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All Tutorials Sample Overview

maXbox Starter 110 - Found all tutorials with samples, source and corresponding script.

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Tutorial 109_1 OpenAI ChatGPT API, April 2023
Tutorial 110 Code Overview Samples, April 2023

Actual Version: 4.7.6.20 IX Jan. 2023
<https://archive.org/details/maxbox4>

"Lost in translation - post to application".

All Description and Source

Description:

Tutorial 00 Function-Coding (Blix the Programmer)

- You've always wanted to learn how to build software

http://www.softwareschule.ch/examples/341_blix_clock.txt

mX4 executed: 02/04/2023 13:18:28 Runtime: 0:0:16.915 Memload: 45% use

Tutorial 01 Procedural-Coding

- All you need to know is that in this program, we have a procedure and a function

http://www.softwareschule.ch/download/50_program_starter.txt

mX4 executed: 02/04/2023 13:24:16 Runtime: 0:0:1.729 Memload: 44% use

Tutorial 02 OO-Programming

- This lesson will introduce you to objects, classes and events.

http://www.softwareschule.ch/download/59_timerobject_starter2.txt

mX4 executed: 02/04/2023 13:29:30 Runtime: 0:0:2.997 Memload: 45% use

Tutorial 03 Modular Coding

- Modular programming is subdividing your program into separate subprograms

66_pas_eliza_include_sol.txt

66_pas_eliza_form_sol.inc

mX4 executed: 02/04/2023 13:39:17 Runtime: 0:0:0.995 Memload: 46% use

http://www.softwareschule.ch/download/maxbox_examples.zip

Tutorial 04 UML Use Case Coding

- UML is said to address the modelling of manual, as well as parts of systems.

59_timerobject_starter2_uml_main.txt
59_timerobject_starter2_uml_form.inc

http://www.softwareschule.ch/download/maxbox_examples.zip

mX4 executed: 02/04/2023 13:53:15 Runtime: 0:0:3.517 Memload: 45% use

Tutorial 05 Internet Coding

- This lesson will introduce you to Indy Sockets and the library.

101_pas_http_tester.txt
102_pas_http_download.txt

mX4 executed: 02/04/2023 14:00:05 Runtime: 0:0:2.27 Memload: 45% use

Tutorial 06 Network Coding

- This lesson will introduce you to FTP and HTTP. Each computer on a TCP/IP network has a unique address associated with it, the IP-Address.

129_pas_blogger.txt

http://www.softwareschule.ch/examples/129_pas_blogger.txt

Exception: USER: command requires a parameter

Tutorial 07 Game Graphics Coding

- This lesson will introduce a simple game called Arcade like Pong.

183_playearth_first.pas

mX4 executed: 02/04/2023 16:03:03 Runtime: 0:0:2.272 Memload: 46% use

Tutorial 08 Operating System Coding

- Lesson will introduce various short functions interacting with the OS API and Demonstrates functions of operating systems.

192_opearatingsystem2.txt

If you can't find the file use the link:

http://www.softwareschule.ch/examples/192_opearatingsystem2.txt

mX4 executed: 02/04/2023 16:07:55 Runtime: 0:0:1.502 Memload: 46% use

Tutorial 09 Database Coding

- Introduction to SQL (Structured Query Language) and database connection.

195_SQL_DBExpress2.txt

If you can't find the file use the link:

http://www.softwareschule.ch/examples/195_SQL_DBExpress2.txt

maXbox4 195_SQL_DBExpress2.txt Compiled done: 02/04/2023 16:15:16

Tutorial 10 Statistic Coding

- We spend time in programming Statistics and in our case with probability.

212_statisticmodule4.txt

If you can't find the file use the link:

http://www.softwareschule.ch/download/212_statisticmodule4.txt

mX4 executed: 02/04/2023 16:19:38 Runtime: 0:1:36.404 Memload: 46% use

Tutorial 10 Probability Coding

- Probability theory is required to describe nature and life.

http://www.softwareschule.ch/examples/650_dice.txt

mX4 executed: 02/04/2023 16:28:01 Runtime: 0:0:0.970 Memload: 45% use

Tutorial 11 Forms Coding

- TApplication, TScreen, and TForm are the classes that form.

245_formapp2.txt

If you can't find the file use the link:

http://www.softwareschule.ch/examples/245_formapp2.txt

Exception: Cannot open file "C:\Program Files\Streaming\maxbox4\Import\tutor110\examples\outline3.txt". The system cannot find the path specified.

Tutorial 12 SQL DB Coding

- SQL Programming V2

This lesson will introduce you to SQL (Structured Query Language) and a database connection with a simple Access DB.

241_db3_sql_tutorial2.txt

If you can't find the file use the link:

http://www.softwareschule.ch/examples/241_db3_sql_tutorial2.txt

mX4 executed: 02/04/2023 16:35:31 Runtime: 0:0:1.595 Memload: 46% use

Tutorial 13 Crypto Coding

- CryptoBox is based on LockBox 3 which is a library for cryptography.

258_AES_cryptobox2.txt

If you can't find the file use the link (size 10 KB, 10120 Bytes):

http://www.softwareschule.ch/examples/258_AES_cryptobox2.txt

mX4 executed: 02/04/2023 16:37:50 Runtime: 0:0:1.208 Memload: 46% use

Tutorial 14 Parallel Coding

- I'll explain you what "blocking" and "non-blocking" calls are.

Test it with F2 / F9 or press `Compile` and you should hear a sound a browser will open.
So far so good now we'll open the example:

263_async_sound.txt

If you can't find the file use the link (size 3 KB, 2666 Bytes):

http://www.softwareschule.ch/examples/263_async_sound.txt

mX4 executed: 02/04/2023 16:52:14 Runtime: 0:0:9.73 Memload: 47% use

Tutorial 15 Serial RS232 Coding

- Serial communication is based on a protocol and the standard RS 232.

263_async_sound.txt

If you can't find the file use the link (size 3 KB, 2666 Bytes):

http://www.softwareschule.ch/examples/263_async_sound.txt

Links of maXbox, TSerial and Asynchronous Threads of DelphiWebStart:

059_timerobject_starter2_ibz2_async.txt

Tutorial 16 Event Driven Coding

- Event driven programming are usually message based languages

287_eventhandling2.txt (20888 kb)

Or 263_async_sound.txt

If you can't find the file use one of those links:

http://www.softwareschule.ch/examples/287_eventhandling2.txt

http://www.softwareschule.ch/examples/287_eventhandling2.htm

maXbox4 287_eventhandling2.txt Compiled done: 02/04/2023 17:00:43

Exception: Cannot open file "C:\Program Files\Streaming\maxbox4\Import\tutor110\examples\faszination_tee.jpg". The system cannot find the path specified.

PascalScript maXbox4 - RemObjects & SynEdit

Tutorial 17 Web Server Coding

- This lesson will introduce you to Indy Sockets with the TCP-Server.

Test it with F9 / F2 or press **Compile** and you should hear a sound. So far so good now we'll open the examples:

303_webserver_alldocs2.txt

102_pas_http_download.txt //if you don't use a browser

If you can't find the two files try also the zip-file loaded from:

http://www.softwareschule.ch/download/maxbox_internet.zip or direct as a file

http://www.softwareschule.ch/examples/303_webserver_alldocs2.txt

Command GET /index.htm at 02/04/2023 17:03:29 received from 127.0.0.1:51546

All Docu Server Closed at Sun, 2 Apr 2023 17:03:45 +0200

mX4 executed: 02/04/2023 17:03:45 Runtime: 0:0:16.957 Memload: 47% use

Tutorial 18 Arduino System Coding

- Arduino hardware is programmed using a Wiring-based language.

Test it with F9 / F2 or press **Compile** and you should hear a sound. So far so good now we'll open the examples:

305_webserver_arduino3.txt

102_pas_http_download.txt //if you don't use a browser

If you can't find the two files try also the zip-file loaded from:

http://www.softwareschule.ch/download/maxbox_internet.zip or direct as a file

http://www.softwareschule.ch/examples/305_webserver_arduino3.txt

Server Started at Sun, 2 Apr 2023 17:09:53 +0200

mX4 executed: 02/04/2023 17:09:53 Runtime: 0:0:1.245 Memload: 47% use

PascalScript maXbox4 - RemObjects & SynEdit

Command GET / at 02/04/2023 17:09:53 received from 127.0.0.1:51573

web debug: /

Command GET /OSLogo.gif at 02/04/2023 17:09:53 received from 127.0.0.1:51574
web debug: /OSLogo.gif
Server Stopped at Sun, 2 Apr 2023 17:10:04 +0200
Ver: 4.7.6.20 (476). Workdir: C:\Program Files\Streaming\maxbox4\Import\tutor110

Tutorial 18_3 Arduino RGB LED Coding

- We code a RGB LED light on the Arduino board and breadboard.

So far so good now we'll open the examples:

```
305_webserver_arduino3ibz_rgb_led.txt  
102_pas_http_download.txt //if you don't use a browser
```

If you can't find the two files try also the zip-file loaded from:

http://www.softwareschule.ch/download/maxbox_internet.zip or direct as a file
http://www.softwareschule.ch/examples/305_webserver_arduino3ibz_rgb_led.txt

Server Started at Sun, 2 Apr 2023 17:15:40 +0200

mX4 executed: 02/04/2023 17:15:40 Runtime: 0:0:1.216 Memload: 47% use

PascalScript maXbox4 - RemObject & SynEdit

Command GET / at 02/04/2023 17:15:40 received from 127.0.0.1:51623

web debug: /Command GET /OSLogo.gif at 02/04/2023 17:15:40 received from
127.0.0.1:51624 web debug: /OSLogo.gif

Server Stopped at Sun, 2 Apr 2023 17:15:47 +0200

Ver: 4.7.6.20 (476). Workdir: C:\Program Files\Streaming\maxbox4\Import\tutor110

Tutorial 18_5 Arduino RGB LED WebSocket

- Web server and their COM protocols too.

```
443_webserver_arduino_rgb_light5.txt
```

If you want to get the whole package including Arduino sketches too then try the zip-file:

<http://sourceforge.net/projects/maxbox/files/Arduino/arduinopackage.zip/download>

Tutorial 19 WinCOM /Arduino Coding

- Illustrates what the WinCOM (Component Object Model) interface.

