UNIT I

Introduction to CAD Tool

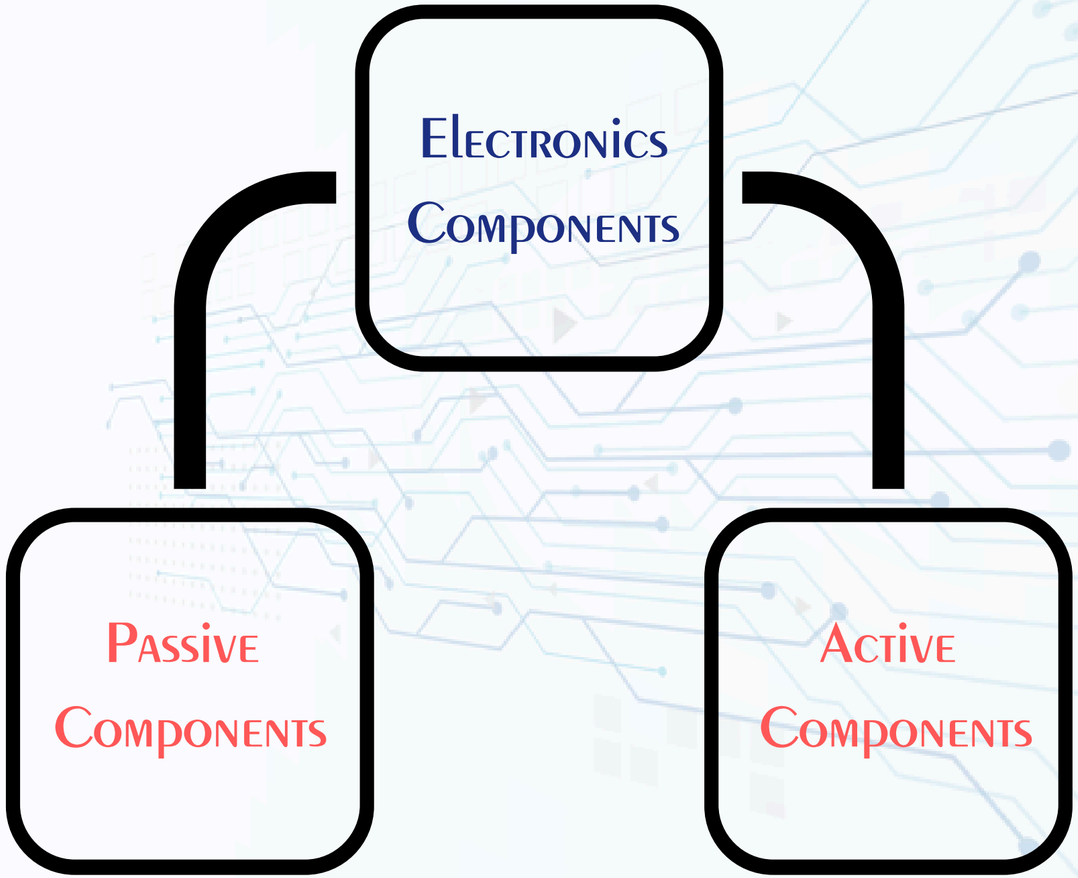
Voltage

- Voltage is the electrical potential difference between two points in a circuit. It is the "push" that causes current to flow.
- Unit: Volts (V).

Current

- Current is the flow of electric charge through a conductor.
- Unit: Amperes (A).

Key Components in PCB



Passive Components

Components that do not require external power and cannot amplify signals; they only consume energy or store it temporarily.

Types

Resistor, Capacitor, Inductor, LDR, Variable Resistor, Switch, Etc.,

Active Components

Components that require an external power source to operate and can amplify or control electrical signals.

Types

Diode, Transistor, IC, LED, Battery, Etc.,

Resistor

- A resistor opposes the flow of electrical current.

Application

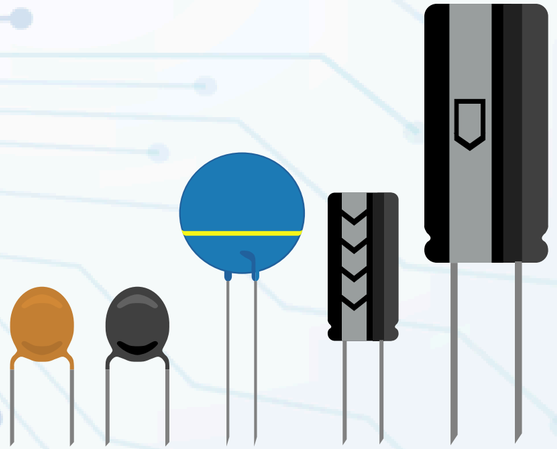
- Current limiting in circuits.
- Voltage dividers.

Capacitors

- A capacitor stores and releases electrical energy

Application

- Smoothing power supply noise.
- Timing and oscillation circuits.

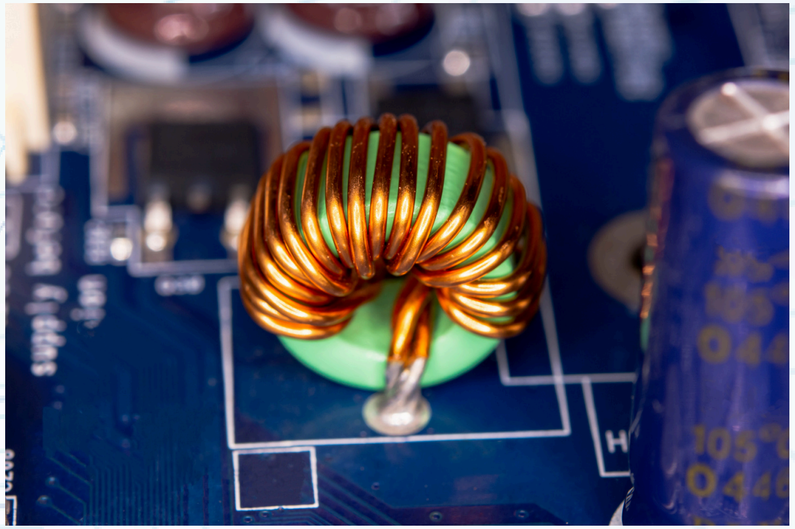


Inductors

- An inductor stores energy in a magnetic field when current flows through it.

Application

- Filters in power supplies.
- Transformers.



Diode

- A diode allows current to flow in only one direction.

Application

- Rectifiers.
- Voltage regulation (Zener diodes).

Transistor

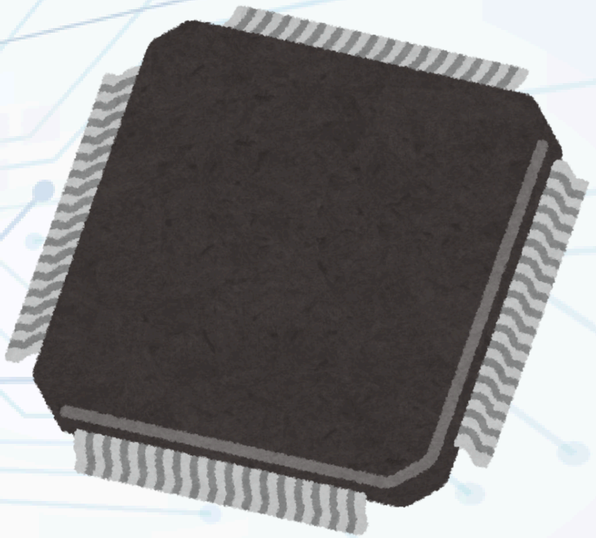
- A transistor is a semiconductor device used for amplification and switching.

Application

- Amplifiers in audio devices.
- Logic gates in digital circuits.

Integrated Circuits (ICs)

- ICs are miniature circuits with multiple electronic components integrated into a single chip.

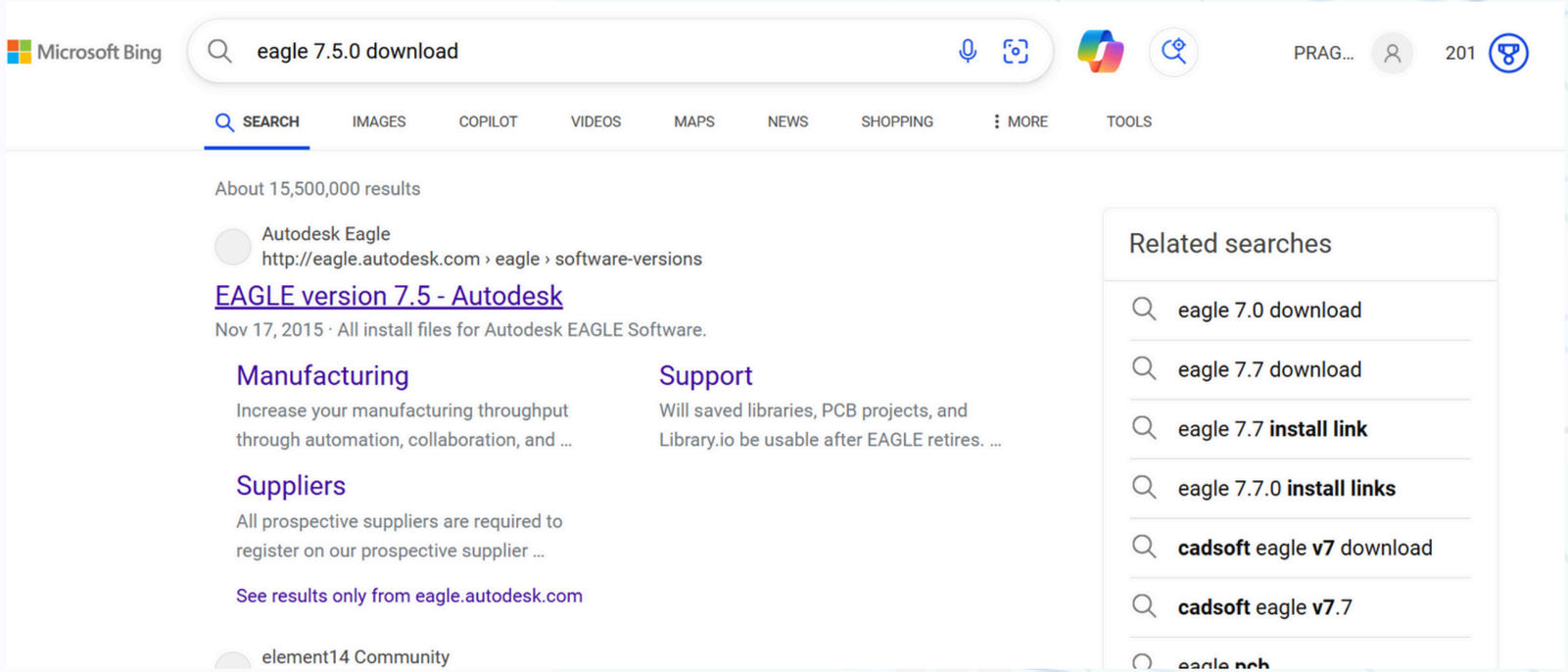


Application

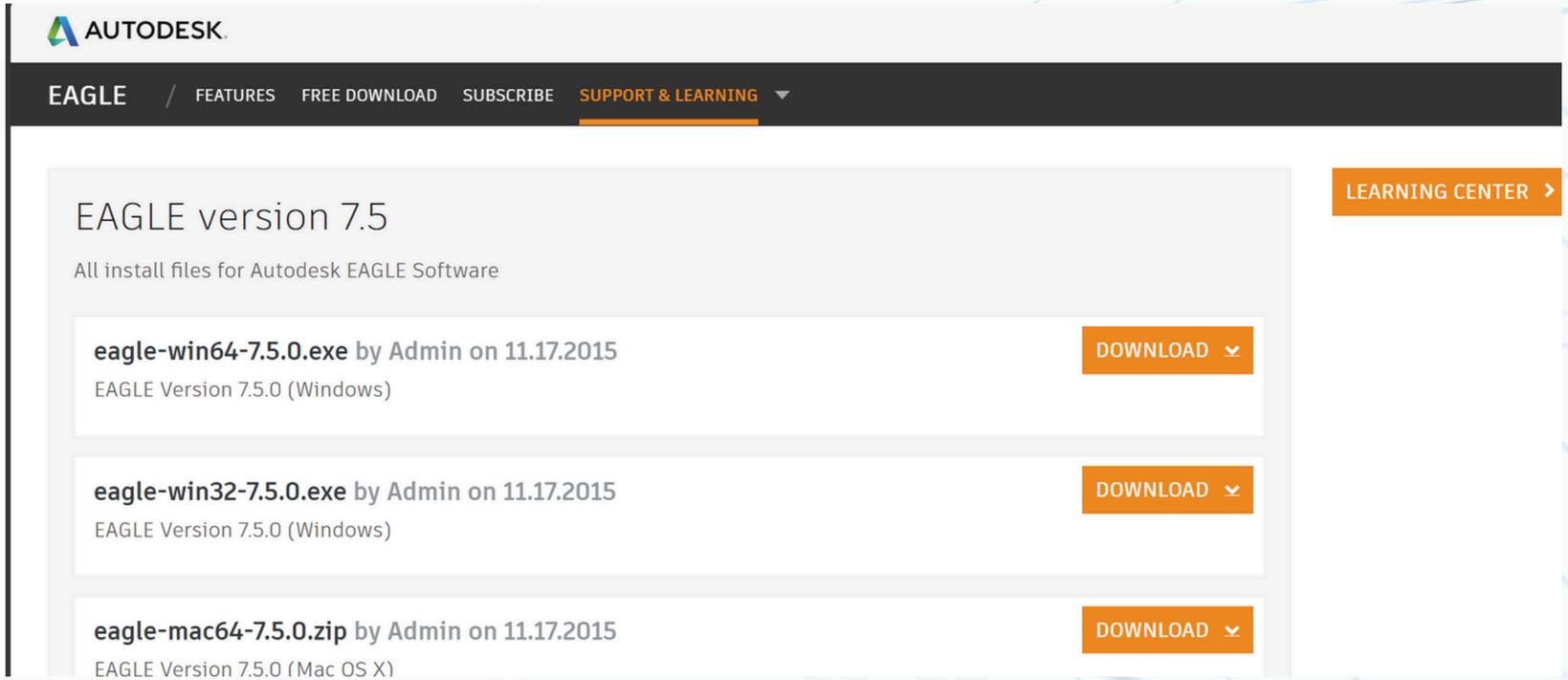
- Microprocessors, Memory Chips.
- Power management and control systems.

