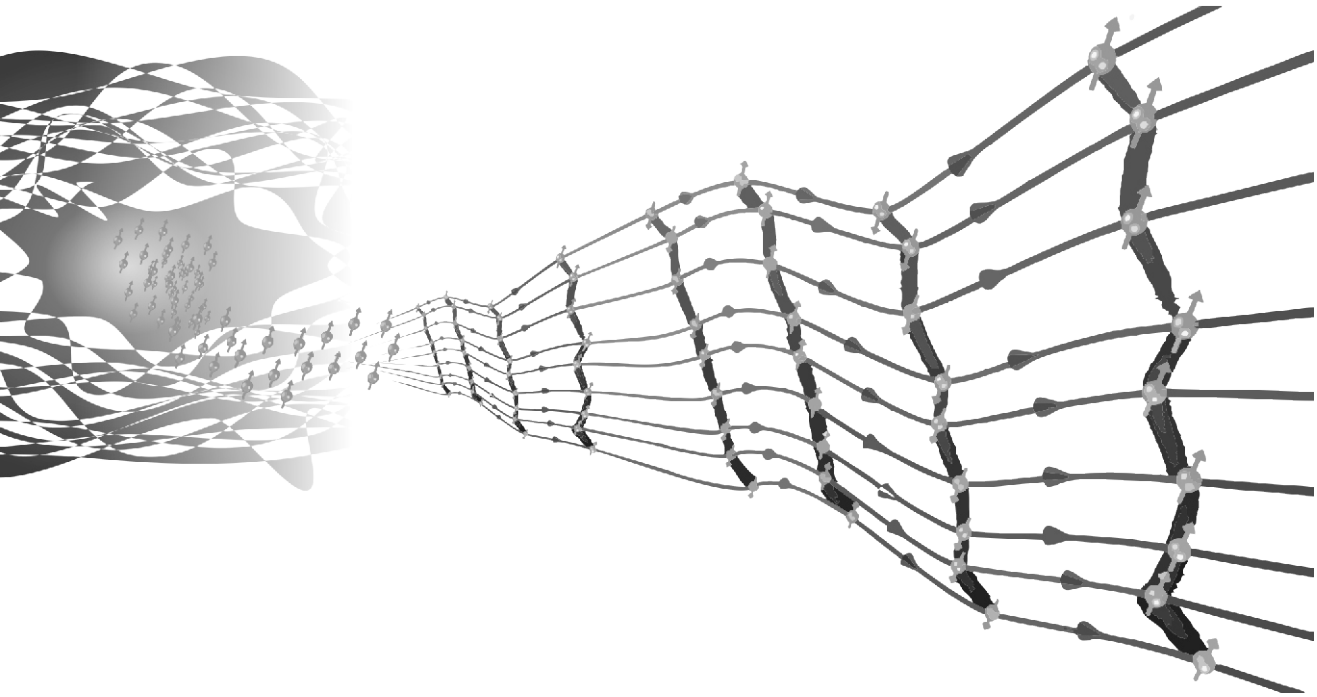
BLAISE PASCAL MAGAZINE 101



Faker: Synthetic Data Generator
Migration Guide to Firebird 4.0
PAS2JS Communicating with the webserver (Part 2)
Polygons in the making
Raspberry Pi with Windows 11 / Delphi & Lazarus running
Webassembly for PAS2JS

BLAISE PASCAL MAGAZINE 101

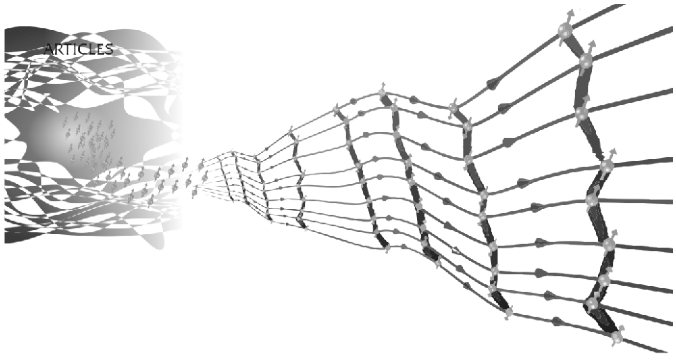
Time cristals

In condensed matter physics, a time crystal is a quantum system of particles whose lowest-energy state is one in which the particles are in repetitive motion. The system cannot lose energy to the environment and come to rest because it is already in its quantum ground state.

Because of this the motion of the particles does not really represent kinetic energy like other motion, it has "motion without energy".

Time crystals were first proposed theoretically by Frank Wilczek in 2012 as a time-based analogue to common crystals — whereas the atoms in crystals are arranged periodically in space, the atoms in a time crystal are arranged periodically in both space and time.

Several different groups have demonstrated matter with stable periodic evolution in systems that are periodically driven. In terms of practical use, time crystals may one day be used as quantum memories.



Pascal is an imperative and procedural programming language, which Niklaus Wirth designed (left below) in 1968–69 and published in 1970, as a small, efficient language intended to encourage good programming practices using structured programming and data structuring. A derivative known as Object Pascal designed for object-oriented programming was developed in 1985. The language name was chosen to honour the Mathematician, Inventor of the first calculator: Blaise Pascal (see top right).

Stephen Ball
http://delphiaball.co.uk
@DelphiABall

Dmitry Boyarintsev
dmitry.living @ gmail.com

Michaël Van Canneyt,
michael @ freepascal.org

Marco Cantù
www.marcocantu.com
marco.cantu @ gmail.com

David Dirkse
www.davdata.nl
E-mail: David @ davdata.nl

Benno Evers
b.evers @ everscustomtechnology.nl

Bruno Fierens
www.tmssoftware.com
bruno.fierens @ tmssoftware.com

Holger Flick
holger @ flixments.com

Mattias Gärtner
nc-gaertnma@netcologne.de

Max Kleiner
www.softwareschule.ch
max @ kleiner.com

John Kuiper
john_kuiper @ kpnmail.nl

Wagner R. Landgraf
wagner @ tmssoftware.com

Vsevolod Leonov
vsevolod.leonov@mail.ru

Andrea Magni www.andreamagni.eu
andrea.magni @ gmail.com
www.andreamagni.eu/wp

Paul Nauta PLM Solution Architect
CyberNautics
paul.nauta @ cybernautics.nl

Kim Madsen
www.component4developers.com

Boian Mitov
mitov @ mitov.com

Jeremy North
jeremy.north @ gmail.com

Detlef Overbeek - Editor in Chief
www.blaisepascal.eu
editor @ blaisepascal.eu

Howard Page Clark
hdpc @ talktalk.net

Heiko Rompel
info @ rompelsoft.de

Wim Van Ingen Schenau -Editor
wisone @ xs4all.nl

Rik Smit
rik @ blaisepascal.eu

Bob Swart
www.eBob42.com
Bob @ eBob42.com

B.J. Rao
contact @ intricad.com

Daniele Teti
www.danieleteti.it
d.teti @ bittime.it

Anton Vogelaar
ajv @ vogelaar-electronics.com

Danny Wind
dwind @ delphicompany.nl

Jos Wegman / Corrector / Analyst

Siegfried Zuhr
siegfried @ zuhr.nl

Editor - in - chief
Detlef D. Overbeek, Netherlands Tel.: Mobile: +31 (0)6 21.23.62.68
News and Press Releases email only to **editor@blaisepascal.eu**

