
The power of Access and web services

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Use for Access developers

- Up to date info in your database
 - Exchange rates, Weather, Converting Data, External content
- Extend application with external functionality
 - SMS, MS Graph for Office 365, Flow for workflows with hundreds of connectors, QnAMaker for FAQ
- Publish data to the web so you can work on them together

Topics

- Consuming a WEB api from VBA
 - QNAmaker, artificial intelligence based bot service
 - Snelstart, web based accounting software
 - Microsoft Flow, workflows in the cloud
- Sharepoint as a backend and synchronising information between Office documents and Sharepoint
- Linking Odata tables in Acces

Working with API – the buzzwords

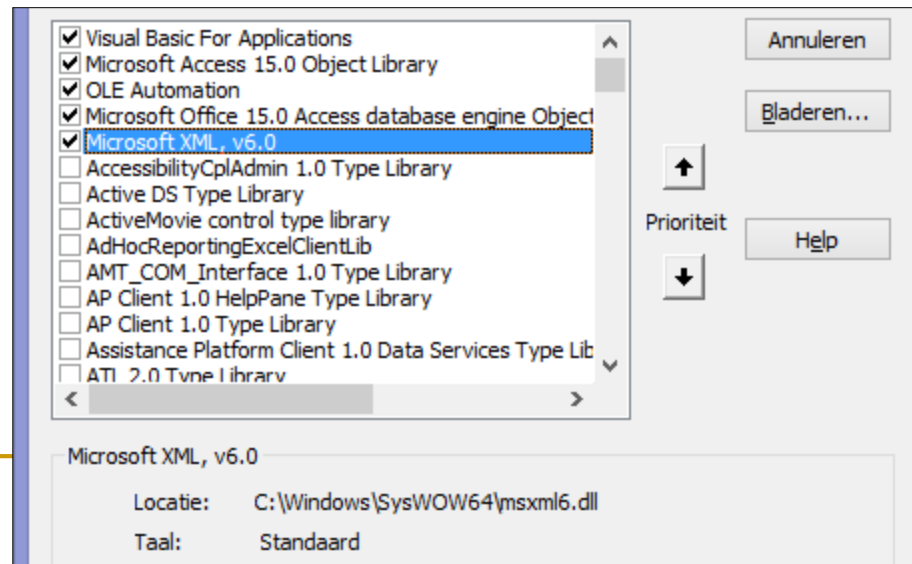
- Representational State Transfer (REST)
 - GET, POST, PUT, DELETE
- XML / JSON

Found Web APIs

- www.programmableweb.com
 - “Search over 13,939 APIs. Updated daily”
 - 10/10/2018: 20315
 - 14/09/2019: 22437

What is needed for accessing Web APIs from VBA?

- Webaddress of the Web API
- Eventually an API Key
- Microsoft XML-library
- No Webservices Toolkit or SOAP Library!



XmlHttp I

■ Open

```
xmlHttp.Open "GET", strUrl, [TRUE], [username], [password]
```

```
xmlHttp.Open "POST", strUrl, [FALSE], [username], [password]
```

■ Headers

```
xmlHttp.setRequestHeader "X-Authorization", "xxxxxxxxxx"
```

```
xmlHttp.setRequestHeader "Content-Type", "text/xml"
```

```
xmlhttp.setRequestHeader "Accept", "application/xml"
```

XmlHttp II

■ Send without Data

```
xmlHttp.send
```

■ Send with Data

```
Dim postData As String
```

```
postData = "From=" & fromNumber
```

```
postData = postData & "&To=" & toNumber
```

```
postData = postData & "&Body=" & body 'Send the POST data
```

```
xmlHttp.send postData
```

```
Dim JS as string
```

```
JS = "{\"user_id\":\"abc\", \"password\":\"def\", >> >>}"
```




```
XMLHTTP.setRequestHeader "Content-Type", "application/json"
```


```
XMLHTTP.Send JS
```



Reading JSON-Datei?

- No tools in Access ;-)
- But with VBA: RECURSIVE JSON TEXT PARSING CLASS
(<http://www.codeproject.com>)


Recursive VBA JSON Parser for Excel

Tim Ski, 24 Oct 2014 CPOL  10.3K  729  4

Rate this: 

 4.20 (4 votes)

JSON parser for VBA class module, allows recursive data.

 [Download JSParse.zip - 43.4 KB](#)

Introduction

This is a VBA class that can parse recursive JSON data.

