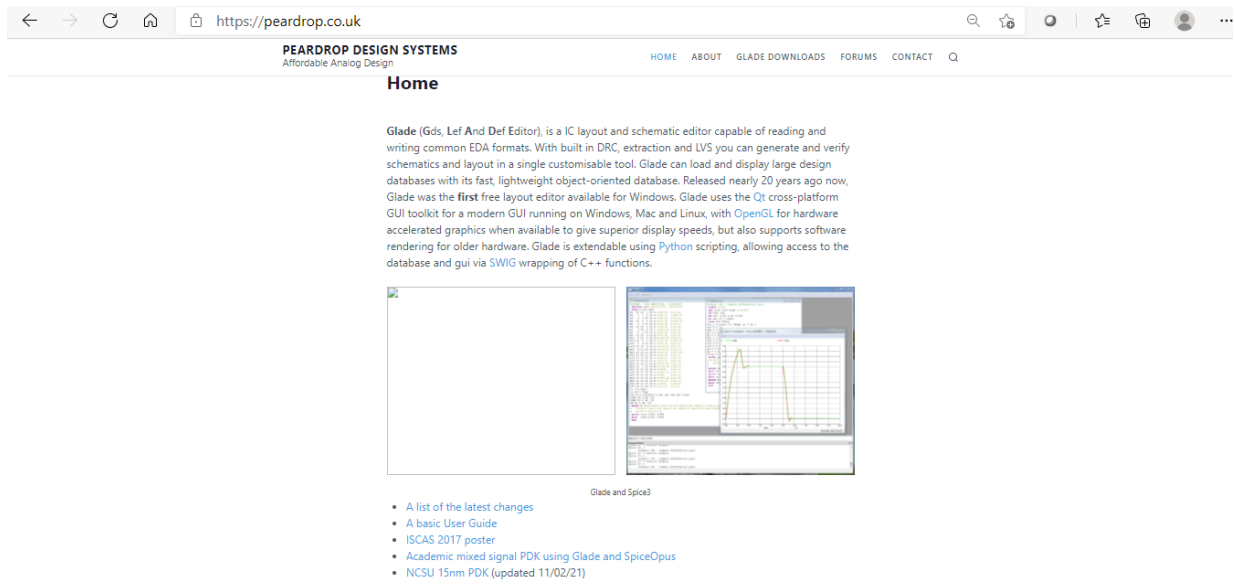


# Installation Guide GLADE Software

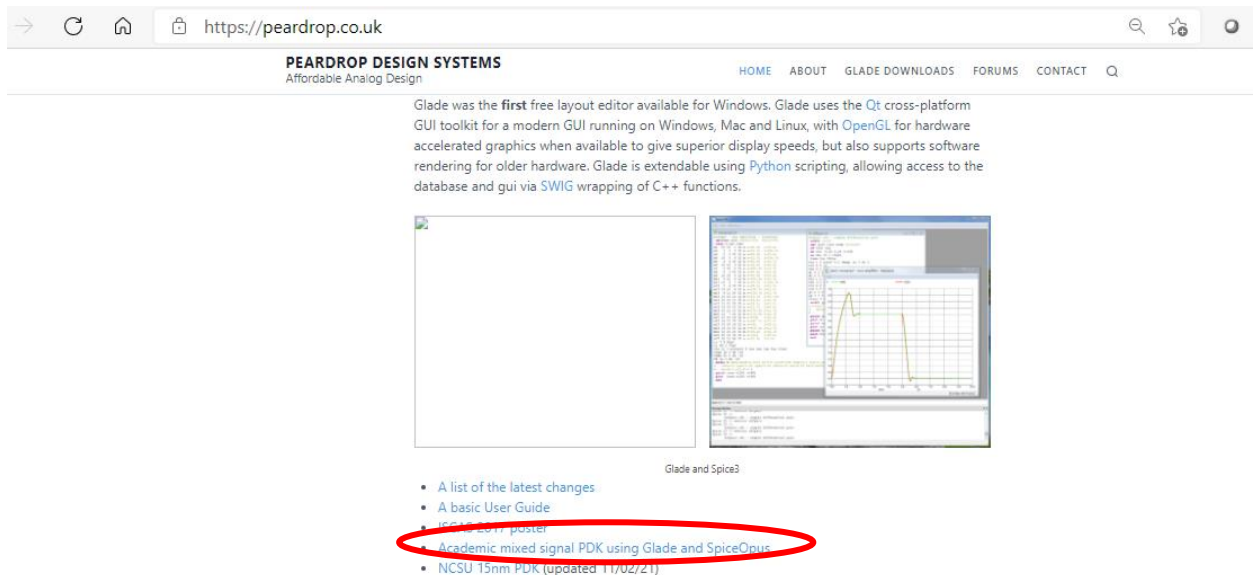
## **Step 1:**

Go to site <https://peardrop.co.uk/> you will be directed to the page shown below.



## **Step 2**

Scroll down the page and click on [Academic mixed signal PDK using GLADE and SpiceOpus](#) shown below with red circle.