Editors
Peter Bijlsma, W. (Wim) van Ingen Schenau, Rik Smit

Correctors
Howard Page-Clark, Peter Bijlsma

Subscriptions (2019 prices)

	Internat. excl. VAT	Internat. incl. 9% VAT	Shipment
Printed Issue ±60 pages	€ 155,96	€ 250	€ 80,00
Electronic Download Issue 60 pages	€ 64,20	€ 70	———
Printed Issue inside Holland (Netherlands) 60 pages	———	€ 250,00	€ 70,00

Subscriptions can be taken out online at **www.blaisepascal.eu** or by written order, or by sending an email to **office@blaisepascal.eu**
Subscriptions can start at any date. All issues published in the calendar year of the subscription will be sent as well.
Subscriptions run 365 days. Subscriptions will not be prolonged without notice. Receipt of payment will be sent by email.
Subscriptions can be paid by sending the payment to:
ABN AMRO Bank Account no. 44 19 60 863 or by credit card or Paypal
Name: Pro Pascal Foundation-Foundation for Supporting the Pascal Programming Language (Stichting Ondersteuning Programeertaal Pascal)
IBAN: NL82 ABNA 0441960863 BIC ABNANL2A VAT no.: 81 42 54 147 (Stichting Programmeertaal Pascal)
Subscription department
Edelstenenbaan 21 / 3402 XA IJsselstein, The Netherlands
Mobile: + 31 (0) 6 21.23.62.68 **office@blaisepascal.eu**

Member and donator of WIKIPEDIA
Member of the **Royal Dutch Library** KB

From your editor

A happy new year to everybody!
Finally there seems to be some light at the end of this tunnel.
We were able to finalize some very important wishes:
Lazarus had a new update and for Free Pascal we have been able to add some very special items: Generics (already integrated in the FPC-TrunkVersion), and Anonymous functions should become available very soon now.

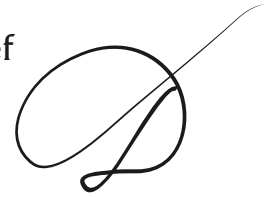
We added WebAssembly as you can read in this issue (*Webassembly for PAS2JS page 85*) and for PAS2JS we have started with a series of article (*lessons*) see page: *"PAS2JS Communicating with the webserver (Part 2) - starting at page 20* that will later become a book.
We created a new Mini Server for Testing Purposes which will be shown in the next item. That will make it very easy to built web-sites in PAS2JS and also create desktop applications which will run in your browser and show you how to do so.

I had in mind to do much more items in this issue but because the articles already added up to 100 pages,
I decided to publish them in the next issue 102.
Since wee now have WebAssembly we will create a web-store which will be capable of creating shop-connections with banks and other module providers (*like we use Molly*) in Pascal and show this sample code so you all could use that.
This is the basis for our new to build website.
I think is ridiculous that we run a site that is not build on Pascal.
It also has a very nice learning aspect which will demonstrate very well what potential PAS2JS and WebAssembly has.

I am already planning the next real-life meetings. I'll tell you soon...
Might be beginning April 2022..

I hope this year will become a very interesting and successful year as ever for you...

Detlef



"Our smart refrigerator just texted a 'Glacier Alert.'"

LibraryForm

Show article | Go to issue Nr | Issue | Search

- Advertisement -

ID	IssueNr	Author	Article	PDF	PageNr
861	99_100	Michael van Canneyt	GIT continued: Branching and partial commits for Lazarus and Delphi		36
862	99_100	Bob Swart	Testing IntraWeb Applications with Delphi		145
863	99_100	Paulo César Botelho Barbosa	Skia for Delphi		30
864	99_100	Detlef Overbeek	Creating a new Library Program with PDF viewer		157
865	99_100	Michael van Canneyt	Introduction to programming the internet with PAS2S		98
866	99_100	Bruno Fierens	Delphi for Raspberry		55
867	99_100	Danny Wind	Last part of the Webservice (5), Deploy to Apache		124
868	99_100	Den Zubow	PDF document in a report – using of new TfrxPDFView object		114
869	99_100	Newscientist and Detlef Overbeek	Scaling to a Very Large AI (Artificial Intelligence) causes unprecedented insights		169
870		Detlef	test		

Show Thumbnails | Page | Jump to page | server

Page 98
Page 99
Page 100
Page 101
Page 102
Page 103
Page 104
Page 105
Page 106
Page 107
Page 108
Page 109
Page 110
Page 111
Page 112
Page 113
Page 114

The new Library stick program has arrived with some improvements..

1. The thumbnails are created in the background so they load much faster.
2. In the Image you can see a large text field where you can search in all the text of that issue.
   The pages that are relevant will appear at th bottom. By clicking on the item you will be guided to the page.

Figure 1: Designing HTML in a RAD manner JSON

Page 23: ["...\" your changes to a server. In our case, the s..."]
Page 31: ["...hics. Highlight the server side, that is, be i...","...ow a multithreading server will be able to rec..."]
Page 77: ["...he Microsoft Speech Server Platform. There are...","... client, server, and mobile version...","... operating systems; server voices are availabl..."]
Page 99: ["...e 99/100 2021 99v A SERVER-SIDE BACKENDMost We...","...dized JSON format.A server that exchanges data..."]
Page 100: ["...s a complete client server ORM/SOA framework.!...","... application server. This can be a Fast...","...CGI server, a CGI, ...","...stand-alone HTTP(s) server. ...","... a RPC
Page 101: ["...t you do not need a server to generate the pag..."]

The new Library stick program has arrived with some improvements..

❶ The thumbnails are created in the background so they load much faster.

❷ In the Image you can see a large text field where you can search in all the text of that issue.
The pages that are relevant will appear at th bottom. By clicking on the item you will be guided to the page.

Blaise Library Program
+
USB Librarystick

Containing:
installer for Windows
Issues 1-100 / 5809 Pages
873 Articles / Code samples

RASPBERRY PI APPS WITH DELPHI

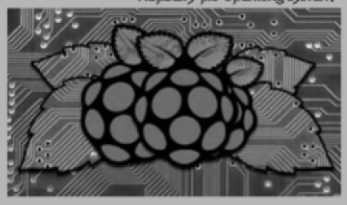
A new approach to create Raspberry Pi apps with Delphi via MILETUS

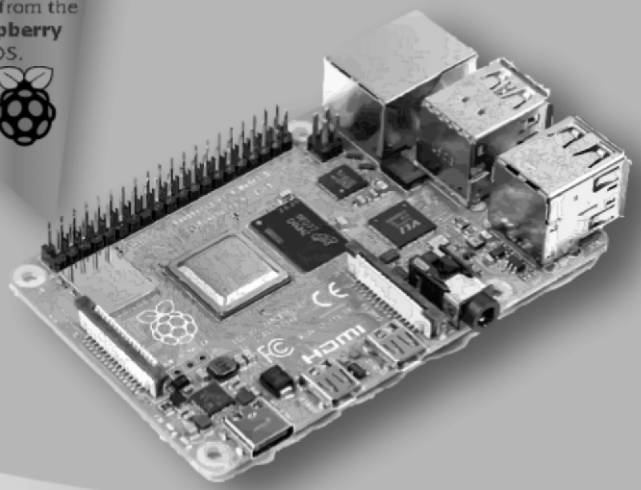
By Bruno Fierens

MILETUS

In **TMS WEB Core v1.7**, we introduced the **Miletus** technology for the first time as a technology to create cross-platform desktop applications from the **Delphi** IDE based on web technology.
So far, with **Miletus,** it was possible to create **Windows** (Win32 & Win64), macOS (Intel & ARM) and **LINUX 64** bit applications from the same codebase.
Now, from **TMS WEB CORE V1.9**, it is possible to generate applications from the **Delphi** IDE that can run on a **Raspberry Pi** using the official Raspberry Pi OS.

https://arstechnica.com/information-technology/2013/03/how-two-volunteers-built-the-raspberry-pis-operating-system/





GETTING STARTED

To create a **Raspberry Pi** app from the **Delphi IDE**, follow File | New | Other and under TMS WEB, you find the application type **TMS Miletus app.**
After the IDE created the default application, you can start adding your code to the application in pretty much the same way as you would do for a **VCL application or FireMonkey** application.
The components you can use are the same components as for a regular **TMS WEB Core** web client application, i.e. the TWEB* components.

