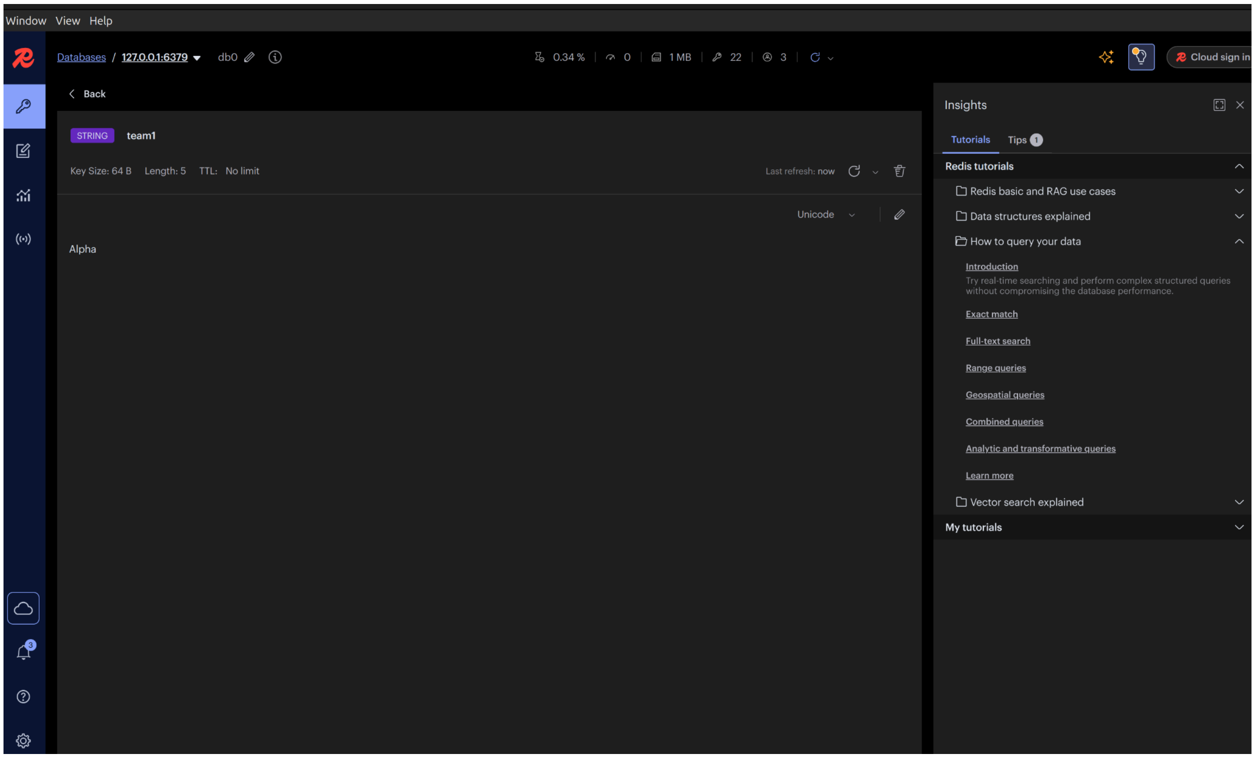
Results: 22. Scanned 22 / 22

sample_jobQueue		18%	4
sample_leaderboard		5%	1
sample_session		68%	15
STRING	team1	No limit	64 B
STRING	team2	No limit	64 B

Redis tutorials

- Redis basic and RAG use cases
- Data structures explained
- How to query your data
  - Introduction
    Try real-time searching and perform complex structured queries without compromising the database performance.
  - Exact match
  - Full-text search
  - Range queries
  - Geospatial queries
  - Combined queries
  - Analytic and transformative queries
  - Learn more
- Vector search explained

My tutorials



Window View Help
Databases / 127.0.0.1:6379 db0
0.34 % | 0 | 1 MB | 22 | 3
Cloud sign in
Back
Last refresh: now
Unicode
Insights
Tutorials
Tips 1
Redis tutorials
Redis basic and RAG use cases
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My tutorials