Example qnamaker.ai

```
Public Function TestQNA(strQuestion As String)
```

```
    On Error GoTo ErrorHandler
```

```
    Dim HTTPReq As Object
```

```
    Dim JsonText As String
```

```
    Dim strLicense As String
```

```
    Set HTTPReq = CreateObject("WinHTTP.WinHttpRequest.5.1")
```

```
    strLicense = "XXXXXXXXXX" 'Obtain your own license at qnamaker.ai
```

```
    HTTPReq.Open "POST",
```

```
    "https://westus.api.cognitive.microsoft.com/qnamaker/v2.0/knowledgebases/c3eb2cd8-aae6-4227-b5ca-efcb7c51e89b/generateAnswer", False
```

```
    HTTPReq.setRequestHeader "Ocp-Apim-Subscription-Key", strLicense
```

```
    HTTPReq.setRequestHeader "Content-Type", "application/json"
```

```
    HTTPReq.setRequestHeader "Cache-Control", "no-cache"
```

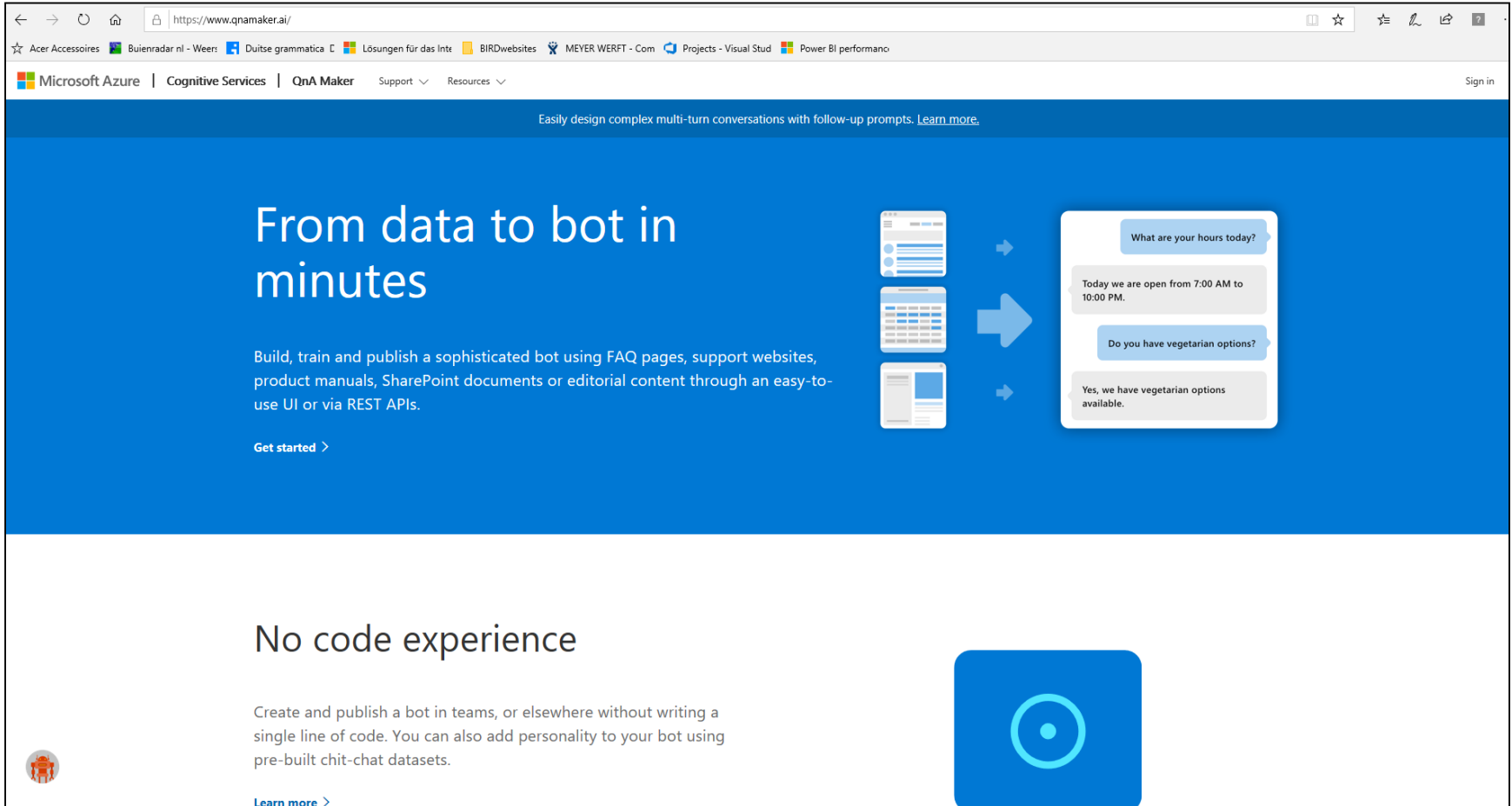
```
    HTTPReq.send "{" & Chr(34) & "question" & Chr(34) & ":" & Chr(34) &  
    strQuestion & Chr(34) & "}"
```

```
    TestQNA = HTTPReq.responseText
```

```
End Function
```