## **Step3:**

When you click the path in step 2 you will reach <http://www.cnm.es/~pserra/apdk/> shown with red circle below. On the extreme left side there is Download option shown with green circle in the Fig.3 click that

← → ↻ 🏠 **Not secure** | www.cnm.es/~pserra/apdk/

## Academic Process Design Kit CNM25 Edition

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**Introduction**

The aim of this academic process design kit (APDK) is to introduce circuit designers to the top-down design methodology of mixed-signal full-custom integrated circuits (ICs) in CMOS technologies.

For this purpose, the following freely available electronic design automation (EDA) tools are proposed for both the schematic and the physical IC design stages:

- Glade** (GDS, LEF and DEF editor) by Peardrop Design Systems is an IC schematic and mask layout editor.
- SpiceOpus** (GDS, LEF and DEF editor) by Peardrop Design Systems is an IC schematic and mask layout editor.
- SpiceOpus** (SPICE with integrated optimization utilities) by the CACD Group at University of Ljubljana is a part of the Berkeley SPICE3F5 electrical simulator featuring NUTMEG language scripting, together with a custom optimization tool and the Georgia Tech Research Institute XSpice high-level multi-domain event-driven engine. The resulting simulation suite can perform native mixed-signal circuit and system simulation and optimization. More information can be found at <https://le.uni-lj.si/spice>.

The APDK incorporates all the required technological information for the simple 2.5um 1P2M PIP CMOS technology (CNM25) from IMB-CNM(CSIC). Anyway, this APDK can be easily customized to extend its coverage to more complex CMOS technologies.

In order to gain hands-on experience, the 100-page APDK documentation comes with a complete set of exercises including the mixed-signal design at architectural level of a Delta-Sigma modulator (DSM) for ADC, the functional specification of the DSM basic building blocks, the automatic circuit optimization at transistor level of an OpAmp as one of these blocks, the full-custom analog layout design of the optimized OpAmp circuit, and the physical verification and post-layout simulation of the OpAmp layout.

After completing the above training, IC designers should be able to go from the functional simulation at architecture level to the tape-out of the corresponding layout for its CMOS integration at the semiconductor foundry.

**News**

2021.04.01: APDK release version 2021\_04\_01  
+ Migration to Glade 5.x series (Python 3)  
+ SpiceOpus plot to PDF  
+ General documentation update

2020.04.19: APDK release version 2020\_04\_19  
+ Update to Glade 4.7.37 and SpiceOpus 2.33  
+ Migration to Glade library format version 800.

**Academic process design kit (APDK)**

IC functional specifications

System-level schematic

Architecture HDL simulation

Block HDL specification

Transistor-level circuit schematic

Automatic circuit optimization

PCell-based and schematic-driven layout

Design rule checker (DRC)

Layout versus schematic (LVS)

3D/2D parasitic extraction (PEX)

Post-layout

Custom symbols and netlisting rules

Standard/custom behavioral code models

Device symbols and netlisting rules

Process and research device models

PCell layout generation code

Layer broken ops and rules script

PCell extraction code and matching rules

Technology cross section

Simulation models

### Step4:

You will reach the page shown below do here you have Glade 5.0.2 for Windows and for Linux depending on which operating system you have click. For windows 64 bit you need to click on 64bit shown with red circle below

← → ↻ 🏠 **Not secure** | www.cnm.es/~pserra/apdk/download.html

## Academic Process Design Kit CNM25 Edition

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Select your preferred operative system:

**MS Windows** **Ubuntu-like Linux**

APDK 2021.04.01 (manual only) [pdf](#)

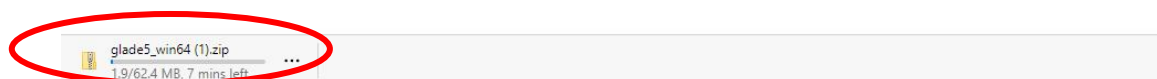
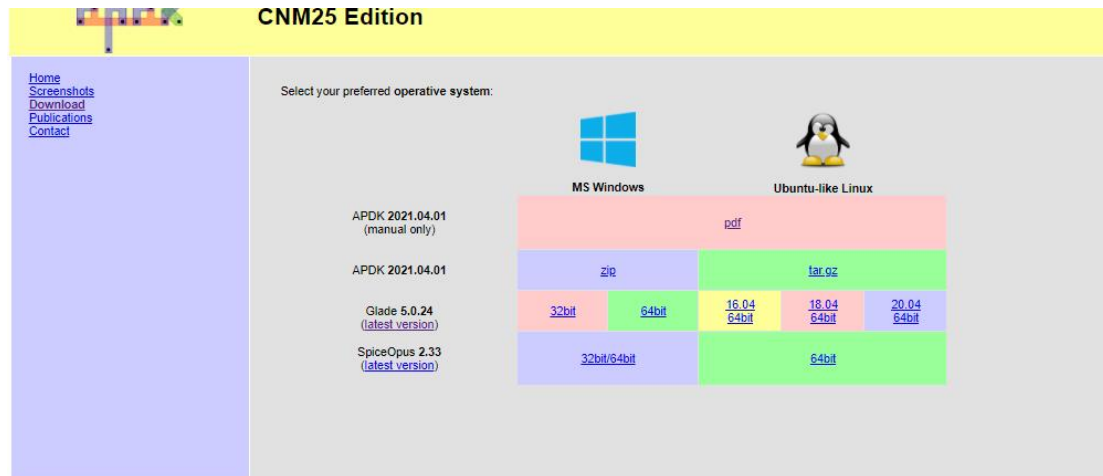
APDK 2021.04.01 [zip](#) [tar.gz](#)

