

# tmssoftware.com

## Modern web development with TMS WEB Core for Visual Studio Code

develop • faster



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 [@tmssoftwarenews](https://twitter.com/tmssoftwarenews)  
 [youtube.com/tmssoftwareTV](https://youtube.com/tmssoftwareTV)

# Overview

Part 1: Classification, introduction, setup and the first app with TMS WEB Core VS Code

Part 2: Application Development and Features of TMS WEB Core VS Code

**Part 3: Web, Mobile and Desktop Applications with TMS WEB Core VS Code**

**TMS WEB Electron Application**

**TMS WEB Miletus Application**

**TMS WEB Bootstrap Application**

*Note: This set of slides is intended for users of the Visual Studio Code editor. Alternatively, if you would like to use the integrated development environment Delphi, download the corresponding set of slides.*

# Other project types of TMS WEB Core for Visual Studio Code

Create a new project

Search for templates (Alt+S)

All languages All platforms All project types

**Recent project templates**

TMS WEB Application Object Pascal

**TMS WEB Application**  
A template to create a new TMS WEB Application to run on the browser.  
Object Pascal WEB Application

**TMS WEB Console Application**  
A template to create a new TMS WEB Application to run on the browser with a console interface.  
Object Pascal WEB Application

**TMS WEB Electron Application**  
A template to create a new TMS WEB Electron Application.  
Object Pascal Linux Windows macOS Application

**TMS WEB Miletus Application**  
A template to create a new TMS WEB Miletus Application.  
Object Pascal Linux Windows macOS Application

**PWA TMS WEB PWA Application**  
A template to create a new TMS Progressive WEB Application to run on the browser or be installed on the operating system.  
Object Pascal WEB Application

**TMS WEB Package**  
A template to create a new TMS WEB Package to create components that can be installed on

Back Next

- in addition to the template for a web application, TMS WEB Core offers further project templates:
  - TMS WEB Electron application
  - TMS WEB Miletus application
  - TMS WEB PWA application
  - TMS Web Bootstrap application
- with the Electron and Miletus frameworks, you can create client applications from a web app that can run on Windows, Linux, macOS and Raspberry Pi (Miletus).

# Run a web app natively on the target device

- access to device and system functions, such as local files and folders
- use of local databases
- offline use through installation on the target systems
- no direct execution in the browser, therefore usually better user experience
- cross platform applications, i.e. apps for desktop and web from one source code base
- existing source code can be further developed for new types of applications

# TMS WEB Electron Application


Create a new project


## Recent project templates


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 TMS WEB Application  
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 TMS WEB Electron Application  
A template to create a new TMS WEB Electron Application.  
Object Pascal Linux Windows macOS Application

 TMS WEB Miletus Application  
A template to create a new TMS WEB Miletus Application.  
Object Pascal Linux Windows macOS Application

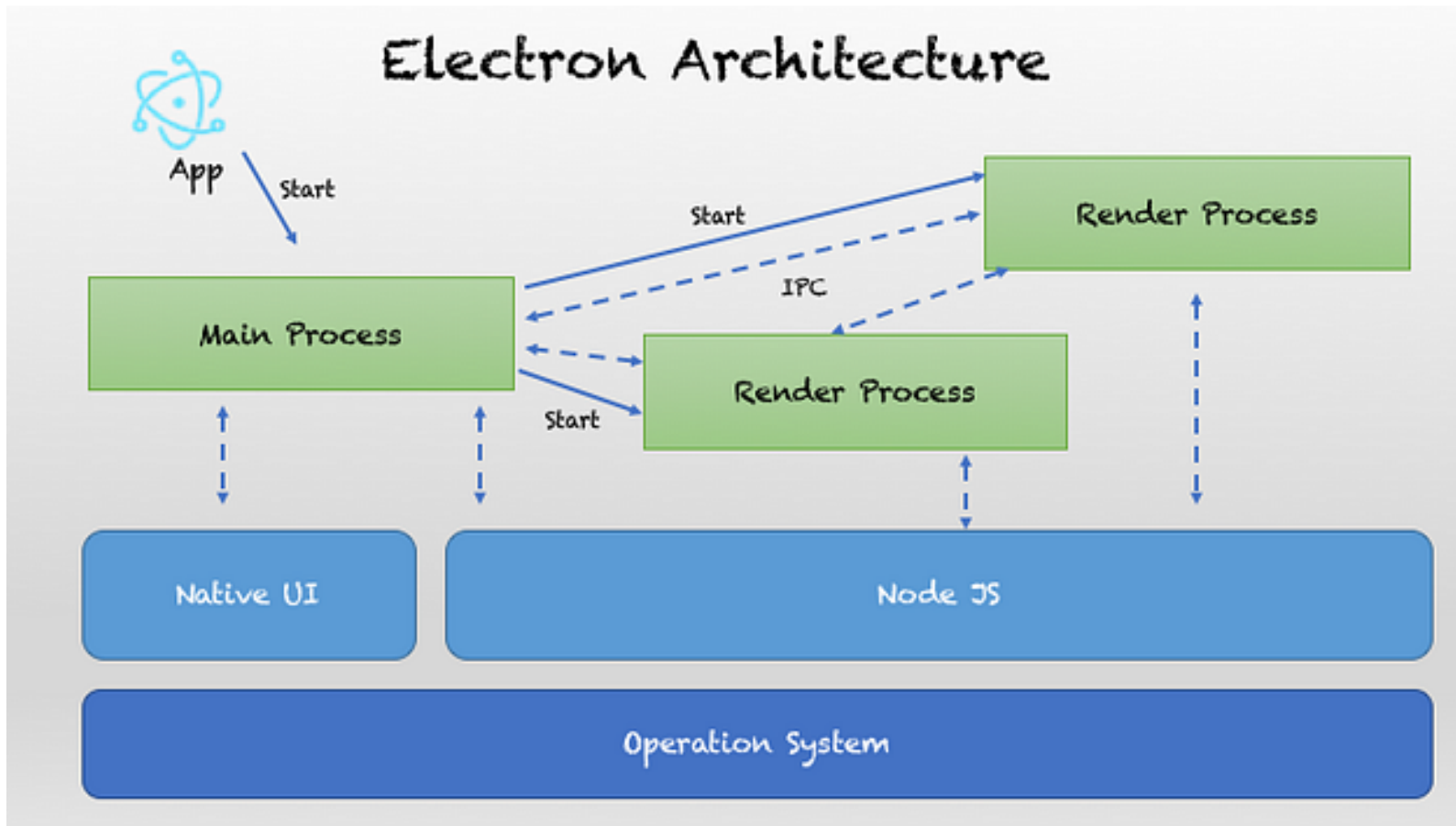
 TMS WEB PWA Application  
A template to create a new TMS Progressive WEB Application to run on the browser or be installed on the operating system.  
Object Pascal WEB Application

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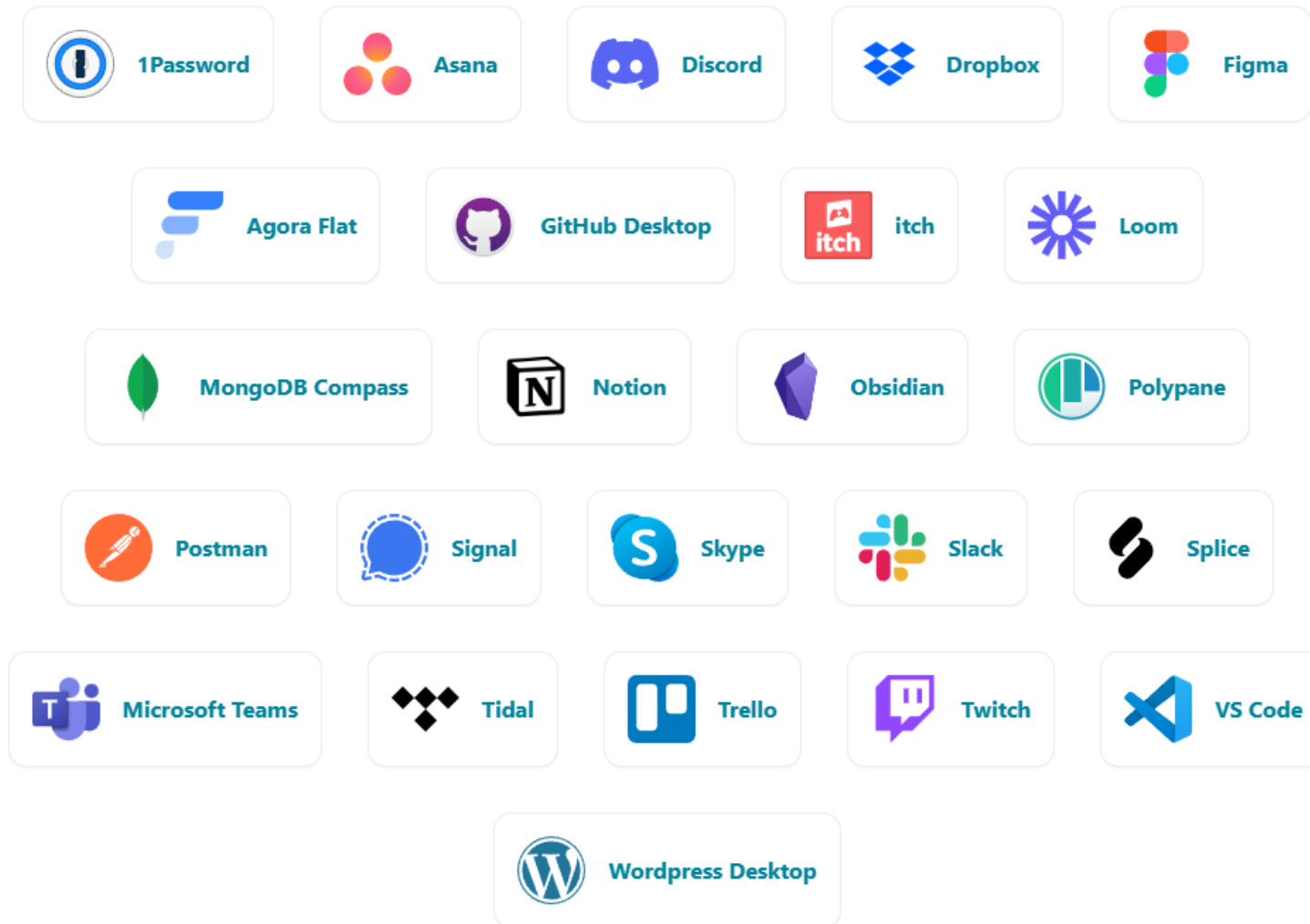
- web application based on the Electron Framework to create cross-platform desktop applications
- native user interface with application menu, windows, dialog boxes, notifications, auto-update function, installer, app store distribution
- info: <https://www.electronjs.org/>