Test it with F9 / F2 or press **Compile** and you should hear a sound. So far so good now we'll open the examples:

```
318_excel_export3.TXT  
299_animationmotor_arduino.txt //if you have an arduino
```

If you can't find the two files try also the zip-file loaded from:
http://www.softwareschule.ch/examples/318_excel_export3.txt

```
maxbox4 318_excel_export3.txt Compiled done: 02/04/2023 17:23:59  
Exception: Invalid class string.
```

Tutorial 20 Regular Expressions RegEx

- A regular expression (RegEx): describes a search pattern of text.

So far so good now we'll open the example:

```
309_regex_powertester4.txt
```

http://www.softwareschule.ch/examples/309_regex_powertester4.txt

https://www.academia.edu/16516346/maXbox_Regex_PI_Analysis_Report

<https://www.slideshare.net/maxkleiner1/basta-mastering-regex-power>

```
### mX4 executed: 02/04/2023 17:27:41 Runtime: 0:0:8.480 Memload: 47% use
```

Tutorial 21 Android SONAR: End of 2015

- SonarQube Technical Architecture

/Plugins

Plugin Version Description

C# [csharp] 4.0 Enable analysis /reporting on C# projects.

Java [java] 3.1 SonarQube rule engine.

PL/SQL[plsql] 2.7 Enable analysis and reporting
on PL/SQL projects.

Git [scmgit] 1.0 Git SCM Provider.

SVN [scmsvn] 1.0 SVN SCM Provider.

Web [web] 2.3 Analyze HTML (also within PHP/Ruby/etc.
templates) and JSP/JSF code.

XML [xml] 1.2 Enable analysis and reporting on XML files.

Hope you did already work with the Starter 28 on DLL Code topics:

http://www.softwareschule.ch/download/maxbox_starter28.pdf

http://www.softwareschule.ch/download/maxbox_starter37.pdf

Feedback @ max@kleiner.com

Literature: Kleiner et al., Patterns konkret, 2003, Software & Support

<http://docs.sonarqube.org/display/PLUG/Git+Plugin>

http://www.softwareschule.ch/download/codesign_2015.pdf

<http://superuser.com/questions/462940/digitally-signing-software-self-signing-certificate>

Tutorial 22 Services Coding

- COM clients are applications that make use of a COM object or service

So far so good now we'll open the example:

363_compress_services2.txt

File size: 15572

If you can't find the two files try also the zip-file (15572 bytes) loaded from:

http://www.softwareschule.ch/examples/363_compress_services2.txt

mX4 executed: 02/04/2023 17:36:39 Runtime: 0:0:0.961 Memload: 48% use

Tutorial 23 Real Time Systems

- A real-time system is a type of hardware that operates with a time constraint.

You can find the example at:

http://www.softwareschule.ch/examples/374_realtime_random2.txt

Count of Threads B: 11

mX4 executed: 02/04/2023 18:05:43 Runtime: 0:0:36.856 Memload: 48% use

Tutorial 24 Clean Code

- Today we dive into Clean Code and Refactoring.

421_PI_Power2.TXT

or direct as a file: http://www.softwareschule.ch/examples/421_PI_Power2.TXT

Asserts to test function units:

mX4 executed: 02/04/2023 18:10:33 Runtime: 0:0:8.668 Memload: 48% use

Tutorial 25 maXbox Configuration

- As you will see the configuration of maXbox is possible.

- 07.02.2013 00:23 10'544 maxbootscript_.txt

369_macro_demo.txt

found back: 6

mX4 executed: 02/04/2023 18:17:13 Runtime: 0:0:22.270
Memload: 48% use

Tutorial 26 Socket Programming with TCP

- This Tutorial is based on an article by Chad Z.

- In reality, blocking sockets are the ONLY way Unix does sockets. Blocking sockets also offer other advantages, and are much better for threading, security, and other aspects. Some extensions have been added for non-blocking sockets in Unix.

You need the following file ready to download:

<http://www.softwareschule.ch/examples/tcpserversocks.zip>

Tutorial 27 XML & Tree

- XML (Extensible Markup Language) is a flexible way to create common formats

You need the following script file ready to download and start with compile:

http://www.softwareschule.ch/examples/440_XML_Tutor2.txt

ZVRWAQITMJIAKFXKSAZJWLAQMDFKWWQKDIGNVNFBCB

mX4 executed: 02/04/2023 18:24:38 Runtime: 0:0:1.163 Memload: 49% use

Tutorial 28 DLL Coding (available)

- A DLL is a library, short for Dynamic Link Library of executable functions.

By the way the script you get all this is:

http://www.softwareschule.ch/examples/440_DLL_Tutor2.txt

mX4 executed: 02/04/2023 18:57:14 Runtime: 0:0:0.955 Memload: 48% use

Tutorial 29 UML Scripting (available)

- A first step in UML is to find the requirements.

By the way the script you get all this is:

http://www.softwareschule.ch/examples/461_sqlform_calwin.txt

mX4 executed: 02/04/2023 19:07:58 Runtime: 0:0:12.975 Memload: 48% use

Tutorial 30 Web of Things (available)

- There are three main topics in here.

First technologies – simply put, this part is mainly for early adopters. It's about coding, developing toys, plugging in kettles on the web (and we and many others actually did that!).

The second part is about new ideas, prototyping and new technologies that are in the lab. It's about research papers, and software philosophy, and about researchers worldwide.

Third part is about end-users and products.

So far so good now we'll open the examples:

443_webserver_arduino_rgb_light4.txt

102_pas_http_download.txt //if you don't use a browser

If you can't find the two files try also the zip-file loaded from:

http://www.softwareschule.ch/download/maxbox_internet.zip or direct as a file

http://www.softwareschule.ch/examples/443_webserver_arduino_rgb_light4.txt

Listening HTTP on 192.168.56.1:8080.

Server Started at Sun, 2 Apr 2023 19:14:25 +0200

CheckComPort: FALSE

ExecuteShell3 Command could be protected in ini-File!

by setting EXECUTESHELL=N

the answer is: *

mX4 executed: 02/04/2023 19:14:26 Runtime: 0:0:3.376 Memload: 49% use

Tutorial 31 Closures (2014)

- They are a block of code plus the bindings to the environment.

Test it with F9 / F2 or press **Compile** and you should hear a sound. So far so good now we'll open the examples:

271_closures_study_workingset2.txt

271_closures_study2.txt

http://www.softwareschule.ch/examples/271_closures_study2.txt

Start Proc...

End Proc.

mX4 executed: 02/04/2023 19:21:55 Runtime: 0:0:32.646 Memload: 49% use

Tutorial 32 SQL Firebird (2014)

- Firebird is a relational database offering many ANSI SQL standard features.

Test now the script with F9 / F2 or press **Compile**. So far now we'll open the example:

268_DBGGrid_treeFirebird.TXT

<http://www.softwareschule.ch/examples/>

maXbox4 268_DBGGrid_tree.txt Compiled done: 02/04/2023 20:05:12

ShowTime for SQL 02/04/2023

Exception: An error occurred while attempting to initialize the Borland Database Engine (error \$210A).

Tutorial 33 Oscilloscope (2014)

- Oscilloscopes are one of the must of an electronic lab.
- Because Windows is multitasking and many processes and interrupts occur while your code is running, nanosecond timing would be not particularly useful. `GetTickCount` is also limited to the accuracy of the system timer (10 / 55 ms).

Test the script with F9 / F2 or press Compile. So far now we'll open the time-sound example: `068_sound_oscilloscope.txt`

http://www.softwareschule.ch/examples/068_sound_oscilloscope.txt

mX4 executed: 02/04/2023 20:08:29 Runtime: 0:0:8.158 Memload: 49% use

Tutorial 34 GPS Navigation (2014)

- The Global Positioning System (GPS) is a space-based satellite navigation system.

Literature:

Kleiner et al., Patterns konkret, 2003, Software & Support

<http://www.kleiner.ch/kleiner/gpsmax.htm>

http://www.softwareschule.ch/examples/475_GPS_mX2.txt

maxbox4 475_GPS_mX2.txt Compiled done: 02/04/2023 20:16:20

Tutorial 35 WebBox (2014)

- We go through the steps running a small web server called web box.

So far so good now we'll open the examples:

`443_webserver_arduino_rgb_light4.txt`

`102_pas_http_download.txt` //if you don't use a browser

If you can't find the two files try also the zip-file loaded from:

http://www.softwareschule.ch/download/maxbox_internet.zip or direct as a file

http://www.softwareschule.ch/examples/443_webserver_arduino_rgb_light4.txt

Tutorial 36 Unit Testing (2015)

- the realm of testing and bug-finding.

Test the script with F9 / F2 or press Compile. So far now we'll open the

test-function example: `587_one_function_assert.txt`

http://www.softwareschule.ch/examples/587_one_function_assert.txt

Hope you did already work with the Starter 24 on Clean Code topics:

```
True Assert Log: random passwd mX4 Assertion: 02/04/2023 20:21:07  
### mX4 executed: 02/04/2023 20:21:07 Runtime: 0:0:2.561 Memload: 48% use
```

Tutorial 37 API Coding (2015)

- Learn how to make API calls with a black screen and other GUI objects.

Test the script with F9 / F2 or press Compile. So far now we'll open the API-function example: 580_indystacksearch_geo2_winapi_tut37.txt

This is the huge test driven script, a better and smaller demo script to start is the following:

```
617_API_coding_tut37.txt
```

http://www.softwareschule.ch/examples/617_API_coding_tut37.txt

Hope you did already work with the Starter 28 on DLL Code topics

```
ResolveHost: 192.168.11.1  
WSGetHostByName: BREITSCH-BOX  
123,456,789.1235  
### mX4 executed: 02/04/2023 20:24:36 Runtime: 0:0:8.883 Memload: 49% use
```

Tutorial 38 3D Coding (2015)

- 3D printing or additive physical manufacturing is a process.

maXbox Starter 38

Start with a 3D Printing Lab

1.1 We need an API

3D printing or additive physical manufacturing is a process of making three dimensional solid objects from a digital file like a CAD Stereo lithography (SLA). The topic is huge and the applications include research (so in our school), design visualization, prototyping/CAD/CAM, metal and box casting, architecture, education, geographical topology, healthcare and also entertainment, research and amusement.

It's hard to imagine but take a look at this slicing simulation and you get the idea:

https://github.com/maxkleiner/maXbox3/blob/masterbox2/examples2/356_3D_printer.txt

```
### mX4 executed: 02/04/2023 20:27:39 Runtime: 0:1:16.908 Memload: 47% use
```

Tutorial 39 GEO Map Coding (available)

- To find a street nowadays is easy; open a browser and search for.