Glade 5.0.24 (latest version) [32bit](#) [64bit](#) [16.04 64bit](#) [18.04 64bit](#) [20.04 64bit](#)

SpiceOpus 2.33 (latest version) [32bit/64bit](#) [64bit](#)

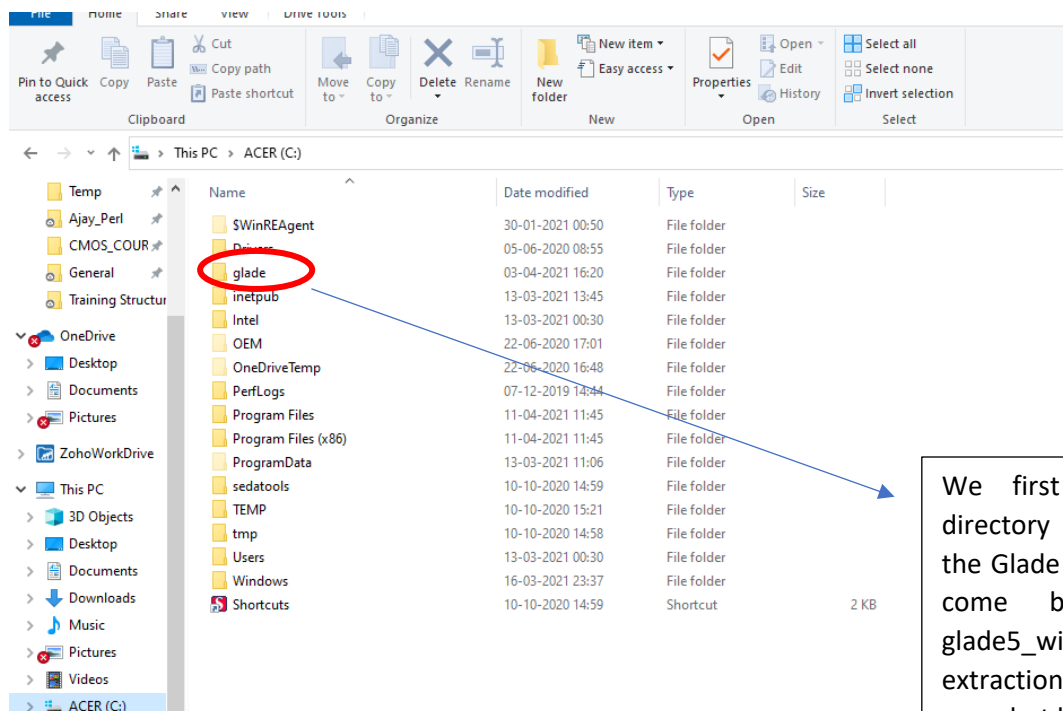
### Step5:

Once you click on 64bit a zip file will be downloaded as shown below



### Step6:

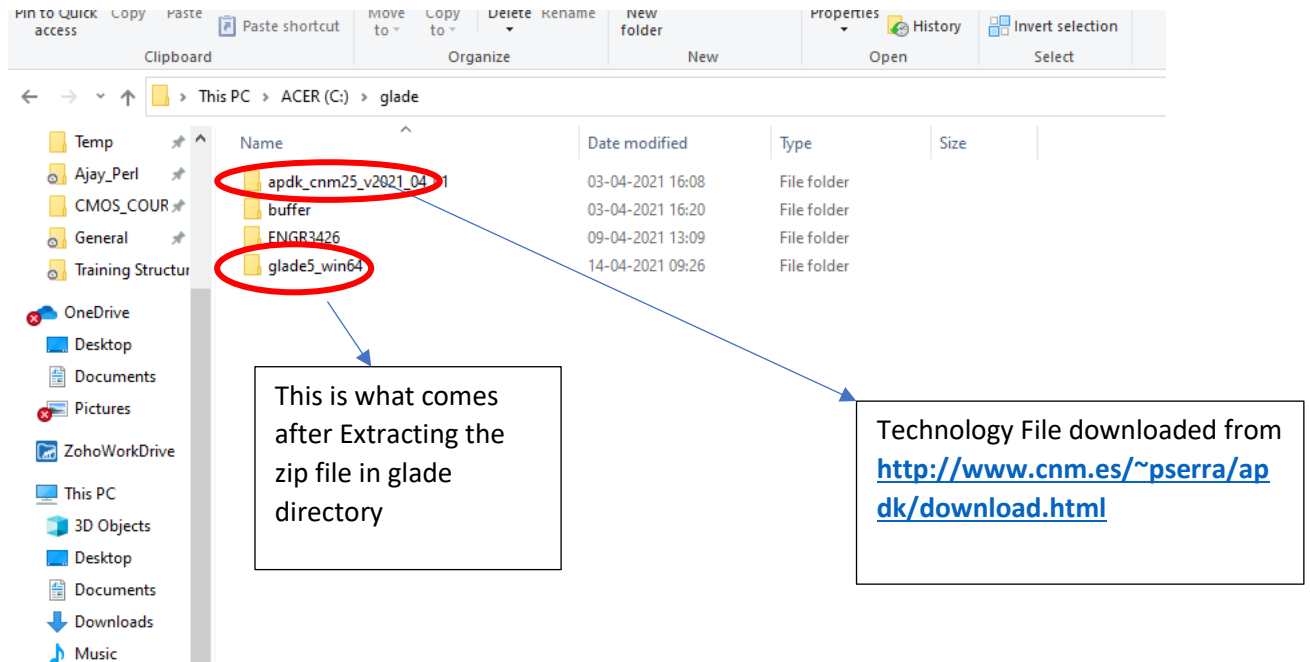
Once your download is complete you need to unzip the folder at a file location which in my case is C:/glade shown below with red circle and after extraction you will have a folder inside C:/glade by name of as glade5\_win64