Software Installation Process

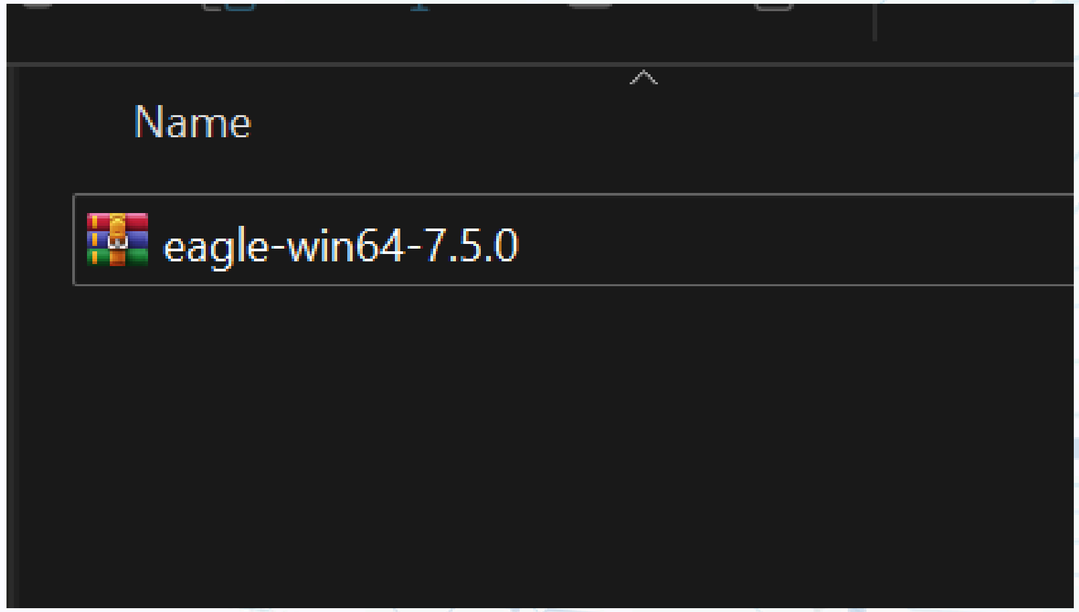
Eagle Software Installation



Eagle Software Installation

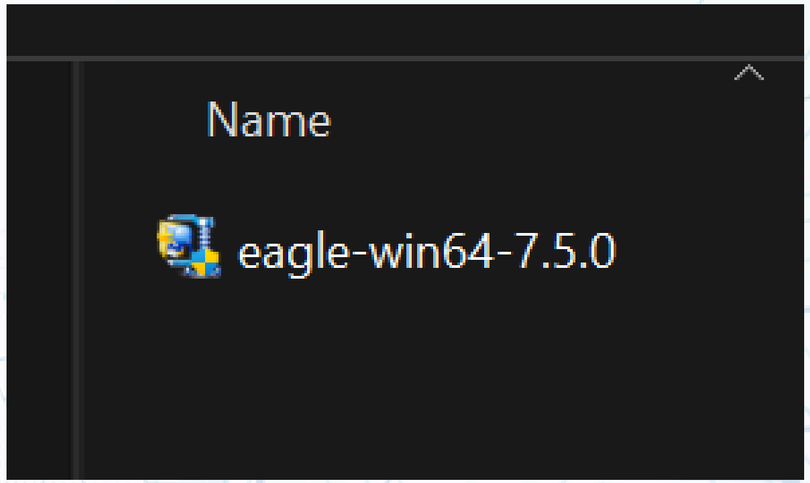


Eagle Software Installation



Extract the Rar file

Eagle Software Installation....



Click the exe file

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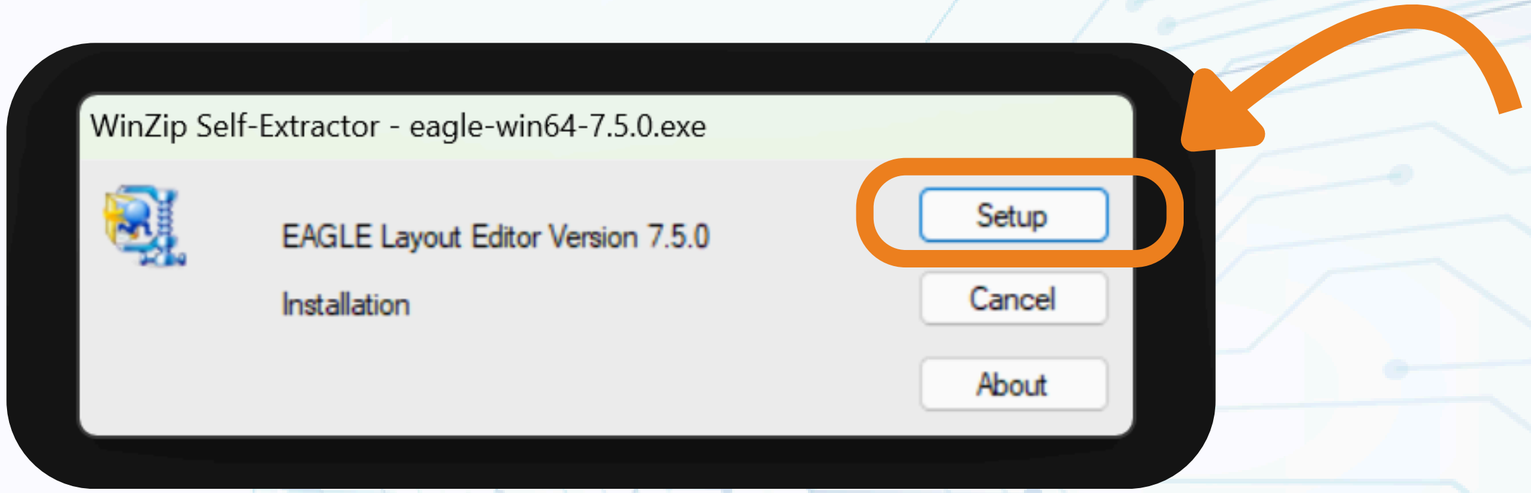
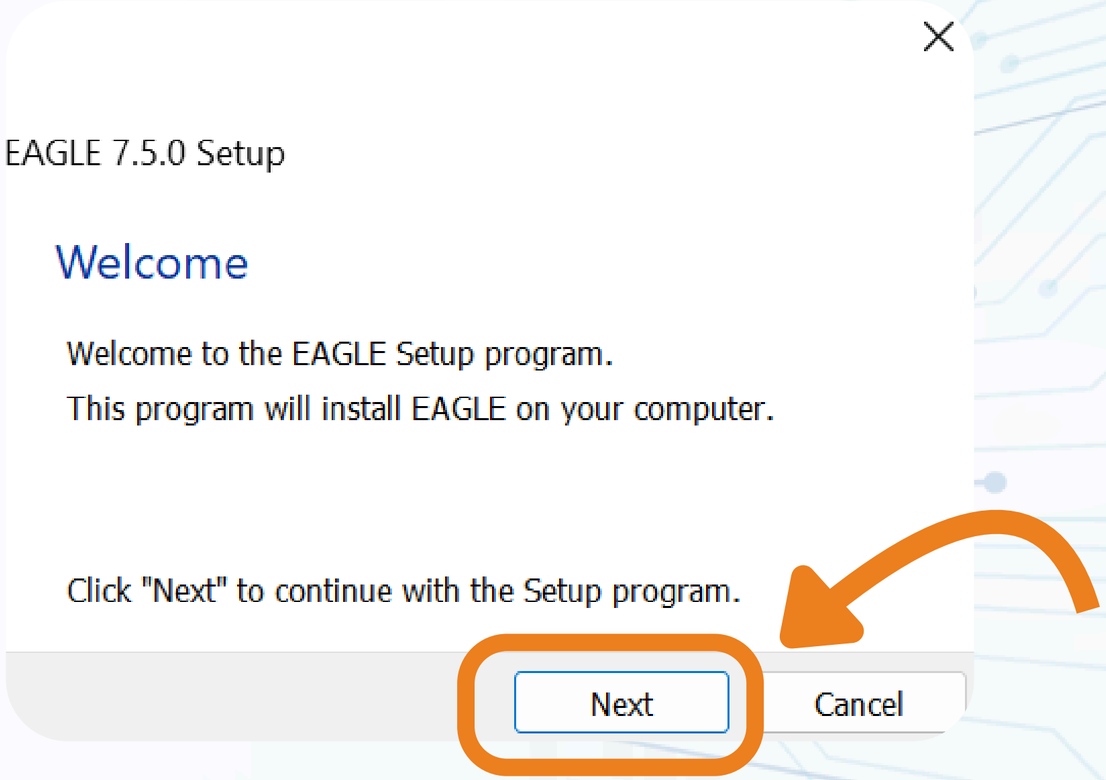


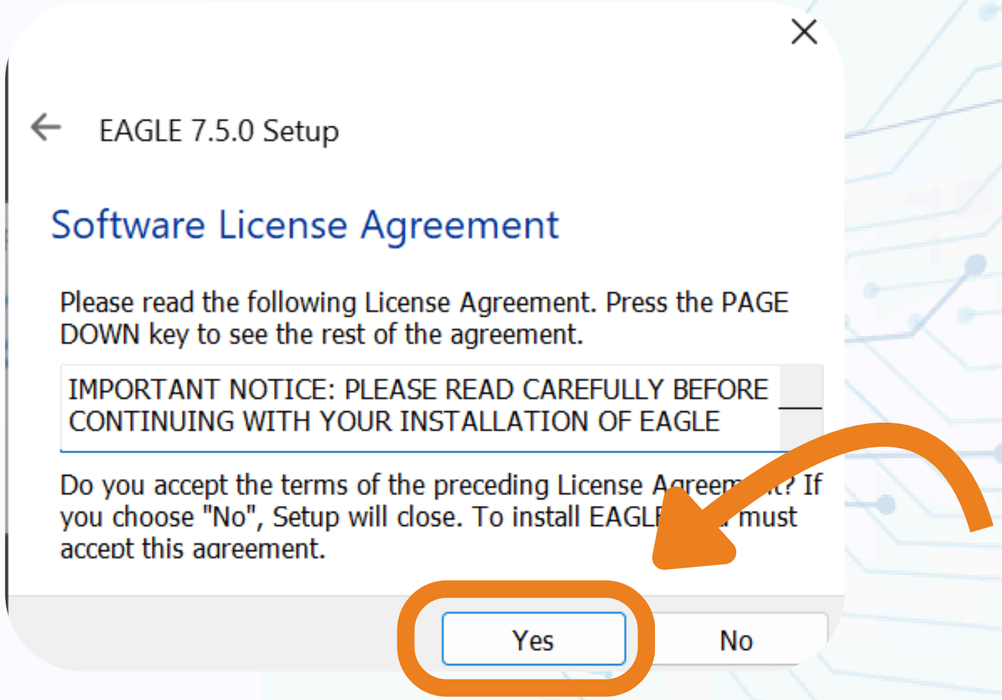
Click the Setup option

Eagle Software Installation....



Click the Next option

Eagle Software Installation....



Click the Yes option

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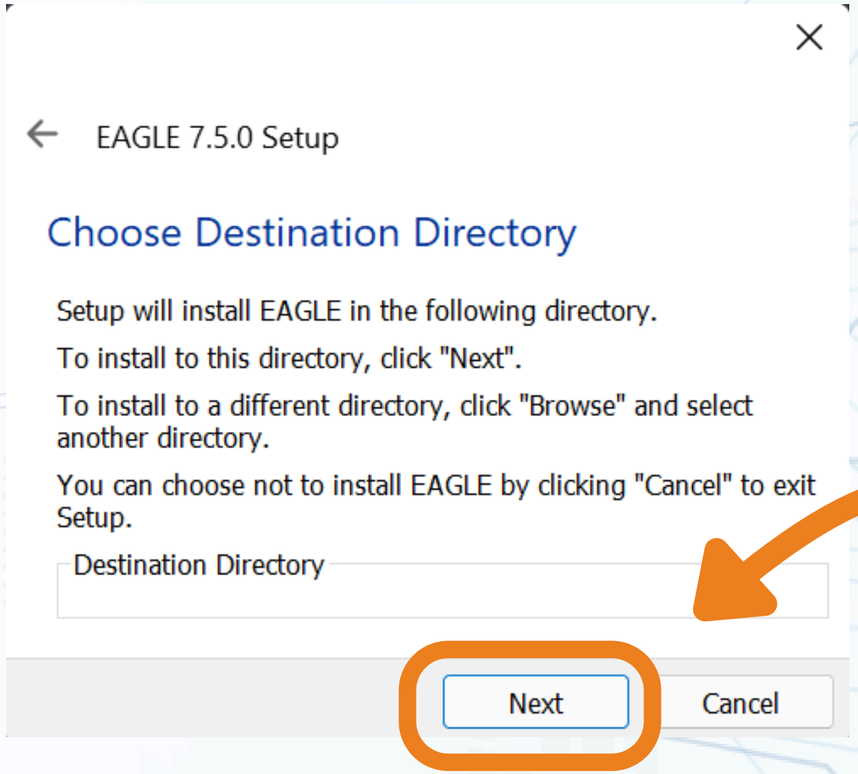