STRING team1

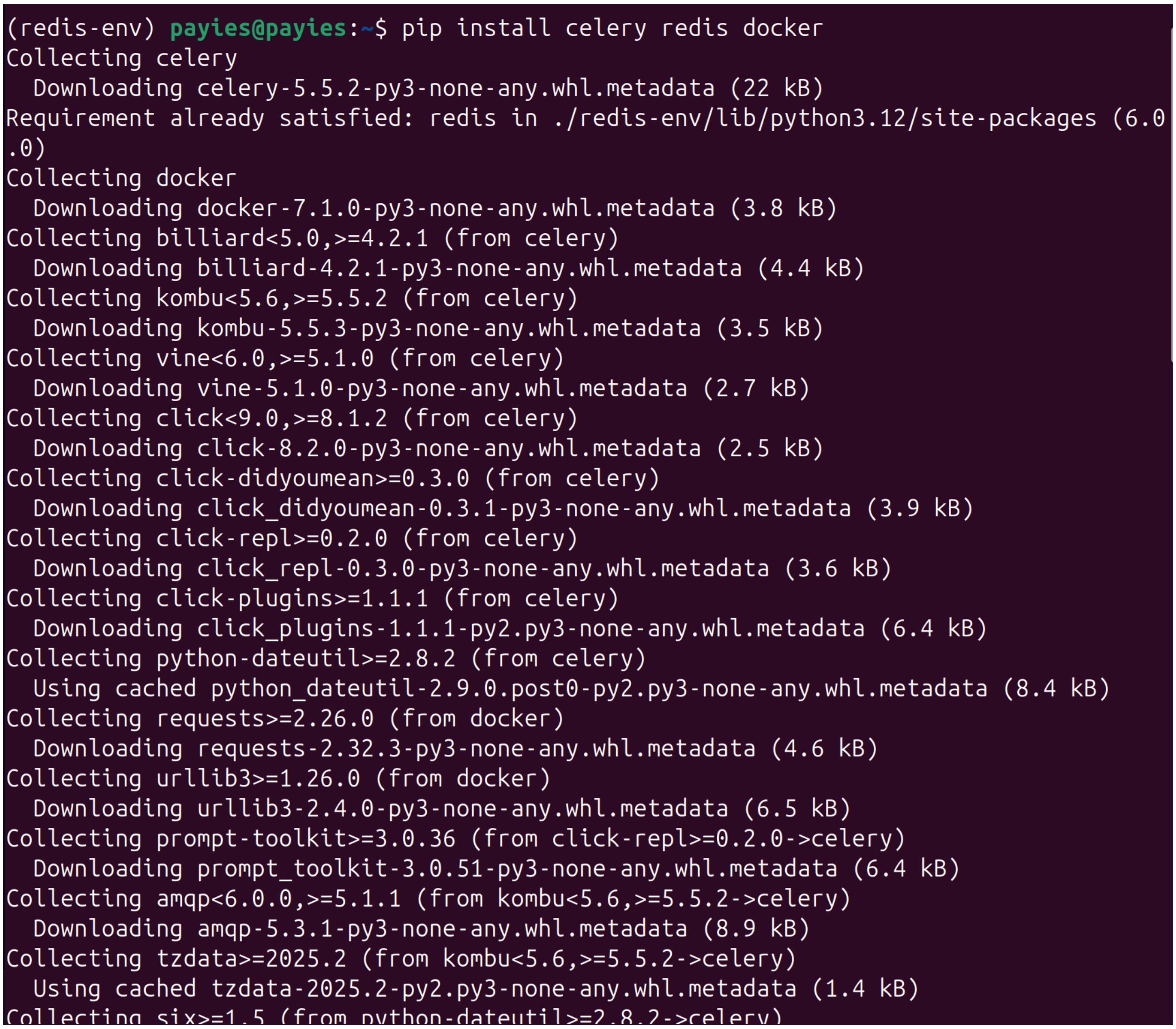
Key Size: 64 B Length: 5 TTL: No limit

Alpha

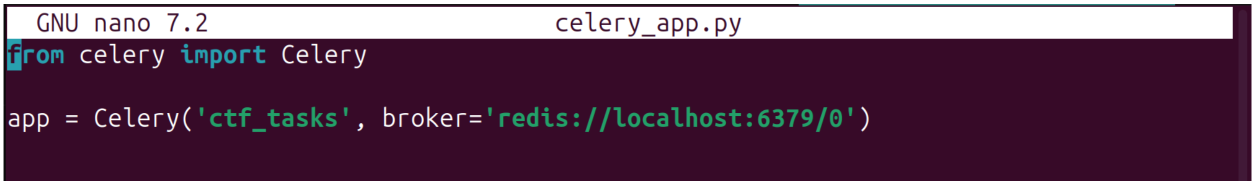
Redis Setup: Docker container with exposed port 6379.