# TMS WEB Electron Application Architektur Electron-Framework



- the starting point is a web application based on HTML, CSS and JavaScript
- this is generated here by the TMS WEB Core
- Electron uses the WebKit browser engine for rendering
- Electron allows the web app to have system access to files, create an application window with menu, etc.

# Apps created with Electron



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With the help of TMS WEB Core you can create cross-platform apps from the Electron base directly in the Delphi development environment.

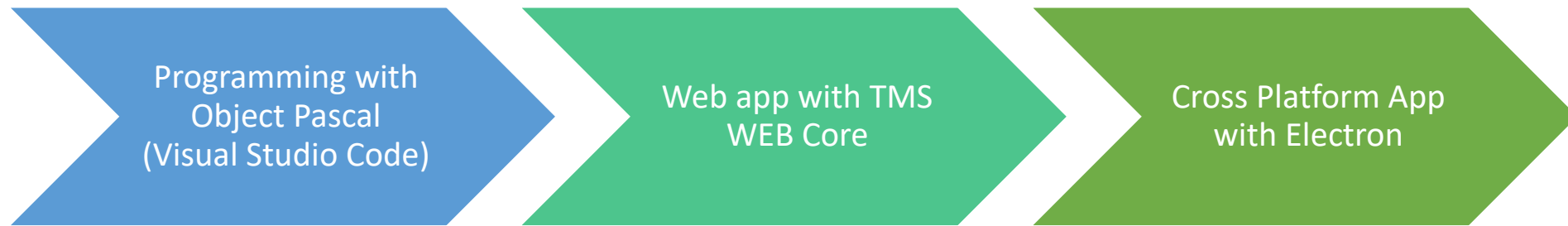
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HTML, CSS and JavaScript-Code are not necessary.

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This technology is also available for developers of Delphi (Object Pascal).

# TMS WEB Electron Application Development Path



- Object Pascal
- graphic designer
- IDE
- visual and non-visual components

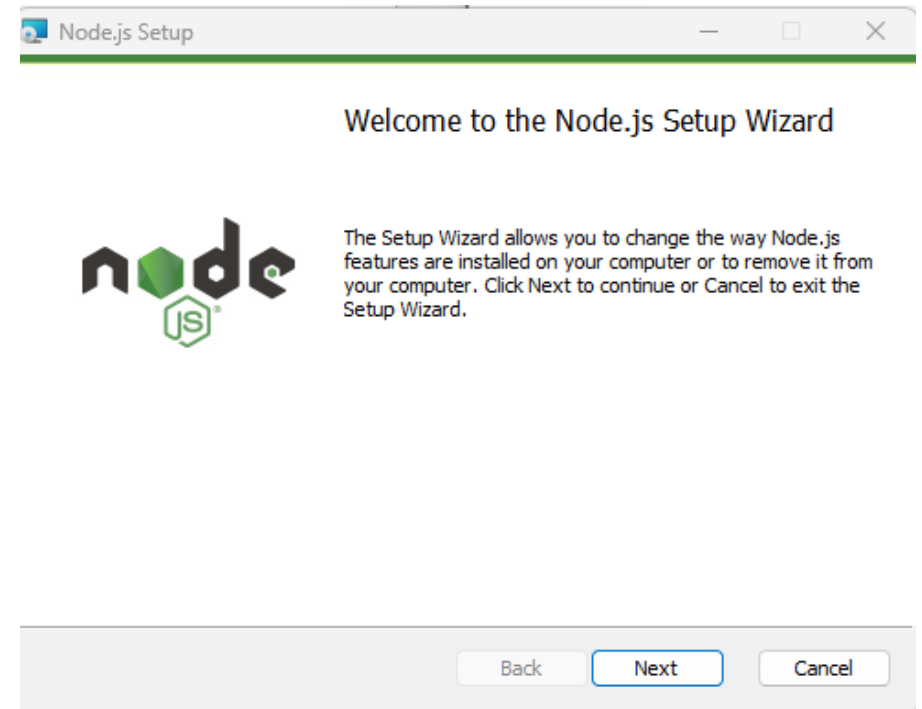
- JavaScript code is automatically compiled from Object Pascal
- Integration of CSS and JavaScript libraries

- Cross-platform apps for Windows, macOS and Linux
- System Access
- Application menu, file system, ...
- App Packages for Deployment

# TMS WEB Electron Application

## Electron-Installation

- to use Electron, you need to install Node.js.
- we recommend that you use the latest LTS version available.
- <https://nodejs.org/>
- testing with `node -v` and `npm -v`
- global installation of Electron with:  
`npm i electron -g`



# TMS WEB Electron Application

## Electron – Features

- file open dialog and file save dialog, message dialog and error dialogs
- drag & drop function
- menus (main and popup menu)
- access to MySQL/ PostgreSQL database
- window management
- global shortcuts
- file Watcher