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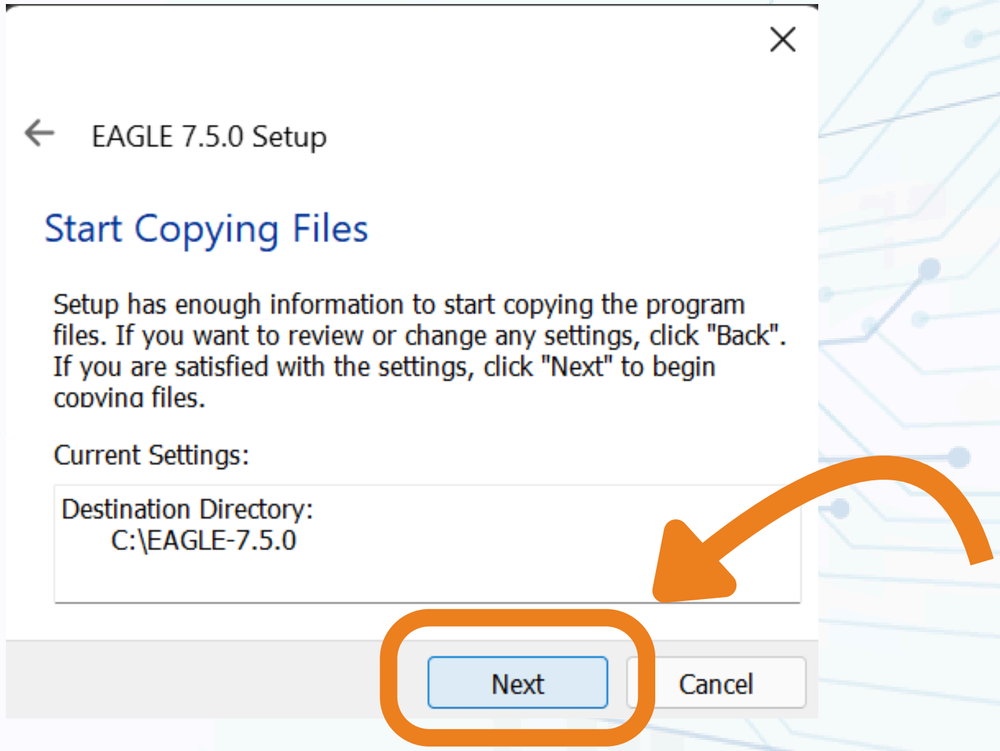

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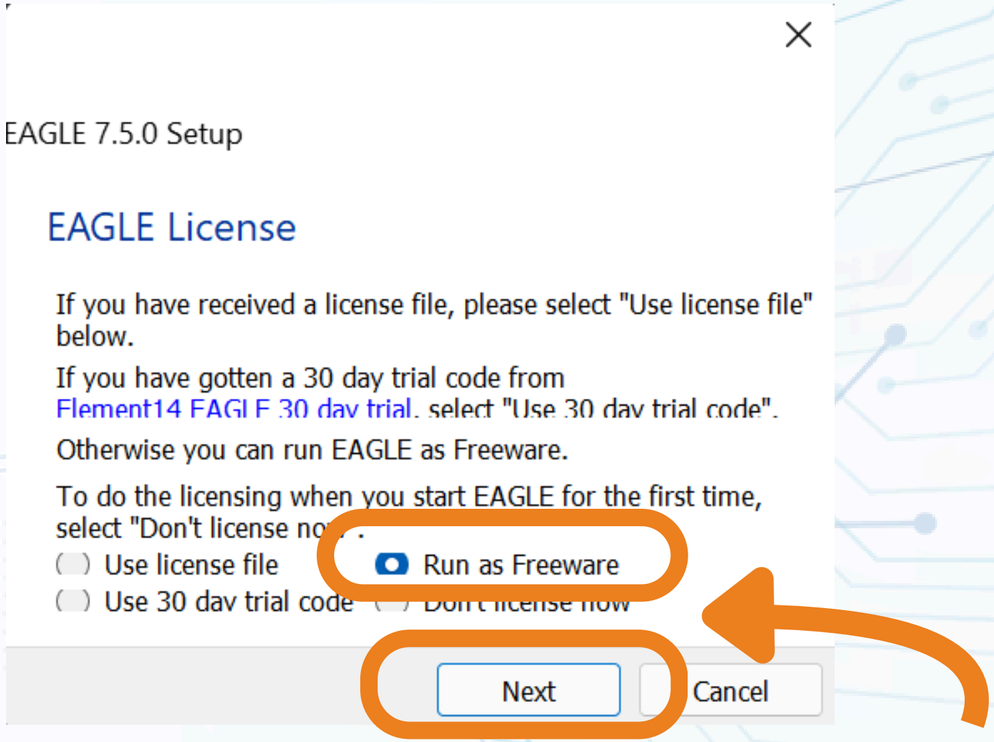
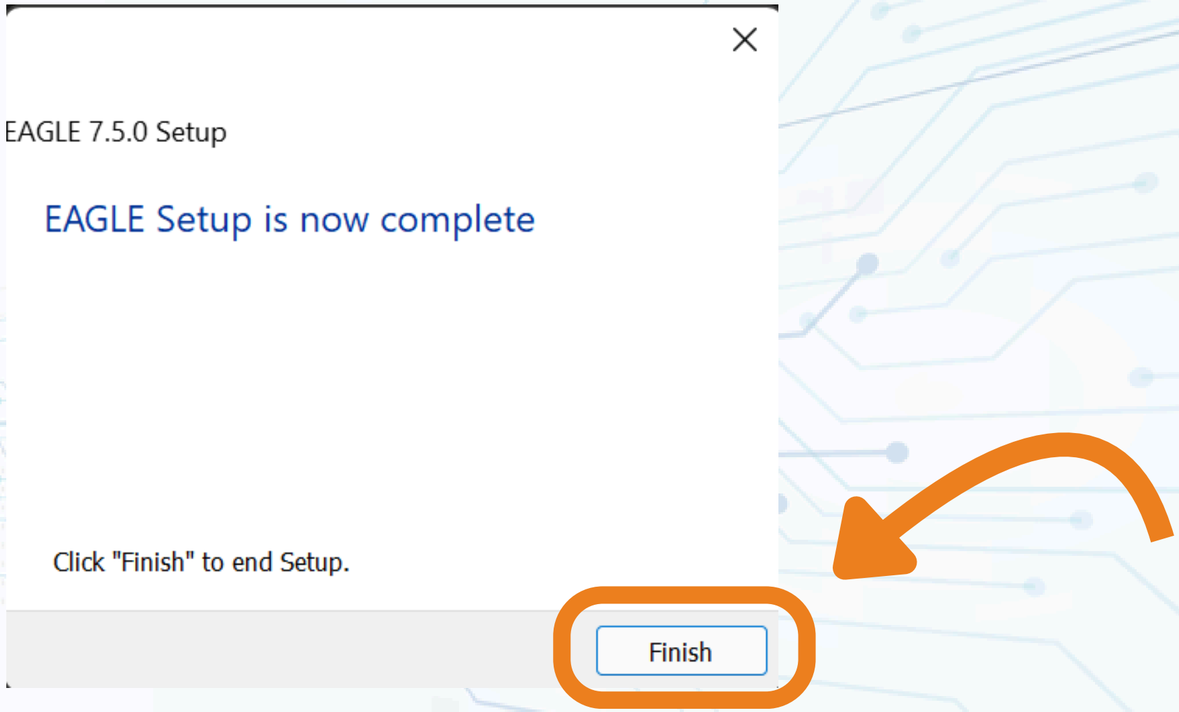
Eagle Software Installation....



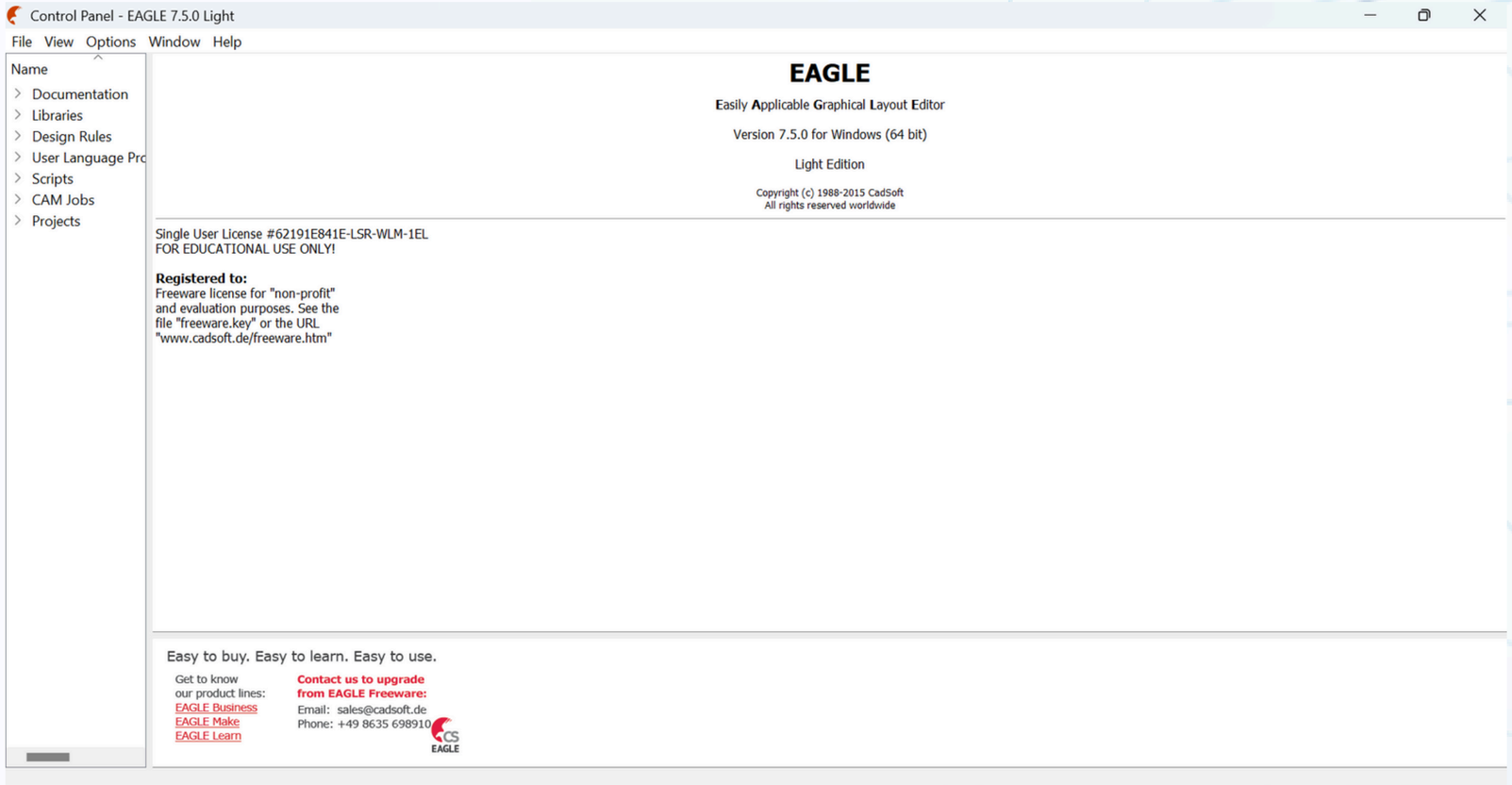
Select Run as Freeware and Click the Next option

Eagle Software Installation....