Python Programs: `publisher.py` sets data and publishes messages, `subscriber.py` reads keys and listens on Redis Pub/Sub.

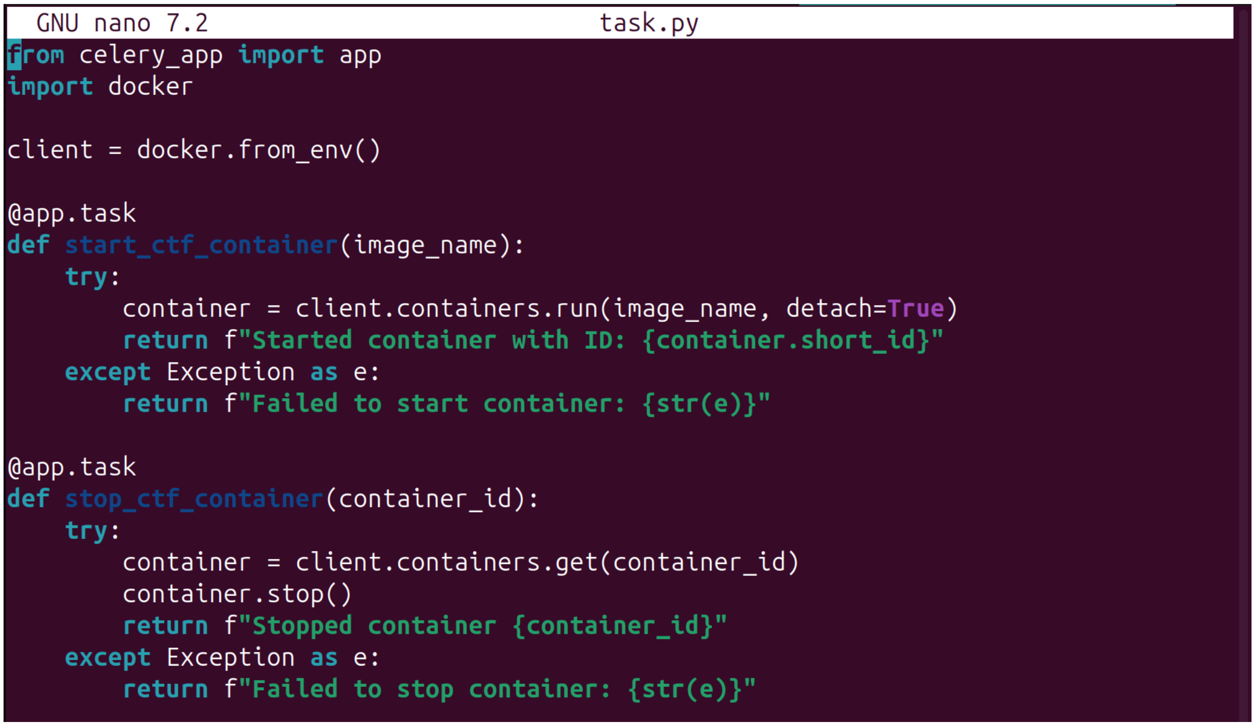
Monitoring Tool: RedisInsight is used to visualize real-time Redis activity.