FAKER Python4Delphi

AUTHOR: MAX KLEINER Try finally begin. – Max

Make the fake.

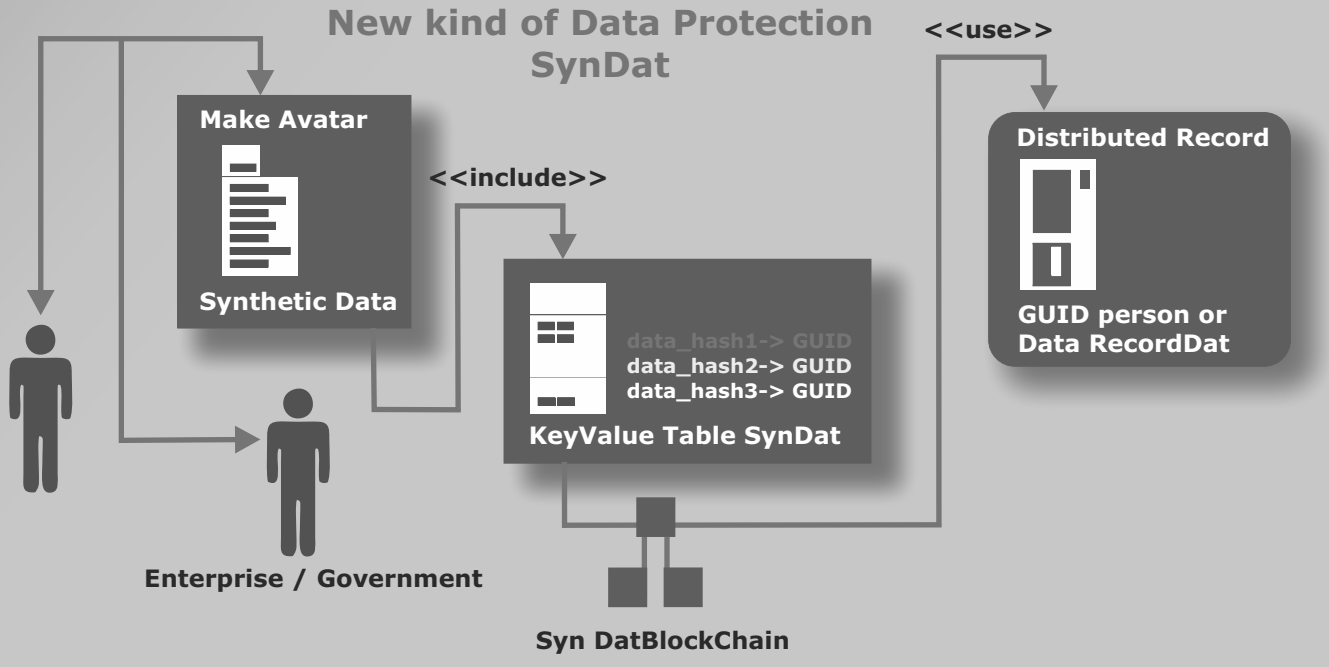
INTRODUCTION

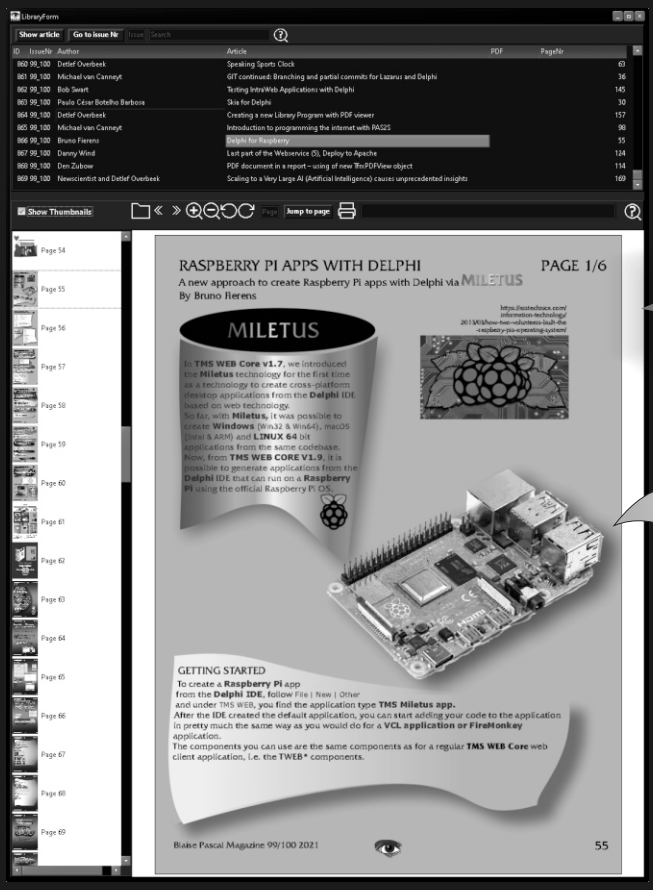
Real data, extracted from the real world, is a gold standard for data science and data protection, perhaps for obvious reasons. In such a case, synthetic data producing can be used either in place of real data, protect real user as an avatar or to augment an insufficiently large dataset. With **Python4Delphi** scripting.

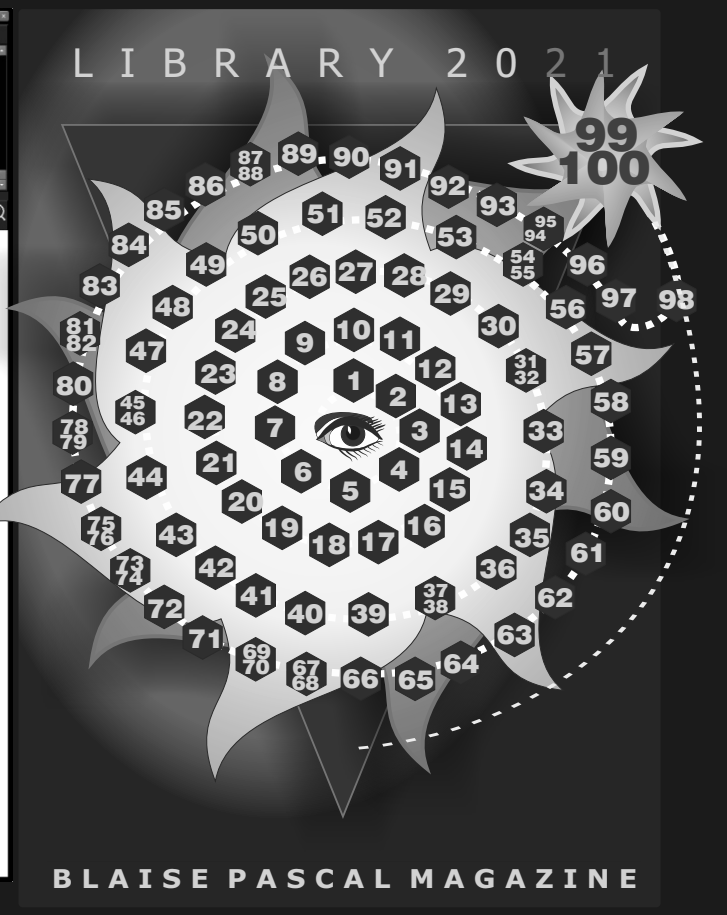
```
http://www.softwareschule.ch/examples/pydemo32_2.txt
```

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 strong inspired by PHP's Faker, Perl's Data::Faker, and Ruby's Faker.

