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Python with asyncio - Artemis LabVIEW™ Migration

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The future licensing, development and support of LabVIEW™ platform by National Instruments in the domain of academia and research is uncertain. Therefore the need for migration of LabVIEW projects to other platforms gain momentum. Python is a popular programming language and a possible alternative that enables effective system integration. Most control systems in the experiment control system domain are focusing on instrument control and monitoring, hence are I/O driven applications. Asynchronous I/O in Python can be handled effectively using asyncio module which in part of Python's standard library enabling to write code using co-routines and the async/await syntax implementing a cooperative multi-tasking. This talk will give an introduction to this programming paradigm. The migration of a LabVIEW™ VI monitoring the cryostat of the Artemis ion-trap experiment utilizing Python's asyncio together with MQTT, Telegraf, InfluxDB and Grafana will be shown.

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