-

So far so good now we'll open the examples:

509_GEOMap3.txt

If you can't find the two files try also direct as a file

http://www.softwareschule.ch/examples/509_GEOMap3.txt

```
maXbox4 509_geomap3.txt Compiled done: 02/04/2023 20:33:31
### mX4 executed: 02/04/2023 20:33:33 Runtime: 0:0:2.865 Memload: 47% use
```

Tutorial 39_1 GEO Map OpenLayers (available)

- We run through GEO Maps coding second volume.

Test now the script with F9 / F2 or press Compile. So far now we'll open the example:

509_GEOMapMemoryStreamtest.TXT

<http://www.softwareschule.ch/examples>

http://www.softwareschule.ch/examples/509_GEOMapMemoryStreamtest.TXT

```
open.mapquestapi.com:80 and url: \/nominatim\/v1\/reverse.php", "detail":
{"errorcode": "messaging.adaptors.http.flow.ApplicationNotFound"}}
```

```
Exception: Cannot open file "C:\Program
Files\Streaming\maxbox4\Import\tutor110\outputmap_2cologne.xml". The
system cannot find the file specified.
```

```
maXbox4 509_GEOMapMemoryStreamtest.TXT Compiled done: 02/04/2023 20:43:42
```

Tutorial 39_2 Maps2 Coding

- The Mapbox Static API

<http://www.softwareschule.ch/EKON20.pdf>

Tutorial 40 REST Coding (2015)

- REST style emphasizes that interactions between clients and services, So what is REST? REST (REpresentational State Transfer) is a simple stateless architecture concept that generally runs over HTTPS/TLS.

If you can't find the two files try also direct as a file or at sourceforge:

http://www.softwareschule.ch/examples/640_rest_weather_report.txt

http://www.softwareschule.ch/examples/640_rest_geocode.txt


```
string stream cont: {"fault":{"faultstring":"Unable to identify
proxy for host: open.mapquestapi.com:80 and url:
\/nominatim\/v1\/search.php","detail":
{"errorcode":"messaging.adaptors.http.flow.ApplicationNotFound"}}}
Exception: Access violation at address 007A58DC in module
'maXbox4.exe'. Read of address
maXbox4 640_rest_geocode.txt Compiled done: 02/04/2023 20:48:46
```

Tutorial 40_1 OpenWeatherMap Coding German

- "OpenWeatherMap" ist ein Online-service.

https://www.academia.edu/14979785/Tutor_40_REST_API_Coding

Tutorial 41 Big Numbers Coding (2015)

- Today we step through numbers and infinity.

```
maxbox3\examples\161_bigint_class_maxprove2.txt
http://www.softwareschule.ch/examples/161\_bigint\_class\_maxprove2.txt
```

```
maXbox4 161_bigint_class_maxprove2.txt Compiled done: 02/04/2023 20:51:59
### mX4 executed: 02/04/2023 20:52:01 Runtime: 0:0:3.430 Memload: 47% use
```

Tutorial 41 Big Numbers Short

- numbers and infinity short version

```
maXbox3 568_U_BigFloatTestscript2.pas Compiled done: 6/18/2015
http://www.softwareschule.ch/examples/161\_bigint\_class\_maxprove3.txt
```

```
maXbox4 161_bigint_class_maxprove3.txt Compiled done: 02/04/2023 20:55:10
### mX4 executed: 02/04/2023 20:55:12 Runtime: 0:0:3.404 Memload: 46% use
```

Tutorial 42 Multi Parallel Processing (2015)

- Multi-processing has the opposite benefits to multi-threading.

If you can't find files use the link (size 23 KB):

http://www.softwareschule.ch/examples/630_multikernel3.TXT

http://www.softwareschule.ch/examples/263_async_sound.tt

```
DOScomSpec: C:\WINDOWS\system32\cmd.exe
NUMBER_OF_PROCESSORS: 8
```

..

```
### mX4 executed: 02/04/2023 20:58:25 Runtime: 0:0:1.112 Memload: 47% use
```

Tutorial 43 Code Metrics: June2016

- Software quality consists of both external and internal quality.

You find the script to test and work:

http://www.softwareschule.ch/examples/615_regex_metrics_java2pascal.txt

Process Handle inside: 2764

Working Set Mem KB: 122840

Working Set Peak: 128228

mX4 executed: 02/04/2023 22:51:21 Runtime: 0:0:4.289 Memload: 48% use

Tutorial 44 IDE Extensions

- provides a mechanism for extending your functions.

All examples can be found online:

maxbox4\examples\161_bigint_class_maxprove3.txt

http://www.softwareschule.ch/examples/161_bigint_class_maxprove3.txt

maxbox4 161_bigint_class_maxprove3.txt Compiled done: 02/04/2023 22:53:39

Tutorial 45 Robotics: July2016

- The Robots industry is promising major operational benefits.

The script is called: examples\667_URobo2_tutor45.pas

maxbox4 667_URobo2.pas Compiled done: 02/04/2023 22:56:39

mX4 executed: 02/04/2023 22:56:39 Runtime: 0:0:1.525 Memload: 48% use

Tutorial 46 WineHQ: Dez2016

- is a compatibility layer capable of running Windows applications.

All examples can be found online:

4

..\examples\161_bigint_class_maxprove3.txt

http://www.softwareschule.ch/examples/161_bigint_class_maxprove3.txt

The call respectively the calculation goes like this:

```
function GetBigIntFact(aval: byte): string;
```

```
//call of unit mybigint
```

```
var mbRes: TMyBigInt; i: integer;
```

```
begin
```

```
mbRes:= TMyBigInt.Create(1);
```

```
try
```

```
//multiplication of factor
```

```
for i:= 1 to aval do
```

```
mbRes.Multiply1(mbres, i);
```

```

Result:= mbRes.ToString;
finally
//FreeAndNil(mbResult);
mbRes.Free;
end;
end;
Or you want the power of 100 like 2^100=
12676506002282299670376
function BigPow(aone, atwo: integer): string;
var tbig1, tbig2: TInteger;
begin
tbig1:= TInteger.create(aone);
//tbig2:= TInteger.create(10);
try
tbig1.pow(atwo);
finally
result:= tbig1.toString(false);
tbig1.Free;
end;
end;

```

At least one really big, it's 333^{4096} (10332 decimal digits)!

With wine -dbg you can also find out more of the application you want to run or recompile the whole project like Homebrew on mac. Homebrew is a package manager that makes installing open source programs much easier. In particular, trying to install a large program like Wine without the help of a package manager would be tremendously difficult. 5

Tutor 47 RSA Crypto Jan2017

- Work with real big RSA Cryptography

Ref: <http://www.softwareschule.ch/maxbox.htm>

132:

133: ..\examples\210_RSA_crypto_complete8hybrid.txt

134: ..\examples\750_ibz_cryptomem_RSA_proof_64.txt

decrypt: 1976620216402300889624482718775150

EulerPhi 4

EulerPhi 10

mX4 executed: 02/04/2023 23:02:46 Runtime: 0:0:34.46 Memload: 48% use

Tutor 48 Microservice Jan2017

- Essentially, micro-service architecture is a method of developing software. A microservice architecture shifts around complexity. Instead of a single complex system, you have a bunch of simple services with complex interactions.

Ref: <http://www.softwareschule.ch/maxbox.htm>

179:

```
180: ..\examples\210_RSA_crypto_complete8hybrid.txt
181: ..\examples\750_ibz_cryptomem_RSA_proof_64.txt
182: ..\examples\749_helloWebServer3_tempsensor3.txt
183: ..\examples\749_helloWebServer3.txt

maxbox4 749_helloWebServer3_tempsensor4adafruit2.txt Compiled
done: 02/04/2023 23:05:52
```

```
-----
Logfile: C:\Program
Files\Streaming\maxbox4\Import\tutor110\arduino_tempBMP280_log8.txt
Hello Temp/Web server start at: 192.168.0.134
02/04/2023 23:05:55 C°: ° >
02/04/2023 23:05:57 C°: ° >
02/04/2023 23:05:59 C°: ° >
SocketServer stop: 23:05:59
Serial stop: 23:06:00
### mX4 executed: 02/04/2023 23:06:00 Runtime: 0:0:9.434 Memload: 48% use
```

Tutorial 49 Refactoring: March 2017

- Learning how to refactor code, has another big advantage.

The script is called: examples\712_towerofhanoi_animation.pas

```
maxbox4 712_towerofhanoi_animation.pas Compiled done: 02/04/2023 23:10:17
```

```
-----
cpu speed: 2005
```

```
### mX4 executed: 02/04/2023 23:10:18 Runtime: 0:0:2.680 Memload: 48% use
```

Tutorial 50 Big Numbers II: April 2017

- We focus on a real world example from a PKI topic RSA.

The script is called: examples\712_towerofhanoi_animation.pas

```
EncryptStr: 0.001 ms
```

```
DecryptStr: 0.122 ms
```

```
### mX4 executed: 02/04/2023 23:14:15 Runtime: 0:0:6.10 Memload: 48% use
```

Tutorial 51 5 Use Cases April 2017

- In the technology world, your use cases are only as effective as

http://www.softwareschule.ch/download/maxbox_starter51.pdf

In the technology world, your use cases are only as effective as the value someone's deriving from them. We want to show 5 of them:

1. Arduino Sensor Measure
2. XML DOM Analyser
3. Parallel Batch Processing
4. QR-Code Generator
5. Message Encryption & Robotics (Tutor 50)
6. Image Processing

Tutorial 52 Work with WMI Mai 2017

- Windows Management Instrumentation

Those are the interfaces which are mapped to a type library:

```
function WMIStart: ISWBemLocator;
function
WMIConnect (WBemLocator: ISWBemLocator; Server, account, password: string):
ISWBemServices;
function WMIExecQuery (WBemServices: ISWBemServices; query: string):
ISWbemObjectSet;
function WMIRowFindFirst (ObjectSet: ISWbemObjectSet; var
Enum: IEnumVariant;
```

Code and script can be found at:

http://www.softwareschule.ch/examples/766_wmi_management.txt

maXbox4 766_wmi_management.txt Compiled done: 02/04/2023 23:18:05

Hi world of third step code

Hi world of third step code

1.15572734979092 pets

edoc fo pets 4xobXam si siht

this is maXbox4 step of code

{0002DF01-0000-0000-C000-000000000046}

IE Installed: TRUE

{76A64158-CB41-11D1-8B02-00600806D9B6}

WMI Installed: TRUE

Layer Support: TRUE

this is the filecontent4 it

Exception: incorrect credentials. WMI connection failed.

case: UnistoreSvc_a2e13ef - Benutzerdatenspeicher_a2e13ef -- Running

case: UserDataSvc_a2e13ef - Benutzerdatenzugriff_a2e13ef -- Running

case: WpnUserService_a2e13ef - Windows-Pushbenachrichtigungs-
Benutzerdienst_a2e13ef -- Running

mX4 executed: 02/04/2023 23:20:44 Runtime: 0:0:6.265 Memload: 48% use

Tutorial 52_2 Work with WMI II June 2017

- Work with WMI System Management V2.

http://www.softwareschule.ch/examples/766_wmi_management2.txt

Variant is null, cannot invoke.