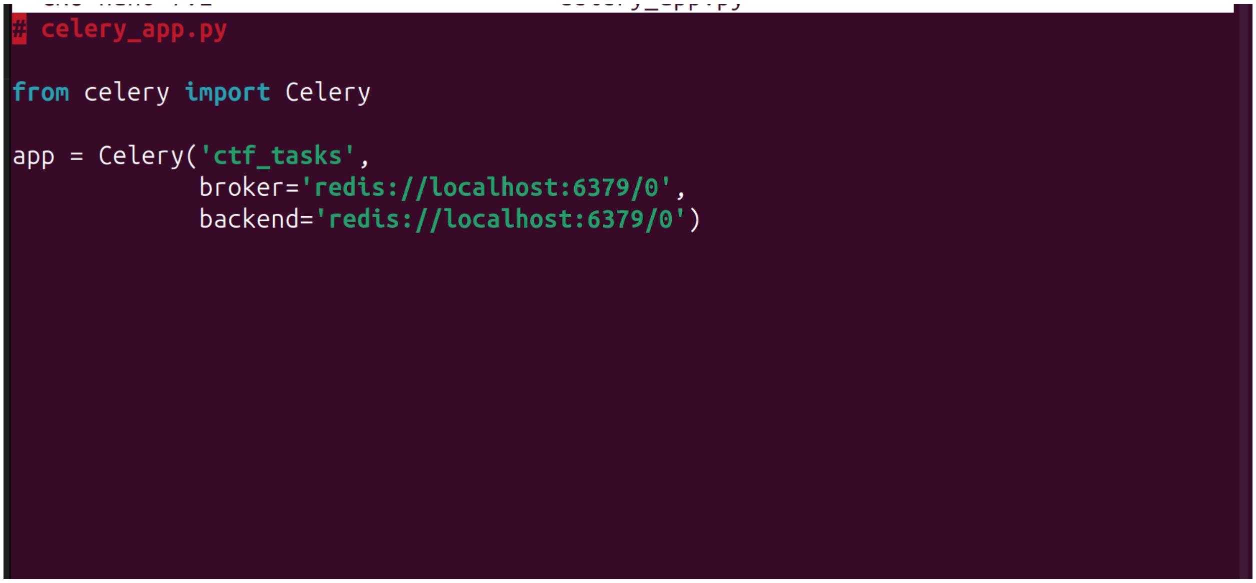
```
(redis-env) payies@payies:~$ pip install celery redis docker
Collecting celery
  Downloading celery-5.5.2-py3-none-any.whl.metadata (22 kB)
Requirement already satisfied: redis in ./redis-env/lib/python3.12/site-packages (6.0
.0)
Collecting docker
  Downloading docker-7.1.0-py3-none-any.whl.metadata (3.8 kB)
Collecting billiard<5.0,>=4.2.1 (from celery)
  Downloading billiard-4.2.1-py3-none-any.whl.metadata (4.4 kB)
Collecting kombu<5.6,>=5.5.2 (from celery)
  Downloading kombu-5.5.3-py3-none-any.whl.metadata (3.5 kB)
Collecting vine<6.0,>=5.1.0 (from celery)
  Downloading vine-5.1.0-py3-none-any.whl.metadata (2.7 kB)
Collecting click<9.0,>=8.1.2 (from celery)
  Downloading click-8.2.0-py3-none-any.whl.metadata (2.5 kB)
Collecting click-didyoumean>=0.3.0 (from celery)
  Downloading click_didyoumean-0.3.1-py3-none-any.whl.metadata (3.9 kB)
Collecting click-repl>=0.2.0 (from celery)
  Downloading click_repl-0.3.0-py3-none-any.whl.metadata (3.6 kB)
Collecting click-plugins>=1.1.1 (from celery)
  Downloading click_plugins-1.1.1-py2.py3-none-any.whl.metadata (6.4 kB)
Collecting python-dateutil>=2.8.2 (from celery)
  Using cached python_dateutil-2.9.0.post0-py2.py3-none-any.whl.metadata (8.4 kB)
Collecting requests>=2.26.0 (from docker)
  Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
Collecting urllib3>=1.26.0 (from docker)
  Downloading urllib3-2.4.0-py3-none-any.whl.metadata (6.5 kB)
Collecting prompt-toolkit>=3.0.36 (from click-repl>=0.2.0->celery)
  Downloading prompt_toolkit-3.0.51-py3-none-any.whl.metadata (6.4 kB)
Collecting amqp<6.0.0,>=5.1.1 (from kombu<5.6,>=5.5.2->celery)
  Downloading amqp-5.3.1-py3-none-any.whl.metadata (8.9 kB)
Collecting tzdata>=2025.2 (from kombu<5.6,>=5.5.2->celery)
  Using cached tzdata-2025.2-py2.py3-none-any.whl.metadata (1.4 kB)
Collecting six>=1.5 (from python-dateutil>=2.8.2->celery)
```