Demo API: <https://www.qnamaker.ai/>



The screenshot shows the QnA Maker website homepage. The browser address bar displays <https://www.qnamaker.ai/>. The navigation bar includes "Microsoft Azure", "Cognitive Services", "QnA Maker", "Support", and "Resources". A "Sign in" link is located in the top right corner. The main content area features a blue background with the heading "From data to bot in minutes". Below this heading, a paragraph states: "Build, train and publish a sophisticated bot using FAQ pages, support websites, product manuals, SharePoint documents or editorial content through an easy-to-use UI or via REST APIs." A "Get started" link is positioned below the paragraph. To the right, a diagram illustrates the workflow: three document icons on the left, a large blue arrow pointing right, and a chatbot interface on the right. The chatbot interface shows a user asking "What are your hours today?", the bot replying "Today we are open from 7:00 AM to 10:00 PM.", a user asking "Do you have vegetarian options?", and the bot replying "Yes, we have vegetarian options available." Below the main content area, the heading "No code experience" is displayed. A paragraph below it reads: "Create and publish a bot in teams, or elsewhere without writing a single line of code. You can also add personality to your bot using pre-built chat-chat datasets." A "Learn more" link is located at the bottom left of this section. A blue square icon with a white target symbol is positioned to the right of the "No code experience" section.

Easily design complex multi-turn conversations with follow-up prompts. [Learn more.](#)

From data to bot in minutes

Build, train and publish a sophisticated bot using FAQ pages, support websites, product manuals, SharePoint documents or editorial content through an easy-to-use UI or via REST APIs.

[Get started >](#)

No code experience

Create and publish a bot in teams, or elsewhere without writing a single line of code. You can also add personality to your bot using pre-built chat-chat datasets.

[Learn more >](#)

Demo API

- Flow
- Snelstart
 - Upload PDF (Binary data)

Sharepoint

- “SharePoint is a web-based collaborative platform that integrates with Microsoft Office. Microsoft states that SharePoint has 190 million users across 200,000 customer organizations.”
- Sharepoint List is a “table”
 - Users can add Custom fields
 - Office documents that are uploaded inherit the fields as contenttypeproperties
- Use it in Access, Flow, Power BI, Power Apps

Sharepointlist as a backend

The screenshot shows a SharePoint interface for a list named 'sharepoint_as_a_table_in_access'. The list contains five items, each with a title, an ID, and a start date. An inset window shows the underlying data table with columns for ID, Title, test, Startdate, and a user icon. The table data is as follows:

| ID | Title | test | Startdate | | klik om t |
|----|---------|------|-----------|------|-----------|
| 1 | Test 1 | 1 | 1-1-2019 | 👤(0) | |
| 2 | Test 2 | 2 | 1-2-2019 | 👤(0) | |
| 3 | Test 3 | 3 | 1-3-2019 | 👤(0) | |
| 4 | Test 4 | 4 | 1-4-2019 | 👤(0) | |
| 5 | Test 5 | 5 | 1-5-2019 | 👤(0) | |
| * | (Nieuw) | 0 | 8-9-2019 | 👤(0) | |

Exchanging Properties I

A Sharepoint documentlibrary is also a List. Through VBA one can update the ContentTypeProperties:

App_WorkbookBeforeSave:

```
Dim prop As Object
```

```
For Each prop In ActiveWorkbook.ContentTypeProperties
```

```
    Call SETSERVERMETADATA(prop.Name, Range(prop.Name))
```

```
Next prop
```

Exchanging Properties II

```
Public function SETSERVERMETADATA(ByVal metaTypeName As String, Optional ByVal  
newValue As Variant = "") As String
```

```
.....
```

```
.....
```

```
Set Wb = ActiveWorkbook
```

```
If newValue <> "" Then
```

```
    If IsDate(newValue) Then
```

```
        Wb.ContentTypeProperties(metaTypeName).Value = CDate(newValue & " 09:00:00")
```

```
    ElseIf IsNumeric(newValue) Then
```

```
        Wb.ContentTypeProperties(metaTypeName).Value = CDbI(newValue)
```

```
    Else
```

```
        Wb.ContentTypeProperties(metaTypeName).Value = CStr(newValue)
```

```
    End If
```

```
.....
```

```
.....
```