We are also able to sample from a model and create synthetic data, hence the name **SynDat.** The most obvious way that the use of synthetic data benefits data science is that it reduces the need to capture data from real-world events, and for this reason it becomes possible to generate data and construct a **dataset** much more quickly than a **dataset** dependent on real-world events and in addition you don't misuse data protection.





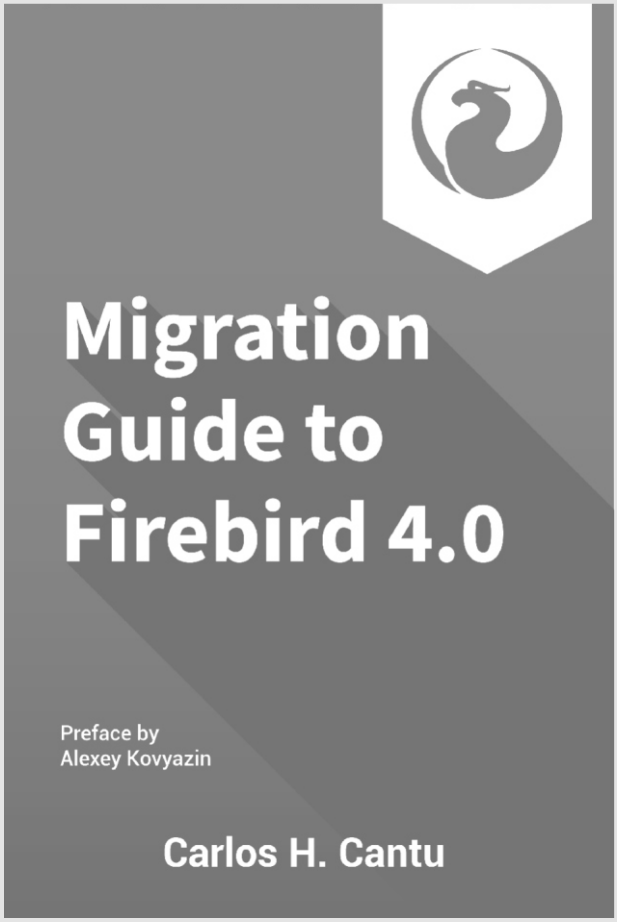


Blaise Library Program
+
USB Librarystick

Containing:
installer for Windows
Issues 1-100 / 5809 Pages
873 Articles / Code samples

Price: € 75 incl.Shipping

https://www.blaisepascalmagazine.eu/product/lib-stick
https://www.blaisepascalmagazine.eu/product/bundle-libstick-download-subscription/
https://www.blaisepascalmagazine.eu/product-category/special-offer/



ABSTRACT

Accompagnying the recent release of Firebird 4.0, a book about migrating to 4.0 is a welcome help for Firebird users who wish to use the latest version of the Firebird 4.0 engine. A review of the english translation of the book.

MIGRATION GUIDE TO FIREBIRD 4

First edition – 2021
Author: Carlos Henrique Cantu
Piracicaba – São Paulo – Brazil

Editing, translation, diagramming, finalization:
Carlos Henrique Cantu
Proofreading: Ann Harrison
Revision 1.20
The book is for sail at:

`https://www.firebirdnews.org/migration-guide-to-firebird-4/`

1 INTRODUCTION

As the title indicates, the book 'Migration guide to Firebird 4.0' by Carlos Henrique Cantu is meant for people who are already using Firebird: The book covers migration from version 3.0 of Firebird or earlier versions.
It is not meant as a beginner's guide to Firebird, nor is it intended to be a complete reference of Firebird.

The book gives insight in the isses you can (and most likely will) encounter when migrating existing databases and applications to Firebird. It also gives hints on how to solve or prevent the issues from occurring.

To this end, the book starts by repeating some basic firebird concepts: the various available architectures and their characteristics - important for choosing the right version to use. It mentions user-defined functions: these are deprecated in Firebird. They can still be used in Firebird, but they are no longer available or enabled by default.

2 INSTALLATION & MIGRATION

A first step in migrating to a new server version is obviously installing the new version, so this is covered to some extent for Linux and Windows: This chapter offers little surprises to seasoned Firebird users, as the procedure has not changed significantly.

The migration chapter is arguably the most important chapter of the book: it explains the need for a migration process, identifies the pitfalls that can occur during the migration and offers workarounds for some commonly found problems. It also recommends a replication scheme for migration of systems that must be available 24/7 but unfortunately, it fails to explain how to do this - earlier versions of Firebird do not have this functionality built-in, making this a non-trivial task which could really use an in-depth explanation.

A new installation needs to have some users present to be able to function, so some time is spent on explaning the new features regarding user management in Firebird: For users of firebird 3, this will offer few insights, but users of older versions of Firebird should read this chapter carefully, as the user management has changed significantly in version 3, so you need to be aware of it if you migrate to version 4.0.
SQL users are only one component of database security, and so the book spends some time on tips how to further secure your databases.

3 NEW FEATURES OF FIREBIRD 4.0

Good reasons for updating a database server are improved stability, speed and bug fixes.
Access to new features is an equally valid reason for migrating to a new version, so naturally the new features must be discussed in a book about migration to a new version.

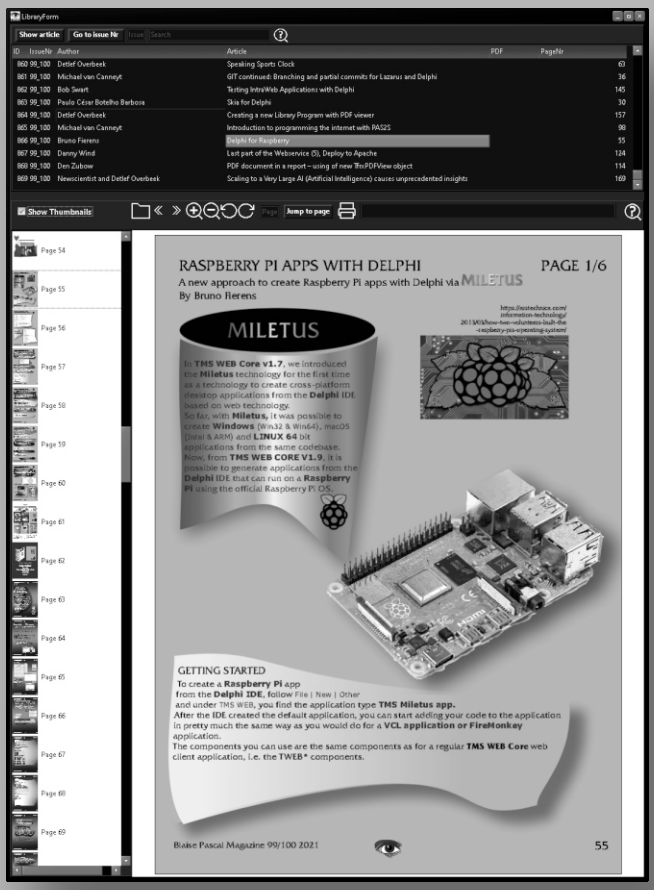
Firebird 4.0 - or more specifically, the client library that applications use when connecting to firebird - allows you to specify connection strings using an URL syntax, the book naturally explains how to construct these connection strings.

