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Script Interface Plugin

General

The Script Interface Plugin enables you to write **Scripts** in the *JavaScript* language to program CoDaBix. Scripts are **lightweight extensions** of CoDaBix.

- A fast and simple (yet powerful) way to extend CoDaBix's functionality
- Implemented in **JavaScript** which is a powerful scripting language, and **TypeScript** to avoid errors by providing static typing and to offer a rich developer experience
- Can be changed and restarted while CoDaBix is running
- Stored in the CoDaBix back-end database, so it is bound to the data, not to the installation
- Executed in an isolated environment, has only access to certain defined CoDaBix APIs, not OS APIs
- No need to install an development environment, create a project, compile it, copy the DLL, etc. ...
Instead, simply write the script in the built-in and web-based Script Editor with **IntelliSense** support

What Does the Plugin Do?

- Find, create and manipulate Nodes and read and write Node values
- Register for events, e.g. when a Node value has been written
- Do calculations, call mathematic functions, generate a random number
- Create an interval timer that continuously calls back a script function
- Read and write files
- Handle incoming HTTP(S) requests of the CoDaBix web server (including WebSocket connections)
- Execute HTTP(S) requests to external servers

If you have basic programming experience, you should be able to easily find your way when writing code of a script. JavaScript is one of the most popular scripting languages and in combination with TypeScript (that provides static type safety), a script can **scale from a one-liner** (e.g. adjust a Node value before it is written) **to complex code** with namespaces, classes, dependencies on other scripts and further more.

Note: You don't need to be familiar with TypeScript to be able to write scripts.

Features

- High performance by compiling script code to CIL bytecode
- Type safety of variables, properties and so on through TypeScript
- Protects against unintended infinite loops by applying a timeout to script execution

Supported Specifications

- Support for **TypeScript 4.1** in the Script Editor
- Full support for **ECMAScript 5.1** (syntax and library)
- Almost full support for **ECMAScript 2015+** syntax (let / const, class, for-of, async / await etc.) by downlevel compilation to ECMAScript 5.1 using TypeScript
- Partial support for **ECMAScript 2015** library (Collections, Typed Arrays, Promise)
- Supports **Async Functions** for long-running operations using the async / await keywords (enhancing JavaScript's event-driven, non-blocking model)

Purpose & Use Cases

You can use scripts for

- simple circuitries ("When a button is pressed, the light shall be turned on and after 3 minutes be turned off")
- adjusting values that are read from or written to a device, e.g. by doing some calculations
- generating complex Node hierarchies / structures
- generating demo data (e.g. write a random value to a Node every 2 seconds)
- big data: collect external data around specific points, e.g. store Berlin's current weather in a datapoint Node
- providing a complex, customized condition for triggers

Script Interface Plugin Development Guide

You can find the Development Guide to the Script Interface Plugin here:

- [Script Interface Plugin Development Guide](#)

Installation

The Script Interface Plugin is an inherent part of CoDaBix and does not need to be installed.

Configuration

The Script Interface Plugin allows to configure Scripts in the CoDaBix Web Configuration using the “Script Interface” menu entry - see [Managing Scripts](#) in the Script Interface Plugin Development Guide.

Diagnostics

The Script Interface Plugin allows to diagnose Scripts in the CoDaBix Web Configuration using the “Script Interface” menu entry - see [Managing Scripts](#) in the Script Interface Plugin Development Guide.

Entities

The Script Interface Plugin does not use the CoDaBix Entity Model because it allows Scripts to be managed using the CoDaBix Web Configuration and therefore doesn't provide entities.

Folders & Files

The Script Interface Plugin is an inherent part of CoDaBix and therefore doesn't consist of additional files or folders.

About Versions

This Document

Date	2017-11-14
Version	1.8

Plugin

Name	Script Interface Plugin
Version	Corresponds to the CoDaBix Version

Assembly

The Script Interface Plugin is an inherent part of CoDaBix and therefore doesn't consist of a separate assembly.

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