Demo Sharepoint

Odata

- “OData - the best way to REST: An open protocol to allow the creation and consumption of queryable and interoperable RESTful APIs in a simple and standard way.”
- Growing number of data providers is supporting Odata
 - ❑ <https://opendatanederland.org/>
 - ❑ <http://data.europa.eu/euodp/en/data/>

Odata ODBC

<https://www.cdata.com/drivers/odata/odbc/>

SEE THE WORLD AS A DATABASE
Chat Cart 800.235.7250

PRODUCTS DRIVERS SUPPORT ORDER COMPANY BLOG

OData

OData ODBC Driver
Read, Write, and Update OData through ODBC
Easily connect live OData data with BI, ETL, Reporting, & Custom Apps

OData
Open Data Protocol

ODBC-gegevensbronbeheer (32-bits)

Gebruikers-DSN Systeem-DSN Bestands-DSN **Stuurprogramma's** Traceren Groepsgewijze verbinding Info

Op uw systeem geïnstalleerde ODBC-stuurprogramma's:

| Naam | Versie | Bedrijf | Bestand |
|--|-----------------|-----------------------|--------------|
| CData ODBC Driver for OData | 19.00.7156.00 | CData Software, Inc. | CDATA.ODBC.D |
| Driver da Microsoft para arquivos texto (*.txt; *.csv) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Driver do Microsoft Access (*.mdb) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Driver do Microsoft dBase (*.dbf) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Driver do Microsoft Excel(*.xls) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Driver do Microsoft Paradox (*.db) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Microsoft Access dBASE Driver (*.dbf, *.ndx, *.mdx) | 14.00.7180.5000 | Microsoft Corporation | ACEODBC.D |
| Microsoft Access Driver (*.mdb) | 10.00.18362.01 | Microsoft Corporation | ODBCJT32.D |
| Microsoft Access Driver (*.mdb, *.acmdb) | 14.00.7180.5000 | Microsoft Corporation | ACEODBC.D |

Met behulp van een ODBC-stuurprogramma kunnen ODBC-programma's gegevens opnemen uit ODBC-gegevensbronnen. Als u nieuwe stuurprogramma's wilt installeren, gebruikt u het installatieprogramma van het stuurprogramma.

OK Annuleren Toepassen Help

Demo Odata

- Why does MS Excel have odata connectivity and MS Access not?

Questions?



References I

- Web API
 - https://en.wikipedia.org/wiki/Web_API
- JSON / XML
 - <http://www.w3schools.com/json/default.asp>
 - <http://www.w3schools.com/xml/default.asp>
- Build Web API with Visual Studio
 - <http://www.asp.net/web-api/overview/getting-started-with-aspnet-web-api/tutorial-your-first-web-api>
- JSON Parser VBA
 - <http://www.codeproject.com/Articles/828911/Recursive-VBA-JSON-Parser-for-Excel>
- XMLHttpRequest
 - [https://msdn.microsoft.com/en-us/library/ms535874\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/ms535874(v=vs.85).aspx)
- ServerXMLHTTP
 - [https://msdn.microsoft.com/en-us/library/ms766431\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/ms766431(v=vs.85).aspx)

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- www.programmableweb.com
- <https://www.qnamaker.ai/>
- Soto on qnamaker (Minutes 27 to 37):
<https://techcommunity.microsoft.com/t5/Access-Blog/Access-Recap-from-Ignite-2017/ba-p/114269>
- <https://docs.microsoft.com/bs-latn-ba/azure/machine-learning/studio/excel-add-in-for-web-services>
- <https://support.office.com/en-us/article/Link-to-a-Data-Service-5ce2738f-bf36-4490-a015-d1745d102bb8>

References III

- <https://www.cdata.com/kb/tech/odata-odbc-access-linked-tables.rst>
- <https://services.odata.org/V2/Northwind/Northwind.svc/>
- <https://www.odata.org/>
- <https://www.cbs.nl/en-gb/our-services/open-data>
- <https://data.overheid.nl/> (14.777)

References IV

- <https://support.office.com/en-us/article/What-is-SharePoint-97b915e6-651b-43b2-827d-fb25777f446f>
- <http://sp365kb.blogspot.com/2013/06/sharepoint-and-excel-properties-step-by.html>