PascalScript maXbox4 - RemObjects & SynEdit

maXbox4 766_wmi_management2.txt Compiled done: 02/04/2023 23:25:15

Tutorial 53 Real Time UML August 2017

- In complex RT systems, the logical design is strongly influenced.

2017-07 Cumulative Update for Windows 10 Version 1703 for x64-based Systems (KB4025342) – maXbox 4.2.5.10

www.softwareschule.ch/examples/751_Elevator_Simulator3.pas

http://www.softwareschule.ch/examples/766_wmi_management.txt

maXbox4 751_Elevator_Simulator3.pas Compiled done: 02/04/2023 23:29:05

BREITSCH-BOX

mX4 executed: 02/04/2023 23:29:05 Runtime: 0:0:1.589 Memload: 49% use

Tutorial 54 Microservice II MS Crypto API Sept 2017

- MS Cryptographic Service Provider

20: The script can be found at:

21: <http://www.softwareschule.ch/examples/sha256.txt>

22: pic:

<http://www.softwareschule.ch/images/sierpinski4realhash.png>

Crypt_ReleaseContext: TRUE

4.7.6.20

mX4 executed: 02/04/2023 23:31:58 Runtime: 0:0:1.941 Memload: 49% use

255:

https://sourceforge.net/projects/maxbox/files/Examples/13_General/778_advapi32_dll_SHA256.txt/download

256:

https://sourceforge.net/projects/maxbox/files/Examples/13_General/675_bitcoin_doublehash2.txt/download

Tutorial 55 ASCII Talk Dez 2017

- Algorithms for Collaborative Filtering

http://www.softwareschule.ch/download/maxbox_starter55.pdf

Tutorial 56 Artificial Neural Network 2018

- The Fast Artificial Neural Network (FANN) library.

In my recent research I found the FANN as a Fast Neural Network and I need this library to classify things.

https://sourceforge.net/projects/maxbox/files/Examples/13_General/807_FANN_XorSample2.pas/download

```
maXbox4 807_FANN_XorSample2.pas Compiled done: 03/04/2023 09:25:32
```

```
#####  
### mX4 executed: 03/04/2023 09:25:32 Runtime: 0:0:0.958 Memload: 51% use
```

Tutorial 57 Neural Network II

- This tutor will go a bit further to the topic of pattern recognition.

This tutor will go a bit further to the topic of pattern recognition which implements multilayer artificial neural networks in different languages with support for both fully connected and sparsely connected networks. With FANN Cross-platform execution in both fixed and floating point are supported.

<http://www.softwareschule.ch/examples/neuralnetwork.txt>

```
maXbox4 neuralnetwork.txt Compiled done: 03/04/2023 09:30:05
```

```
#####  
### mX4 executed: 03/04/2023 09:30:05 Runtime: 0:0:0.979 Memload: 50% use
```

Tutorial 58 Data Science

- Principal component analysis (PCA) is often the first thing to try out.

Principal component analysis (PCA) is often the first thing to try out if you want to cut down the number of features and do not know what feature extraction method to use.

Use of dmath.dll

The script can be found at:34:

http://www.softwareschule.ch/examples/811_mXpctest_dmath_datascience.pas

35: ..\examples\811_mXpcatest_dmath_datascience.pas

dmath.dll loaded

3628800

15#

mX4 executed: 03/04/2023 09:48:06 Runtime: 0:0:1.298 Memload: 48% use

<https://softwareschule.code.blog/2023/04/01/how-to-chat-with-gpt/>

Tutorial 59 Big Data Feb 2018

- Big data comes from sensors, devices, video/audio, networks, blogs.

The script you found at:

123:

http://www.softwareschule.ch/examples/813_PCA_datascience_iris3.txt

dataset:

<http://www.softwareschule.ch/examples/iris.txt>

124: pic:

<http://www.softwareschule.ch/images/sierpinski4realhash.png>

mX4 executed: 03/04/2023 09:56:35 Runtime: 0:0:3.591 Memload: 48% use

Tutorial 60 Machine Learning March 2018

- This tutor introduces the basic idea of machine learning.

This tutor introduces the basic idea of machine learning with a very simple example. Machine learning teaches machines (and me too) to learn to carry out tasks and concepts by themselves.

<http://www.softwareschule.ch/examples/decision.jpg>

Overview:

<http://www.softwareschule.ch/examples/machinelearning.jpg>

https://sourceforge.net/projects/maxbox/files/Examples/13_General/809_FANN_XorSample_traindata.pas/download

maXbox4 809_FANN_XorSample_traindata.pas Compiled done:
03/04/2023 09:59:43

mX4 executed: 03/04/2023 09:59:43 Runtime: 0:0:1.34 Memload: 48% use

Tutorial 60_1 Sentiment Analysis

- SA is a way to evaluate and elaborate written or spoken language.

The full script is available:

23: 24:

<http://www.softwareschule.ch/examples/sentiment2.txt>

```
{"probability": {"neg": 0.39243610796467154, "neutral":  
0.39855945698005463, "pos": 0.60756389203532846}, "label": "pos"}
```

```
### mX4 executed: 03/04/2023 10:04:01 Runtime: 0:0:7.107  
Memload: 47% use
```

Tutorial 60_2 Neural Network III

- Data Science with ML

<http://www.softwareschule.ch/examples/datascience.txt>

```
### mX4 executed: 03/04/2023 10:06:23 Runtime: 0:0:1.243  
Memload: 47% use
```

Tutorial 63 Machine Games

- game against machine evolution (game)

To play the game with maXbox4.exe you need to download some OpenGL resources:

opengldata.zip

https://sourceforge.net/projects/maxbox/files/Examples/13_General/opengldata.zip/download

Unpack it to ../source/opengldata: After starting at

http://www.softwareschule.ch/download/maxbox_starter63.pdf

Tutorial 64 Install Routines

- If you write a simple script program and distribute it.

If you have a large number of computers that all need new programs or apps installed, it can be very time-consuming to sit and click at each machine and manually start the installation programs.

```
Const DESTPATH = 'examples\astroids_res\';
```

```
57: SOURCEPATH =
```

http://www.softwareschule.ch/examples/astroids_res.zip;

```
58: SOURCEFILE = 'astroids_res.zip';
```

Script files are usually edited from inside the Setup program.

```
92:
```

```
93: C:\maXbox\mX46210\maxbox4\examples\828_install_routine.txt
```

```
94:
```

https://sourceforge.net/projects/maxbox/files/Examples/13_General/828_install_routine.txt/

```
FreePhysicalMemory: 2147483647
```

SHA-1

f60338a77b77f2032061bf72a545afb727f6395f

mX4 executed: 03/04/2023 10:17:06 Runtime: 0:0:31.863

Memload: 48% use

Tutorial 65 Machine Learning III

- the basic idea of back-propagation and optimization.

https://sourceforge.net/projects/maxbox/files/Docu/EKON_22_machine_learning_slides_scripts.zip/download

http://www.softwareschule.ch/download/maxbox_starter65.pdf

Tutorial 66 Machine Learning IV

- This tutor makes a comparison of a several classifiers in scikit-learn

The script with 7 classifiers can be found:

http://www.softwareschule.ch/examples/classifier_compare2confusion.py.txt

Tutorial 67 Machine Learning V

- This tutor shows train test set split and histograms

http://www.softwareschule.ch/download/maxbox_starter67.pdf

Tutorial 68 Machine Learning VI

- This tutor shows clustering and 3D plots

The script can be found:

http://www.softwareschule.ch/examples/classifier_compare2confusion2.py.txt

Tutorial 69 Machine Learning VII

- This tutor shows clustering and 3D plots

This tutor puts a trip to the kingdom of prime classes with dataframe knowledge.

http://www.softwareschule.ch/download/maxbox_starter69.pdf

Tutorial 70 No GUI

- This tutor shows shell code

This tutor explains a solution to attach a console to your app. Basically we want an app to have two modes, a GUI mode and a non-GUI mode for any humans and robots.

The script can be found:

http://www.softwareschule.ch/examples/866_native_console.txt

4.7.6.20

C:\Windows\explorer.exe

explorer.exe

mX4 executed: 03/04/2023 10:30:13 Runtime: 0:0:0.995

Memload: 46% use

Tutorial 71 CGI Scripts

- This tutor shows CGI

Quite simply, CGI stands for Common Gateway Interface.

You can find the script-code at:

<http://www.softwareschule.ch/examples/cgi.txt>

The whole project with the source and compiled exe at:

https://sourceforge.net/projects/maxbox/files/Examples/13_General/880_cgiMain_server3.pas/download

Intel(R) Core(TM) i7-8565U CPU @ 1.80GHz

mX4 executed: 03/04/2023 10:40:40 Runtime: 0:0:1.690 Memload: 46% use

PascalScript maXbox4 - RemObjects & SynEdit

Ver: 4.7.6.20 (476). Workdir: C:\Program Files\Streaming\maxbox4\Import\tutor110

Tutorial 72 Multilanguage Coding

- This tutor shows several languages in one

You can find the script-code at:

<http://www.softwareschule.ch/examples/cgi.txt>

```
function GetConnections: TObjectList;
```

```
function GetActive: Boolean;
```

```
procedure SetActive(const Value: Boolean);
```

Code and script can be found at:

http://www.softwareschule.ch/examples/751_Elevator_Simulator4.pas

http://www.softwareschule.ch/examples/766_wmi_management.txt

maXbox4 766_wmi_management2.txt Compiled done: 03/04/2023 10:56:25

Tutorial 73 EKON 24

- This presentation shows machine learning in the community edition

http://www.softwareschule.ch/download/maxbox_starter73.pdf

Tutorial 74 BASTA 2020

- This presentation shows visualization frameworks in Visual Studio Code

http://www.softwareschule.ch/download/maxbox_starter74.pdf

Tutorial 75 Machine Learning VIII

- This tutor shows object detection with computer vision

The script and data can be found:

<http://www.softwareschule.ch/examples/detector2.htm>

<https://sourceforge.net/projects/maxbox/files/Examples/EKON/EKON24/ImageDetector/>

```
maXbox4 992_detector21_wget_integrate2ict_EKON25_CAS2.txt Compiled done:
03/04/2023 11:03:03
```

```
integrate image detector compute ends...
```

```
elapsedSeconds:= 13.6654431
```

```
no console attached..
```

```
### mX4 executed: 03/04/2023 11:03:18 Runtime: 0:0:16.21 Memload: 48% use
```

Tutorial 76 Machine Learning IX

- This tutor shows working with CAI

This tutor explains a trip to the kingdom of object recognition with computer vision knowledge and an image classifier from the CAI framework in Lazarus and Delphi, the so called CIFAR-10 Image Classifier.