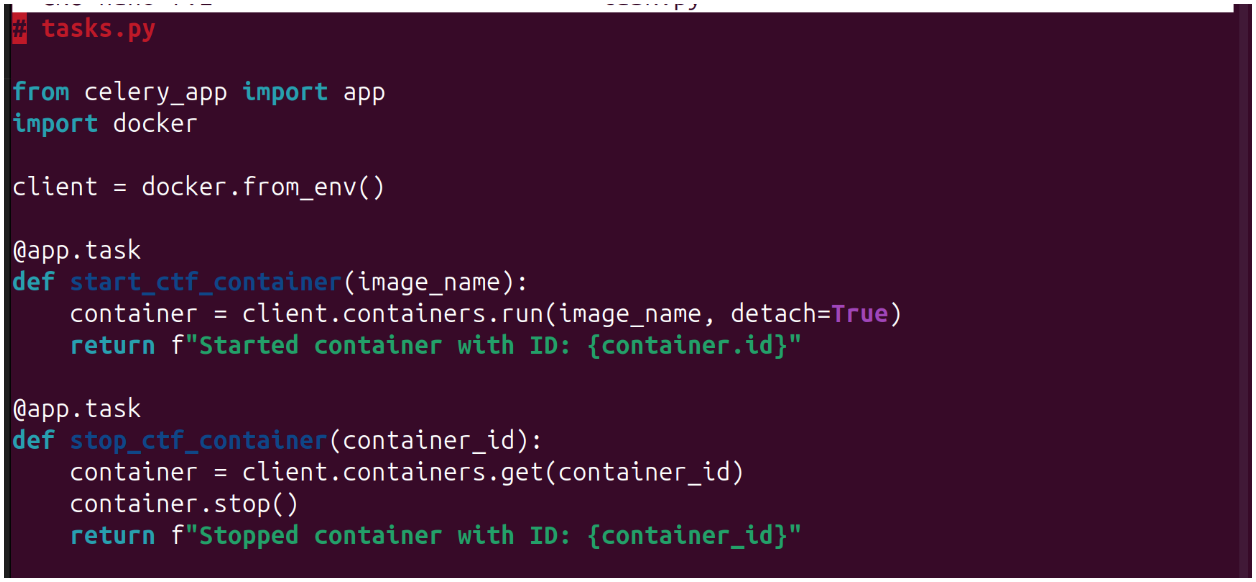
```
  GNU nano 7.2                                celery_app.py
from celery import Celery

app = Celery('ctf_tasks', broker='redis://localhost:6379/0')
```



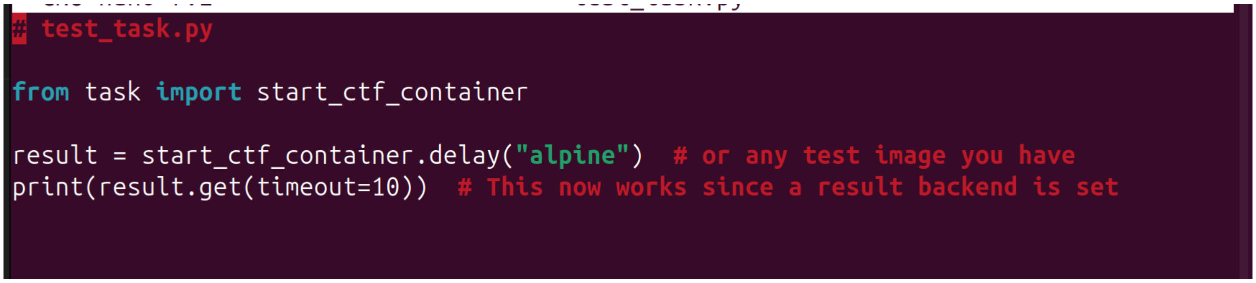
```
  GNU nano 7.2                                  task.py
from celery_app import app
import docker

client = docker.from_env()

@app.task
def start_ctf_container(image_name):
    try:
        container = client.containers.run(image_name, detach=True)
        return f"Started container with ID: {container.short_id}"
    except Exception as e:
        return f"Failed to start container: {str(e)}"

@app.task
def stop_ctf_container(container_id):
    try:
        container = client.containers.get(container_id)
        container.stop()
        return f"Stopped container {container_id}"
    except Exception as e:
        return f"Failed to stop container: {str(e)}"
```