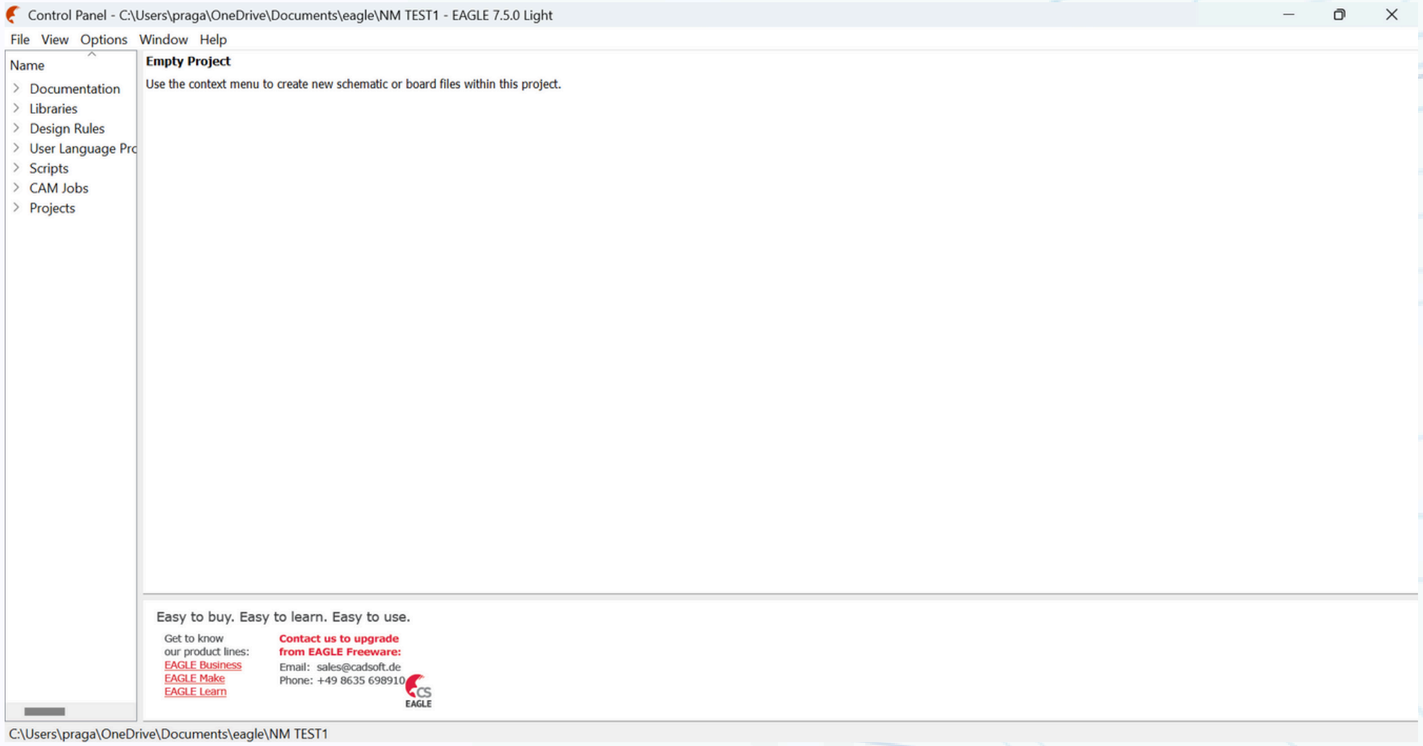


Click the Finish option

Eagle Software

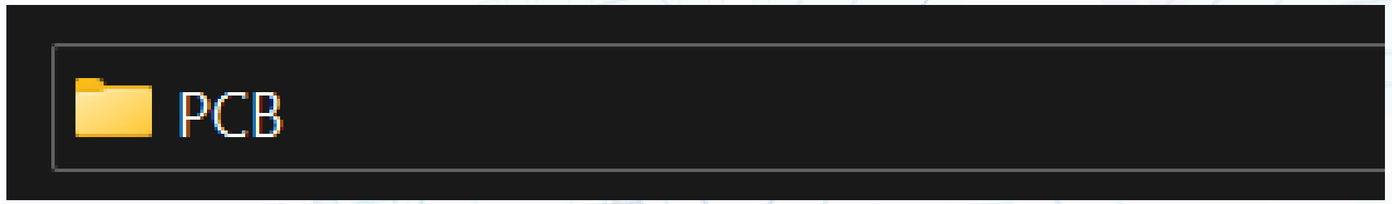


Eagle Software



Open the Eagle 7.5.0

File Management

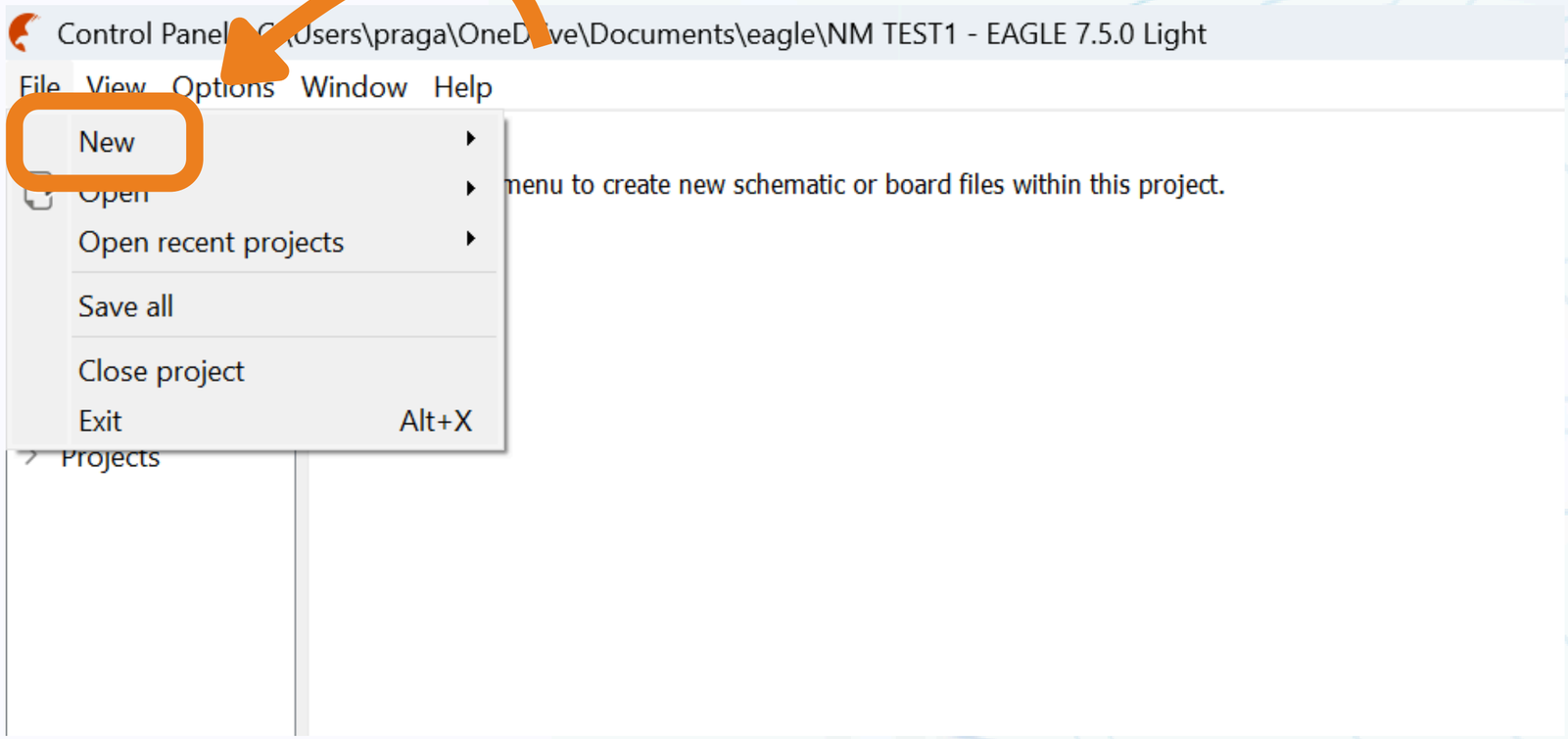


Create a folder to store all the project files

File Management

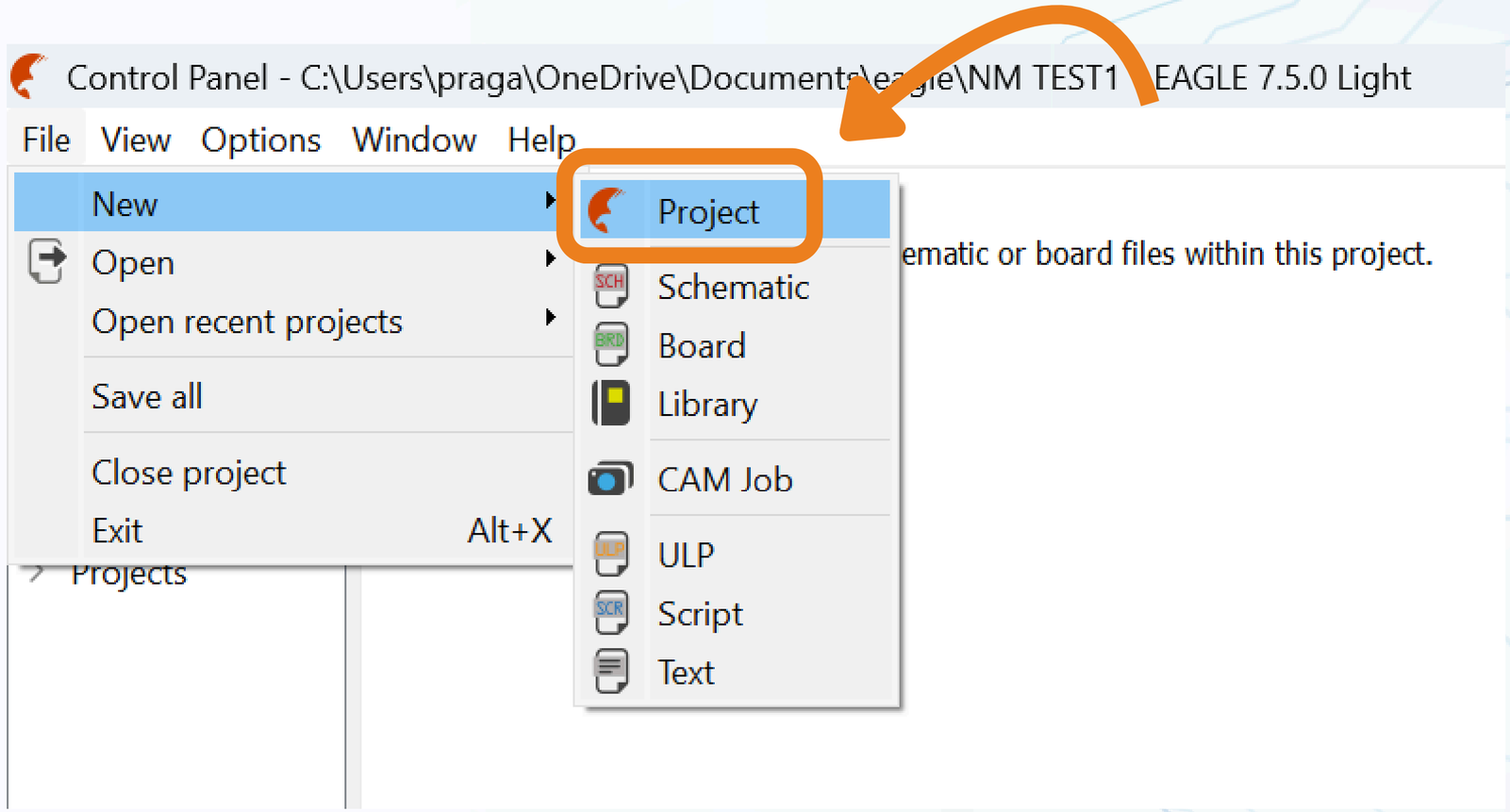
Create a Project folder to store the Design and fabrication files