CAI NEURAL API is a pascal based neural network API optimized for AVX, AVX2 and AVX512 instruction sets plus OpenCL capable devices including AMD, Intel and NVIDIA for GPU capabilities.

https://github.com/maxkleiner/maXbox/blob/master/EKON24_SimpleImageClassificationCPU.ipynb

The script and data can be found:

<http://www.softwareschule.ch/examples/detector2.htm>

<https://sourceforge.net/projects/maxbox/files/Examples/EKON/EKON24/ImageDetector/>

https://sourceforge.net/projects/maxbox/files/Examples/EKON/EKON24/SimpleImageClassifier_CPU_Cifar2.pas/download

Tutorial 77 Machine Learning X

- This tutor explains some confusion matrix topics
- maXbox Starter 77 - Unified Machine Learning

The answer to this question is a reference to the book *The Hitchhiker's Guide to the Galaxy*, in which the answer to the ultimate question of life, the universe, and everything is revealed to be 42.

http://www.softwareschule.ch/download/maxbox_starter77.pdf

Tutorial 78 Portable pixmap format (PPM)

- explains portable pixmap format (PPM), the portable graymap format (PGM) and portable bitmap format (PBM) are image file formats designed to be easily exchanged between platforms.

The Portable Pixmap format uses an uncompressed and inefficient format so that it is seldom used for storing large images but on the other side this is an advantage.

http://www.softwareschule.ch/download/maxbox_starter78.pdf

Conclusion:

The portable pixmap format (PPM), the portable graymap format (PGM) and portable bitmap format (PBM) are image file formats designed to be easily exchanged between platforms.

The script and data can be found:

<http://www.softwareschule.ch/examples/sphere2.txt>

<http://www.softwareschule.ch/examples/sphere2.htm>

<http://www.softwareschule.ch/examples/detector2.htm>

```
maXbox4 sphere2.txt Compiled done: 03/04/2023 11:15:40
```

```
-----  
P2
```

```
361 361
```

```
255
```

```
sign: P2
```

```
### mX4 executed: 03/04/2023 11:17:02 Runtime: 0:1:22.336 Memload: 51% use
### mX4 executed: 03/04/2023 11:22:48 Runtime: 0:1:25.746
Memload: 47% use
```

Tutor 79 Assertions

Use the Assert procedure to document and enforce the assumptions you must make when writing code. Assert is not a real procedure. The compiler handles Assert specially and compiles the filename and line number of the assertion to help you locate the problem should the assertion fail.

<http://www.softwareschule.ch/examples/unittests.txt>

```
TRUE
```

```
TRUE
```

```
TRUE
```

```
All 30 Unit Tests passed!^?
```

```
TRUE
```

```
### mX4 executed: 03/04/2023 11:34:51 Runtime: 0:0:8.641
Memload: 47% use
```

Tutorial 80 Tips and Tricks

A whole bunch of 25 Years impressions

http://www.softwareschule.ch/download/maxbox_starter80.pdf

Tutorial 81 RSS Feeds of BBC

At its core, RSS refers to simple text files (XML/RDF) with more or less important, updated information – news pieces, articles, weather info, opinion mining that sort of thing.

In the following I want to show this topic thing with the BBC-News feeder. News feeds allow you to see when websites have added new content.

Ref Script & Component:

128:

<http://www.softwareschule.ch/examples/bbcnews.txt>

129: <http://simplerss.sourceforge.net>

130: script: 1017_XmlDocRssParser.pas

26: Iran: Tub of yoghurt thrown at unveiled women in shop: Sat, 01 Apr 2023 16:30:15 GMT
27: King Charles' first visit to Germany as monarch... in 70 seconds: Fri, 31 Mar 2023 14:13:10 GMT
28: Iowa tornadoes captured by eyewitness in car: Sat, 01 Apr 2023 03:37:59 GMT
mX4 executed: 03/04/2023 11:43:29 Runtime: 0:0:1.288
Memload: 47% use

Tutorial 82 JSON

http://www.softwareschule.ch/download/maxbox_starter82.pdf

JSON (JavaScript Object Notation) is a lightweight data-interchange format. Json data can be read from a file or it could be a Json web link.

We show a covid time serie web link with TJSON and TEEChart in Pascal and Python.

Ref: 212:

<http://www.softwareschule.ch/examples/covid2.txt>

12014 Vanuatu

552162 Venezuela

11526994 Vietnam

703228 West Bank and Gaza

535 Winter Olympics 2022

11945 Yemen

343135 Zambia

Worldwide Countries:200 Covid Deaths: 6868235

mX4 executed: 03/04/2023 11:47:56 Runtime: 0:0:49.505

Memload: 48% use

http://www.softwareschule.ch/download/maxbox_starter82_2.pdf

The script you can find at:

33:

<http://www.softwareschule.ch/examples/newssentiment2.txt>

Sentiment of: Yesterday I was clever, so I wanted to change the world. Today I am wise, so I am changing myself

```
{"probability": {"neg": 0.37517484595971884, "neutral": 0.091034274541377691, "pos": 0.62482515404028116}, "label": "pos"}
```

statusCode: 200

mX4 executed: 03/04/2023 11:50:44 Runtime: 0:0:2.858 Memload: 47% use

Tutor 83 maXbox_starter83_Classification

For this tutor we'll explore one of the classic machine learning datasets - hand written digits classification. We have set up a simple SVC and RandomForest to classify the MNIST digits

http://www.softwareschule.ch/download/maxbox_starter83.pdf

<https://colab.research.google.com/github/maxkleiner/maXbox4/blob/master/MNISTSinglePredict2Test.ipynb#scrollTo=YAcgQEaPoMjZ>

TypeError: Feature names are only supported if all input features have string names, but your input has ['int', 'str'] as feature name / column name types. If you want feature names to be stored and validated, you must convert them all to strings, by using `X.columns = X.columns.astype(str)` for example. Otherwise you can remove feature / column names from your input data, or convert them all to a non-string data type.

Tutor 84 maXbox_starter84_Baseline

A baseline is a method that uses heuristics, simple summary statistics, randomness, or machine learning to create predictions for a dataset. You can use these predictions to measure the baseline's performance (e.g., accuracy)- this metric will then become what you compare any other machine learning algorithm against.

```
script: 1026_json_automation_refactor2.txt
```

```
test single country Uzbekistan
```

```
jitems test 1143
```

```
jitems country 1143
```

```
Worldwide Countries:10 Covid Deaths: 1523727942
```

```
### mX4 executed: 03/04/2023 12:07:08 Runtime: 0:1:58.357
```

```
Memload: 48% use
```

```
PascalScript maXbox4 - RemObjects & SynEdit
```

```
Ver: 4.7.6.20 (476). Workdir: C:\Program
```

```
Files\Streaming\maxbox4\Import\tutor110
```

Tutorial 85 maXbox_starter85_JSON

Reading JSON data could be easy. Json data can be read from a file, folder or it could be a json web link. Let us first try to read the json from a web link and chart it.

JSON (JavaScript Object Notation) is a lightweight data-interchange format.

Pic: m85_deathconfratio_json.png

Conclusion:

The proper way to use JSON is to specify types that must be compatible at runtime in order for your code to work correctly. The TJsonBase= class(TObject) and TJsonValue= class(TJsonBase) namespace contains all the entry points and the main types. The TJson= class(TJsonBase) namespace contains attributes and APIs for advanced scenarios and customization.

JSON is a SUB-TYPE of text but not text alone. Json is a structured text representation of an object (or array of objects). We use JSON for Delphi framework (json4delphi), it supports older versions of Delphi and Lazarus (6 or above) and is very versatile. Another advantage is the Object-pascal native code, using classes only TList, TString, TStringStream, TCollection and TStringList; The package contains 3 units: Jsons.pas, JsonsUtilsEx.pas and a project Testunit, available at:

<https://github.com/rilyu/json4delphi>

The script can be found:

<http://www.softwareschule.ch/examples/covid2.txt>

http://www.softwareschule.ch/examples/972_json_tester32.txt

maXbox4 972_json_tester32.txt Compiled done: 03/04/2023 12:10:50

0.317957450402901

0.877458103001118

2054 1568

mX4 executed: 03/04/2023 12:10:50 Runtime: 0:0:1.46 Memload: 49% use

Tutorial 86 maXbox_starter86_Introduction2P4D.pdf

Python for Delphi (P4D) is a set of free components that wrap up the Python DLL into Delphi and Lazarus (FPC). They let you easily execute Python scripts, create new Python modules and new Python types. You can create Python extensions as DLLs and much more like scripting.

http://www.softwareschule.ch/download/maxbox_starter86.pdf

The script can be found:

http://www.softwareschule.ch/examples/1016_newsfeed_sentiment_integrate2.txt

XCompiler Message Count: 0

maXbox4 1016_newsfeed_sentiment_integrate2.txt Compiled done: 03/04/2023 12:14:06

C:\Users\breitsch\AppData\Local\Programs\Python\Python38\python.exe
e: can't open file 'C:\Program': [Errno 2] No such file or
directory

elapsedSeconds:= 0.1835713

mX4 executed: 03/04/2023 12:14:21 Runtime: 0:0:16.777
Memload: 48% use

PascalScript maXbox4 - RemObjects & SynEdit

[Tutor 86_1 Python4Delphi](#)

- [Tutor 86_2 Python4Delphi](#)