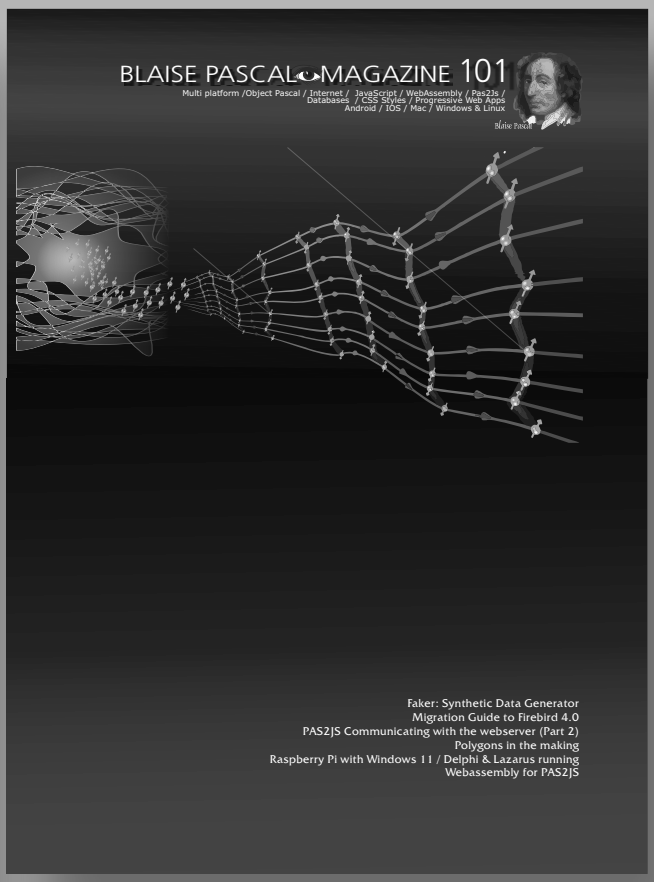
New in Firebird is how Firebird manages some aspects of transaction isolation. The book explains how the transaction isolation works and what changes were introduced in Firebird 4.0 - This chapter is mostly important for application programmers: the transaction isolation levels are usually controlled in application code.
The consequences of the new transaction isolation for garbage collection (and the automated sweep) are also explained.
Every new version of Firebird comes with new features in SQL, and version 4.0 is no different in this regard: new keywords are introduced as well as new data types: the new data types do not interfere with the migration process, but the new keywords can cause problems.

The new time zone capabilities of Firebird are treated in depth. Last but not least, with Firebird 4, firebird gets one-way replication capabilities: the required setup and parameters for database replication are treated in depth.

4 Conclusion

People that wish to migrate to Firebird 4.0 from earlier versions of Firebird will definitely find this book useful: In fact, people with older Firebird versions have more reason to buy this book, since it also discusses changes introduced in Firbeird 3.0. Written in an informal style, it is an easy read that will quickly get you up to speed with the latest version of Firebird.





USB LIB stick + 1 year subscription for only € 100

Blaise Library Program and USB Librarystick

Containing:
installer for Windows
Issues 1-100 / 5809 Pages
873 Articles / Code samples

D11 starter expert

PAS2JS PART 2

ABSTRACT

In a previous article we showed how to get started with pas2js, and how to compile a simple program that interacts with the **HTML** of the webpage. In this article, we show how to interact with an application server using **JSON-RPC**.

❶ INTRODUCTION

It is important to have a close look at the source code once you start acting Please read the article completely before working with it.

A webpage almost invariably communicates with services hosted on a webserver. This can go from downloading a simple file to exchanging data with an application server. As explained in the previous article about real-world programming with **PAS2JS** there are several communication protocols possible: **SOAP, REST, JSON-RPC.**

The communication can happen over **HTTP(s)** or using websockets. **Free Pascal** supports all of these with several frameworks – **FPC** can be used to write a **HTTP** server or **Websocket** server – or even both at the same time.

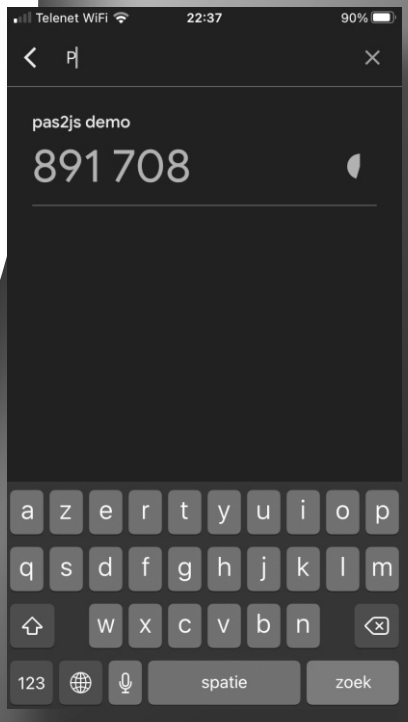
In this article, we'll explain how to use **JSON-RPC** on the server and in **Pas2JS.** The previous article laid the foundations for a login page, and we will now expand on this foundation to demonstrate how to let a **PAS2JS** program communicate with a server.

For this, we'll implement a Users service with 3 calls:

Login	The login call to let a user log in using a username and password.
Logout	The logout call.
CreateUser	A call to create a new user in the user database.

To make our application more secure, we'll also implement **2-factor authentication (2FA)** using the **Google Authenticator** application: **Free Pascal** has a unit that can generate a time-based token which can be used with the **Google Authenticator** application.

This means the login page presented in the previous article needs to be expanded, so we can ask the user for the **2FA** code. At the same time, we'll expand the **HTML** page a little, so it contains a menu bar in which we will add login and logout buttons as well as a place to show the user name.



Using the class `TAPIClientCodeGen` from the fprpccodegen unit (available in native **FPC** and in **pas2js**) the **JSON** description can be consumed and a unit with the above service code can be automatically generated. The generated unit will contain a service class for every class exposed by the **FPC JSON-RPC** server.

The **pas2js** distribution contains a demo project (apiclient) that uses this unit and allows you to generate the service classes exposed by a server, 100% automatically. All that is required is the URL where the **FPC JSON-RPC** server is listening for requests.
It is shown in *figure 11 on article page 19.*

Better yet, the trunk version of the **FPC JSON-RPC** server code can generate this code automatically, you can get it by entering the following **URL** in the browser:

```
http://localhost:3000/RPC/API?format=pascal&unitname=services
```

This way, your service description can be regenerated at any moment, and will always reflect exactly what the server is expecting as input and what data it is returning.
Since the **JSON RPC** server only supports **JSON** types, the generated code can only use the generic **JSON** types when generating code. An extension is planned where type hints can be given and for example a record type can be specified instead of a generic `TJSONObject` class, or a `TDateTime` instead of a `string`.