New Project Creation



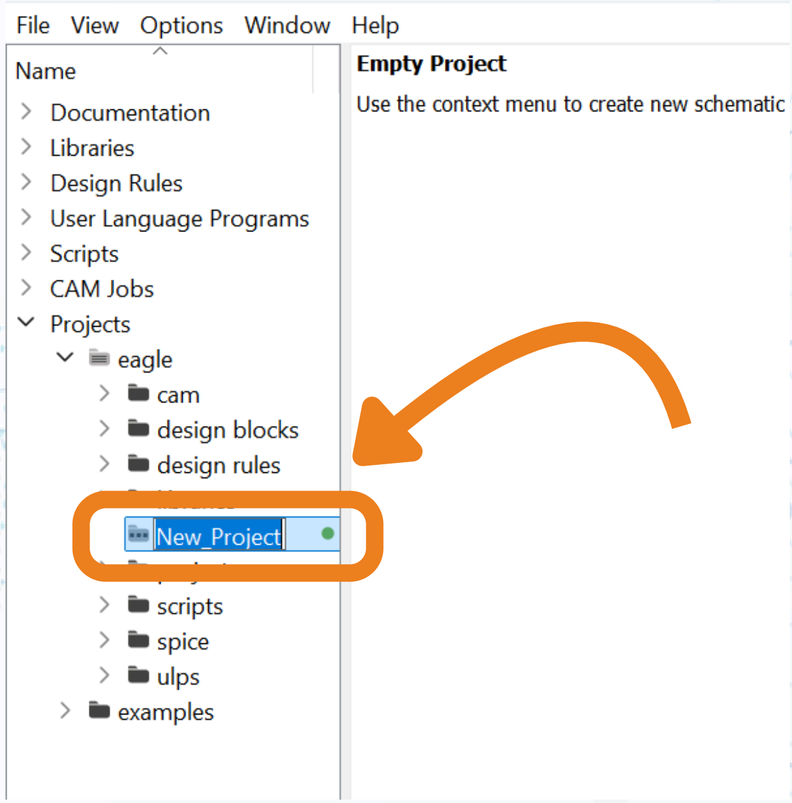
Click file > New

New Project Creation



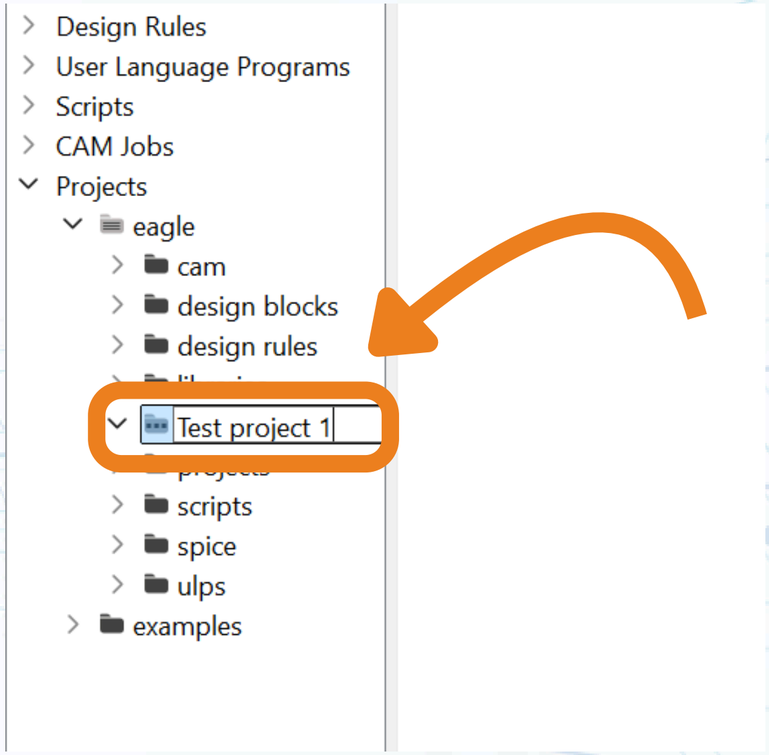
Click file > New > Project

New Project Creation



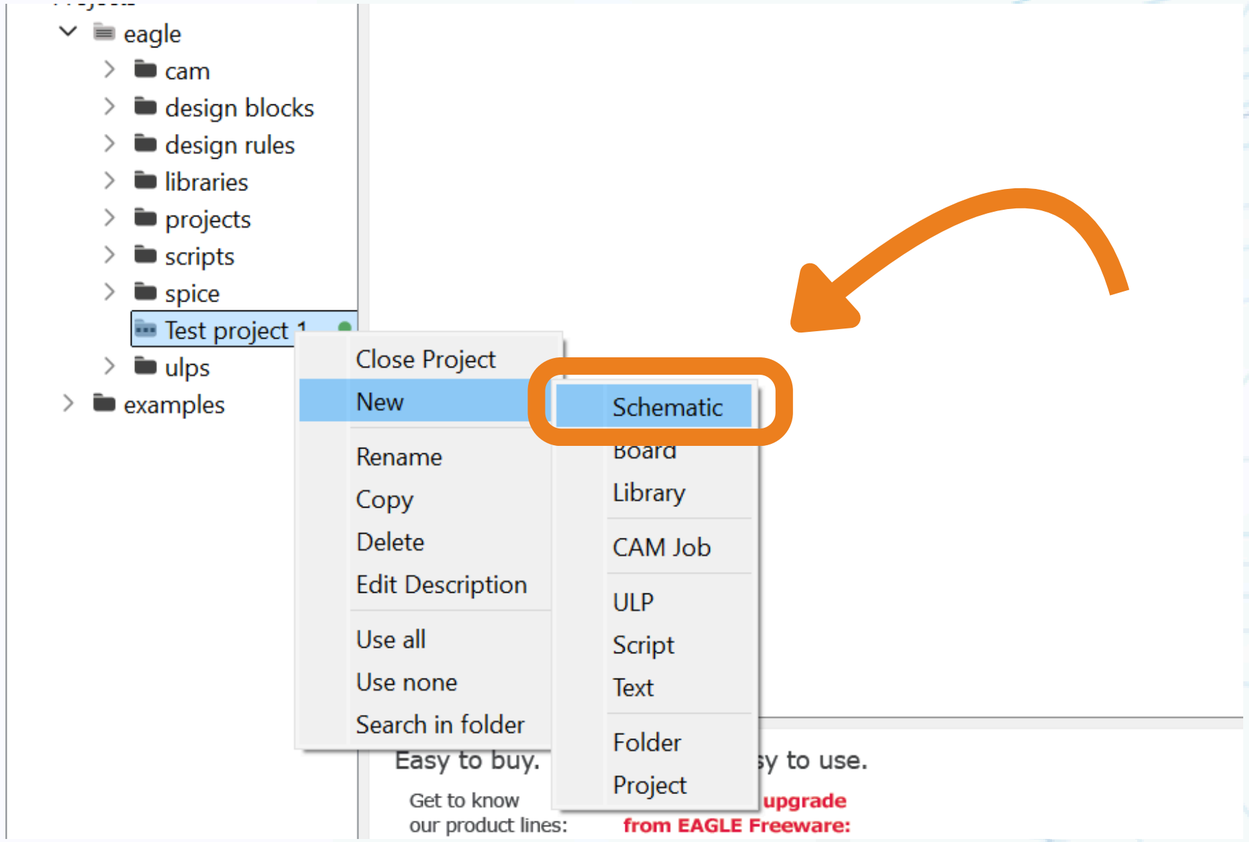
Rename the project file

Rename the project file



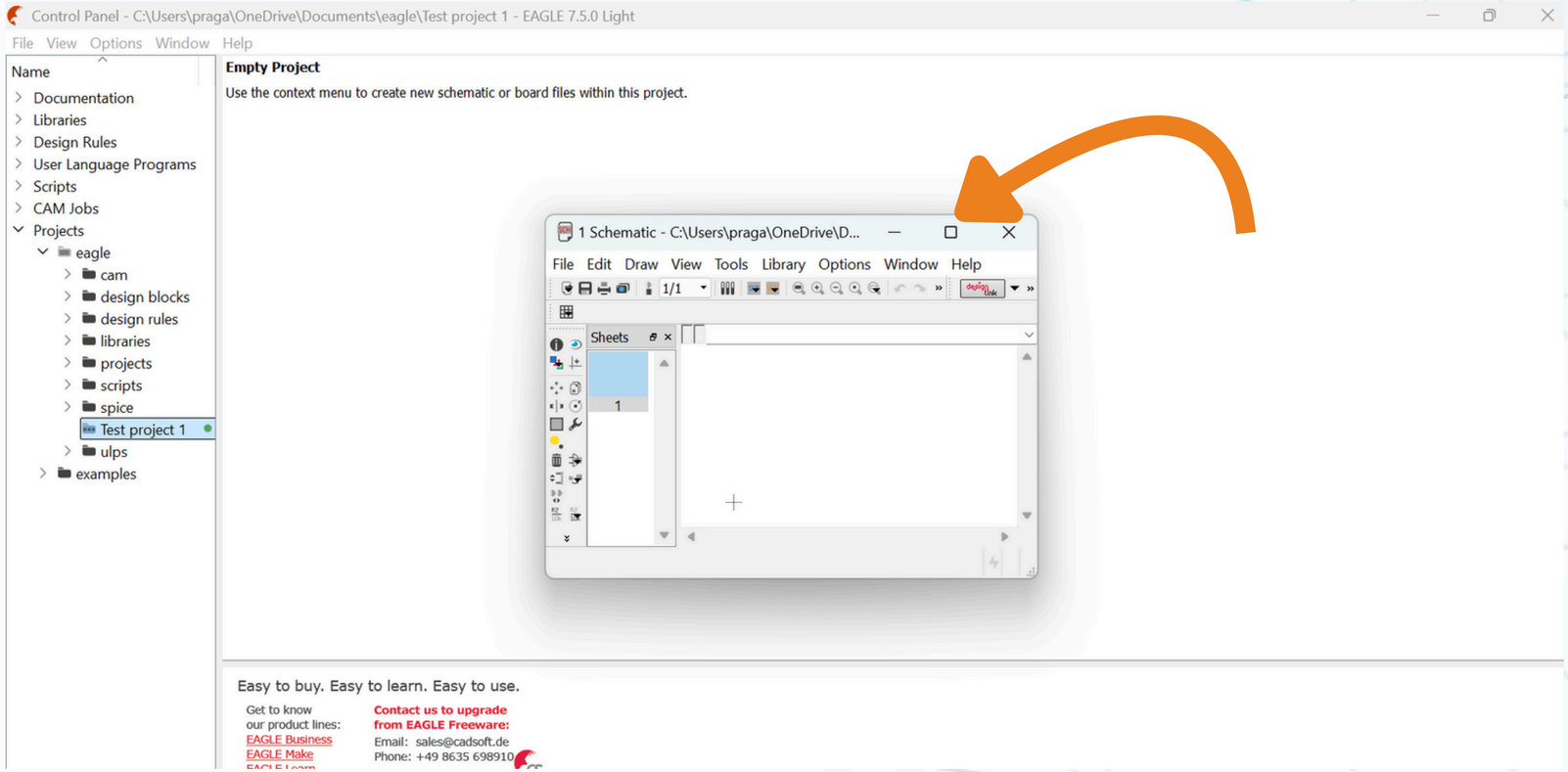
Renamed project file

Creating Schematic sheet



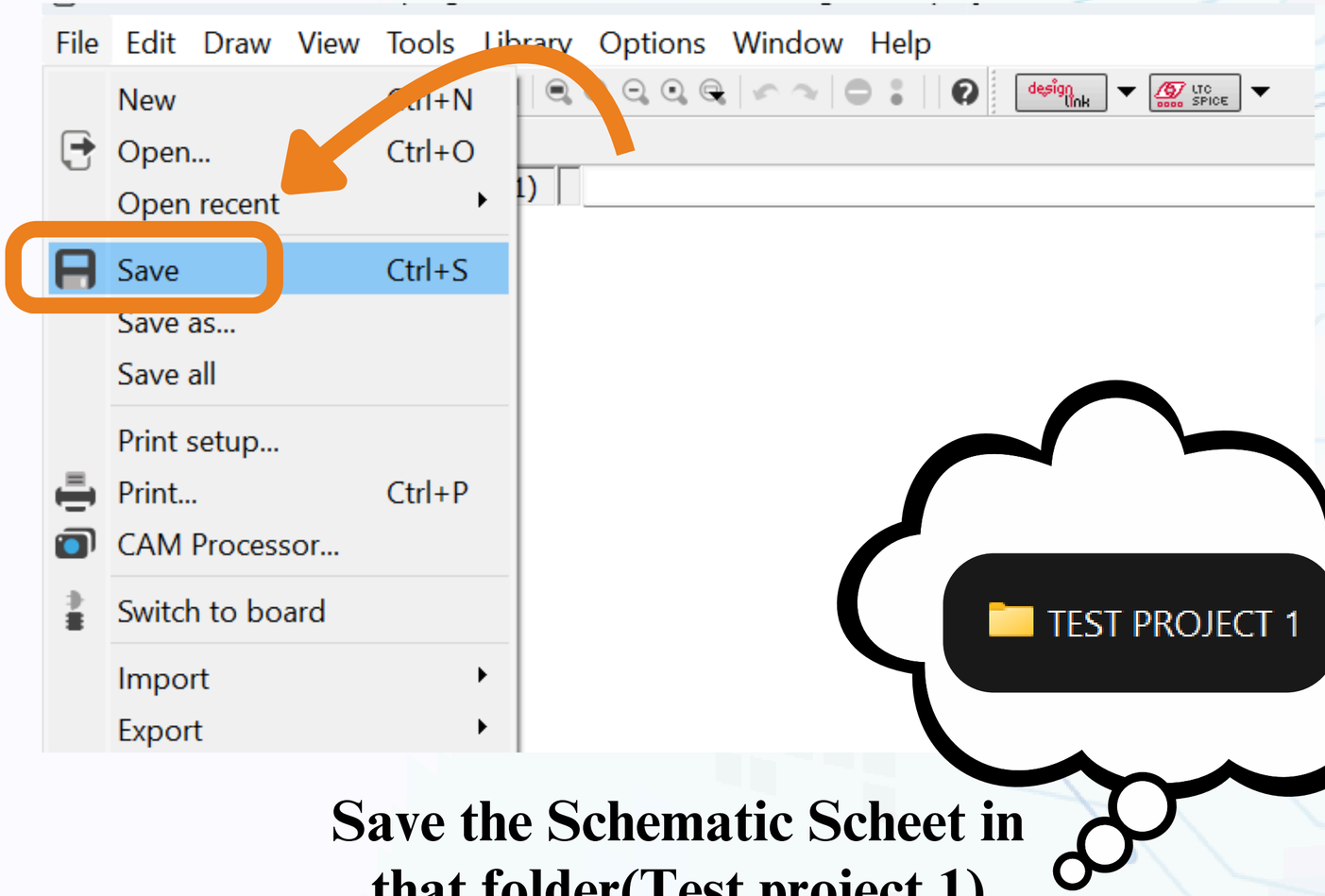
Project > New > Schematic

Schematic sheet



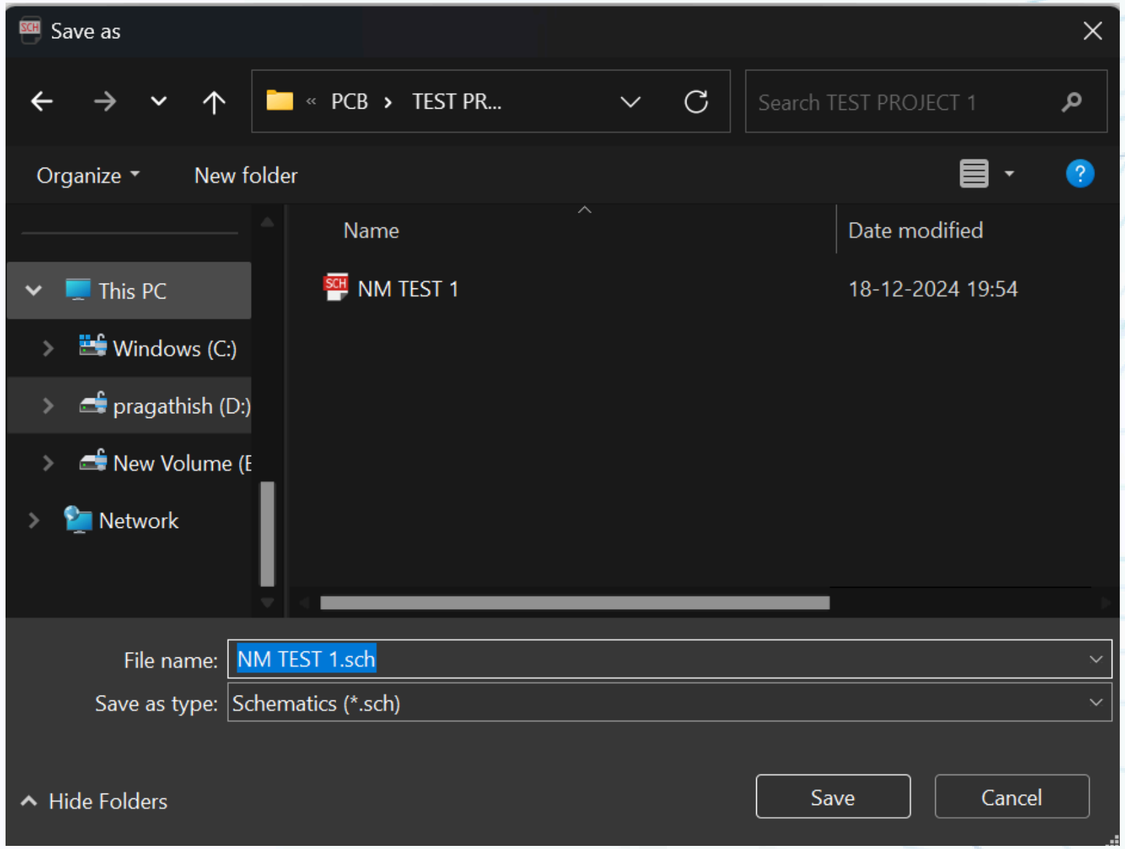
Open the Schematic sheet