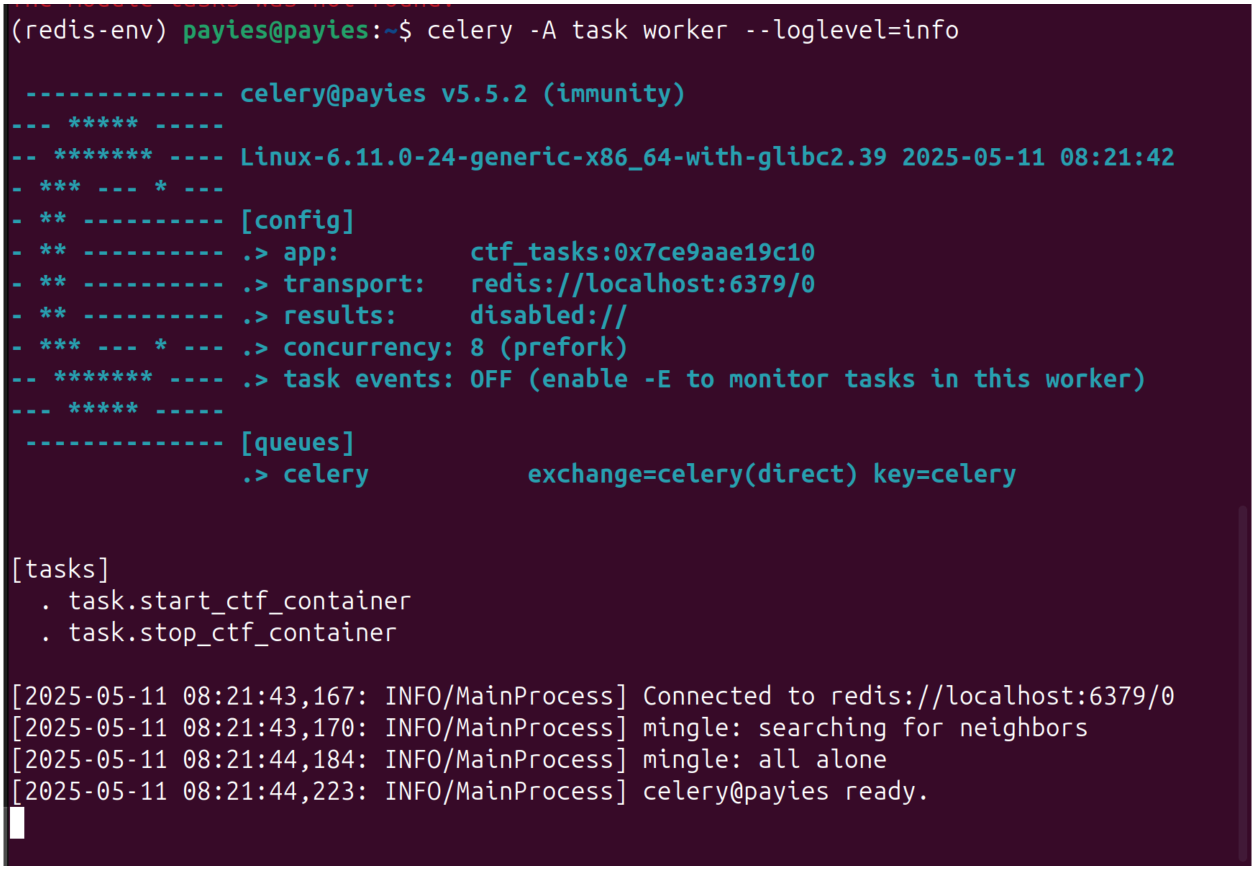
```
  GNU nano 7.2                               celery_app.py
# celery_app.py

from celery import Celery

app = Celery('ctf_tasks',
             broker='redis://localhost:6379/0',
             backend='redis://localhost:6379/0')
```



