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CELERY-POWERED PYTHON: EMPOWERING DISTRIBUTED TASK AUTOMATION

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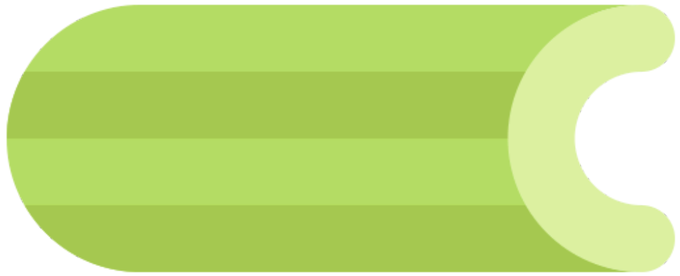
Learn More About Celery



GitHub: https://github.com/celery/celery

Documentation: https://docs.celeryq.dev/en/stable/index.html

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Goals for this Session

- Introduction to Celery
- Installing and Setting Up Celery
- Celery Architecture
- Creating and Running Tasks
- Task Scheduling
- Monitoring and Managing Celery

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Introduction to Celery

- **What is Celery?**
  - Distributed task queue.
  - Handles real-time processing.
  - Supports scheduling tasks.
- **Use Cases for Celery**
  - Background task processing.
  - Asynchronous execution.
  - Periodic task scheduling.
  - Real-time data processing.

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Installing and Setting Up Celery

- **Requirements and Installation**
  - Python 3.x.
  - Install Celery: `pip install celery`.
  - Install broker (e.g., Redis, RabbitMQ).
- **Basic Configuration**
  - Creating a Celery instance.
  - Configuring the broker URL.
  - Configuring the result backend.

Celery Architecture

- **How Celery Works**
  - **Brokers**
    - Role in message passing.
    - Popular options: RabbitMQ, Redis.
  - **Workers**
    - Execute tasks.
    - Scale horizontally.
  - **Task Queues**
    - Distribute tasks.
    - FIFO (First In, First Out) principle.
- **Common Broker Options**
  - RabbitMQ: Robust and scalable.
  - Redis: Simple and fast.

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Creating and Running Tasks

- **Defining Tasks**
  - Using the `@celery.task` decorator.
  - Simple task example.
- **Running Tasks Synchronously and Asynchronously**
  - Synchronous execution.
  - Asynchronous execution: `delay()`, `apply_async()`.
- **Task Options and Settings**
  - Retry mechanisms.
  - Task time limits.
  - Task priorities.

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Task Scheduling

- **Periodic Tasks**
  - Using Celery beat.
  - Defining schedules.
- **Using Celery Beat**
  - Configuration.
  - Periodic task examples.
  - Synchronizing with worker nodes.

Monitoring and Managing Celery

- **Monitoring Tools**
  - **Flower**
    - Real-time web-based monitoring.
    - Installation and setup.
  - **Celery Events**
    - Inspecting tasks.
    - Monitoring worker status.
- **Common Management Commands**
  - Starting workers.
  - Inspecting workers.
  - Revoking tasks.