Save the Schematic Sheet



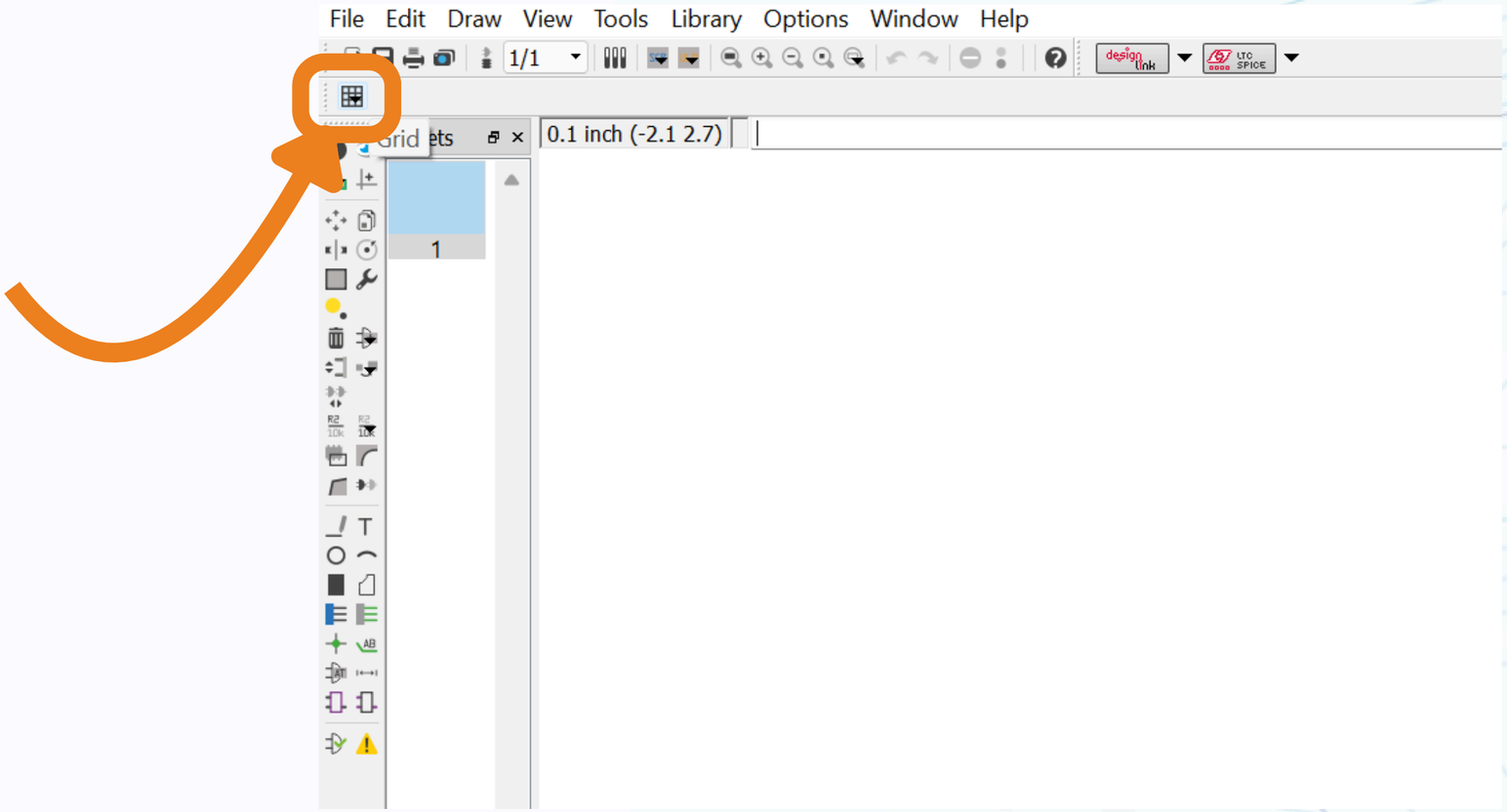
Save the Schematic Scheet in that folder(Test project 1)

Save the Schematic Sheet



Save in that created file

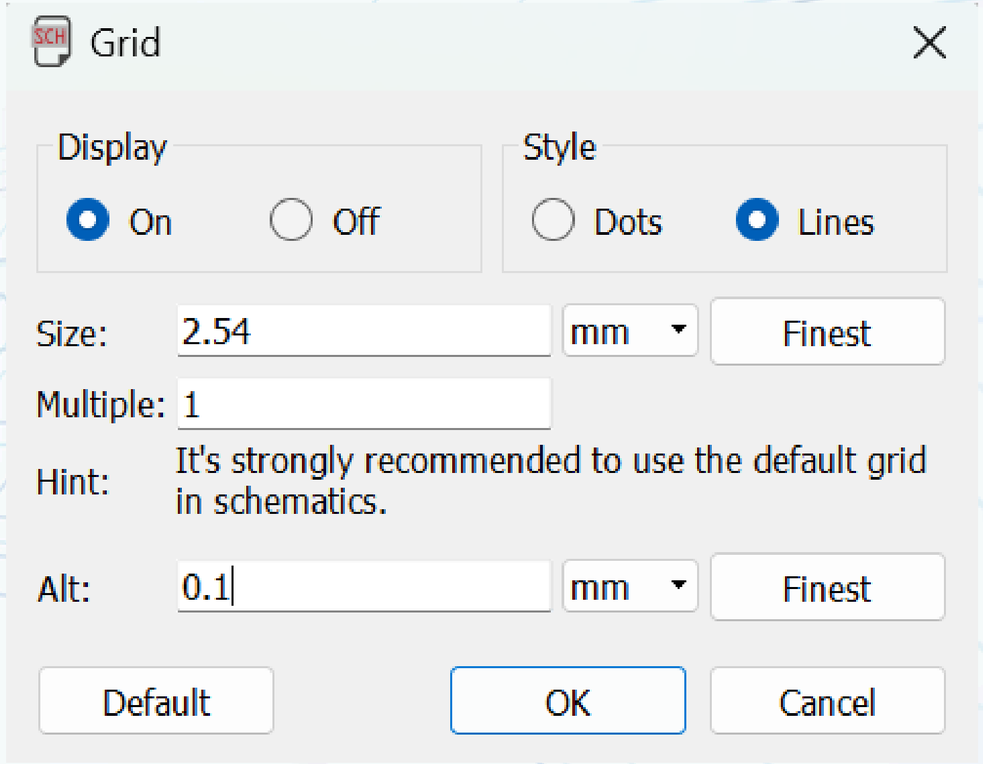
Grid Configuration



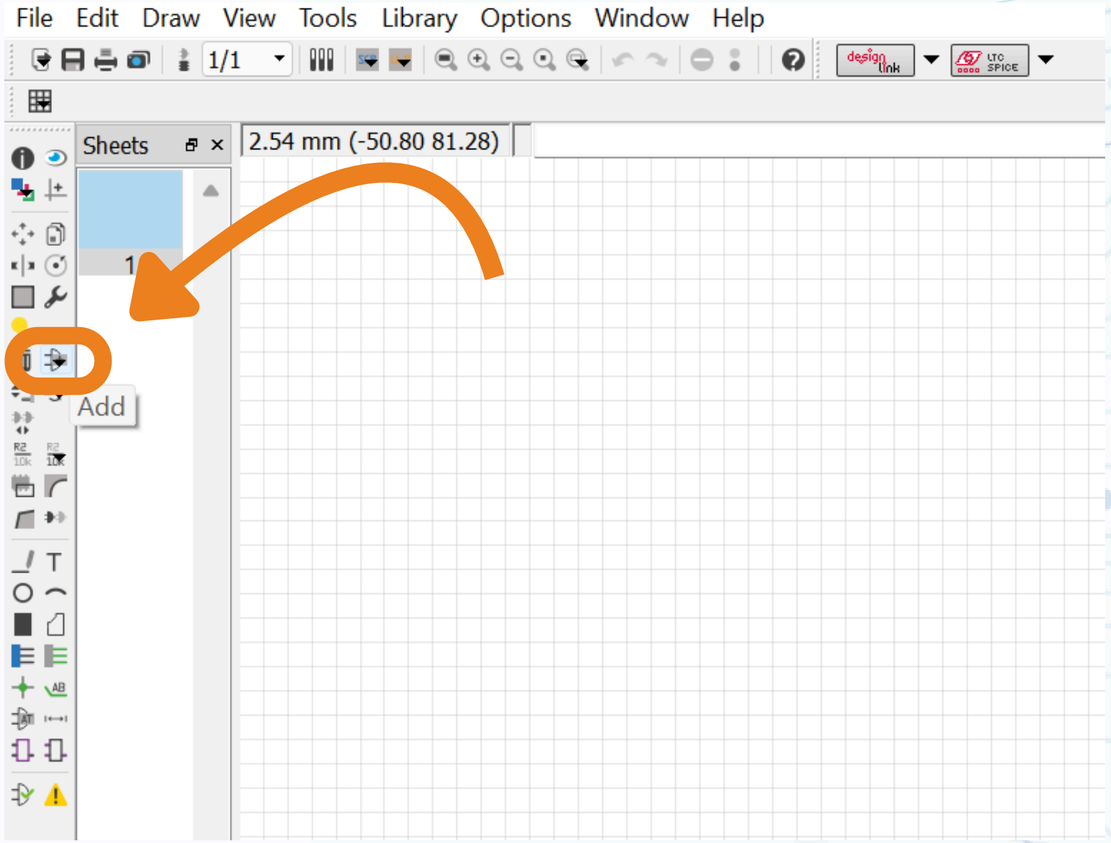
Click the Grid option

Grid Configuration

Display	ON
Style	Lines
Size	2.54mm
Alt	0.1mm

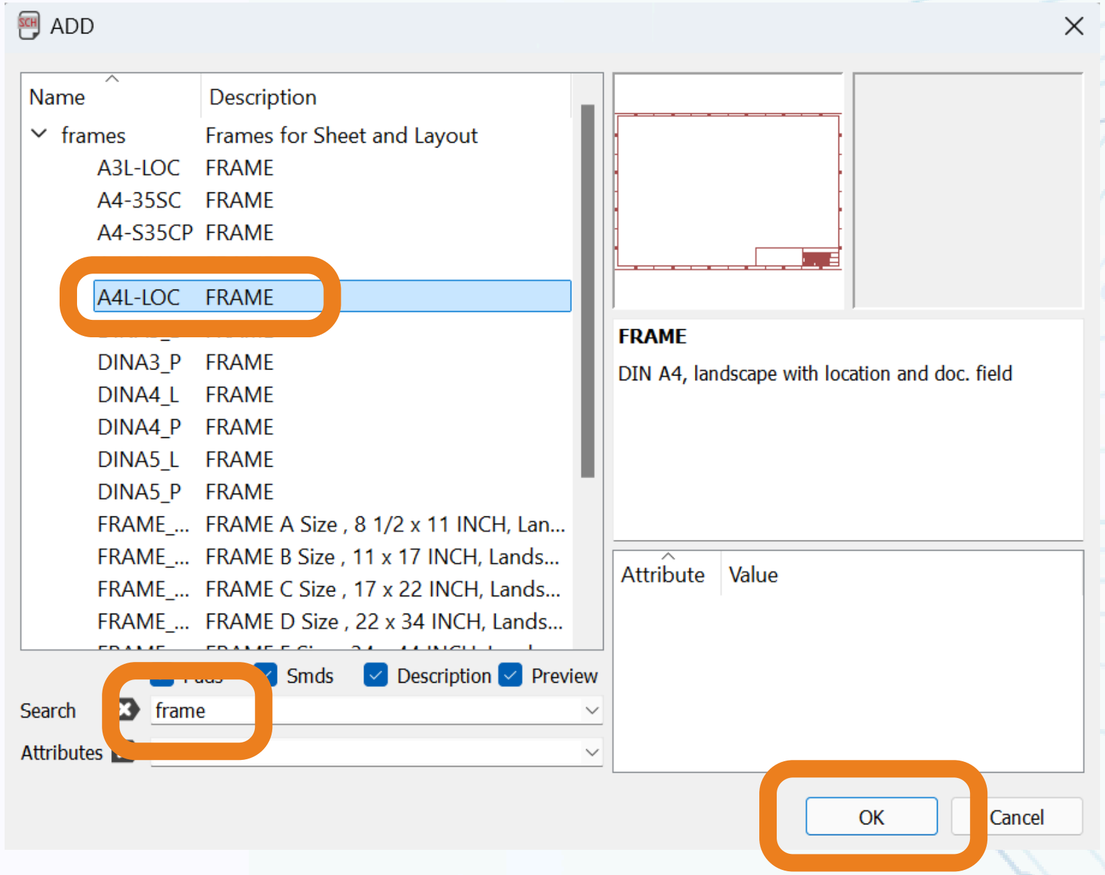


Add Frame



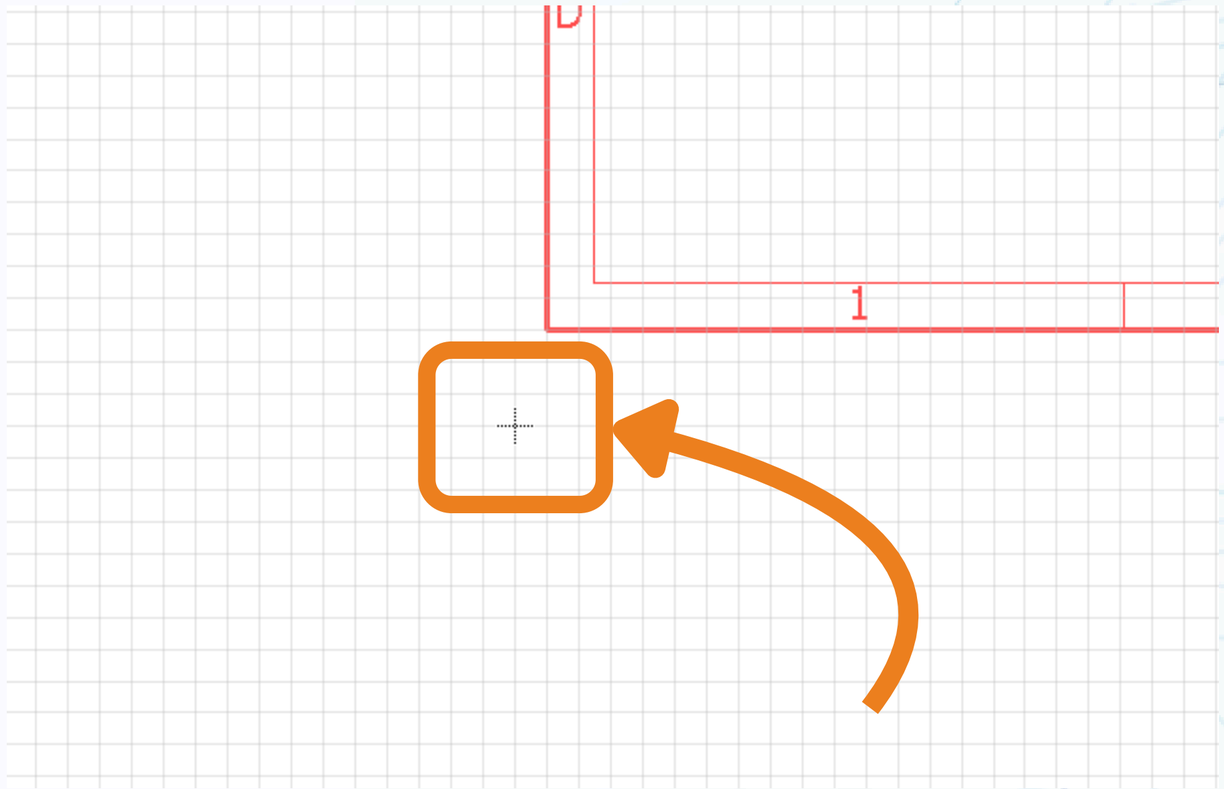
Click the Add button to select the components