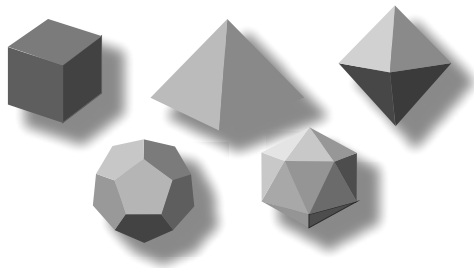
8 CONCLUSION

In this article we have shown how to construct a **RPC** server using a click-and-point mechanism. We've also shown how to call the **RPC** server and how to generate a service description.

The **GUI** of our application has been expanded, and when you look at the BindElements method, you'll see that this has become quite large. In the next article, we'll show how to generate this code automatically, and how to load the **HTML** for the dialogs dynamically.

ABOUT REGULAR POLYGONS

By David Dirkse



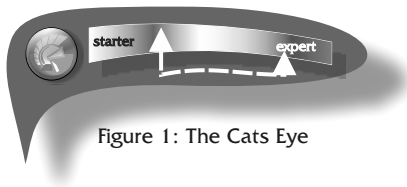
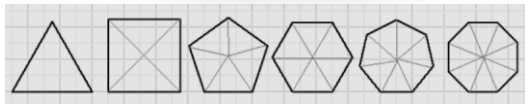


Figure 1: The Cats Eye

INTRODUCTION

In Euclidean geometry, a regular polygon is a polygon that is equiangular (all angles are equal in measure) and equilateral (all sides have the same length). Regular polygons may be either convex or star. In the limit, a sequence of regular polygons with an increasing number of sides approximates a circle, if the perimeter or area is fixed, or a regular apeirogon (effectively a straight line), if the edge length is fixed. Below are pictured some (3 to 8 edged) regular polygons.

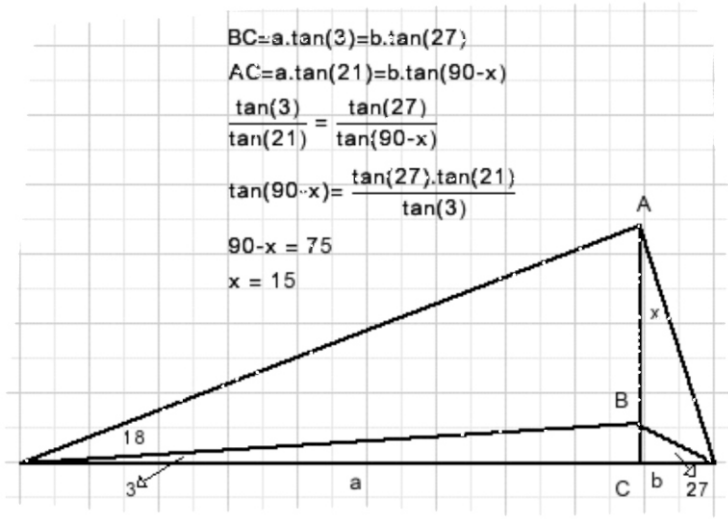


Firgure 1

A regular N polygon may be considered as N ide isosceles triangles which top angle equals 360/N.

This Delphi project originated from a geometric problem.

Asked is to find the value of angle x in the picture below:



Firgure 2

USING FLOATING POINT ARITHMETIC

Floating point values that are a power of 2 (such as 0.5 , 0.25) are exact values.
0.1 or π are approximations. Calculations using these values add inaccuracy.
In this project 32 bit "single" floating point variables are used. Their accuracy is 6 to 7 (decimal) digits.
Example:

```
Var a,b : single;
Begin
.....
 If a = b then .....//this will probably never be "true"
//  Instead this works
 If abs(a-b) < 1e-6 then .....// a almost equal to b
```

So at all times the programmer has to realize the amount of inaccuracy.

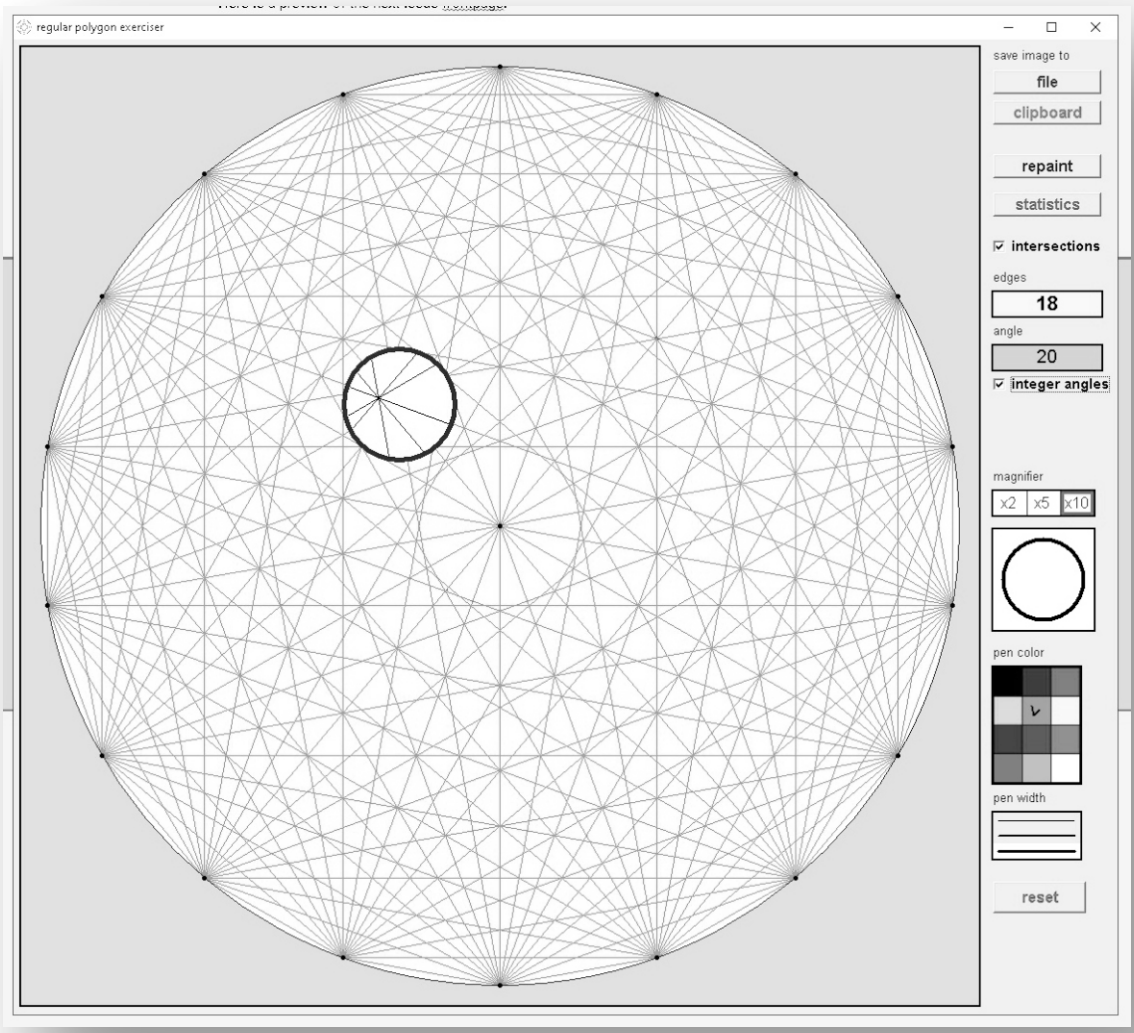
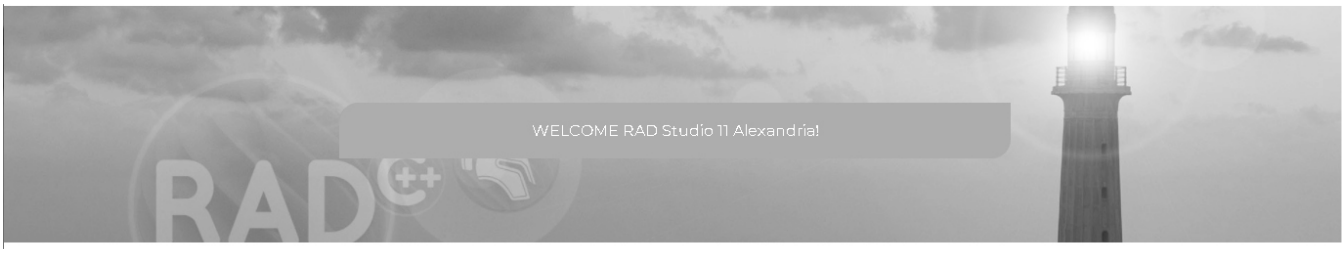