components in the palette for building Electron apps

### TMS Web Electron

 TElectronOpenDialog

 TElectronSaveDialog

 TElectronMessageBox

 TElectronErrorBox

 TElectronMainMenu

 TElectronPopupMenu

 TElectronBrowserWindow

 TElectronTrayIcon

 TElectronIPCCommunication

 TElectronFileWatcher

 TElectronGlobalShortcut

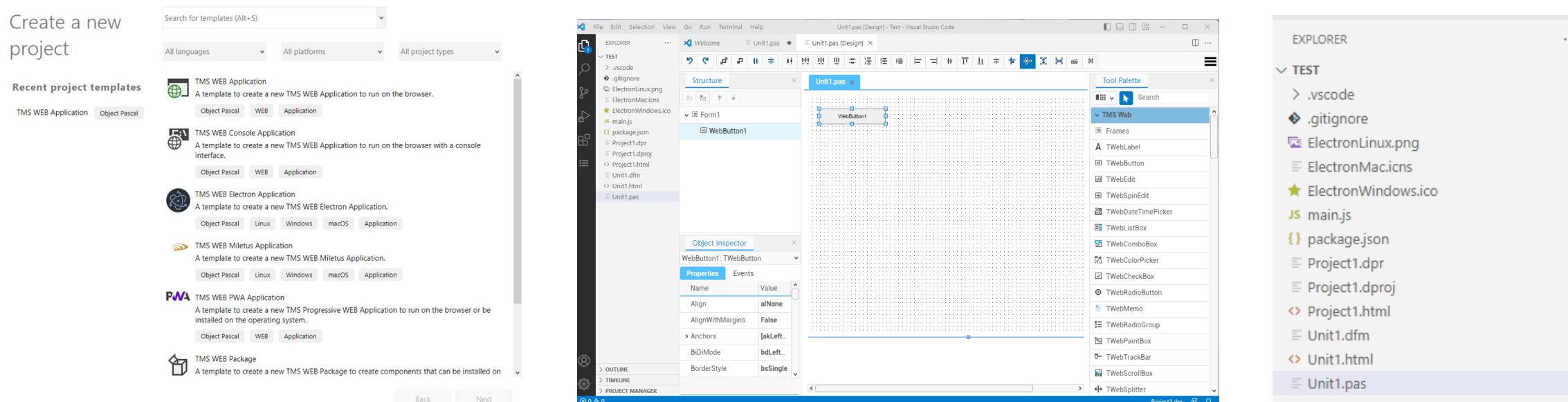
 TElectronMySQLClientDataSet

 TElectronMySQLConnection

 TElectronPostgreSQLClientDataS

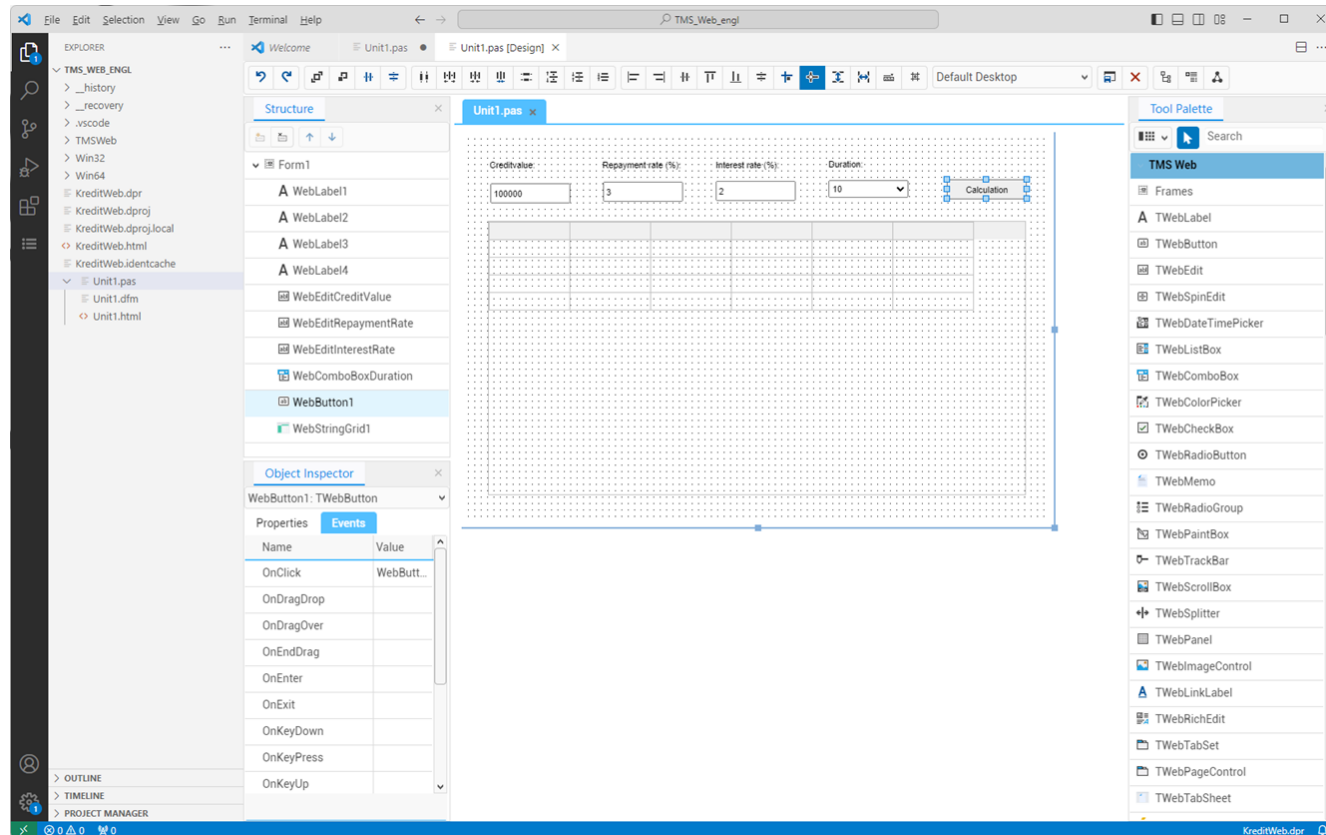
 TElectronPostgreSQLConnection

# TMS WEB Electron Application Example – Editor Visual Studio Code



- generates a project similar to a TMS web application with additional icon files and build configurations
- for each supported platform there is a debug platform and a build platform configuration
- in build mode the debugging tools are disabled

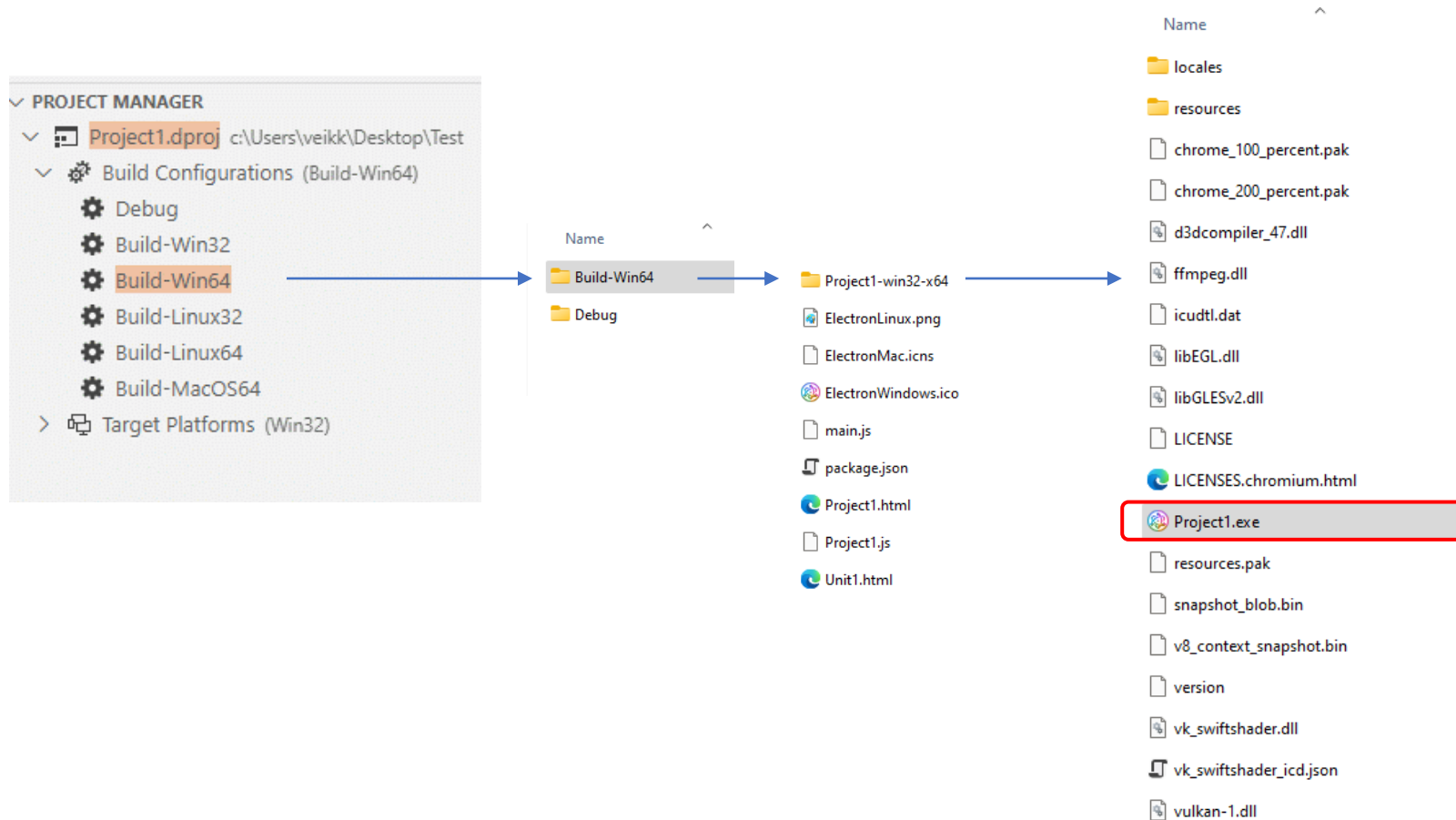
# TMS WEB Electron Application Example – Application Development



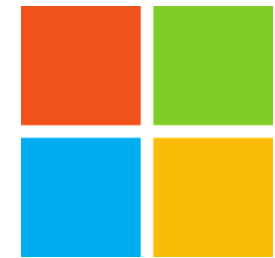
- develop the application in the Delphi IDE
- use of the TMS WEB Core components
- the difference to a web application is that the deployment is customized
- Electron generates the application packages for the selected target systems

# TMS WEB Electron Application

## Example – Application Packages, here Windows

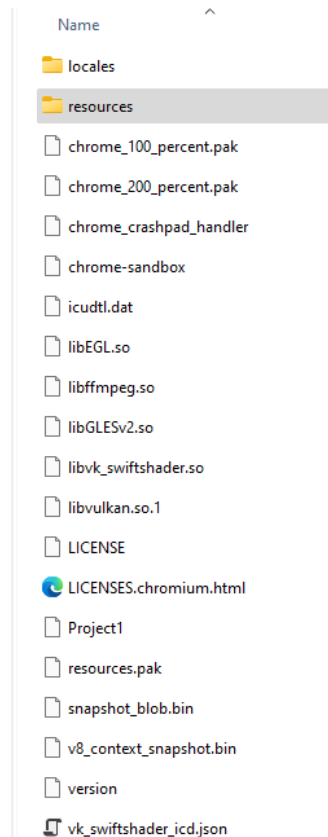
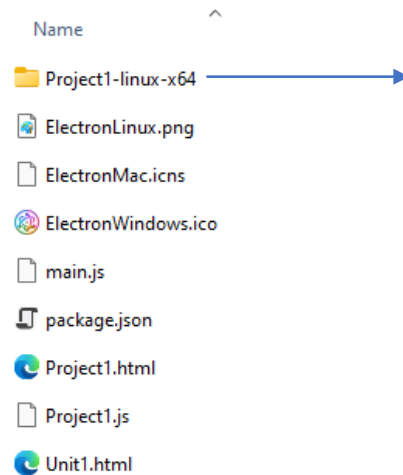
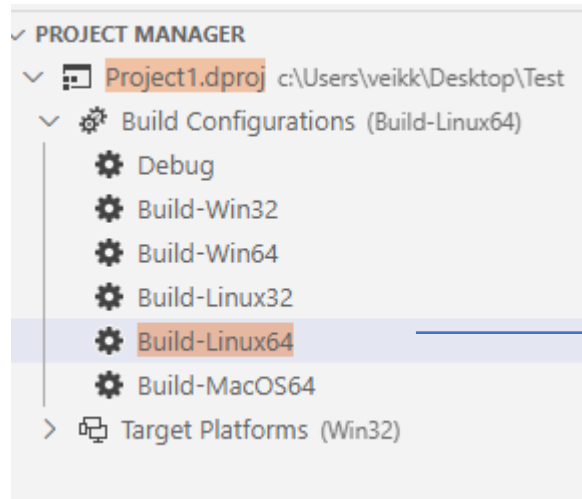


creates the executable file for Windows (\*.exe)