Add Frame



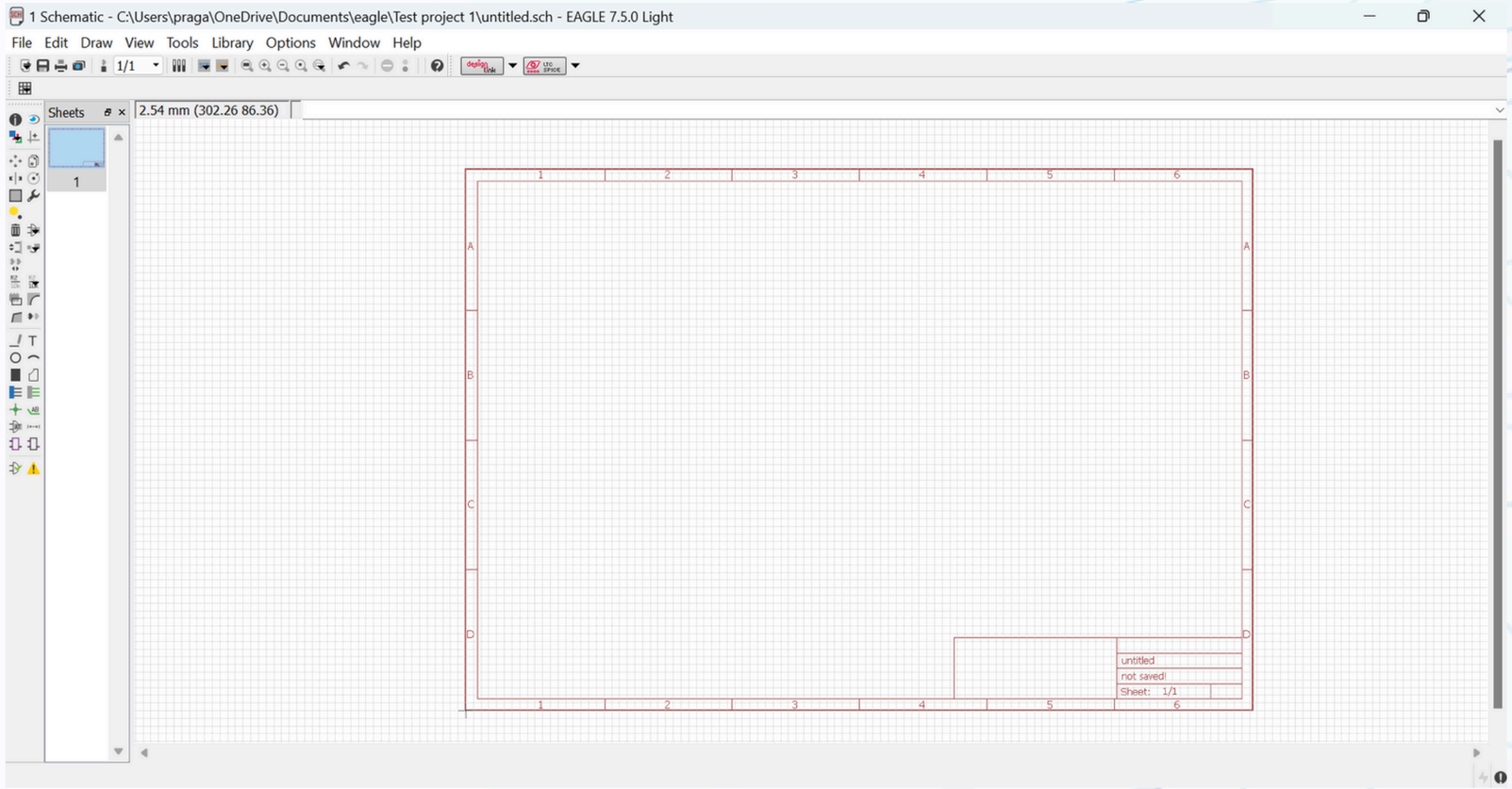
Search > Frame > A4l-loc > OK

Add Frame



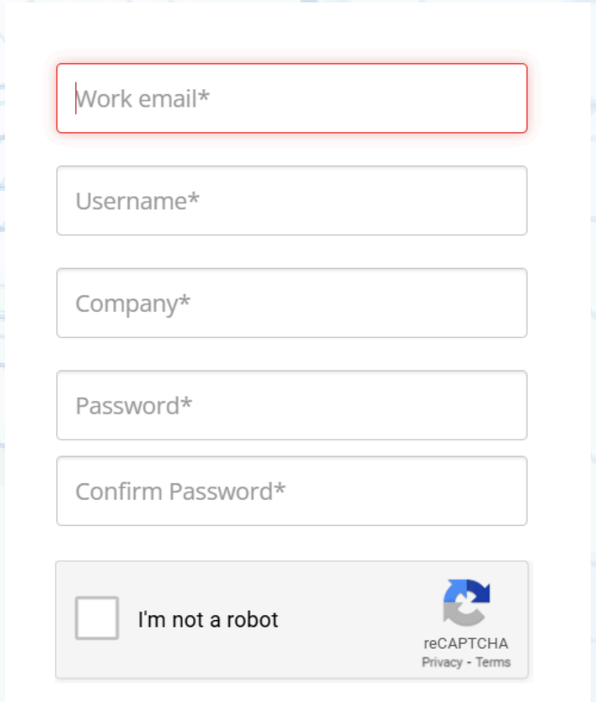
Place the frame in that Origin point

Schematic Sheet

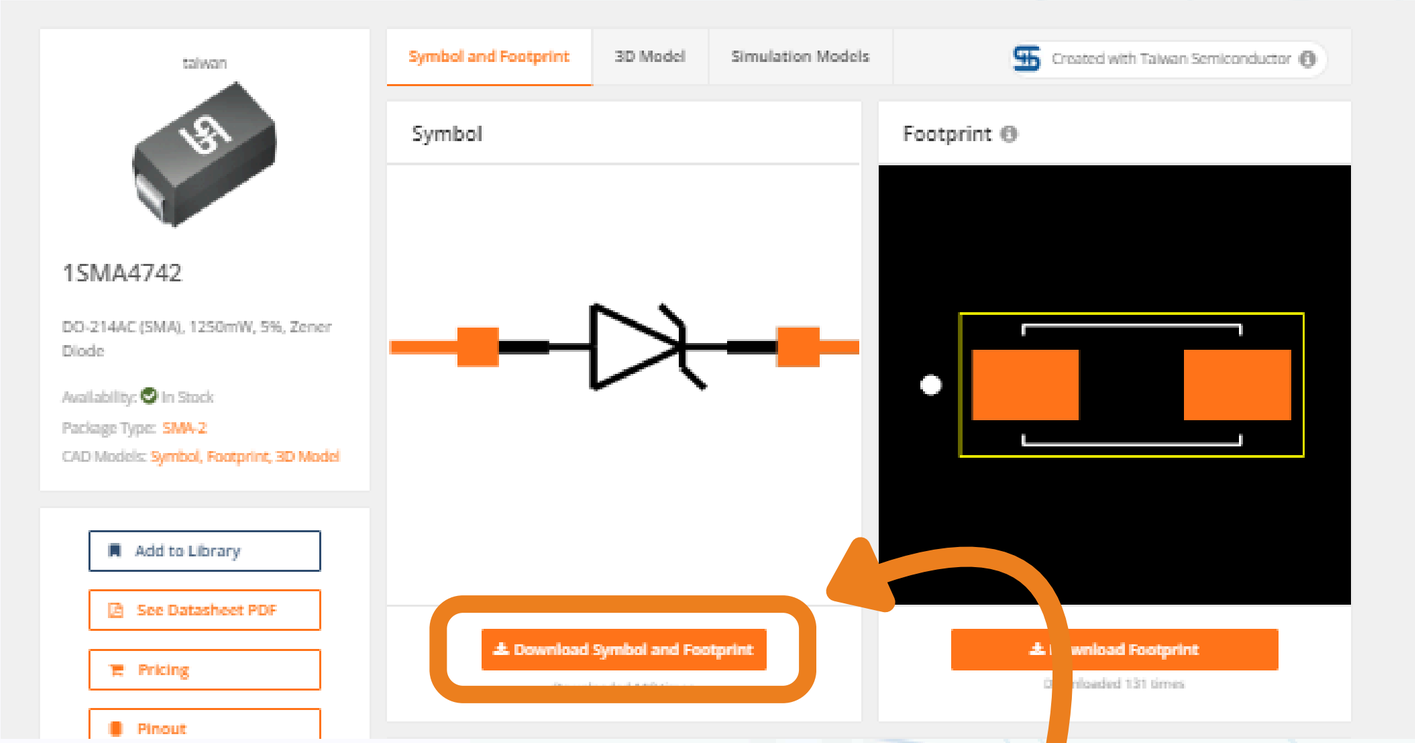


Snapeda

Signup to the Snapeda library tool

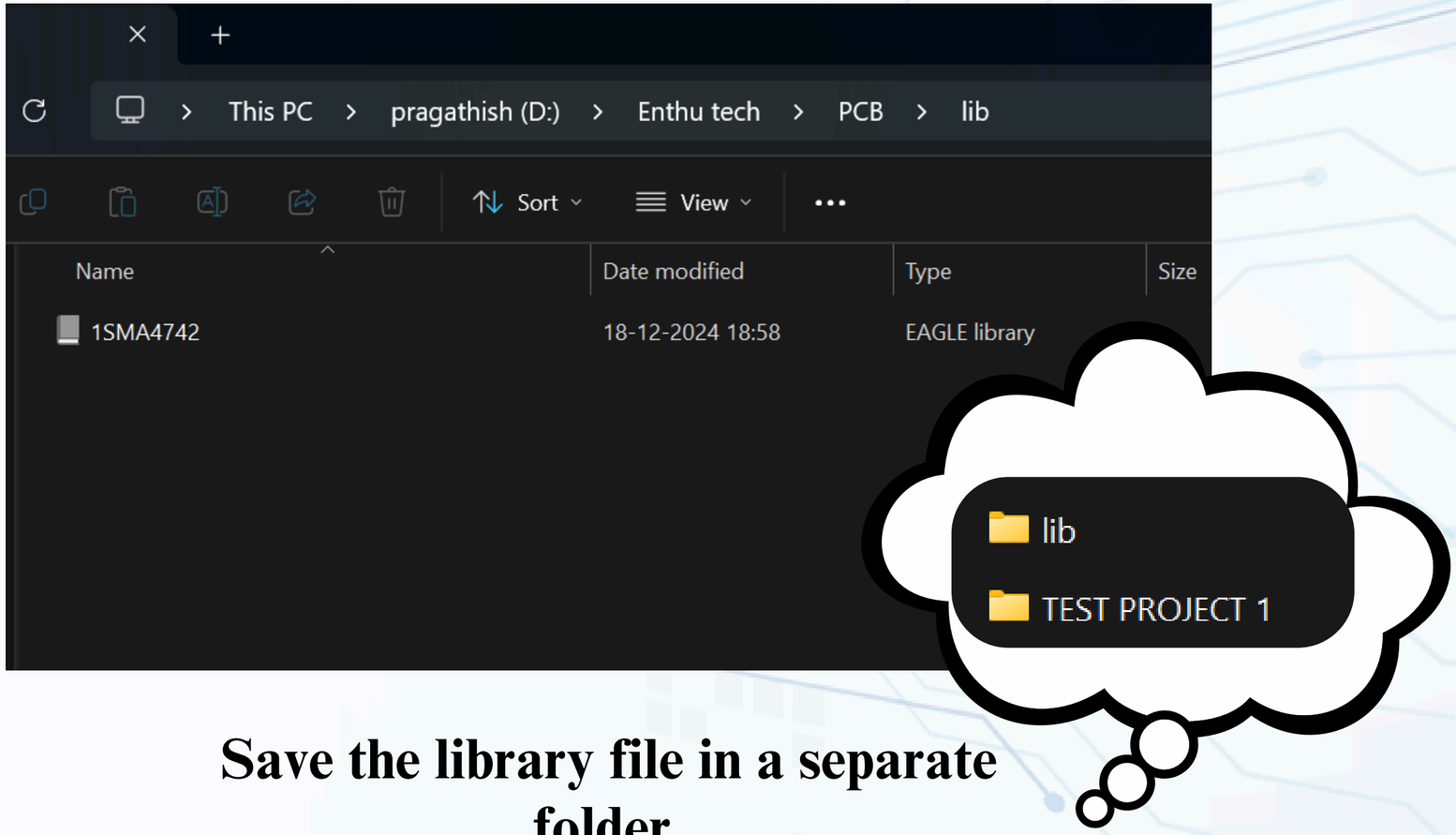


Library downloading



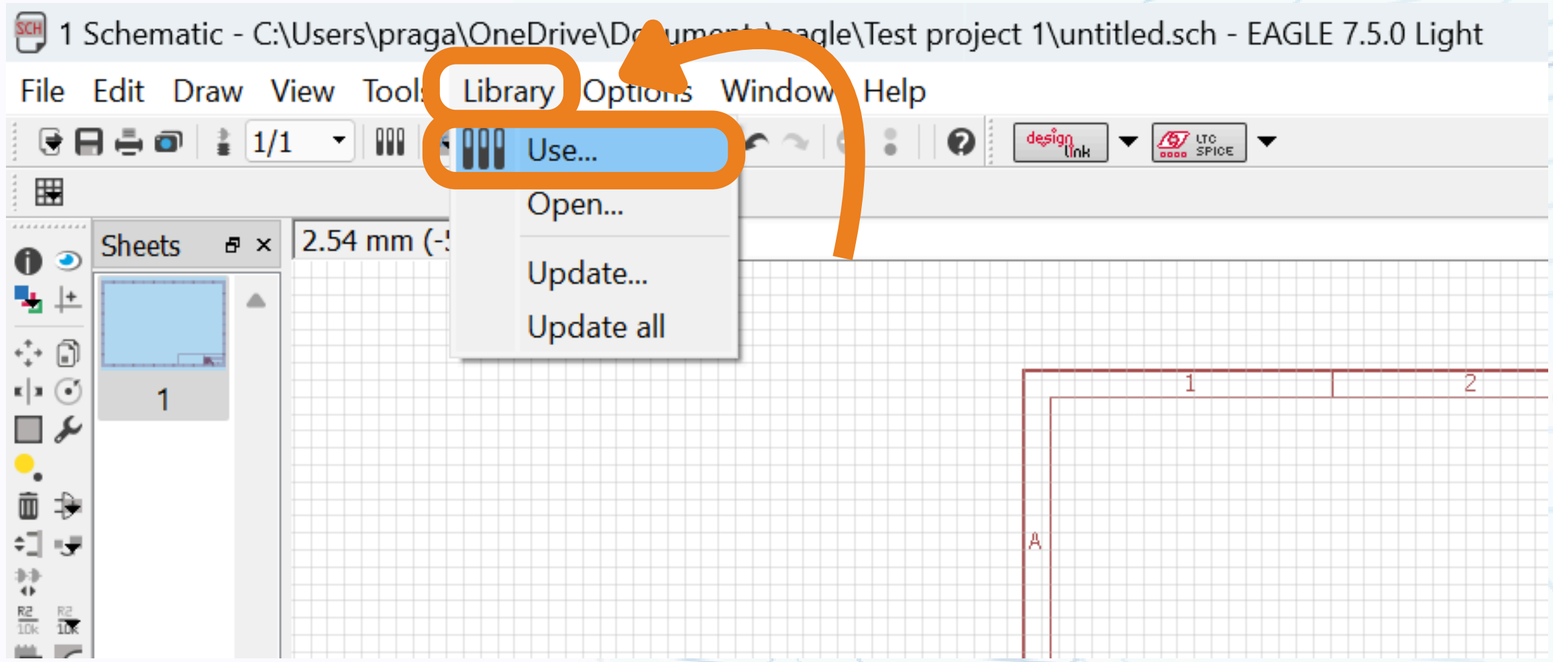
Download symbol and footprint

Library downloading



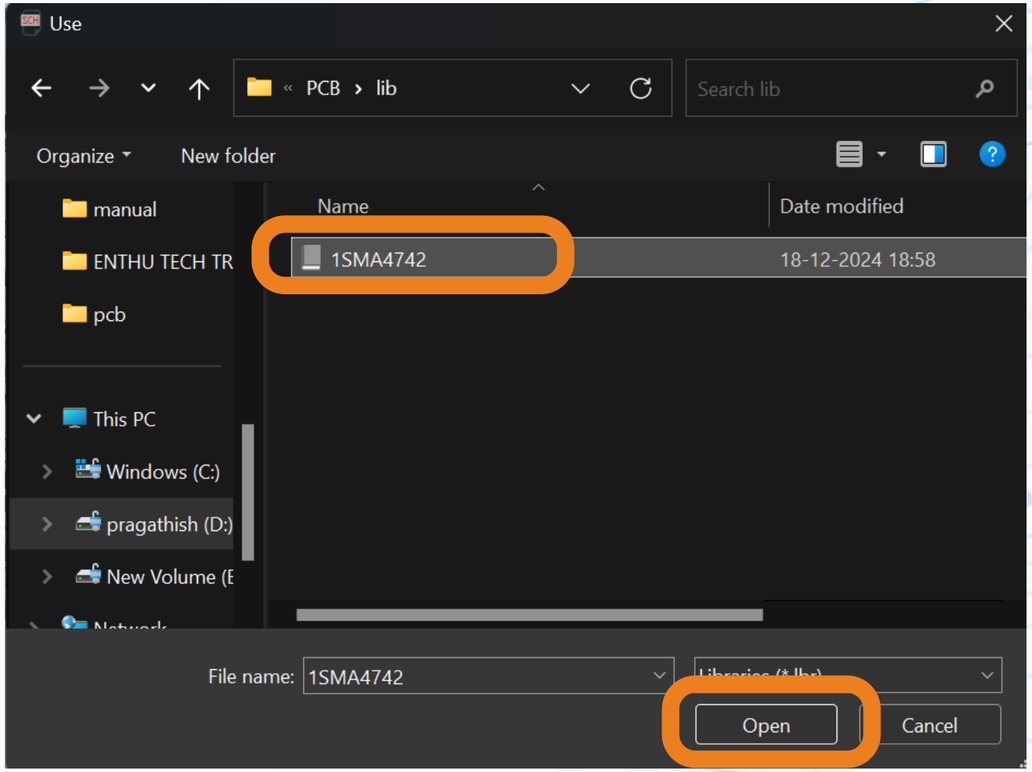