Figure 14

barnsten



From
€1.529,00

Delphi 11 Alexandria

A powerful RAD environment for quickly developing high-performance native cross-platform applications using powerful visual design tools and integrated toolchains that independent developers and enterprise development teams love.

Shop Delphi

From
€2.699,00

RAD Studio 11 Alexandria

RAD Studio is the ultimate RAD environment loved by developers for quickly building high-performance native cross-platform applications in Modern C++ and Delphi using powerful visual design tools and integrated toolchains.

Shop RAD Studio

Phone number: +31 23 542 22 27

ABSTRACT

Because my opinion is that we will go smaller and smaller with computers, having better CPU's and even more memory on board I wanted to show how far we have come already: It is now possible running **Delphi 11 on Windows 11** on **Raspberry. Lazarus** runs of course as well. If you want to try: take your time it will cost a few hours (4). But it works. For those who are interested we have a complete **ISO** prepared for you.

INTRODUCTION

In this article I try to explain how to install a **Raspberry Pi OS** for your **Raspberry Pi 4** card. It must be the 4 with 8 gig memory version because I want to install **Win 11** on it and then install Delphi and Lazarus. Do not try Windows 10!
This article is about **Windows 11**. The Raspberry PI is very hard to find so I'll give an address where you can order it.

https://www.okdo.com/nl/p/okdo-raspberry-pi-4-8gb-basic-kit-universal-version/

It is a trustworthy address from the UK. They only have the pack available: the **PI** itself is sold out for now, this kit contains an **SD card** which you will need to start with. For the windows version you will need a much faster card or rather a disk. I chose an **SSD** disk**:** they are fast booting and that' s what we want. 250 Gig should be working but you could try bigger.
Do not try this with an older version of the **Raspberry Pi** because there are chances you will raise errors because of time out.

Figure 1: The Raspi Kit in parts

To get started you will need some software which you can find at:
https://www.raspberrypi.com/software/
there is a video that might be helpful.
https://www.youtube.com/watch?v=ntaXWS8Lk34

RASPBERRY PI OS

Your **Raspberry Pi** needs an operating system to work. This is it. **Raspberry Pi OS** (previously called **Raspbian**) is the official supported operating system.

Download and install **Raspberry Pi Imager** to a computer with an SD card reader. You can download the images for **Windows, Ubuntu** and **Mac** So what you need to install **Windows 11** on a **Raspberry Pi 4:**

- **Raspberry Pi 4 - 8 GB** memory on board – no less!
- 6GB or larger **microSD card** (available already in the kit)
- **Windows 11 PC**
- **USB** to **Ethernet** or **Wi-Fi dongle**
  Wi-Fi does not work with Windows on installing, even though there is 'WiFi' on board.
  Maybe we can find a way later to handle this , but for now you you would need a **WiFi dongle**.
- **Bluetooth** is available
- Keyboard, mouse, **HDMI** cable (available already in the kit) and power supply 3Volt (available already in the kit) for your **Raspberry Pi**.

Figure 2: The Raspi Kit is very easy to build, and later on quite helpfull

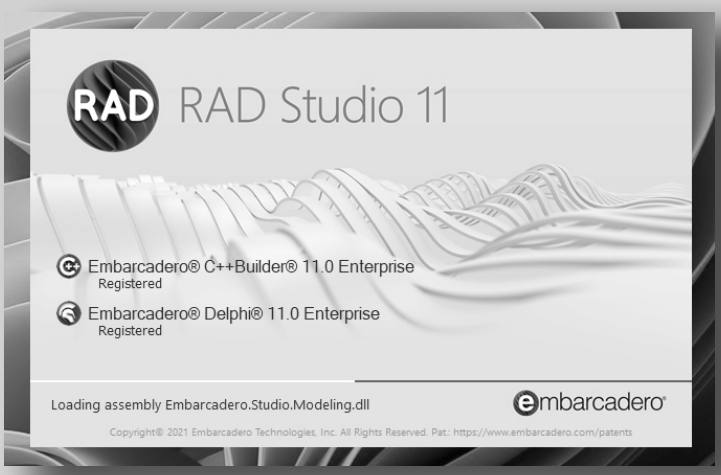
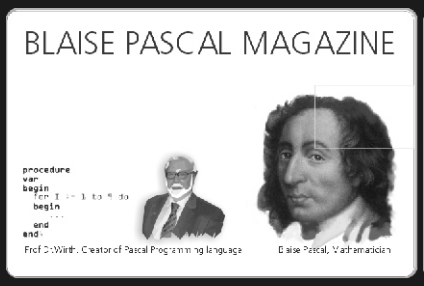
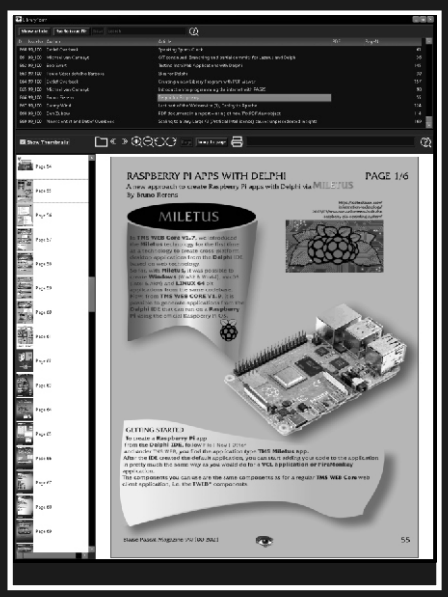


Figure 65: The logo of Delphi appears...