We first created this directory and extracted the Glade here and it will come by name of glade5\_win64 after extraction and is shown in snapshot below

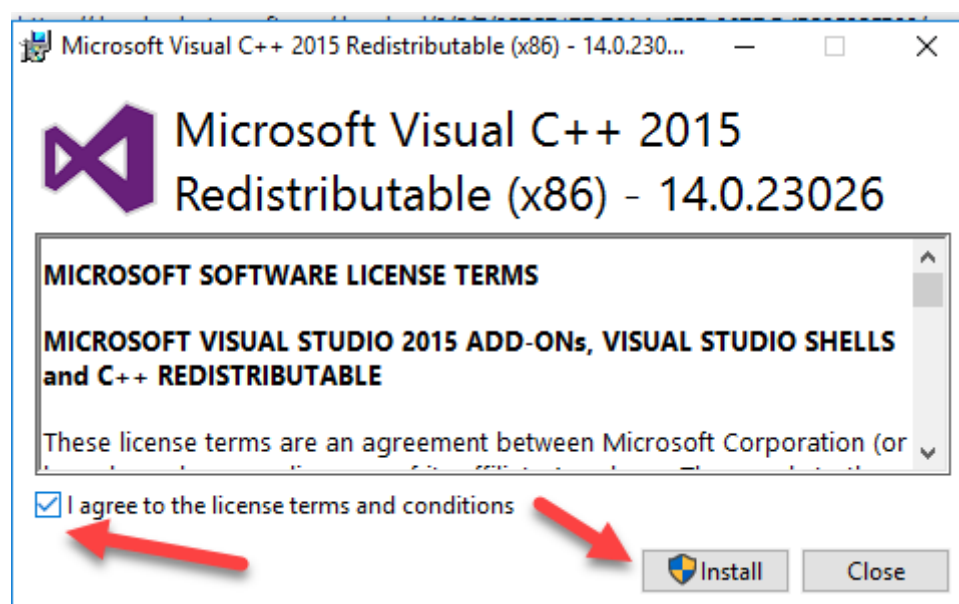
### Step7:

If you click on the glade folder as shown in step 6 you will be able to see a folder by the name of glade5\_win64



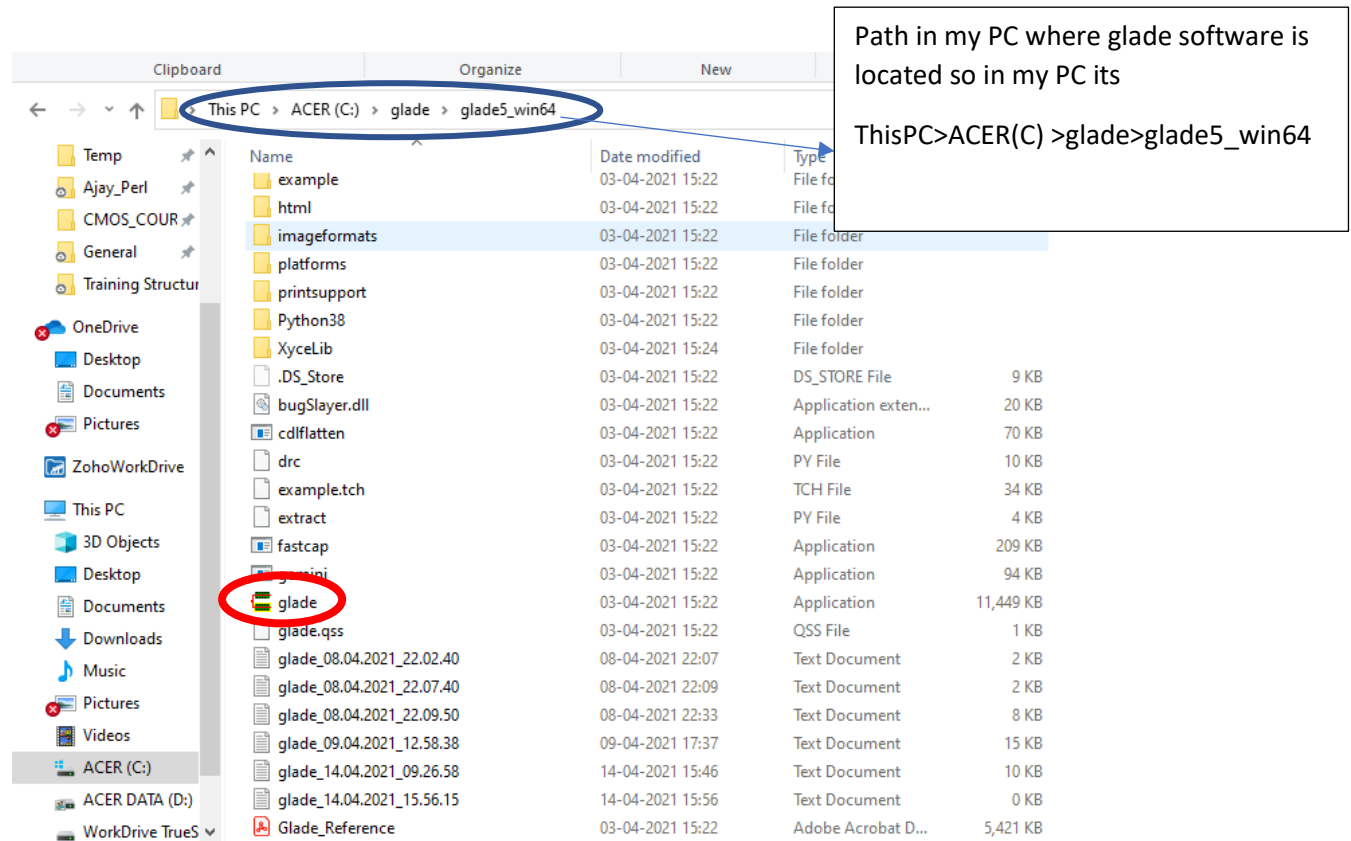
### Step7:

Once you click glade5\_win64 folder you will see a host of files as shown below amongst these files you first need to install click on **VC\_redist.x64** and a window will appear as shown below you have click on, **I agree to the license terms and conditions** as shown by red arrow and then have to click on Install as shown below. This will install the Microsoft Visual software its mandatory to have this one installed otherwise GLADE won't run.



### Step8:

This completes the installation of your GLADE Software and you can check if your glade software is running or not by going to the glade5\_win64 in step6. and then go inside this folder you will have a heap of files you have to select Glade app file as shown below



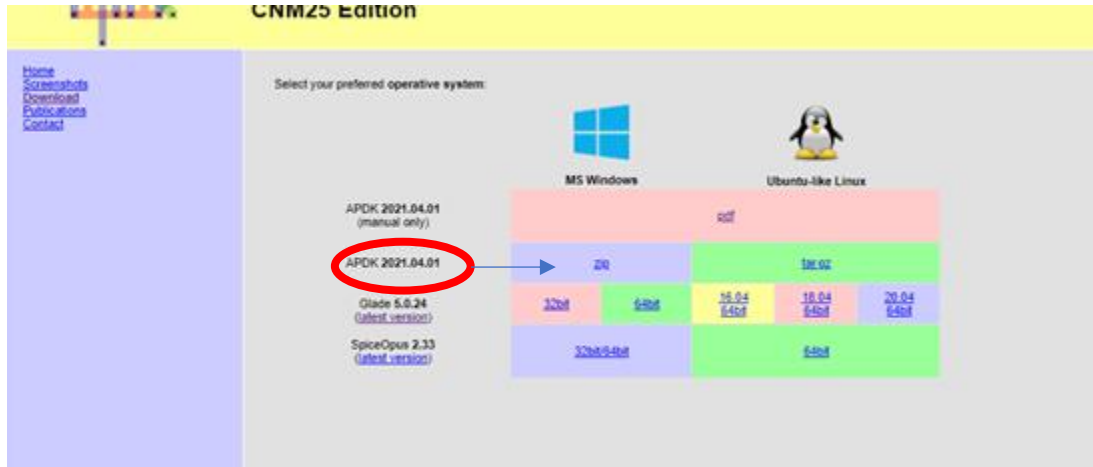
### Step9

As soon as you click on glade the below shown window should pop up



**This completes the Installation of GLADE SOFTWARE.** In next section we are going to explain the set up and configuration files requires for glade software.

So, you need a technology file also which can be downloaded from you will get a zip folder when you download the zip file you will have multiple folders which are also shown below



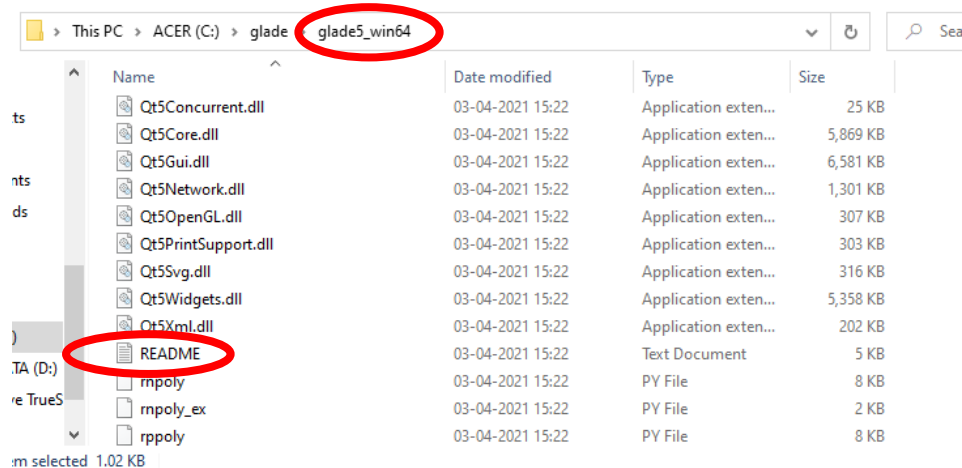
This PC > Downloads > apdk\_cnm25\_v2021\_04\_01 (1) > apdk\_cnm25\_v2021\_04\_01

