FEBRUARY 14, 2017

Azure Functions – Time Trigger (CRON) Cheat Sheet

This is a cheat sheet for CRON expressions that are used in the time triggers for Azure functions. They define how often a trigger/the Azure function should be executed (daily, hourly, every 3 months, ...).

The basic format of the CRON expressions in Azure is:
{second} {minute} {hour} {day} {month} {day of the week}
e.g. ***0*** * * * * * (=every minute)

The following values are allowed for the different placeholders:

Value	Allowed Values	Description
{second}	0-59; *	{second} when the trigger will be fired
{minute}	0-59; *	{minute} when the trigger will be fired
{hour}	1-23; *	{hour} when the trigger will be fired
{day}	1-31; *	{day} when the trigger will be fired
{month}	1-12; *	{month} when the trigger will be fired
{day of the week}	0-6; MON-SUN; *	{day of the week} when the trigger will be fired

e.g. ***3 5*** * * * * defines a trigger that runs every time when the clock is at second 3 and minute 5 (e.g. at 09:05:03, 10:05:03, 11:05:03, ...).

The trigger executes at **UTC timezone**. So for Vienna (UTC+1), a trigger at 18:00 (UTC) executes at 19:00 Vienna time (UTC+1).

Examples

Expression	Description	runs at
0 * * * * *	**every minute**	09:00:00; 09:01:00; 09:02:00; ... 10:00:00
0 */5 * * * *	**every 5 minutes**	09:00:00; 09:05:00
0 0 * * * *	**every hour (hourly)**	09:00:00; 10:00:00; 11:00:00
0 0 */6 * * *	every 6 hours	06:00:00; 12:00:00; 18:00:00; 00:00:00
0 0 8-18 * * *	every hour between 8-18	08:00:00; 09:00:00; ... 18:00:00; 08:00:00
0 0 0 * * *	**every day (daily)**	Mar 1, 2017 00:00:00; Mar 2, 2017 00:00:00
0 0 10 * * *	every day at 10:00:00	Mar 1, 2017 10:00:00; Mar 2, 2017 10:00:00
0 0 * * * 1-5	every hour on workdays	Mar 3 (FRI), 2017 22:00:00; Mar 3 (FRI), 2017 23:00:00; Mar 6 (MON), 2017 00:00:00
0 0 0 * * 0	**every sunday (weekly)**	Mar 5 (SUN), 2017 00:00:00; Mar 12 (SUN), 2017 00:00:00
0 0 9 * * MON	every monday at 09:00:00	Mar 6 (MON), 2017 09:00:00; Mar 13 (MON), 2017 09:00:00
0 0 0 1 * *	**every 1st of month (monthly)**	Mar 1, 2017 00:00:00; Apr 1, 2017 00:00:00; May 1, 2017 00:00:00
0 0 0 1 1 *	**every 1st of january (yearly)**	Jan 1, 2017 00:00:00; Jan 1, 2018 00:00:00; Jan 1, 2019 00:00:00
0 0 * * * SUN	every hour on sunday	Mar 5 (SUN), 2017 23:00:00; Mar 12 (SUN), 2017 00:00:00; Mar 12 (SUN), 2017 01:00:00
0 0 0 * * SAT,SUN	every saturday and sunday	Mar 3 (SUN), 2017 00:00:00; Mar 11 (SAT) 00:00:00; Mar 12 (SUN), 2017 00:00:00
0 0 0 * * 6,0	every saturday and sunday	Mar 3 (SUN), 2017 00:00:00; Mar 11 (SAT) 00:00:00; Mar 12 (SUN), 2017 00:00:00
0 0 0 1-7 *	every first sunday of the	Mar 5 (SUN), 2017 00:00:00; Apr 2 (SUN), 2017 00:00:00

SUN	month at 00:00:00	
11 5 23 * * *	daily at 23:05:11	Mar 1, 2017 23:05:11; Mar 2, 2017 23:05:11
30 5 /6 * * *	every 6 hours at 5 minutes and 30 seconds	06:05:30; 12:05:30; 18:05:30; 00:05:30
*/15 * * * * *	**every 15 seconds**	09:00:15; 09:00:30; ... 09:03:30; 09:03:45; 09:04:00

(the most common expressions are bold)

Attention: the following CRON expression is valid and you can use it, but there is an issue with it:
***0 0 */5** * * **
It means every 5 hours. It executes at: 00:00:00, 05:00:00, 10:00:00, 15:00:00. 20:00:00, 00:00:00 ...
So it's not exactly every 5 hours. So it should be dividable by the maximum value. The following values are good if you want a regular frequency:

- for minutes and seconds: /2, /3, /4, /5, /6, /10, /12, /15, /20 and /30 (60 is divisible by these numbers)
- for hours: /2, /3, /4, /6, /8 and /12
- for months: /2, /3, /4 and /6
- for days: nothing, because there are leap years and months with 28, 29, 30 or 31 days.

All other values can lead to "wrong" executions at the end of a "cycle". e.g. every 7 hours executes at 00:00, 07:00, 14:00, **21:00, 00:00 (only 3 hours – not 7)**

Additional information

Azure Functions timer trigger: https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-timer (https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-timer)
Wikipedia CRON expression: https://en.wikipedia.org/wiki/Cron#CRON_expression (https://en.wikipedia.org/wiki/Cron#CRON_expression)
Working with Azure functions (part 1 – Powershell): https://codehollow.com/2016/11/working-azure-functions-part-1-powershell/ (https://codehollow.com/2016/11/working-azure-functions-part-1-powershell/)
Working with Azure functions (part 2 – C#): https://codehollow.com/2016/11/working-with-azure-functions-part-2-c/ (https://codehollow.com/2016/11/working-with-azure-functions-part-2-c/)
CRON Expression Descriptor: http://cronexpressiondescriptor.azurewebsites.net/ (http://cronexpressiondescriptor.azurewebsites.net/)

Related

Weekly Azure billing report per mail with Azure functions (https://codehollow.com/2017/09/weekly-azure-billing-report-per-mail-azure-functions/)
September 24, 2017
In "Azure"

Working with Azure functions (part 1 - Powershell) (https://codehollow.com/2016/11/working-azure-functions-part-1-powershell/)
November 7, 2016
In "Azure"

Return JSON from C# Azure function (https://codehollow.com/2017/05/return-json-from-csharp-azure-function/)
May 15, 2017
In "Azure"

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