# TMS WEB Electron Application

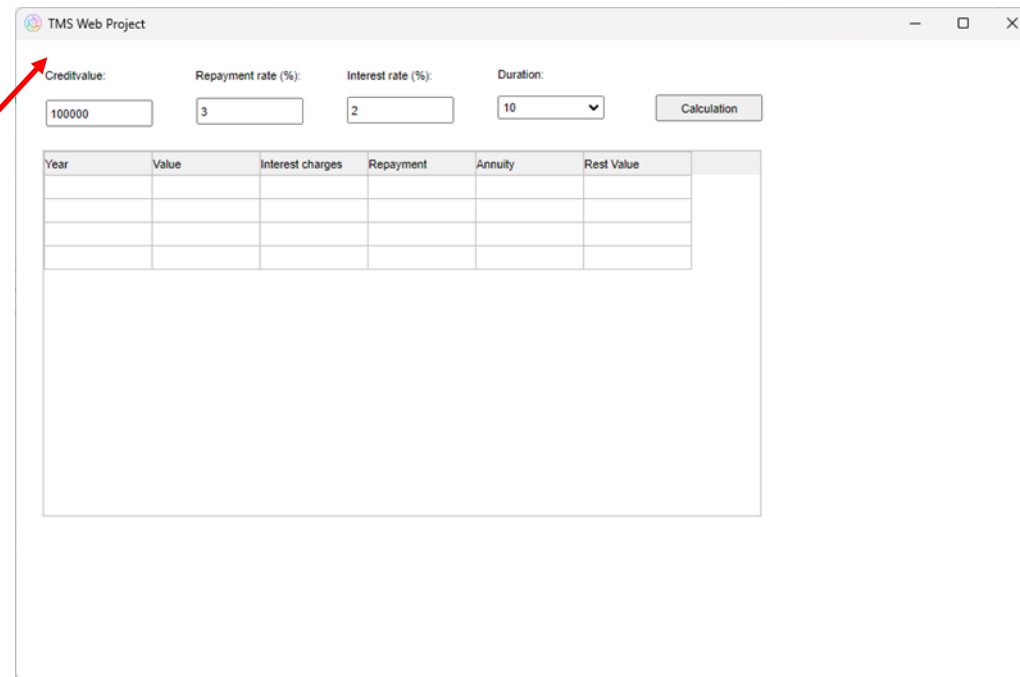
## Example – Application Packages, here Linux



the executable file for Linux is created

# TMS WEB Electron Application

## Example - Running as a Desktop Application (Windows)



The screenshot shows a desktop application window titled "TMS Web Project". The window contains a form with the following fields:

- Creditvalue:
- Repayment rate (%):
- Interest rate (%):
- Duration:
- Calculation:

Below the form is a table with the following columns:

Year	Value	Interest charges	Repayment	Annuity	Rest Value

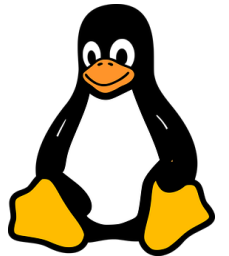
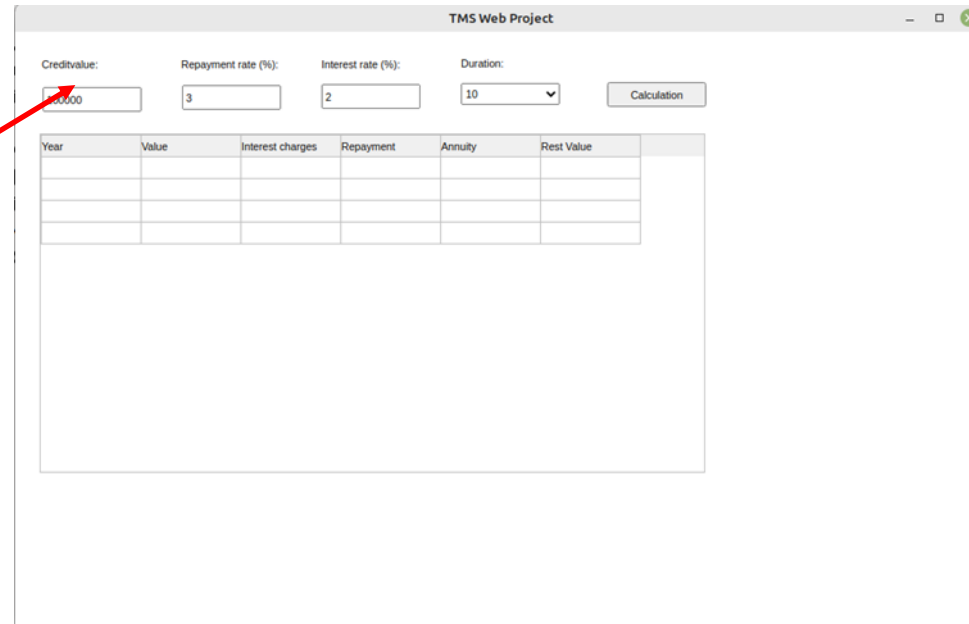
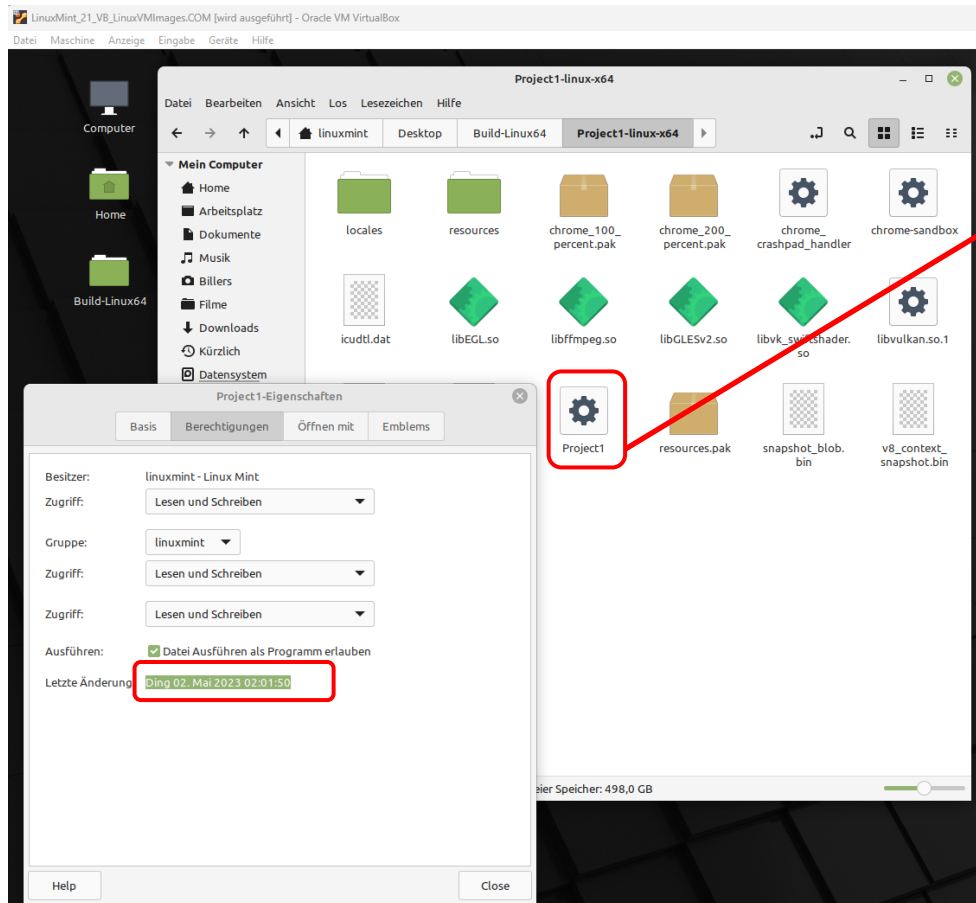
Desktop-Applikation



supplemented by  
Electron framework  
(Debug Mode)