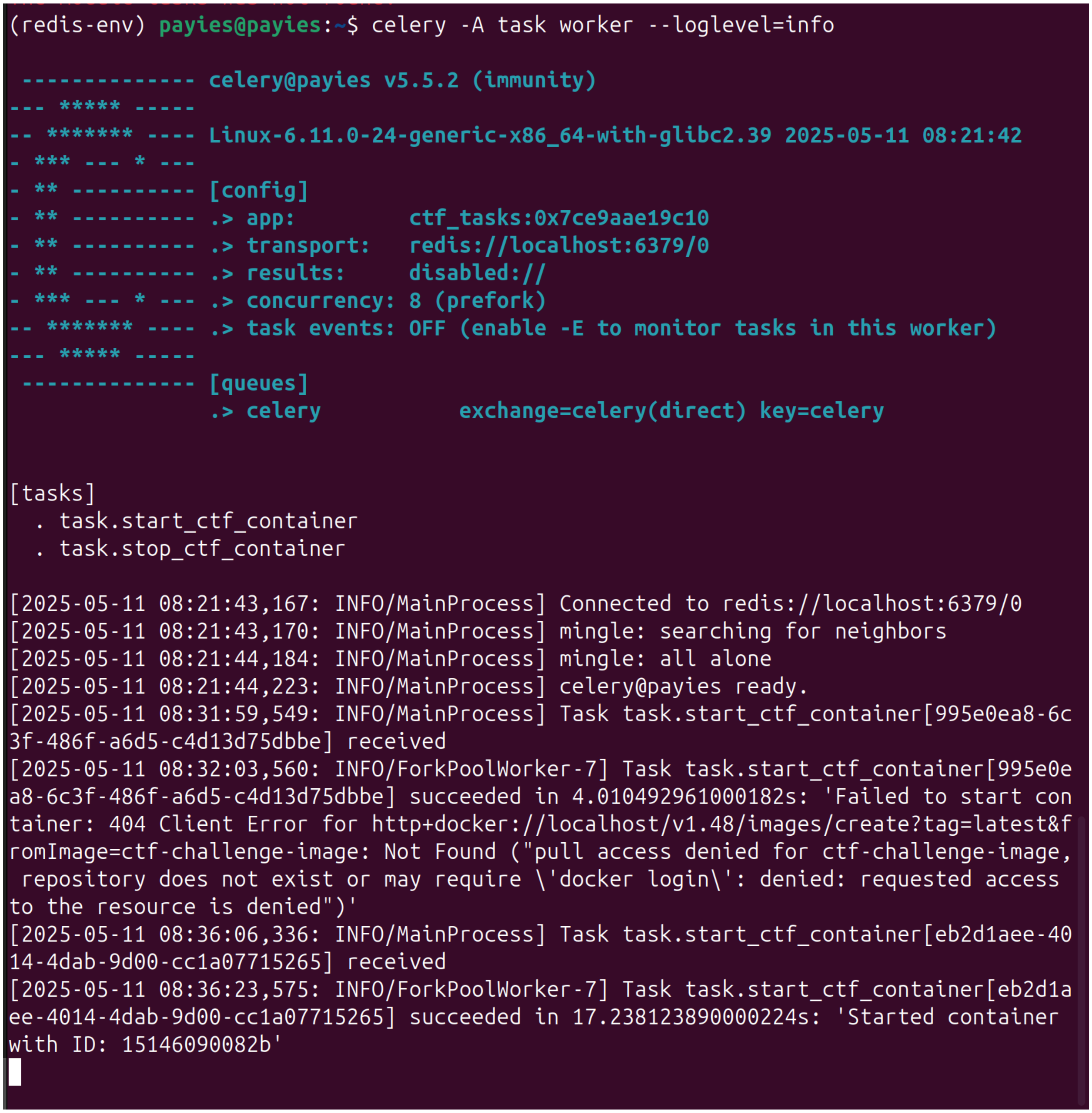
```
# tasks.py

from celery_app import app
import docker

client = docker.from_env()

@app.task
def start_ctf_container(image_name):
    container = client.containers.run(image_name, detach=True)
    return f"Started container with ID: {container.id}"

@app.task
def stop_ctf_container(container_id):
    container = client.containers.get(container_id)
    container.stop()
    return f"Stopped container with ID: {container_id}"
```



```
# test_task.py

from task import start_ctf_container

result = start_ctf_container.delay("alpine")  # or any test image you have
print(result.get(timeout=10))  # This now works since a result backend is set
```



```
The module tasks was not found.
(redis-env) payies@payies:~$ celery -A task worker --loglevel=info

 -------------- celery@payies v5.5.2 (immunity)
--- ***** -----
-- ******* ---- Linux-6.11.0-24-generic-x86_64-with-glibc2.39 2025-05-11 08:21:42
- *** --- * ---
- ** ---------- [config]
- ** ---------- .> app:         ctf_tasks:0x7ce9aae19c10
- ** ---------- .> transport:   redis://localhost:6379/0
- ** ---------- .> results:     disabled://
- *** --- * --- .> concurrency: 8 (prefork)
-- ******* ---- .> task events: OFF (enable -E to monitor tasks in this worker)
--- ***** -----
 -------------- [queues]
                .> celery           exchange=celery(direct) key=celery


[tasks]
  . task.start_ctf_container
  . task.stop_ctf_container

[2025-05-11 08:21:43,167: INFO/MainProcess] Connected to redis://localhost:6379/0
[2025-05-11 08:21:43,170: INFO/MainProcess] mingle: searching for neighbors
[2025-05-11 08:21:44,184: INFO/MainProcess] mingle: all alone
[2025-05-11 08:21:44,223: INFO/MainProcess] celery@payies ready.
```



```
(redis-env) payies@payies:~$ celery -A task worker --loglevel=info

 -------------- celery@payies v5.5.2 (immunity)
