

# ROB

...

Demo Setup Instructions

# Install

# Project Directory & Virtual Environment

The following instructions assume the ROB is installed in a local directory `/home/user/project/rob`. Adjust the highlighted path names to your system.

We recommend using a virtual environment when installing the ROB Demo code.

## Using virtualenv

```
# Create a new virtual environment
virtualenv venv

# Activate the virtual environment
source venv/bin/activate
```

## Using Anaconda

```
# Create a new virtual environment
conda create -n rob pip

# Activate the virtual environment
conda activate rob
```

# Install Packages - Quick Start

To run the demo using the development Web UI, it is sufficient to clone and install the **rob-webapi-flask** repository. The repository contains a build version of the Web UI. If you want to run the demo from the command line you also need to install the **rob-client** package.

## GitHub

```
# Clone and install packages from GitHub
git clone git@github.com:scailfin/rob-webapi-flask.git
pip install -e rob-webapi-flask

# Install this package if you want to run the demo from the command line
git clone git@github.com:scailfin/rob-client.git
pip install -e rob-client
```

# Setup

# Configuration

Ensure that the following environment variables are set before starting the demo server.

## Database

```
# This example uses SQLite. For more examples, see  
# https://docs.sqlalchemy.org/en/13/core/engines.html#database-urls  
export FLOWSERV_DATABASE=sqlite:///home/user/project/rob/db.sqlite
```

# Configuration (cont.)

Ensure that the following environment variables are set before starting the demo server.

## Web API

```
# Configure base directory for all workflow and run files, and the API app path.  
export FLOWSERV_API_DIR=/home/user/project/rob/.rob  
export FLOWSERV_API_PATH=/rob/api/v1
```

# Configuration (cont.)

Ensure that the following environment variables are set before starting the demo server.

## Web UI

```
# Set path to the Web UI build directory.  
export ROB_UI_PATH=/home/user/project/rob/rob-webapi-flask/resources/ui
```



# Setup Database & Install Demo

The database needs to be created once before the demo is run for the first time.

## Create Database

```
flowserv init
```

To run the demo you need to register at least one user.

## Register User(s)

```
flowserv register -u alice -p mypwd  
flowserv register -u bob -p abc123
```

# Setup Database & Install Demo (cont.)

Install the code for the demo workflows. The demos can either be installed from GitHub or from a local folder.

## Install Demo Code

```
# Install directly from GitHub.  
# 'Hello World' Demo  
flowserv install helloworld  
# 'Top Tagger' Demo  
flowserv install toptagger  
  
# Install from a local directory (e.g., /home/user/project/rob/rob-demo-hello-world)  
flowserv install /home/user/project/rob/rob-demo-hello-world
```

**Run the Demo**

# Configure Workflow Engine

Before you start the Flask Web server the workflow engine needs to be defined. The settings differ for the two demos. Note that 'Hello World' can run with the same settings as 'Top Tagger' but 'Top Tagger' cannot run with 'Hello World' settings (unless you install the 'Top tagger' code manually in your virtual environment).

## Set environment variables for the 'Hello World' Demo

```
export FLOWSERV_BACKEND_MODULE=flowserv.controller.serial.engine
export FLOWSERV_BACKEND_CLASS=SerialWorkflowEngine
```

## Set environment variables for the 'Top Tagger' Demo

```
# Note that this demo requires a running Docker Daemon on your machine.
export FLOWSERV_BACKEND_MODULE=flowserv.controller.serial.docker
export FLOWSERV_BACKEND_CLASS=DockerWorkflowEngine
```

# Start the Web Server

Set environment variables to run the Flask development server. The Web UI should then be available at <http://127.0.0.1:5000/rob-ui/>.

## Set environment variables for Flask

```
export FLASK_APP=robflask.api  
export FLASK_ENV=development
```

## Run Flask

```
flask run
```

# Run Demo from Command Line

If you want to run the demo from the command-line instead, you need to open a new terminal window. Make sure to activate the virtual environment and set the environment variable **FLOWSERV\_API\_PATH** to the same value as in the terminal that is running the Flask server.

**Set Environment Variable (in a new terminal window)**

```
export FLOWSERV_API_PATH=/rob/api/v1
```

# Run Demo (cont.)

Example screen shot for running the demo from the command line

```
heiko@raven: ~/projects/rob
heiko@raven: ~/projects/rob x heiko@raven: ~/projects/rob x heiko@raven: ~/projects/rob x
(rob) heiko:rob$ # Login as alice.
(rob) heiko:rob$ eval $(rob login -u alice -p mypwd)
(rob) heiko:rob$ rob whoami
Logged in as alice.
(rob) heiko:rob$ # Set 'Hello World' as the default benchmark
(rob) heiko:rob$ rob benchmarks list
ID | Name | Description
-----|-----|-----
26df2268 | Hello World Demo | Hello World Demo for ROB
46eca6b0 | Top Tagger Demo - ML4Jets | ROB Demo for the Machine Learning Landscape of Top Taggers Comparison
(rob) heiko:rob$ export ROB_BENCHMARK=26df2268
(rob) heiko:rob$ # Create a new submission
(rob) heiko:rob$ eval $(rob submissions create -n "Team Alice")
(rob) heiko:rob$ # Upload the input file
(rob) heiko:rob$ rob files upload -i rob-demo-hello-world/data/names-alice.txt
Uploaded 'names-alice.txt' with ID 25fd878490c94fb48e44bcc1be6cea9b.
(rob) heiko:rob$ # Start a new run
(rob) heiko:rob$ rob runs start
Names File (file) $>
Uploaded files (id, name, date)

25fd878490c94fb48e44bcc1be6cea9b names-alice.txt 2020-07-31T16:13:59

File ID $> 25fd878490c94fb48e44bcc1be6cea9b
Sleep for (sec.) (float) [default '10'] $> 1
Greeting (string) [default 'Hello'] $> Hi
run 948c63fdd3d14c82920217021e000ff8 in state RUNNING
(rob) heiko:rob$ rob runs list
ID | Submitted at | State
-----|-----|-----
948c63fdd3d14c82920217021e000ff8 | 2020-07-31T19:52:49.118953+00:00 | RUNNING
(rob) heiko:rob$ rob runs list
ID | Submitted at | State
-----|-----|-----
948c63fdd3d14c82920217021e000ff8 | 2020-07-31T19:52:49.118953+00:00 | SUCCESS
(rob) heiko:rob$ rob runs download -r 948c63fdd3d14c82920217021e000ff8 -a
(rob) heiko:rob$ tar -ztfv run.tar.gz
-rw-rw-r-- heiko/heiko 722 2020-07-31 16:15 results/greetings.txt
-rw-rw-r-- heiko/heiko 60 2020-07-31 16:15 results/analytics.json
(rob) heiko:rob$ rob benchmarks leaders
Rank | Submission | Number of 3-grams | Number of lines | Score
-----|-----|-----|-----|-----
1 | Team Alice | 328 | 71 | 4.619718309859155
```