# TMS WEB Electron Application

## Example – Running as a Desktop Application (Linux)



Desktop Application

- Running the Electron app on Linux
- here: Linux-Mint

# TMS WEB Miletus Application


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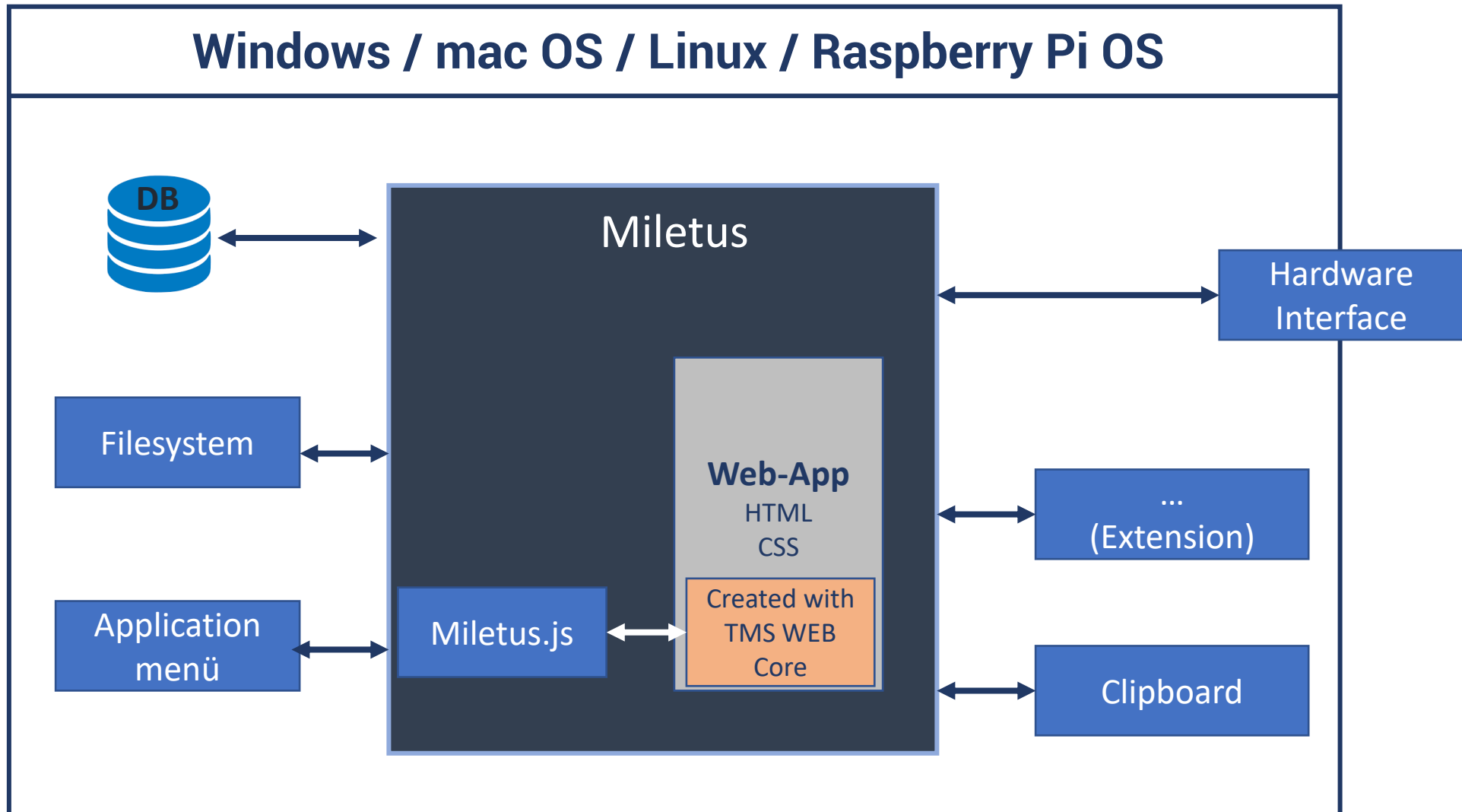
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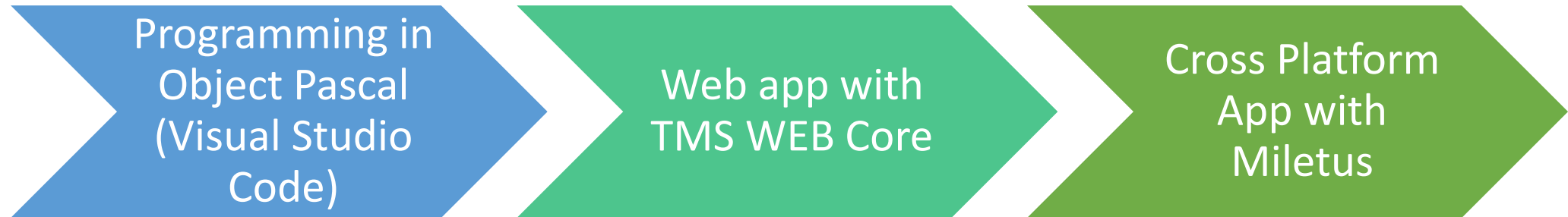
- web application based on the Miletus Framework to create cross-platform desktop applications
- alternative to the Electron framework
- info: <https://miletus.org/>

# TMS WEB Miletus Application

## Architecture of the Miletus framework



# TMS WEB Miletus Application Development Path



- Object Pascal
- graphic designer
- IDE
- visual and non-visual components

- JavaScript code is automatically compiled from Object Pascal
- integration of CSS and JavaScript libraries

- Cross-platform apps for Windows, macOS, Linux and Raspberry Pi
- System Access
- Application menu, file system, ...
- App Packages for Deployment
- DB Access
- Extensibility
- small file sizes of the application packages

# TMS WEB Miletus Application

## Miletus-Features

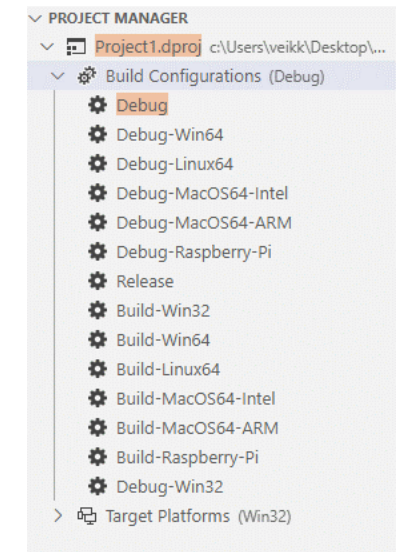
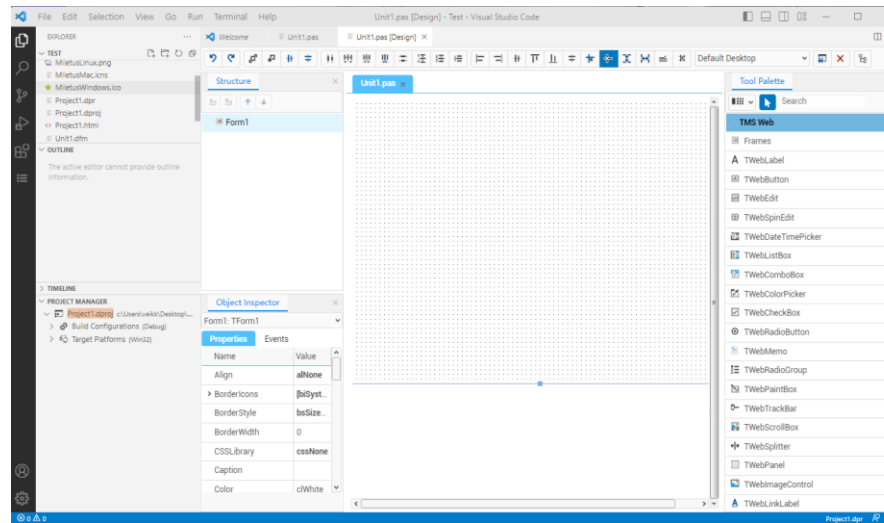
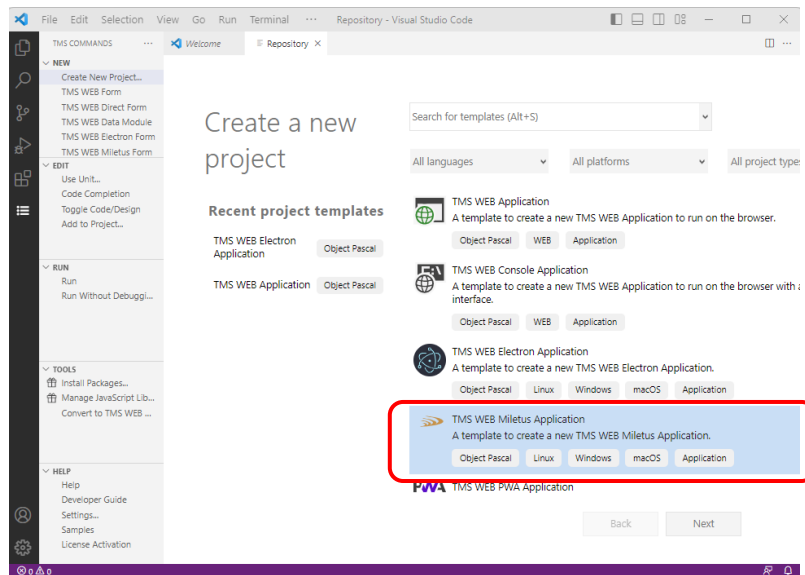
- file access
- file dialogs for opening and saving
- messagebox/ error dialog, application/ popup menu
- system notifications
- application window, tray icon, global application shortcuts
- database access
- clipboard access, shell access
- ini files/ registry (Windows)
- Raspberry Pi Support (Raspberry Pi OS, Hardware)

# TMS WEB Miletus Application

## Advantages/features of the Miletus framework

- smaller file sizes of the application packages
- use of the browser engine of the target systems
- updates to the browser engines, e.g. security updates, take effect for the app
- app can run on Raspberry Pi (Raspberry Pi OS).
- access to the Raspberry Pi hardware interfaces, i.e. GPIO, I2C, SPI and UART and the memory buffer
- expandability of the API, i.e. integration of additional APIs via shared library concept
- support of databases such as SQLite, MySQL, MSSQL, PostgreSQL, MS Access (Windows only), Firebird, Interbase
- professional manufacturer support