Tutorial 86_3 Python4maXbox July 2021

<https://maxbox4.wordpress.com/2021/07/28/python4maxbox-code/>

The script you can find at:

<http://www.softwareschule.ch/examples/pydemo.txt>

```
evalexec: ['__doc__', '__loader__', '__name__', '__package__', '__spec__', 'acos', 'acosh',  
'asin', 'asinh', 'atan', 'atan2', 'atanh', 'ceil', 'copysign', 'cos', 'cosh', 'degrees', 'e', 'erf', 'erfc',  
'exp', 'expm1', 'fabs', 'factorial', 'floor', 'fmod', 'frexp', 'fsum', 'gamma', 'gcd', 'hypot', 'inf',  
'isclose', 'isfinite', 'isinf', 'isnan', 'ldexp', 'lgamma', 'log', 'log10', 'log1p', 'log2', 'modf', 'nan',  
'pi', 'pow', 'radians', 'remainder', 'sin', 'sinh', 'sqrt', 'tan', 'tanh', 'tau', 'trunc']
```

PythonOK: TRUE

mX4 executed: 03/04/2023 12:17:44 Runtime: 0:0:1.10 Memload: 49% use

PascalScript maXbox4 - RemObjects & SynEdit

Ver: 4.7.6.20 (476). Workdir: C:\Program Files\Streaming\maxbox4\Import\tutor110

[Tutor 86_4 Python4maXbox II](#)

Tutorial 87 Image Detection in Lazarus September 2021

Lazarus is also being built in colab and the deep learning network
is compiled and trained.

https://gitlab.ti.bfh.ch/knm4/python4delphi/-/blob/master/EKON24_S_impleImageClassificationCPU_2021.ipynb

http://www.softwareschule.ch/download/maxbox_starter87.pdf

Actual Version: 4.7.6.10

Tutorial 88 Performance Tuning September 2021

Bytecode and Interpreter comparison with internal and external functions.

Script Ref:

189:

http://www.softwareschule.ch/examples/1070_tshirt_prime2_tutor88.txt

190:

http://www.softwareschule.ch/examples/1070_tprime_tshirt.png

Stop Watch Prime Tester4: 0:0:0.243

compiled function pretest TRUE

count primes5: 1229

Stop Watch Prime Tester5: 0:0:0.212

CPUspeed after: 2003

30 30

CountMemoLineHeights 143

mX4 executed: 03/04/2023 12:46:53 Runtime: 0:0:8.79 Memload:
48% use

PascalScript maXbox4 - RemObjects & SynEdit

Ver: 4.7.6.20 (476). Workdir:

C:\ProgramFiles\Streaming\maxbox4\Import\tutor110

Tutorial 89 Build a CNN (Convolutional Neural Network)

maXbox Starter 89 - Build a CNN (Convolutional Neural Network) -
Max Kleiner

Docu of main Neural Unit for maXbox: 20:

http://www.softwareschule.ch/examples/uPSI_NeuralNetworkCAI.txt

21:

http://www.softwareschule.ch/examples/uPSI_neuralnetworkcai.txt

22: http://www.softwareschule.ch/examples/uPSI_neuralvolume.txt

23: http://www.softwareschule.ch/examples/uPSI_neuraldatasets.txt

24: http://www.softwareschule.ch/examples/uPSI_neuralfit.txt

Script Ref: 1065__CAI_2_SiImageClassifier21_Tutor_89.txt

Tutorial 90 Python4Delphi CheatSheet

maXbox Starter 90 - Python4Delphi CheatSheet. - Max Kleiner

http://www.softwareschule.ch/download/maxbox_starter90.pdf

http://www.softwareschule.ch/examples/pydemo13_cheatsheet_Tutorial_90.txt

```
Exception: <class 'ModuleNotFoundError'>: No module named  
'pyqrcode'.
```

```
C:\Program Files\Streaming\maxbox4\Import\tutor110>pip install  
pyqrcode
```

```
Collecting pyqrcode
```

```
  Downloading PyQRCode-1.2.1.tar.gz (36 kB)
```

```
Using legacy setup.py install for pyqrcode, since package 'wheel'  
is not installed.
```

```
Installing collected packages: pyqrcode
```

```
  Running setup.py install for pyqrcode ... done
```

```
Successfully installed pyqrcode-1.2.1
```

```
XCompiler Message Count: 2
```

```
  maXbox4 pydemo13_cheatsheet_Tutorial_90.txt Compiled done:  
03/04/2023 12:55:18
```

```
Virtual Mem: svmem(total=17019686912, available=8635785216,  
percent=49.3, used=8383901696, free=8635785216)
```

```
### mX4 executed: 03/04/2023 12:54:36  Runtime: 0:0:1.359
```

```
Memload: 49% use
```

Tutorial 91 Faker Modul

Faker is a Python library that generates fake data. Fake data is often used for testing or filling databases with some dummy data. Faker is heavily inspired by

PHP's Faker, Perl's Data::Faker, and by Ruby's Faker.\$

```
Script Ref:
```

```
138:
```

<http://www.softwareschule.ch/examples/pydemo32.txt>

```
test import
```

```
0.10000000000000000055511151231257827021181583404541015625
```

```
test import
```

```
0.10000000000000000055511151231257827021181583404541015625
```

```
Exception: <class 'ModuleNotFoundError'>: No module named  
'dumper'.
```

```
C:\Program Files\Streaming\maxbox4\Import\tutor110>pip install  
dumper
```

Collecting dumper

Downloading Dumper-1.2.0-py2.py3-none-any.whl (13 kB)

Installing collected packages: dumper

Successfully installed dumper-1.2.0

```
'Robert Brady', 'sex': 'M', 'address': '277 Brandon  
Drive\nPaigeton, ID 56057', 'mail': 'matthew81@gmail.com',  
'birthdate': datetime.date(2004, 3, 16)}
```

676122681809

Stop Watch Faker Tester1: 0:0:0.288

mX4 executed: 03/04/2023 12:59:49 Runtime: 0:0:1.338

Memload: 49% use

PascalScript maXbox4 - RemObjects & SynEdit

Ver: 4.7.6.20 (476). Workdir:

C:\ProgramFiles\Streaming\maxbox4\Import\tutor110

Tutor 91 Faker SynDat II

Concept of SynDat:

141:

<http://www.softwareschule.ch/examples/syndat.png>

http://www.softwareschule.ch/examples/pydemo32_2.txt

Faker is

Tutorial 92

This tutor explains why PI could be a normal irrational number. So DRINK stands for Decimal Representation of a Irrational Number Kind.

If you are lost into the source code then you could easily add parameters to your app to write output to a file instead of the console: `-o out.txt`, since it's your tool doing the writing, you can build wherever you want for example to start out of the shell and get output to the shell and in the end plot an image to another file output as a graphic like below:

Call the script from the shell with

```
>>> .\maxbox4.exe ..\examples\866_native_console.txt
```

The script can be found:

http://www.softwareschule.ch/examples/1093_XMLUtils_Tutor92tester.txt

http://www.softwareschule.ch/examples/866_native_console.txt

4.23911582752163

```
TStringStream@0D105990
nil
### mX4 executed: 03/04/2023 13:04:51 Runtime: 0:0:1.8 Memload: 49% use
```

```
C:\Program Files\Streaming\maxbox4\Import\tutor110>maxbox4.exe -c
pydemo32.txt
```

```
C:\Program Files\Streaming\maxbox4\Import\tutor110>pydemo32.txt
```

```
Version maXbox4 is: 4.7.6.20
```

```
compiled...
```

```
XCompiler Message Count: 2
```

```
compiled[Hint] (31:36): Variable 'PYVAL' never used
```

```
[Hint] (31:36): Variable 'PYVAL' never used
```

```
compiled[Hint] (32:25): Variable 'APYTHONVERSION' never used
```

```
[Hint] (32:25): Variable 'APYTHONVERSION' never used
```

Tutor 92_1 VCL4Python

Delphi's VCL library as a Python module for building Windows GUI

http://www.softwareschule.ch/download/maxbox_starter92_1.pdf

We can see the simple VCL-form as it says "Hello":

<https://github.com/maxkleiner/DelphiVCL4Python/tree/main/samples/HelloWorld>

<http://www.softwareschule.ch/examples/weatherbox.txt>

```
-----+
```

```
Location: Köln, Regierungsbezirk Köln, Nordrhein-Westfalen,
Deutschland [50.938361,6.959974]
```

```
Follow #[46m#[30m@igor_chubin#[0m for wttr.in updates
```

```
### mX4 executed: 03/04/2023 13:14:36 Runtime: 0:0:4.737
```

```
Memload: 47% use
```

```
PascalScript maXbox4 - RemObjects & SynEdit
```

```
Ver: 4.7.6.20 (476). Workdir: C:\Program
```

```
Files\Streaming\maxbox4\Import\tutor110
```

Tutorial 93 Geocoding II April 2022

Geocoding is the processing of single addresses into geographic coordinates and can be performed by a number of free online web

sites.

http://www.softwareschule.ch/download/maxbox_starter93.pdf

Scriptname: 1108_CAI_GeocodingTWininetAPI_Maponly.pas

res back_: Coords: lat 46.96498 lng 7.46786 :Winkelriedstrasse,
Breitfeld, Stadtteil V, Bern, Verwaltungskreis Bern-Mittelland,
Verwaltungsregion Bern-Mittelland, Bern/Berne, 3014,
Schweiz/Suisse/Svizzera/Svizra importance: 0.3200

[https://nominatim.openstreetmap.org/search?format=json&q=Bonnaud,
%20France](https://nominatim.openstreetmap.org/search?format=json&q=Bonnaud,%20France)

check url 200

res back_: Coords: lat 46.62084 lng 5.43424 :Bonnaud, Val-
Sonnette, Lons-le-Saunier, Jura, Bourgogne-Franche-Comté, France
métropolitaine, 39190, France importance: 0.7350

mX4 executed: 03/04/2023 13:18:02 Runtime: 0:0:3.252
Memload: 48% use

[https://nominatim.openstreetmap.org/search?format=json&q=Munich,
%20Germany](https://nominatim.openstreetmap.org/search?format=json&q=Munich,%20Germany)

check url 200

res back_: Coords: lat 48.13711 lng 11.57538 :München, Bayern,
Deutschland importance: 0.7462

mX4 executed: 03/04/2023 13:20:21 Runtime: 0:0:1.490
Memload: 48% use

Tutorial 94 Post API Services April 2022

Essentially, a POST or GET API microservice architecture is a method of developing software applications as a suite of independently deployable, small, modular services or building block.