Name	Type	Compressed size
doc	File folder	
glade	File folder	
spiceopus	File folder	

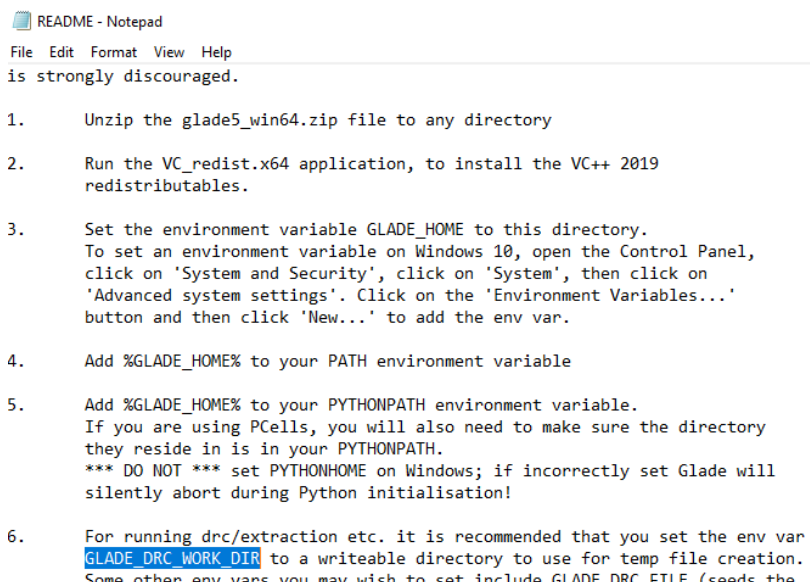
If you will click on glade folder shown above you will have multiple files cnm25.tch is a technology file shown in red circle

This PC > ACER (C:) > glade > apdk_cnm25_v2021_04_01 > glade				
Name	Date modified	Type	Size	
CNM25TechLib	03-04-2021 16:08	File folder		
ExampleLib	03-04-2021 16:08	File folder		
pcells	03-04-2021 16:08	File folder		
SPICE3Lib	03-04-2021 16:08	File folder		
verification	03-04-2021 16:08	File folder		
XSpiceLib	03-04-2021 16:08	File folder		
XtendedLib	03-04-2021 16:08	File folder		
cnm25.tch	03-04-2021 16:08	TCH File	9 KB	
glade	03-04-2021 16:08	Windows Batch File	1 KB	
glade_init	03-04-2021 16:08	PY File	1 KB	
gladerc	03-04-2021 16:08	XML Document	25 KB	

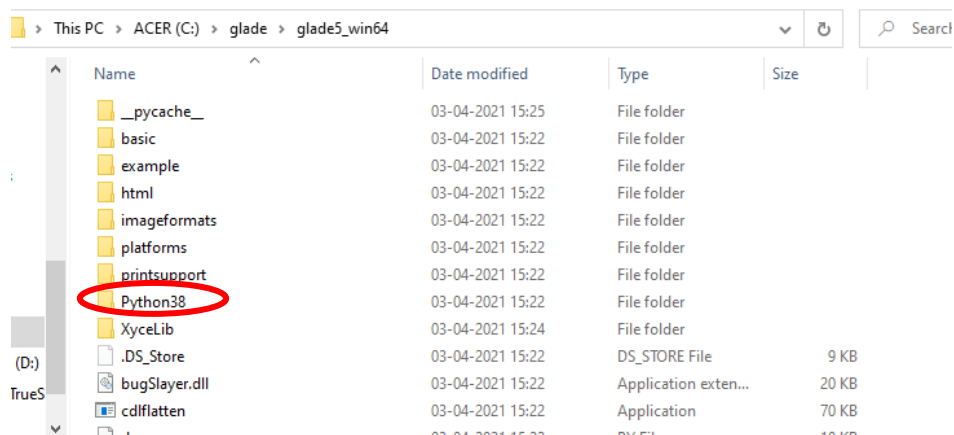
Also, you have README file in glade5\_win64 using which you do the system level variable setting



If you click README file it will open in notepad and is shown below using this file you can set your system variables for GLADE

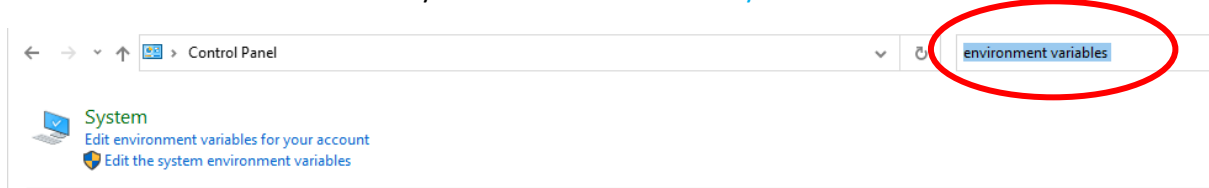


Also in the **glade5\_win64** very folder you can see what is the name of python folder please note it as you will be needing for setting system variables here it is **Python38**