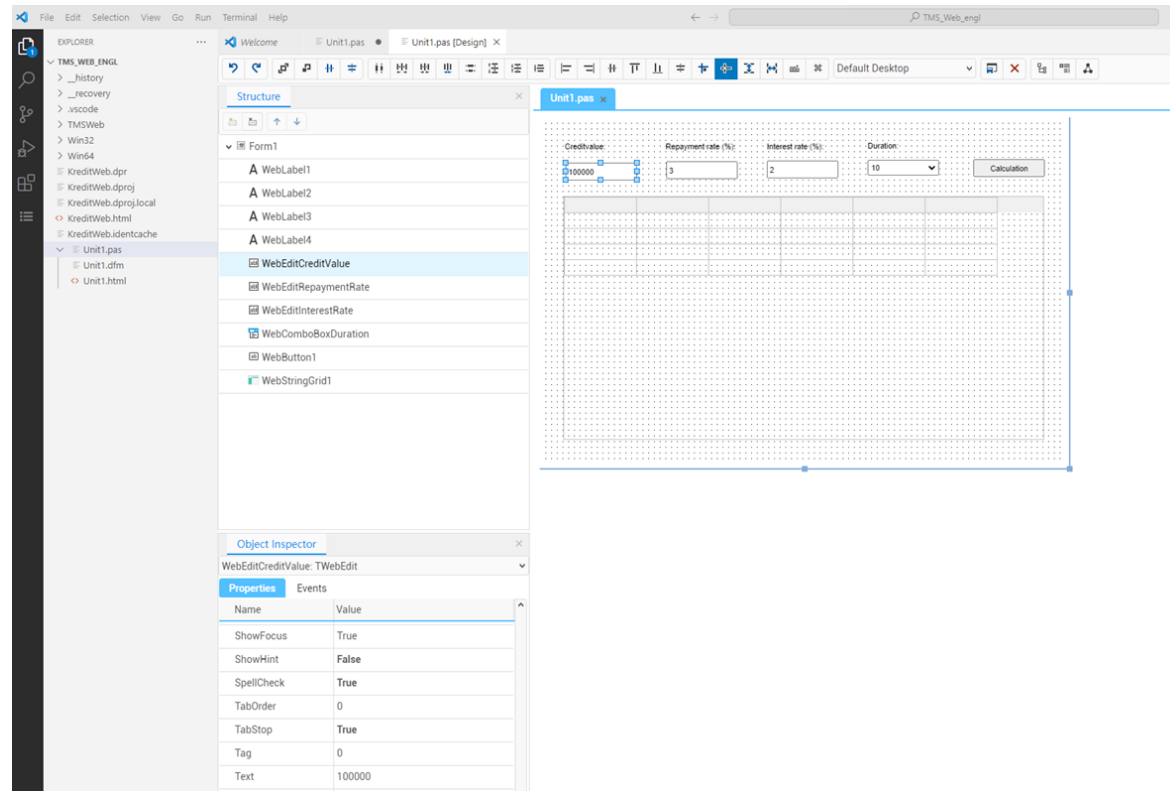
# TMS WEB Miletus Application Example - Visual Studio Code Editor



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# TMS WEB Miletus Application

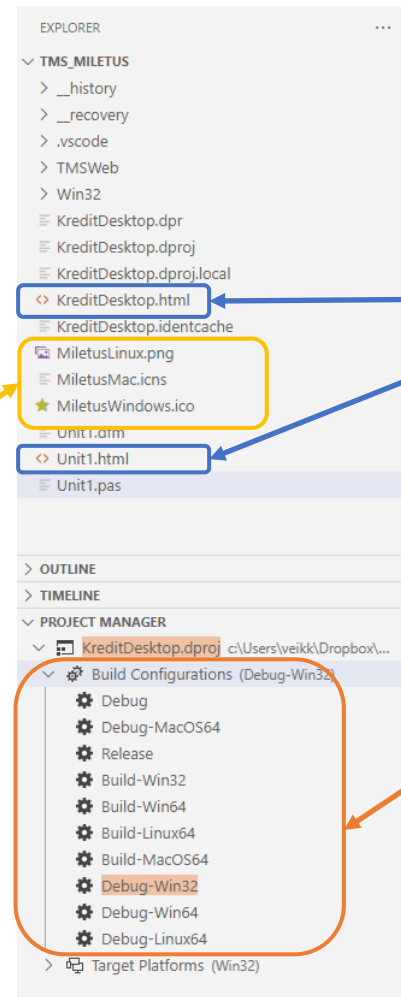
## Example- Development of the application



- Development of the application in Delphi IDE
- use of the TMS WEB Core components
- the difference to a web application is that the deployment is customized
- Miletus generates the application packages for the selected target systems

# TMS WEB Miletus Application

## Example – Project Structure



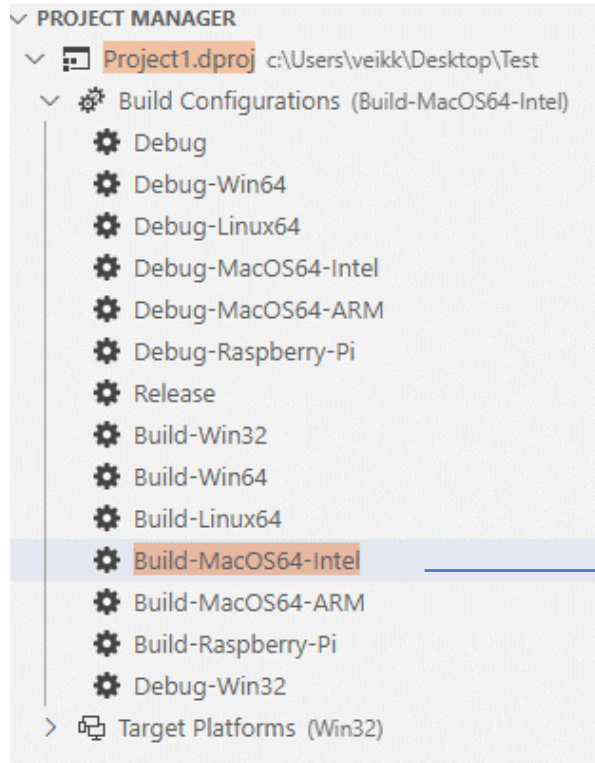
App icons for the target system (Windows, macOS, Linux)

Web application (automatically generated by TMS WEB Core)

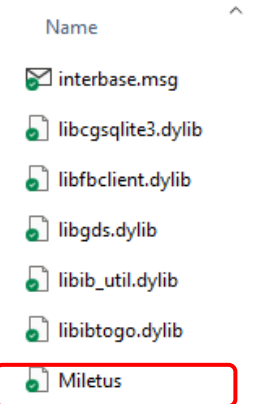
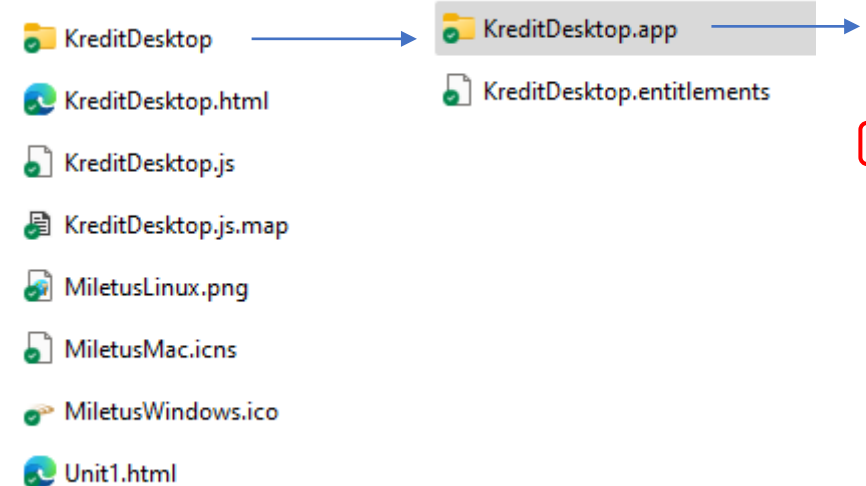
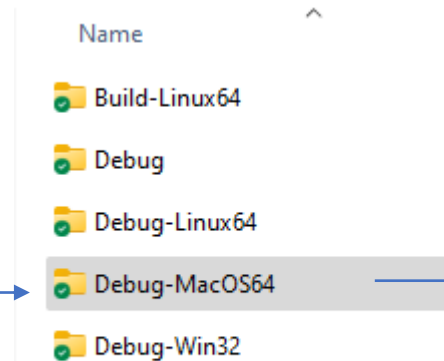
Activation of the application package for the target system