--- ***** -----
-- ******* ---- Linux-6.11.0-24-generic-x86_64-with-glibc2.39 2025-05-11 08:21:42
- *** --- * ---
- ** ---------- [config]
- ** ---------- .> app:         ctf_tasks:0x7ce9aae19c10
- ** ---------- .> transport:   redis://localhost:6379/0
- ** ---------- .> results:     disabled://
- *** --- * --- .> concurrency: 8 (prefork)
-- ******* ---- .> task events: OFF (enable -E to monitor tasks in this worker)
--- ***** -----
 -------------- [queues]
                .> celery           exchange=celery(direct) key=celery


[tasks]
  . task.start_ctf_container
  . task.stop_ctf_container

[2025-05-11 08:21:43,167: INFO/MainProcess] Connected to redis://localhost:6379/0
[2025-05-11 08:21:43,170: INFO/MainProcess] mingle: searching for neighbors
[2025-05-11 08:21:44,184: INFO/MainProcess] mingle: all alone
[2025-05-11 08:21:44,223: INFO/MainProcess] celery@payies ready.
[2025-05-11 08:31:59,549: INFO/MainProcess] Task task.start_ctf_container[995e0ea8-6c
3f-486f-a6d5-c4d13d75dbbe] received
[2025-05-11 08:32:03,560: INFO/ForkPoolWorker-7] Task task.start_ctf_container[995e0e
a8-6c3f-486f-a6d5-c4d13d75dbbe] succeeded in 4.010492961000182s: 'Failed to start con
tainer: 404 Client Error for http+docker://localhost/v1.48/images/create?tag=latest&f
romImage=ctf-challenge-image: Not Found ("pull access denied for ctf-challenge-image,
 repository does not exist or may require \'docker login\': denied: requested access
to the resource is denied")'
[2025-05-11 08:36:06,336: INFO/MainProcess] Task task.start_ctf_container[eb2d1aee-40
14-4dab-9d00-cc1a07715265] received
[2025-05-11 08:36:23,575: INFO/ForkPoolWorker-7] Task task.start_ctf_container[eb2d1a
ee-4014-4dab-9d00-cc1a07715265] succeeded in 17.238123890000224s: 'Started container
with ID: 15146090082b'
```

https://iutbox.iut.ac.ir/index.php/s/qSyeHKtk9EJWpZK