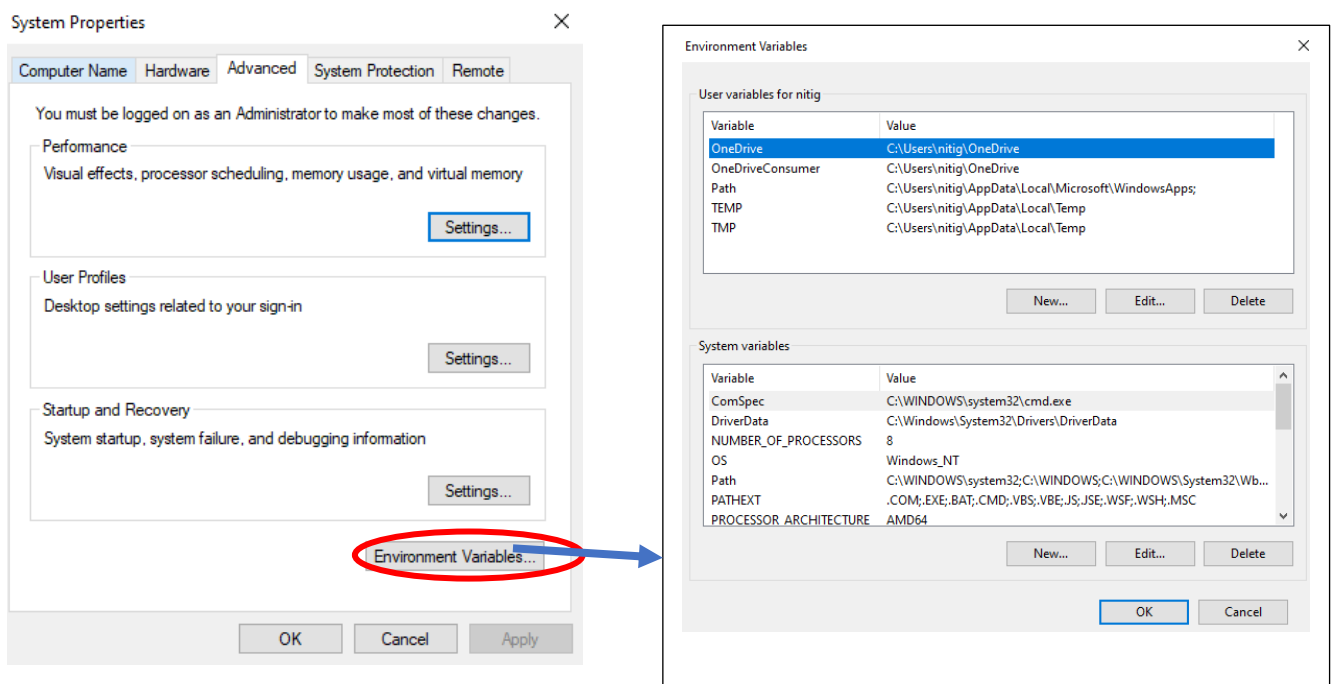
### Step8:

Go to control panel as shown below in search control panel you can search for environment variable shown below in red circle. Under System click on on [Edit the system environmental variables](#)



### Step9:

Once you will click on this you will have a window shown below click on Environment Variables in the lower right-hand corner marked with red circle. After you click another window will open



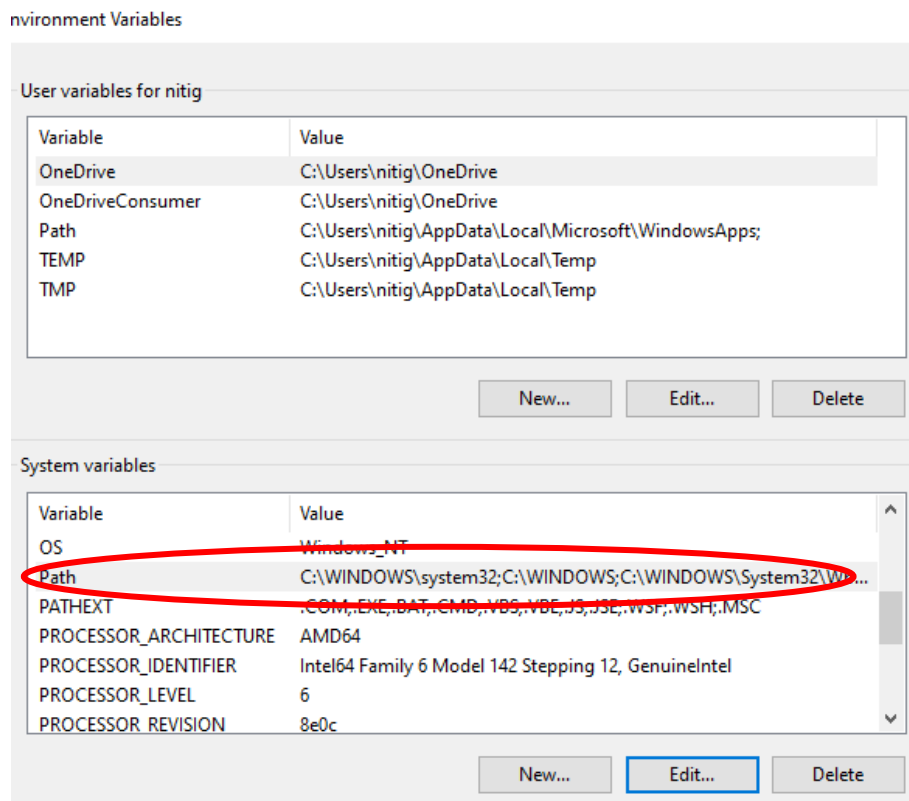
1) Set the environment variable GLADE\_HOME to the directory where you have extracted the glade  
In my case I first created a directory glade and inside it I extracted glade5\_win64