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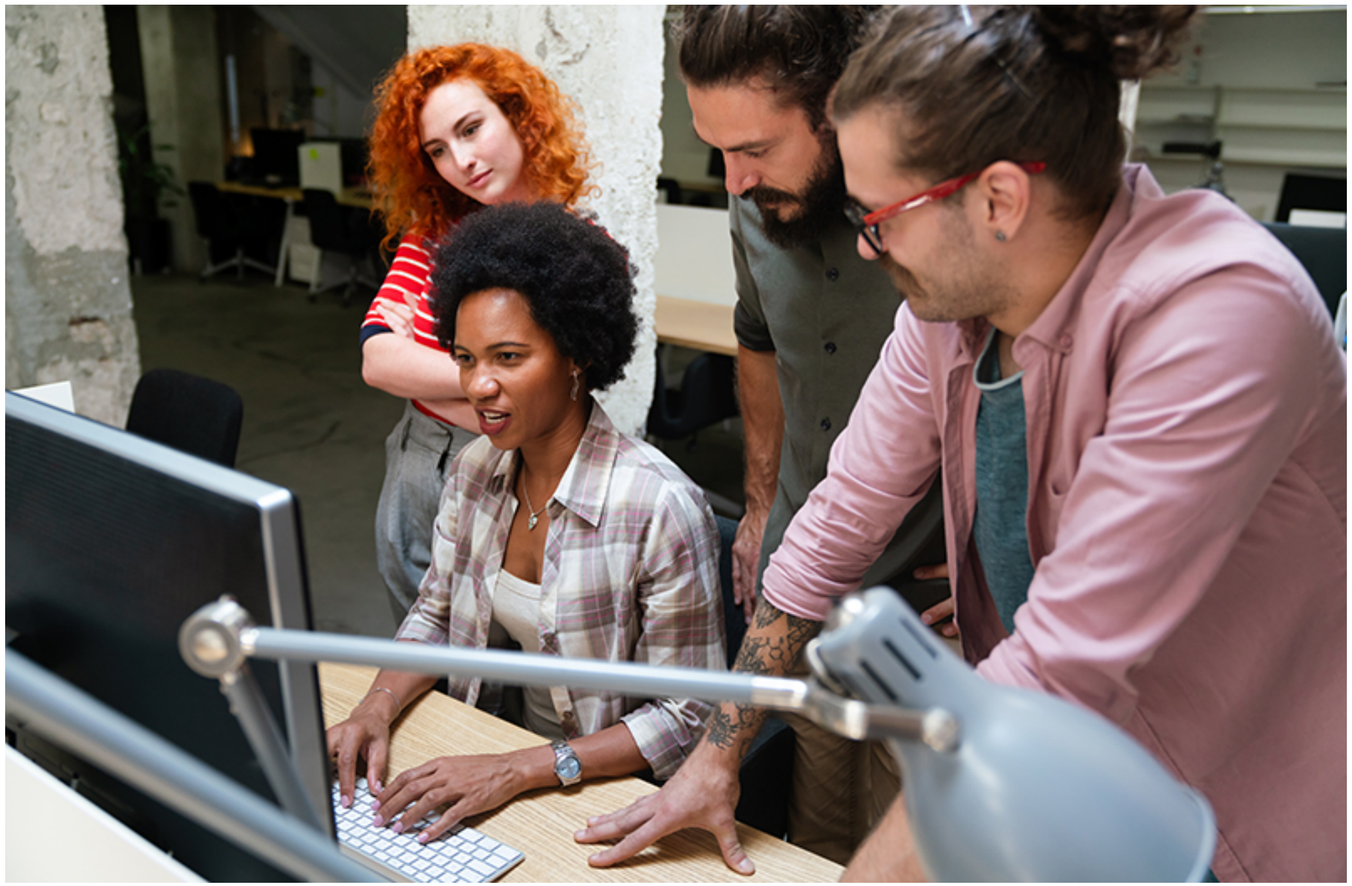
Programming Demo



Let's Explore Celery

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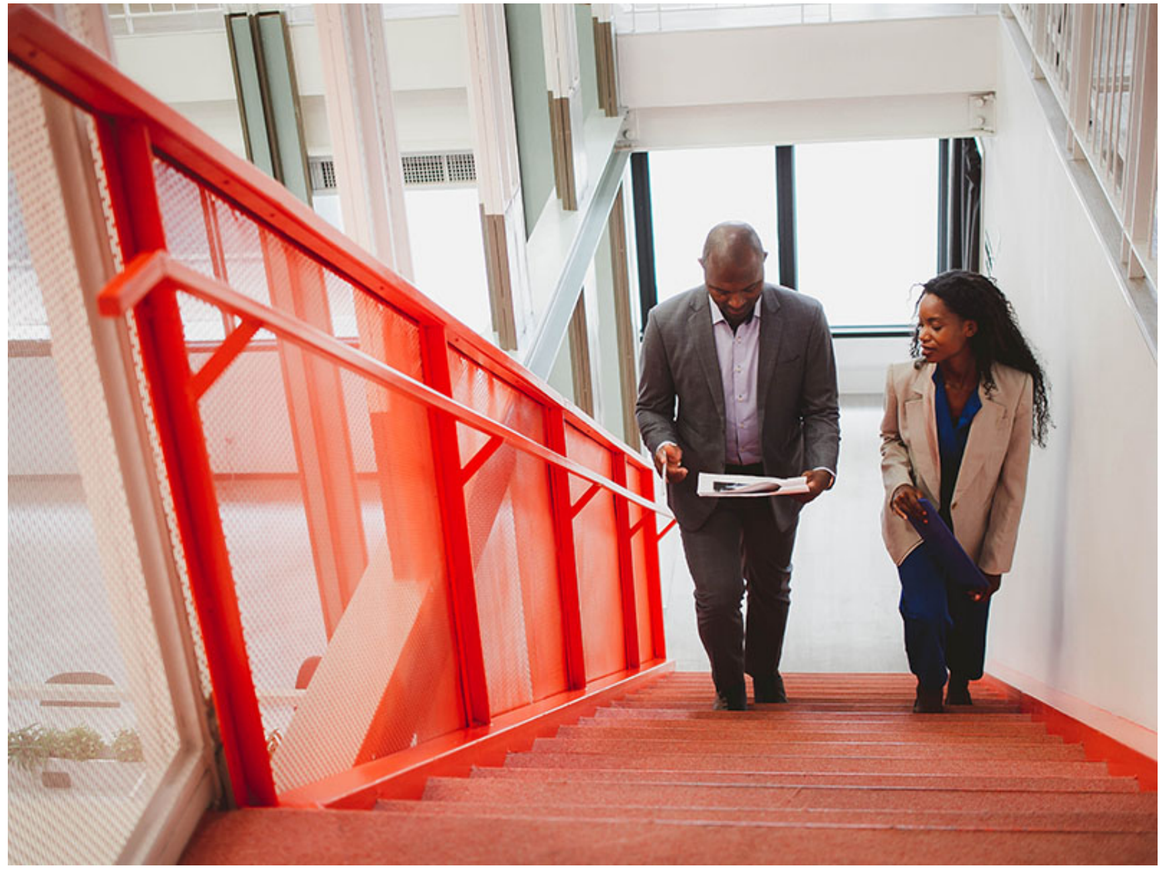
Celery Programming Next Steps

