Write an essay on the topic you have chosen for your final presentation. The essay should consist of three main parts: an introduction, a body (containing at least three paragraphs) and a conclusion. Write around 500 words in total.

In present days there are two main trends in house electro installations. The first one is commonly used. It is basically about wires connected between power source, switches and lights. It is very basic, but it works perfectly for the long time. Another trend is to use smart devices to control house installation – PLC for example. They are smart but not enough. But there can be a third approach.

Speedy is project focused on really smart house installations or smart grids. What is the main difference between Speedy idea and PLC structure? PLC uses permanently connected parts using wires. On the other hand Speedy uses data to control whole network and it's made of so called concentrator units and sensors. Therefore it is completely different approach because this sensory network is mostly about data handling rather than about electricity.

This idea gives us unimaginable flexibility. You can do whatever you want to do. Need to change network arrangement? Easy, just move it. No need for changing complicated wired structure. There are of course some limitations, but the benefits are significantly higher.

Concentrator units are written in C language usign Cube libraries. This means they are very lightweight and quick. There is also no need for extra power source, because we can use PoE (Power over Ethernet) for example, but sometimes it is required. It depends on connected devices. Concentrator units are connected to the server written in NodeJS with Redis database. NodeJS also provides website interface therefore it is possible to control whole network over the Internet. Website browser and server are connected using websocket technology it means there is minimum delay and the network is nearly real-time. It cannot be real-time due to ethernet connection.

Each connected device is able to send digital information to the server and of course receive information. This is one of the biggest advantages and also disadvantages at the same time. Working with digital data is very useful – it is possible to easily adjust signal parameters or apply math functions to the signal. It is very powerful. However it is obvious that we need unified devices so they are able to understand and use communication protocol. Let's talk a little bit about protocol. Communication is provided by standard TCP or UDP, but message format in the datagrams is RESP (REdis Serialization Protocol). It is easy to understand – and what is more important – easy to parse in one iteration. Therefore it is perfect choice for data streaming. It is also possible to send data directly to the Redis database using TCP.

Speedy gives us new opportunities to work with connected devices in the house. Due to its characteristics it is more suitable for offices or cellular buildings. Also it is very new and it needs some time to fix known issues and improve stability. Despite this issues it has enormous potencial because it is not intended only for buildings but simmilar approach can be implemented in whole cities in form of smart grid, between cars or even between cities.