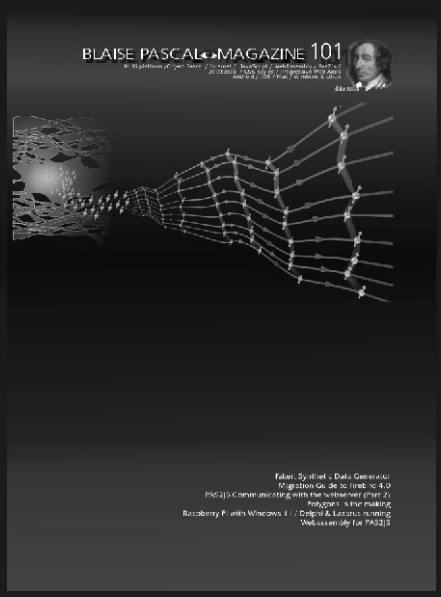
Figure 66: The last step Deelphi opens with its “Welcome Menu”

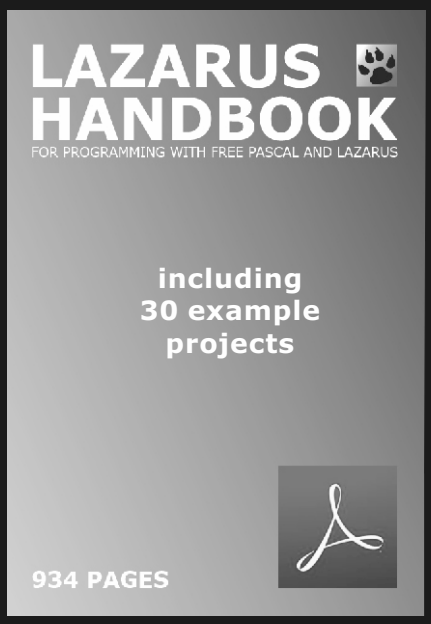


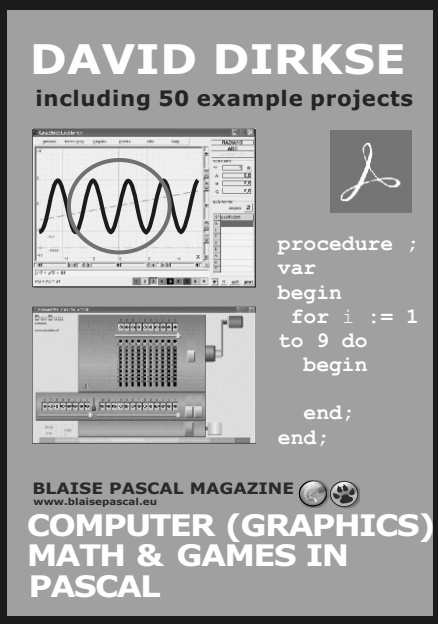


SUPER PACK 5 Items € 150 ex Vat

Normal Price € 280
75+60+50+35+50







1. One year **Subscription**
2. **The newest LIB Stick**
   - including Credit Card USB stick
3. **Lazarus Handbook** - Personalized
   -PDF including Code
4. Book **Learn To Program** using Lazarus PDF including 19 lessons and projects
5. **Book Computer Graphics Math & Games** book + PDF including ±50 projects

https://www.blaisepascalmagazine.eu/product-category/special-offer/

By Michaël Van Canneyt

D11 starter expert

The Lazarus Factory

ABSTRACT

The Free Pascal and Lazarus foundation sponsored development of aWebAssembly backend for FPC.
The backend is now usable in production, and we'll show how to work with it in this article

❶ INTRODUCTION

WebAssembly (Wasm) is gaining traction:
Starting out as a way to make **Javascript** run faster in the browser (`Asm.js`), it has now become a full description of a runtime engine, designed to run bytecode in a safe way, regardless of where the code is running:
`https://webassembly.org/`

All Major browsers support the running of **WebAssembly** byte code, **Node.JS** and **Deno.** Not only that, but major languages (**C/C++,Rust, C#**) - can be compiled to **WebAssembly** using a special libc library, thus allowing a **C#, C/C+**+ program to run in the browser.

The developers at Mozilla took it even a step further:
because **WebAssembly** is designed to be safe, sensitive parts of the browser are converted to **WebAssembly,** and then converted back to **C++**, thus guaranteeing that the resulting code is completely sandboxed and will not be able to penetrate into the rest of the browser.
A **webassembly** program can now be run in the browser, but also on a server, as part of **Javascript** runtimes such as **Node.JS** or **Deno,** or using a dedicated runtime:

wasmtime `https://wasmtime.dev/` ***** *is used creating the .exe file*
or **wasmer:** `https://wasmer.io/`

Both provide a command-line runtime engine that can load a **WebAssembly** file and run the code in it. They allow access to the filesystem and interaction with the console through a common **API** to allow the **WebAssembly** code to interact with the host environment. This **API** is called **WASI** (*which is an acronym for WebAssembly System Interface*):
`https://wasi.dev/`
Since some time, the Free Pascal compiler can emit **Webassembly** code, which also relies on the **WASI API** to talk to the host environment.
The **WebAssembly** backend is meanwhile sufficiently mature to compile many of the packages and units supplied with **Free Pascal.**

The `Goto` statement is not yet implemented, but this is a matter of time before it is implemented. In this article, we explore how to make use of this new c

FREE PASCAL

COMPONENTS 4 DEVELOPERS

kbmFMX Std/Pro v. 1.50.00 released
JAN 1, 2022 KIMBOMADSEN
We are happy to announce an update to
kbmFMX Standard
and Professional Edition.
kbmFMX Standard Edition
is bundled with kbmMemTable...

COMPONENTS 4 DEVELOPERS

KBMMW PROFESSIONAL AND ENTERPRISE EDITION V. 5.18.00 RELEASED!

- **RAD Studio XE5 to 11 Alexandria supported**
- Win32, Win64, Linux64, Android, IOS 32, IOS 64 and OSX client and server support
- Native high performance 100% developer defined application server
- Full support for centralized and distributed load balancing and failover
- Advanced ORM/OPF support including support of existing databases
- Advanced logging support
- Advanced configuration framework
- Advanced scheduling support for easy access to multithread programming
- Advanced smart service and clients for very easy publication of functionality
- High quality random functions.
- High quality pronouncable password generators.
- High performance LZ4 and Jpeg compression
- Complete object notation framework including full support for YAML, BSON, Messagepack, JSON and XML
- Advanced object and value marshalling to and from YAML, BSON, Messagepack, JSON and XML
- High performance native TCP transport support
- High performance HTTPSys transport for Windows.
- CORS support in REST/HTML services.
- Native PHP, Java, OCX, ANSI C, C#, Apache Flex client support!

kbmMemTable is the fastest and most feature rich in memory table for Embarcadero products.

- **Easily supports large datasets with millions of records**
- **Easy data streaming support**
- **Optional to use native SQL engine**
- **Supports nested transactions and undo**
- **Native and fast build in M/D, aggregation/grouping, range selection features**
- **Advanced indexing features for extreme performance**
- New I18N context sensitive internationalization framework to make your applications multilingual.
- New ORM LINQ support for Delete and Update.
- Comments support in YAML.
- New StreamSec TLS v4 support (by StreamSec)
- Many other feature improvements and fixes.

Please visit
`http://www.components4developers.com`
for more information about kbmMW

- High speed, unified database access (35+ supported database APIs) with connection pooling, metadata and data caching on all tiers
- Multi head access to the application server, via REST/AJAX, native binary, Publish/Subscribe, SOAP, XML, RTMP from web browsers, embedded devices, linked application servers, PCs, mobile devices, Java systems and many more clients
- Complete support for hosting FastCGI based applications (PHP/Ruby/Perl/Python typically)
- Native complete AMQP 0.91 support (Advanced Message Queuing Protocol)
- Complete end 2 end secure brandable Remote Desktop with near realtime HD video, 8 monitor support, texture detection, compression and clipboard sharing.
- Bundling kbmMemTable Professional which is the fastest and most feature rich in memory table for Embarcadero products.

COMPONENTS 4 DEVELOPERS

EESB, SOA,MoM, EAI TOOLS FOR INTELLIGENT SOLUTIONS. kbmMW IS THE PREMIERE N-TIER PRODUCT FOR DELPHI / C++BUILDER