http://www.softwareschule.ch/download/maxbox_starter94.pdf

Source of the script at:
164:

<http://www.softwareschule.ch/examples/sentiment4.txt>

27: King Charles' first visit to Germany as monarch... in 70
seconds

neutral prob: 0.766 pol: 0.683

Overall: [0 / 26 / 2]

Overall Prob: [0.750]

mX4 executed: 03/04/2023 13:24:45 Runtime: 0:0:15.869
Memload: 48% use

Tutorial 95 Work with a Language Translation

http://www.softwareschule.ch/download/maxbox_starter95.pdf

Free and Open Source Machine Translation API, entirely self-hosted. Unlike other APIs, it doesn't rely on proprietary providers such as Google or Azure to perform translations

<http://www.softwareschule.ch/examples/translator.txt>

7:Warren Hoburg

8:Sultan Alneyadi

9:Andrey Fedyaev

Exception: WinHttp.WinHttpRequest: The server name or address could not be resolved

Tutorial 96 CNN Pipeline

This machine learning tutor explains training the so called CIFAR-10 Image Classifier with loading and testing a pre-trained model.

http://www.softwareschule.ch/download/maxbox_starter96.pdf

The scripts can be found:

http://www.softwareschule.ch/examples/1135_Cifar10SeparableConvolution_50.pas

http://www.softwareschule.ch/examples/1135_uvisualcifar10test_mX4_1.pas

```
maXbox4 1135_Cifar10SeparableConvolution_50.pas Compiled done:
03/04/2023 14:45:29
```

```
Rate:0.0100  Inertia:0.90  Weight Sum:  0.0000
```

```
  Parent:11
```

```
  Branches:0
```

```
Layers: 13
```

```
Neurons: 205
```

```
Weights: 20960
```

```
Loading 10K images from file "data_batch_1.bin" ...
```

```
Exception: File not found.
```

You need the CIFAR10 Dataset for SEPARABLECONVOLUTION

Tutorial 97 Operating System Routines August 2022

This report will show a few important routines an operating system needs. An Operating System (OS) is an interface between a user and

hardware.

http://www.softwareschule.ch/download/maxbox_starter97.pdf

http://www.softwareschule.ch/examples/1142_list_collections_pydemo42.txt

```
persons: [<__main__.Person object at 0x140D24B0>, <__main__.Person object at 0x140D24F0>]
```

```
persons: 2
```

```
persons: [['Andy', 38], ['Brian', 26]]
```

```
### mX4 executed: 03/04/2023 14:55:28 Runtime: 0:0:1.555
```

```
Memload: 48% use
```

Tutorial 98 Integration Python Scripts August 2022

When you run a Python script, the interpreter converts a Python program into something that the computer can understand. Executing a Python program can be done in two ways: calling the Python interpreter with a shebang line, and using the interactive Python shell or to invoke the script file from a script shell editor like crontab or maXbox. I show 4 solutions.

http://www.softwareschule.ch/download/maxbox_starter98.pdf

Tutorial 99 Gas Storage API

GIE is providing an API (Application Programming Interface) service on its AGSI and AGSI+ storage data. The API documentation is on progress and provides examples and guidance on how to use the service and is available after registration to get an API-key.

http://www.softwareschule.ch/download/maxbox_starter99.pdf

after registration to get an API-key. Below zoom of the past half year:

Pic: 1154_agsi_plot15.png

The scripts and images can be found:

<https://github.com/maxkleiner/agsi-data>

Script Ref: 1154_energy_api_agsi_plot14.txt

2022-11-05:436.55

2022-11-04:271.22

2022-11-03:278.96

Landrange 149: Injection sum: 29132.38

```
### mX4 executed: 03/04/2023 14:59:47 Runtime: 0:0:4.788
```

```
Memload: 49% use
```

```
PascalScript maXbox4 - RemObjects & SynEdit
```

EPlotform closed at: 03/04/2023 14:59:58

Ver: 4.7.6.20 (476). Workdir: C:\Program
Files\Streaming\maxbox4\Import\tutor110

Tutorial 100 Data Science Story

Palmer Archipelago (Antarctica) penguin dataset appears to be a drop in replacemnt for the same. It is a great intro dataset for data exploration & visualization. But the penguins dataset has different number of samples for each species.

http://www.softwareschule.ch/download/maxbox_starter100.pdf

Tutorial 101 Data Science Story2

Regression is a Machine Learning task to predict continuous values (real numbers), as compared to classification, that is used to predict categorical (discrete) values.

http://www.softwareschule.ch/download/maxbox_starter100_1.pdf

Tutorial 102 Compiler versus Interpreter

Both compilers and interpreters are used to convert a program written in a high-level language into machine code understood by computers.

Interpreters usually take less amount of time to analyze the source code. However, the overall execution time is comparatively slower than compilers. A compiler scans the entire program and translates it from object code as a whole into machine code.

Links and Sources

Title

maXbox4/assets/cryptobox at master · maxkleiner/maXbox4 (github.com)

Tutor 103 Image2Text API

This API recognizes and reads a text embedded in pictures or photos.

Image to Text API uses a neural net (LSTM) based OCR engine which is focused on line recognition, but also supports recognizing the character patterns. It supports both handwriting and printed materials as well as street maps.

Script Ref: 1176_APILayer_Demo1.txt

Lois & Clark: The New Adventures of Superman

mX4 executed: 03/04/2023 15:09:47 Runtime: 0:0:0.974 Memload: 49% use

Tutor 104 restcountries API

The purpose of this API is to get information about countries via a RESTful API. It supports restcountries and providing it as a freesolution for developers.

The restcountries project has been acquired by APIlayer. APIlayer is an API marketplace where also your API can reach more audiences.

Script Ref: 1180_restcountries_API_21.txt

len names languages: 4

French

Swiss German

Italian

Romansh

<https://flagcdn.com/w320/ch.png>

mX4 executed: 03/04/2023 15:13:49 Runtime: 0:0:3.340

Memload: 49% use

Tutor 105 Classify Cifar10 CNN

This machine learning tutor explains a classifier based on the so called CIFAR-10 Image Classifier with a pre-trained model.

The pre-trained model is a file: ClassifyCNNModel_70.nn

http://www.softwareschule.ch/download/maxbox_starter105.pdf

The whole package with app, script, tutorial, data and model:

<https://github.com/maxkleiner/neural-api/blob/master/examples/SimpleImageClassifier/MachineLearningPackage.zip>

Script Ref: 1135_classify_cifar10images1_5.pas

Tutorial 106 Air Distance and Bearing, March 2023

As part of a unit on Trigonometry, we review compass and true bearings before working with bearings in Trigonometry problems.

To start this review lesson, we looked at some images from Google Earth.

Ref: 1189_Distance_and_Bearing_Bordcomputer2.pas

XCompiler Message Count: 5

maXbox4 1189_Distance_and_Bearing_Bordcomputer2.pas Compiled
done: 03/04/2023 15:21:59

42213.07192354373 - 60175.77306795546 =
37.29885558827

mX4 executed: 03/04/2023 15:22:31 Runtime: 0:0:32.391
Memload: 49% use

Tutorial 107 pas2js, March 2023

Pas2js is an open source Pascal (hJps://wiki.freepascal.org/Pascal) to JavaScript (hJps://wiki.freepascal.org/JavaScript) transpiler. It parses Object Pascal or maXbox files and emits JavaScript. It takes Delphi/Lazarus projects and modules (.DPR, .LPR, .PAS, .PP) and converts them to JavaScript (.JS). The JavaScript is currently of level ECMAScript 5 and should run in any browser or inNode.js (target "nodejs").

http://www.softwareschule.ch/download/maxbox_starter107.pdf

Tutorial 108 Hacking your Märklin, March 2023

Any ISP will need what Arduino calls output binaries and the rest of the world calls HEX files. These are produced when you Verify/Compile your sketch and contain the data the AVR microcontroller needs to run and in my case "C:\Users\max\AppData\Local\Temp\arduino_build_130743".

http://www.softwareschule.ch/download/maxbox_starter108.pdf

Tutorial 109 Google Translate API, April 2023

Found a Google Translate endpoint that doesn't require an API key. "Lost in translation - post to application".

While digging or diving through the source code of Google's Google Dictionary Chrome extension, which has support for translating via Google Translate, I found the endpoint they use in order to do just that.

Reference:

JSON Lib:

<https://github.com/rilyu/json4delphi/blob/master/src/Jsons.pas>

URI Builder:

<https://github.com/ghquant/Delphi-EmbeddedWB/blob/master/Source/EwbUrl.pas>

<https://github.com/skelter/Indy/blob/master/Lib/Protocols/IdURI.pas>

The script:

<http://www.softwareschule.ch/examples/gtranslate.txt>

XCompiler Message Count: 2

maXbox4 gtranslate.txt Compiled done: 03/04/2023 15:27:30

server: ESF

["Een onderzoekspaper stelt voor om de GPT-4-prestaties met 30% te verbeteren door te overwegen waarom het verkeerd was.", "en"]

mX4 executed: 03/04/2023 15:27:30 Runtime: 0:0:1.71 Memload: 48% use

Tutorial 109_1 OpenAI API, April 2023

ChatGPT is an AI-based chatbot developed by OpenAI that can be used in various ways across many industries.

http://www.softwareschule.ch/download/maxbox_starter109_1.pdf

answer6: maXbox4 is better than maXbox3 because it has a more powerful engine, improved graphics, better sound, and more features. It also has a larger library of games, more customization options, and better support for online play. Additionally, maXbox4 has a more intuitive user interface, making it easier to navigate and use.

Tutorial 110 Code Overview Samples, April 2023

THIS ONE!