# TMS WEB Miletus Application

## Example – application packages, here macOS

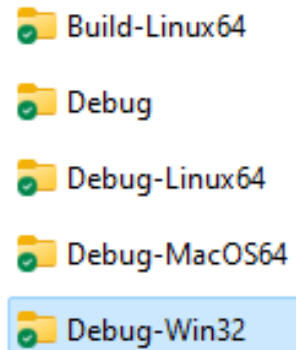
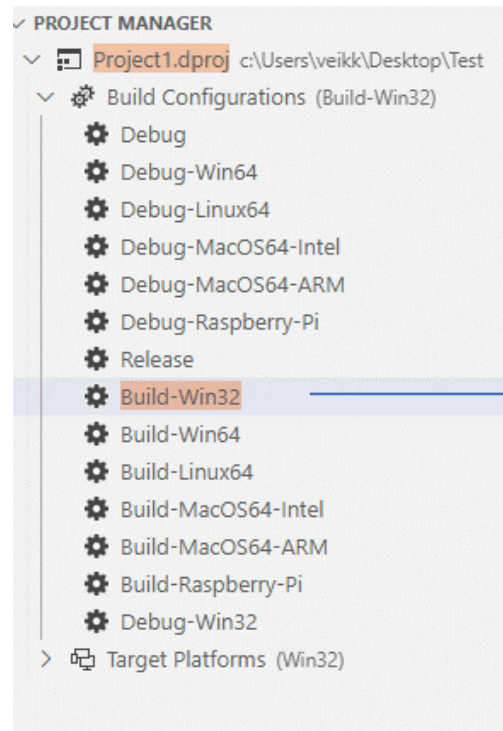


the application package for macOS is created

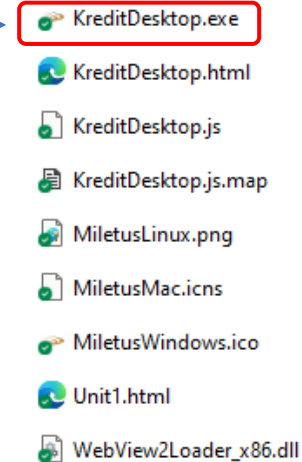


# TMS WEB Miletus Application

## Example – application packages, here Windows

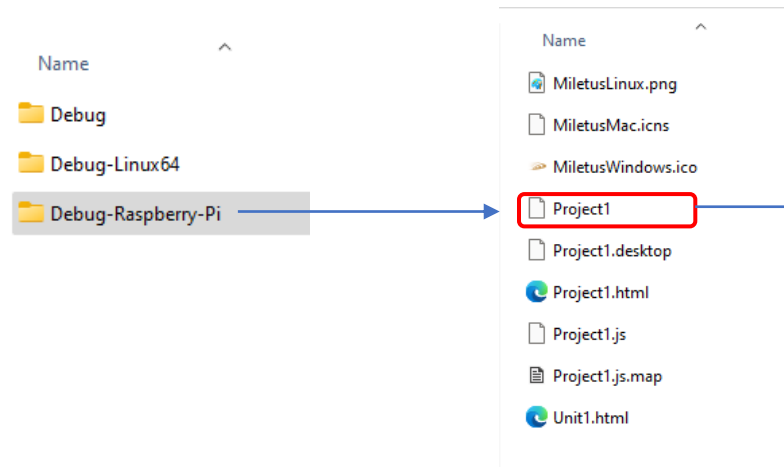
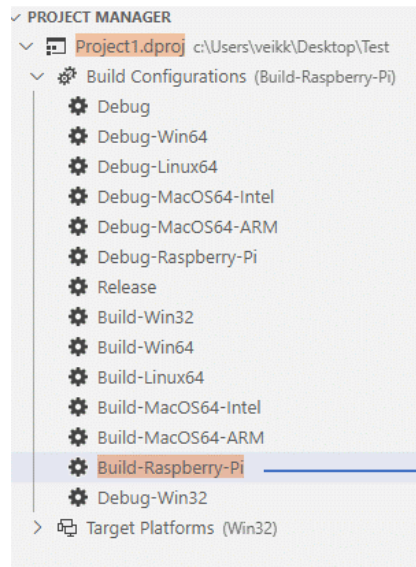


creates the executable file for Windows (\*.exe)

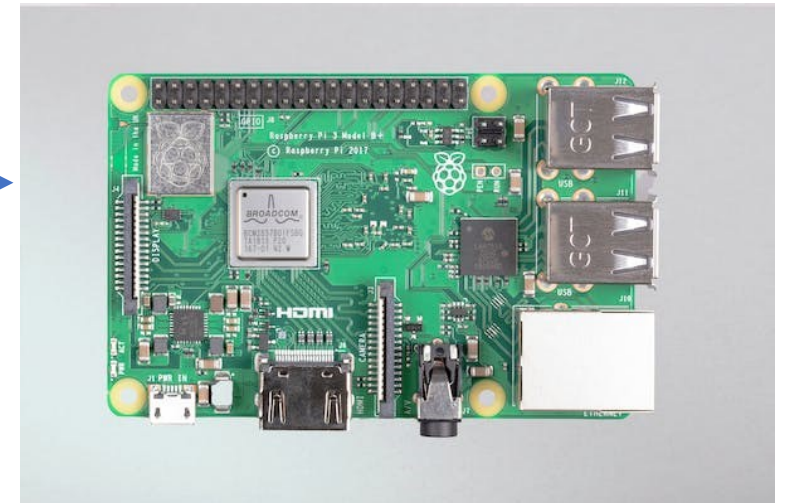


# TMS WEB Miletus Application

## Example – application packages, here Raspberry Pi



The application package for the Raspberry Pi is generated, which can be run on Raspberry Pi OS



Source: <https://www.raspberrypi.com/products/raspberry-pi-3-model-b-plus/>

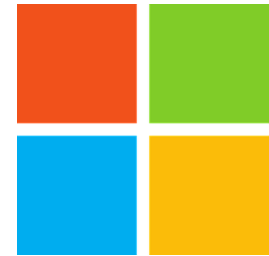
# TMS WEB Miletus Application

## Example - Running as a desktop application: Windows

Year	Value	Interest charges	Repayment	Annuity	Rest Value

supplemented by Miletus framework

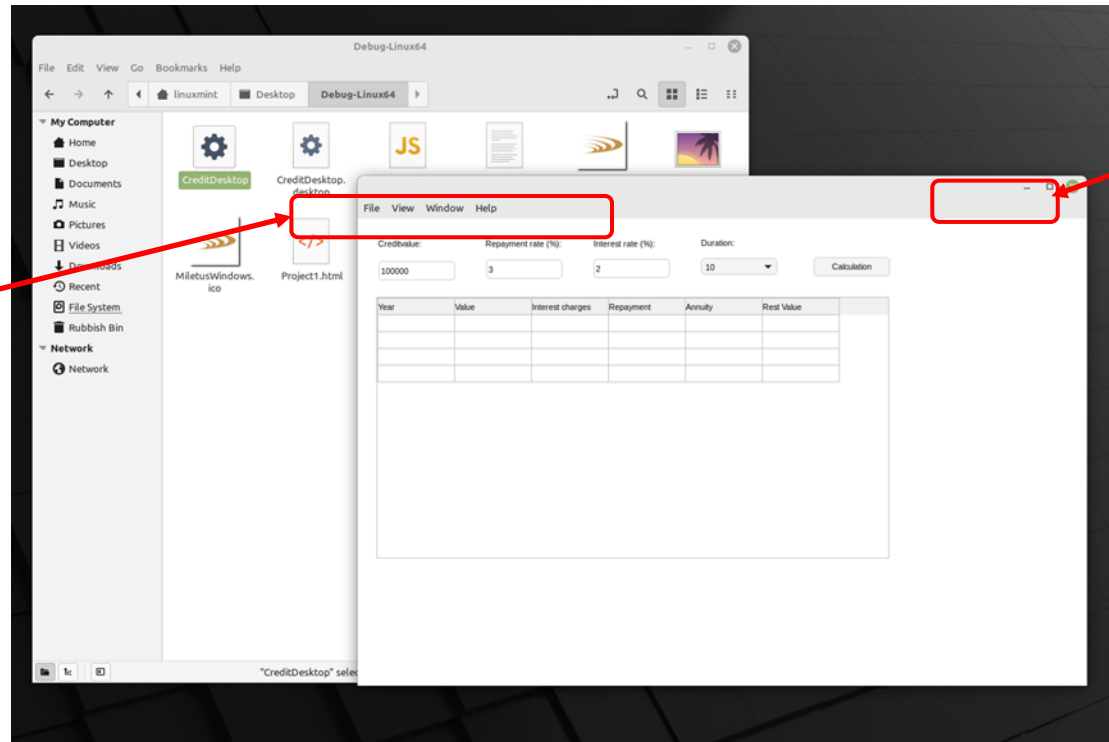
Desktop Application



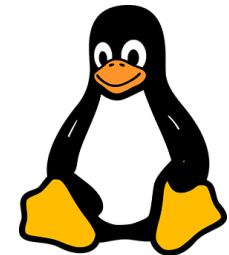
# TMS WEB Miletus Application

## Example – Running as a desktop application: Linux

supplemented by  
Miletus framework

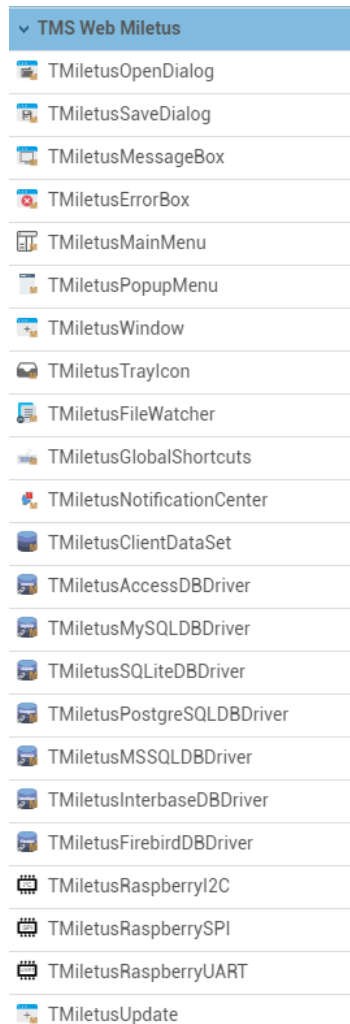


Desktop Application



# TMS WEB Miletus Application

## Using Miletus Features



- in the development environment, non-visual controls are available via the tool palette to integrate and use the features of the Miletus framework into the application
- examples
  - *TMiletusOpenDialog* to display the file open dialog on the respective target system
  - *TMiletusSQLiteDBDriver* for accessing a local SQLite database
  - *TMiletusRaspberryI2C*: input and output of signals via the I2C port of the Raspberry Pi

