

Cloud Computing for Data Analysis
ITCS 6190/8190, Fall 2025
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Assignment #1: Docker Containers

Commands:

```
# Build containers
docker compose build

# Run services
docker compose up --build

# Stop services
docker compose down -v
```

Obtained Output:

Successfully connected to the database!

```
app-1 |
app-1 | === Summary ===
app-1 | {
app-1 |   "total_trips": 6,
app-1 |   "avg_fare_by_city": [
app-1 |     {
app-1 |       "city": "Charlotte",
app-1 |       "avg_fare": 16.25
app-1 |     },
app-1 |     {
app-1 |       "city": "New York",
app-1 |       "avg_fare": 19.0
app-1 |     },
app-1 |     {
app-1 |       "city": "San Francisco",
app-1 |       "avg_fare": 20.25
app-1 |     }
app-1 |   ],
app-1 |   "top_n_longest_trips": [
app-1 |     {
app-1 |       "city": "San Francisco",
app-1 |       "minutes": 28,
app-1 |       "fare": 29.3
app-1 |     },
app-1 |     {
app-1 |       "city": "New York",
app-1 |       "minutes": 26,
app-1 |       "fare": 27.1
app-1 |     },
app-1 |     {
```

```
app-1 |   "city": "Charlotte",
app-1 |   "minutes": 21,
app-1 |   "fare": 20.0
app-1 | },
app-1 | {
app-1 |   "city": "Charlotte",
app-1 |   "minutes": 12,
app-1 |   "fare": 12.5
app-1 | },
app-1 | {
app-1 |   "city": "San Francisco",
app-1 |   "minutes": 11,
app-1 |   "fare": 11.2
app-1 | }
app-1 | ]
app-1 | }
app-1 exited with code 0
```

Reflection:

this project taught me how to:

- Set up a reproducible **multi-container stack** with Docker Compose.
- Use **service networking and environment variables** for container communication.
- Automate initialization of a database and write outputs from another service.

If I were to improve it, I would add more complex queries, better error logging, and perhaps containerize tests for CI/CD.