History of maXbox

New in maXbox 4.7.6.20 (January 15, 2023)
New in maXbox 4.7.6.10 (November 12, 2021)
New in maXbox 4.7.5.80 (July 22, 2021)
New in maXbox 4.7.4.64 (June 14, 2020)
New in maXbox 4.7.4.62 (June 8, 2020)
New in maXbox 4.7.4.60 (April 21, 2020)
New in maXbox 4.7.3.60 (April 15, 2020)
New in maXbox 4.7.2.82 (April 7, 2020)
New in maXbox 4.7.1 (November 15, 2019)
New in maXbox 4.6.3.10 (August 6, 2019)
New in maXbox 4.5.8.10 (December 27, 2017)
New in maXbox 4.2.8.10 (October 24, 2017)

New in maXbox 4.2.6.10 (August 24, 2017)
New in maXbox 4.2.5.10 (February 20, 2017)
New in maXbox 4.2.4.80 (October 21, 2016)
New in maXbox 4.2.4.60 (September 30, 2016)
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New in maXbox 4.2.0.80 (April 15, 2016)
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New in maXbox 3.9.9.101 (October 25, 2014)
New in maXbox 3.9.9.100 (October 10, 2014)
New in maXbox 3.9.9.98 (July 25, 2014)
New in maXbox 3.9.9.96 (May 15, 2014)
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New in maXbox 3.9.9.82 (December 16, 2013)
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New in maXbox 3.9.7.1 (January 22, 2013)
New in maXbox 3.9.7 (December 3, 2012)
New in maXbox 3.9.6.3 (November 14, 2012)
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New in maXbox 3.8.5 (April 3, 2012)
New in maXbox 3.8.4 (March 2, 2012)
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New in maXbox 3.6.1.2 (October 12, 2011)
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<https://github.com/maxkleiner/maXbox4/tree/master/docs>

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Actual Version: 4.7.6.20 IX Jan. 2023

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maXbox 4.7.4.64 on Linux:

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helpfile online:

http://www.softwareschule.ch/download/maxbox_functions.txt

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http://sourceforge.net/projects/maxbox/files/Docu/maXbox_Introduction_2014.pdf/download

Tutorial 109 - How to chat with GPT

While digging or diving through the source code of Google's Google Dictionary Chrome extension, which has support for translating via Google Translate, I found the endpoint they use in order to do just that. Since google translator frequently runs into 5xx errors, it might be useful to switch off to another endpoint, although this one is also annoyingly touchy with 403s error or 404s.



400. That's an error.

The server cannot process the request because it is malformed. It should not be retried. That's all we know.



pic:1202_transerror.png

So the endpoint we do invoke is:

URL: https://clients5.google.com/translate_a/t?client=dict-chrome-ex&sl=auto&tl=en&q=bonjour

Its a backbone from the link

https://translate.googleapis.com/translate_a/single

Now let's have a look at the app/script below with individual texts from your own data to translate. For this, we wrote two useful functions. The first one returns the text translated with the target language. The second one accepts one sentence as an argument with language detection as a param "auto". Then it will show the text in JSON or as file:

Query Parameters

Query Parameter	Default	Notes
client	dict-chrome-ex	Needs to be dict-chrome-ex or else you'll get a 403 error.

Query Parameter	Default	Notes
sl	auto	Designates the source language of the text to translate.
tl	(none)	Designates the destination language of the text to translate.
q	(none)	Text to translate

This seems like a great discovery!

This app allows you to translate or detect text from many different languages. That's why I want this endpoint to be seamlessly integrated into googletrans, with it switching between endpoints if one is facing 4xx/5xx errors.

```

Const AURLS = 'https://clients5.google.com/translate_a/t?client=dict-
chrome-ex&sl=%s&tl=%s&q=%s';

function Text_to_traslate_API2(AURL, aclient, langorig, langtarget, atext:
                                string):string;
var httpq: THttpConnectionWinInet;
    rets: TStringStream;
    heads: TStrings; iht:IHttpConnection2;
    jo: TJSON; jarr:TJsonArray2;
begin
    httpq:= THttpConnectionWinInet.Create(true);
    rets:= TStringStream.create('');
    try
        httpq.Get(Format(AURLS, [langorig, langtarget, atext]), rets);
        writeln('server: '+Httpq.GetResponseHeader('server'));

        jo:= TJSON.Create();
        jo.parse(rets.datastring)
        jarr:= jo.JsonArray;
        if httpq.getresponsecode=200 Then result:=jarr[0].stringify
            else result:='Failed: '+
                itoa(Httpq.getresponsecode)+Httpq.GetResponseHeader('message');
    except
        writeln('EWI_HTTP: '+ExceptionToString(exceptiontype, exceptionparam));
    finally
        httpq.free;
        httpq:= Nil;
        rets.Free;
        jo.free;
    end;
end;

```

Google's service, offered free of charge, instantly translates words, phrases, text and web pages between English and over 100 other languages. That's how we call the function:

```

atext:= 'bonjour mes amis da la ville';
writeln(utf8ToAnsi(Text_to_traslate_API2(AURL, 'dict-chrome-
                                ex', 'auto', 'es', atext)));

```

and the result:

```

server: ESF
["Hola mis amigos en la ciudad", "fr"]

```


for the query: https://translate.googleapis.com/translate_a/single?client=gtx&dt=t&sl=en&tl=ja&q=Hello, how are you today?

And something like this:

```
[["Bonjour", "Hello", null, null, 1]
]
, null, "en", null, null, null, null, []
]
```

String unicode (\uxxx) encoding and decoding.

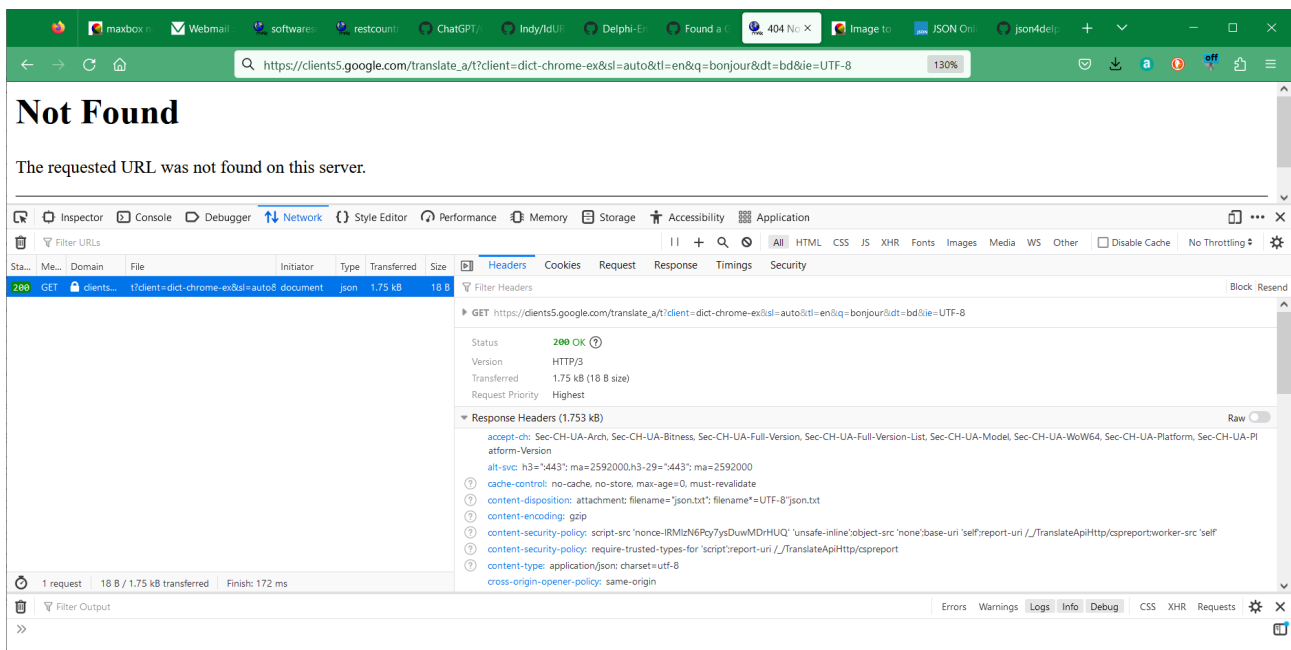
After some testing with request headers and F12 tools - Inspect (see below), I found the solution for the garbled text it can be. Simply set the User-Agent header to the one that Google Chrome uses.

Example:

```
import requests
word = 'لماذا تفعل هذا'
url = "https://clients5.google.com/translate_a/t?client=dict-chrome-ex&sl=auto&tl=en&q=" + word
headers = {
    'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64)
AppleWebKit/537.36(KHTML, like Gecko) Chrome/88.0.4324.104 Safari/537.36'}

try:
    request_result = requests.get(url, headers=headers).json()

    print(request_result)
    print('[In English]: ' + request_result['alternative_translations'][0]
['alternative'][0]['word_postproc'])
    print('[Language Dected]: ' + request_result['src'])
except:
    pass
```



Pic:1202_inspect_box_tutor109.png

Conclusion:

We should probably create a way to house all of these endpoints through one API, perhaps an interface that all of the endpoints implement. Also maybe try to URL encode the text before sending it (and use GET as it should not work with POST).

"Neural machine translation (NMT) systems have reached state of the art performance in translating text and are in wide deployment. Yet little is understood about how these systems function or how they break. A research paper suggests improving GPT-4 performance by 30% by having it consider why it was wrong.

The main part function opens connection with `HttpGet(EncodURL, mapStrm);`, invokes the API and results a stream which we convert to a datastring. A RESTful API needs to have one and exactly one entry point. If you don't use User-Agent, the response will have an incorrect encoding (ASCII). If you use a banned User-Agent like `curl/7.37.1`, you'll get a 403 error page; but if you use a web browser User-Agent, the response will have a correct encoding (UTF-8). About the POST request, it seems that the API endpoint allows using POST requests using query parameters instead of a body. This also works with PUT, PATCH, DELETE and OPTIONS (basically all common methods).

```
atext:= urlencode('A research paper suggests improving GPT-4 performance by 30%
by having it consider why it was wrong.');
```

```
writeln(utf8ToAnsi(Text_to_traslate_API2(AURL,'dict-chrome-
ex','auto','it',atext)));
```

```
["Un documento di ricerca suggerisce di migliorare le prestazioni del
GPT-4 del 30% facendo in modo che fosse sbagliato.", "en"]
```

Reference:

<https://medium.com/geekculture/a-simple-guide-to-chatgpt-api-with-python-c147985ae28>

JSON Lib:

<https://github.com/rilyu/json4delphi/blob/master/src/Jsons.pas>

URI Builder:

<https://github.com/ghquant/Delphi-EmbeddedWB/blob/master/Source/EwbUrl.pas>

<https://github.com/skelter/Indy/blob/master/Lib/Protocols/IdURI.pas>

The script:

<http://www.softwareschule.ch/examples/gtranslate.txt>

Doc and Tool: <https://maxbox4.wordpress.com>

Script Ref: 1202_Google_Translate_API2.txt

Max Kleiner 03/04/2023