Save the library file in a separate folder

Importing Library File



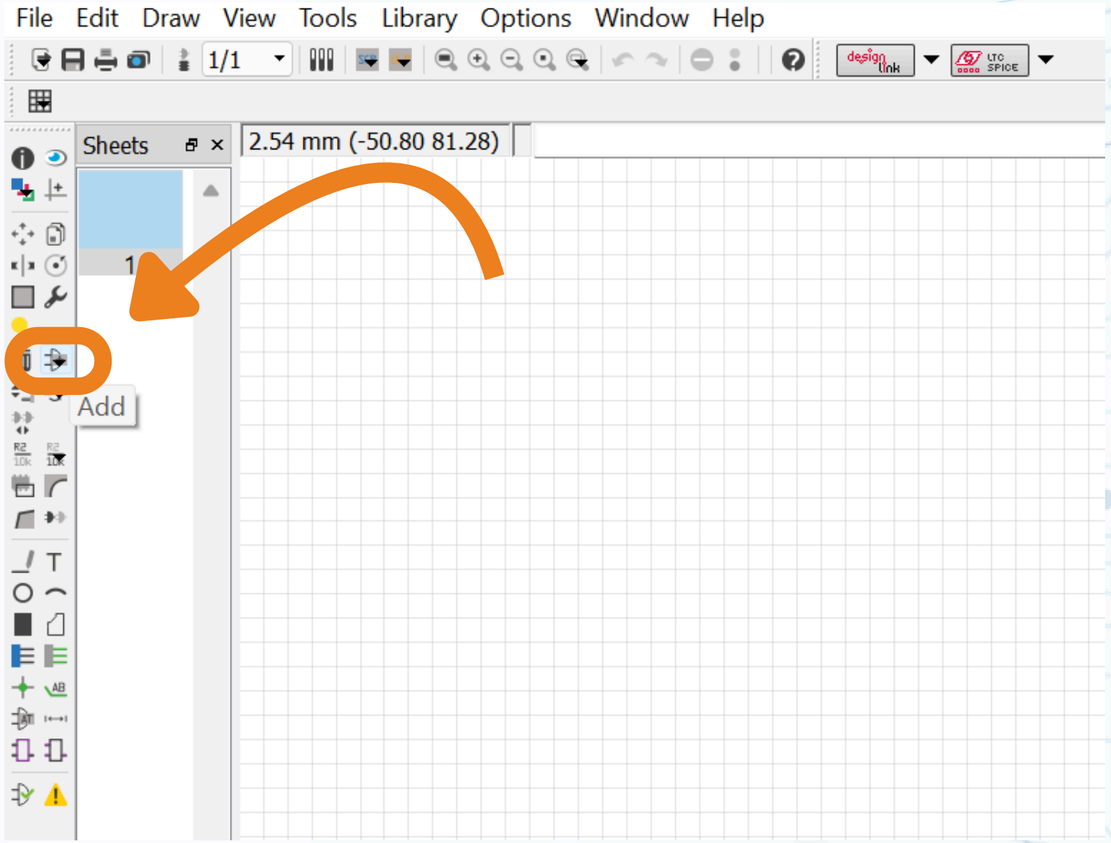
Click > Library > Use

Importing Library File



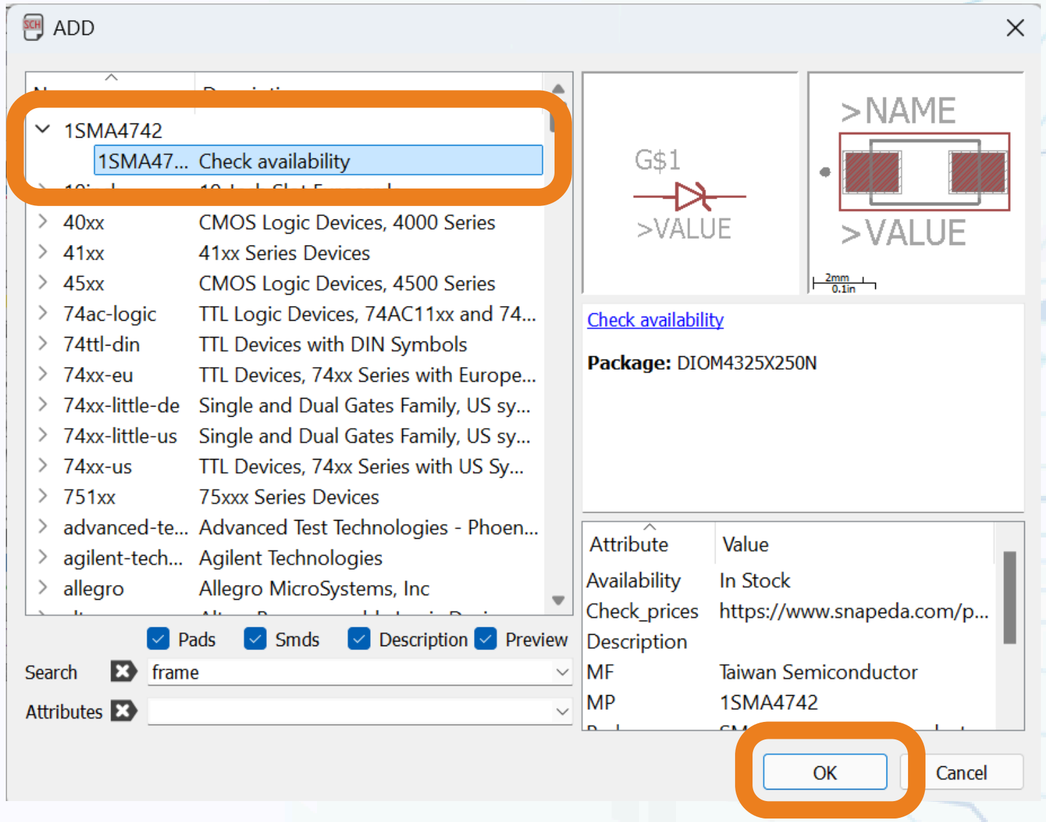
Select the Component > Open

Add Components



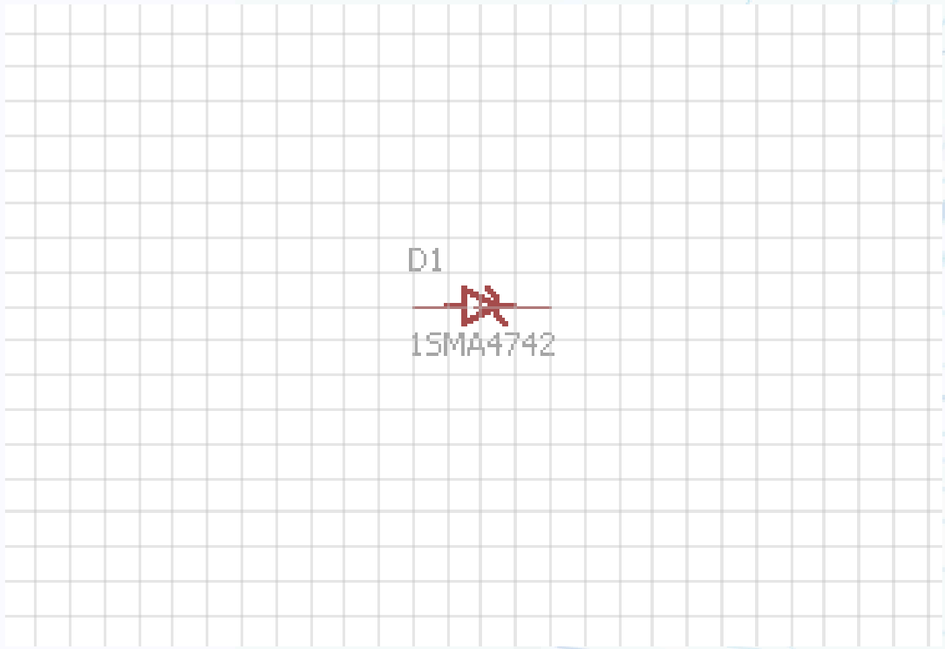
Click the Add button to select the components

Add Components



Select the component > Click OK

Component Import



By this method you can import multiple Components

Thank You