- Explore the Celery GitHub Repo
- Read the Celery Documentation
- Try out the Celery Examples
- Run the code from the webinar as GitHub Codespace and explore it on your own
- Incorporate it into your next project!



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Download the Code

github.com/cc-xebia-webinars/celery-webinar_06112024

slides and source code available

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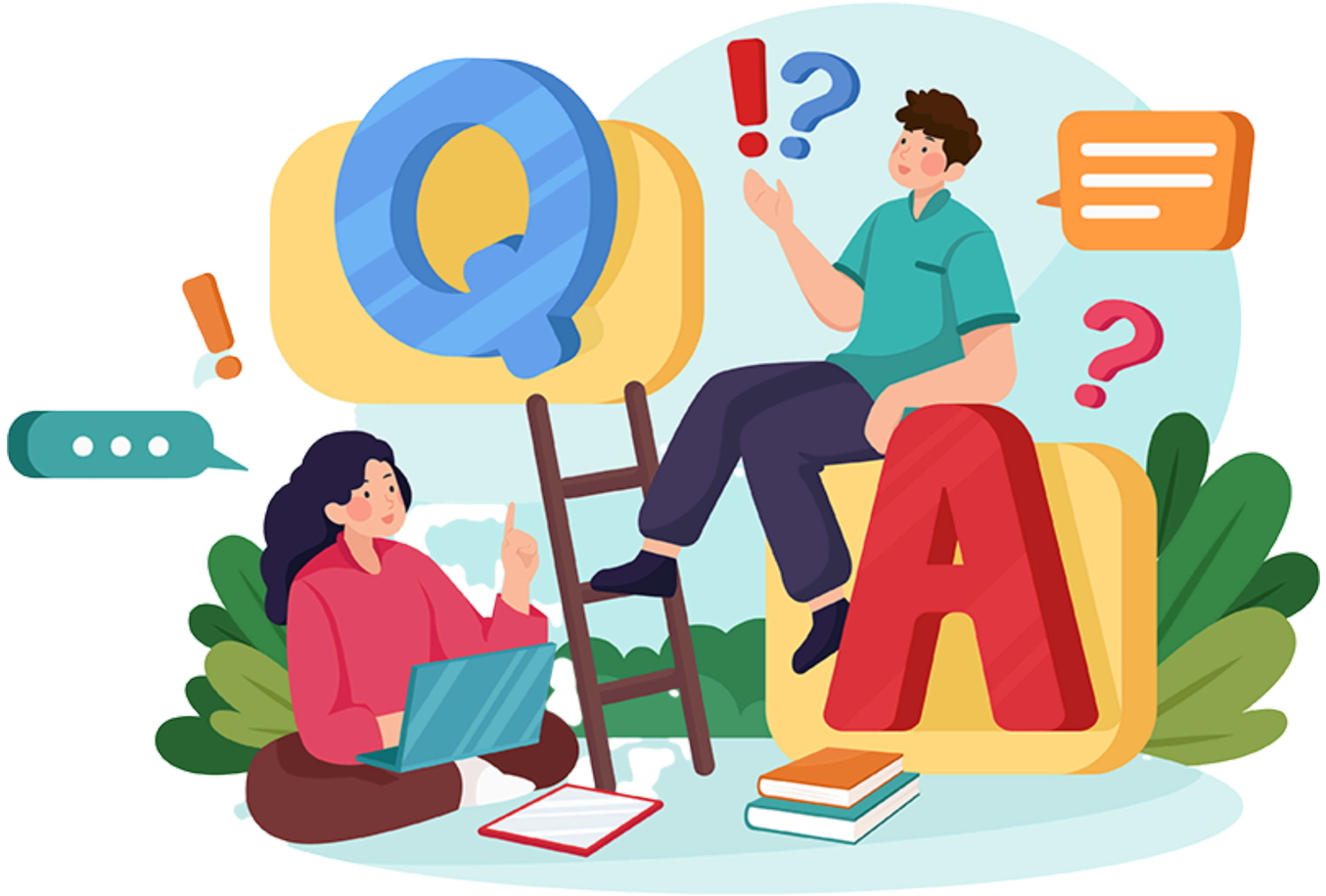
Q&A



Questions?

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Thank you!

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