Variable name: **GLADE\_HOME**

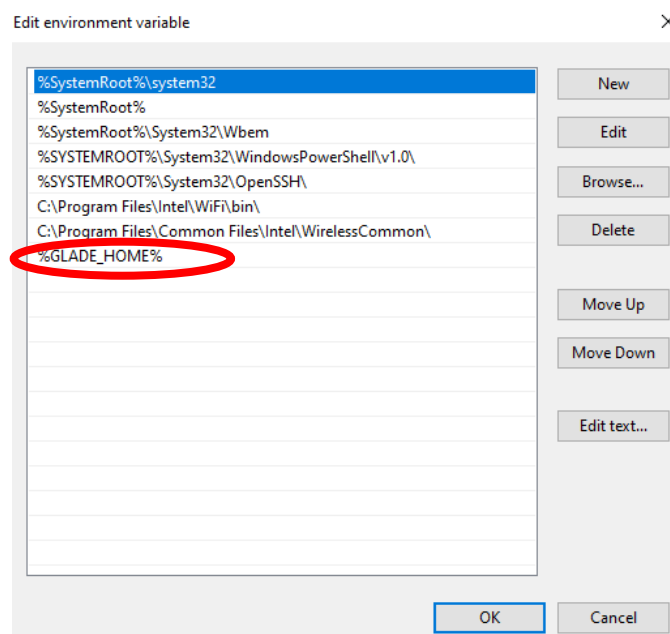
Variable value: **C:\glade\glade5\_win64** (here you give the path where you have extracted the glade)



2) Add %GLADE\_HOME% to your Path(PATH) environment variable which is shown below click on path two time or highlight it and press Edit



After clicking on Edit you will get the window as shown below here you Add %GLADE\_HOME% by clicking on Edit



3) Add %GLADE\_HOME% to your PYTHONPATH environment variable. Also include here all the library and DLL files inside Python38. If you are using PCells, these cells are in **apdk\_cnm25\_v2021\_04\_01 directory and you need to mention the path** you will also need to make sure the directory they reside in is in your PYTHONPATH

**\*\*\* DO NOT \*\*\* set PYTHONHOME on Windows; if incorrectly set Glade will silently abort during Python initialization!**

Variable name: **PYTHONPATH**

Variable value:

**%GLADE\_HOME%\Python38\Lib;%GLADE\_HOME%\Python38\DLLs;C:\glade\apdk\_cnm25\_v2021\_04\_01\glade;C:\glade\apdk\_cnm25\_v2021\_04\_01\glade\pcells;C:\glade\apdk\_cnm25\_v2021\_04\_01\glade\verification**

Note: %GLADE\_HOME% → C:\glade\glade5\_win64  
%GLADE\_HOME%\Python38\Lib → C:\glade\glade5\_win64\Python38\Lib  
%GLADE\_HOME%\Python38\DLLs → C:\glade\glade5\_win64\Python38\DLLs

4) For running drc/extraction etc. you set the env var GLADE\_DRC\_WORK\_DIR to a writeable directory to use for temp file creation.

Variable name: **GLADE\_DRC\_WORK\_DIR**

Variable value: **C:\glade\glade\_drc {glade\_drc folder is first created inside glade by us}**

5) Some other env vars you may wish to set include GLADE\_DRC\_FILE (seeds the DRC dialog), GLADE\_EXT\_FILE (seeds the LPE dialog), GLADE\_NETLIST\_FILE (seeds the LVS dialog), GLADE\_LOGFILE\_DIR (the directory where Glade logfiles are written).

Variable name: **GLADE\_LOGFILE\_DIR**

Variable value: **C:\glade\glade\_logfiles**

Variable name: **GLADE\_DRC\_FILE**

Variable value: **C:\glade\apdk\_cnm25\_v2021\_04\_01\glade\verification\cnm25drc.py**

Variable name: **GLADE\_EXT\_FILE**

Variable value: **C:\glade\apdk\_cnm25\_v2021\_04\_01\glade\verification\cnm25lvs.py**

## Simulation

Glade supports simulation initially from schematics. The currently supported simulators include:

- Xyce - A public domain Spice like simulator from Sandia Labs.
- Spice3f5 - A venerable simulator from Berkeley.

## Simulator installation

To download a prebuilt binary of the Xyce, go to the Xyce website at <https://xyce.sandia.gov/> and select Download. You need to register to get download access. Follow the installation instructions in the documentation. You will need to make a note of the installation directory for use in the simulation setup dialog below.

To download a prebuilt binary of Spice3f5, go to [www.peardrop.co.uk/downloads](http://www.peardrop.co.uk/downloads) and download the Spice3f5 package for your OS.