# TMS WEB Miletus Application

## Miletus – Feature: Save File Dialog

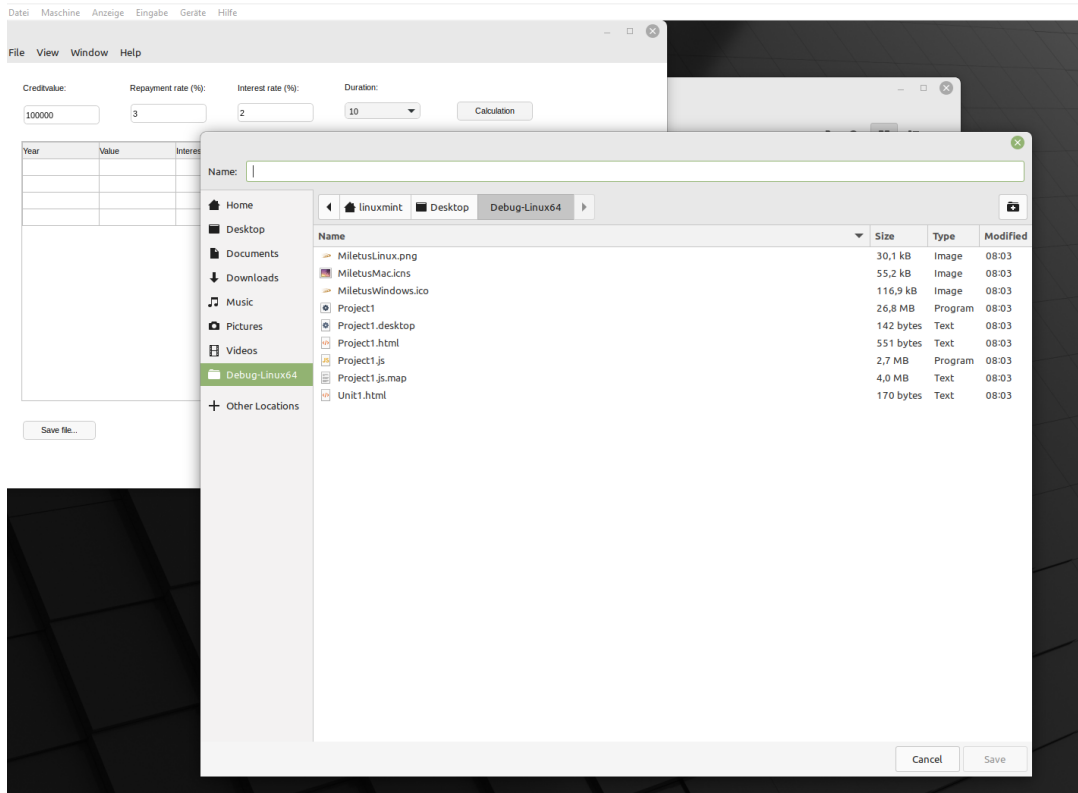
The screenshot displays the TMS WEB IDE interface. The Explorer panel on the left shows the project structure, including the file `Unit1.pas`. The Structure panel shows the form `Form1` containing a `WebButton1` and a `MiletusSaveDialog1` component. The Object Inspector shows the selected component as `MiletusSaveDialog1: TMiletusS`. The Design view shows a grid with a `Save as...` button and a `MiletusSaveDialog1` component. The Tool Palette on the right lists various components, with `TMiletusSaveDialog` highlighted. A callout box shows the source code for the button click event.

```
procedure TForm1.WebButton1Click(Sender: TObject);  
begin  
  
end;
```

Property	Value
FilterIndex	1
InitialDir	
Name	Mil...

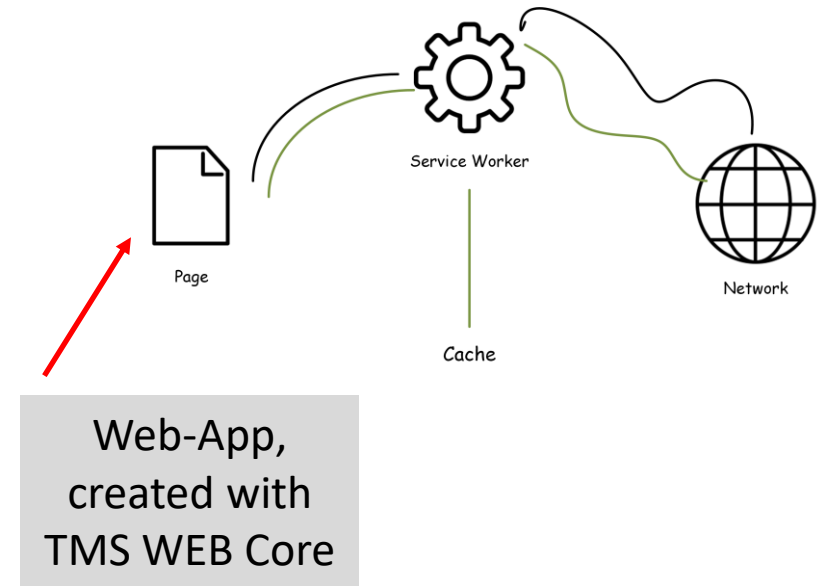
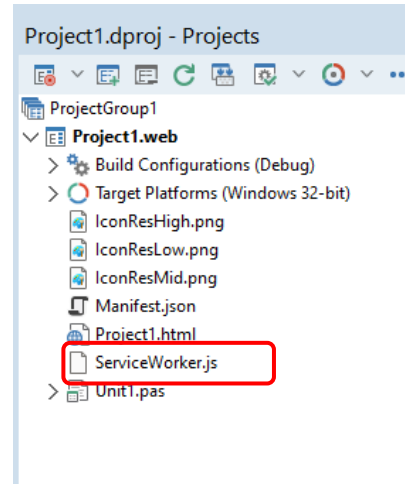
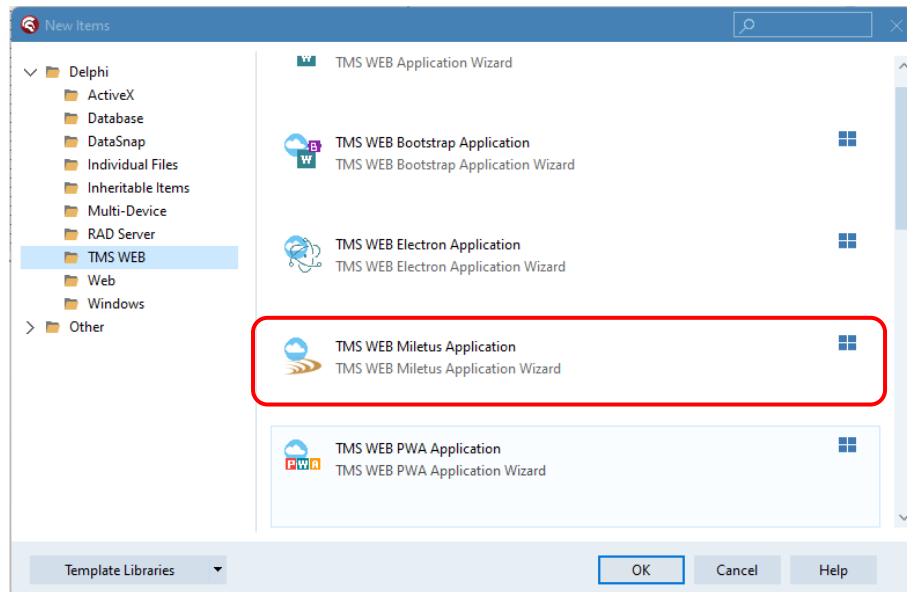
# TMS WEB Miletus application

## File Save Dialog on Linux



- you create the application package for another operating system and copy it to the target system.
- clicking on the button opens the standard dialog box for saving files.
- here you can see it for Linux-Mint.

# TMS WEB PWA Application



- it is also possible to automatically create a progressive web application (PWA) from the IDE wizard
- a progressive web application is a web application designed to adapt to online/ offline situations, to different types of devices and, above all, to be able to be installed on the desktop and launched from a desktop icon, similar to a native application
- you can find more information about progressive web applications here: <https://web.dev/progressive-web-apps/>

# Outlook

- the “Miletus” technology is also available without being detached from TNS WEB Core
- this makes it possible to create application packages for web applications for Windows, macOS, Linux and Raspberry Pi OS
- all the advantages of the Miletus framework (small application packages, access to Raspberry Pi hardware interfaces, expandability, direct access to local databases, etc.) can then be used by any web app
- a web app can easily become a cross-platform application
- the Miletus API can be accessed from the web app using JavaScript or TypeScript
- information at: <https://miletus.org/>

# Resources & Help

- TMS WEB Core:  
<https://www.tmssoftware.com>
- Visual Studio Code  
<https://code.visualstudio.com/>
- Miletus-Framework:  
<https://miletus.org/>
- Electron-Framework:  
<https://www.electronjs.org/de/>
- TMS Academic License:  
<https://www.tmssoftware.com/site/academic.asp>
- Flick, Holger: TMS WEB Core: Developing Web Applications with Delphi, Independently published, 2020

**tmssoftware.com**

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More info:

<http://web.tmssoftware.com>