Instruction Sheet for
OpenPLC with LDmicro
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## 1 Online / Offline content

1. The online content of Spoken Tutorials can be accessed from : https://spoken-tutorial.org/tutorial-search/
2. You can also download the Spoken Tutorials for offline learning from : https://spoken-tutorial.org/cdcontent/
3. From this link download the FOSS categories in the language you wish to learn.
4. The Spoken Tutorial content will be downloaded as a zip file on your machine.
5. Extract the contents of the zip file & access them.
6. Read the README.txt file and do as instructed.

## 2 The procedure to practise

1. You have been given a set of spoken tutorials and files.
2. You will typically do one tutorial at a time.
3. You may listen to a spoken tutorial and practise by reproducing all the steps shown in the video side-by-side.
4. If you find it difficult to do the above, you may consider listening to the whole tutorial once and then practise during the second hearing.

## 3 Side-by-side learning video (Only for offline content)

1. Go to the folder name spoken on your machine.
2. Locate `index.html` file.
3. Open this file with either Firefox or Chrome web browser.
4. The Side-by-Side learning video will appear. This video will explain how to learn from the spoken tutorials.
5. Click on the Play button to play the video.
6. Note all the steps explained therein.

## 4 OpenPLC with LDmicro

1. Click on `"Select FOSS"` or `"All FOSS Categories"` drop-down and choose `" OpenPLC with LDmicro"`.
2. Click on `"Select Language"` or `"All Languages"` drop-down and choose the language `"English"`.
3. Click on `"Submit"` button.
4. You will see a list of tutorials based on your selection.
5. Start with the first tutorial in the displayed list.

## 5 General Instruction about OpenPLC with LDmicro series

1. Each tutorial explains control logic using LDmicro ladder logic program.
2. LDmicro software is used to simulate the control logic that is created by a user.
3. In this series, ladder logic program is explained in simulation mode as well with the hardware kit.
4. The LDmicro software user interface is different in Windows and Linux environment.
5. In Linux, we have made the toolbar for easy access of frequenly used instructions.
6. In Windows, the user has to choose the instructions from the menu bar.

## 6 First tutorial: Overview of OpenPLC with LDmicro

1. Locate the topic `"OpenPLC with LDmicro"` and click on it.
2. To view the tutorial, click on the `Play` icon which is located in the player.
3. What you can expect in this series and the content available in various tutorials in this series are covered in this tutorial

## 7 Second tutorial: Installation of LDmicro on Linux

1. Locate the topic `"Installation of LDmicro on Linux"` and click on it.
2. To view the tutorial, click on the `Play` icon which is located in the player.

3. How to install LDmicro, AVRDUDE and Drivers for USBasp programmer in Linux OS is covered in this tutorial.

# 8 Third tutorial: Installation of LDmicro on Windows

1. Locate the topic "Installation of LDmicro on Windows" and click on it.
2. To view the tutorial, click on the Play icon which is located in the player.
3. How to install LDmicro, AVRDUDE and Drivers for USBasp programmer in Windows OS is covered in this tutorial.

# 9 Fourth tutorial: Introduction to LDmicro

1. Locate the topic "Introduction to LDmicro" and click on it.
2. From this tutorial onwards, all the topics are common for Linux and Windows learners.
3. Follow all the instructions properly while practising.

## 9.1 Instructions to practise

(a) Create a folder on the "Desktop" with your "Name-RollNo-Component". (Eg. "asha-04-openplc").
(b) Give a unique name to the files you save, so as to recognize it next time. (Eg. "openplc-1-asha").
(c) Remember to save all your work in your folder.
(d) This will ensure that your files don't get over-written by someone else.
(e) Save your work from time to time, instead of saving it at the end of the task.

## 9.2 Common instructions for Assignments

(a) Attempt the Assignments as instructed in the tutorial.
(b) Save your work in your folder.

## 9.3 Common instructions to use Code files

(a) Click on the link "Code files" located below the player and save it in your folder.
(b) Extract the downloaded zip file.
(c) You will see all the code/source files used in the particular tutorial.
(d) The .ld file can be accessed by opening them in LDmicro using Open option under File menu
(e) The ladder diagram can then be compiled to generate a .hex file.
(f) Or you can download the .hex file from Code files which can be uploaded to the Mainboard directly.
(g) It is not recommended to download the Code files without understanding the working.
(h) Follow all the steps as shown in each tutorial and understand the working of each instruction.

4. Play-pause-practise the whole tutorial.
5. Once the tutorial is complete, choose the next tutorial from the playlist which is located on the right side or below the player.
6. Follow all the above instructions, till you complete all the tutorials in the series.

# 10 General instructions for Windows users

1. In the "Programming OpenPLC" tutorial, we have specified how to run the avrdude command for windows user.
2. Open the command prompt in windows and go to the folder where the .hex file has been saved.
3. Type the command as shown in the video at 2:30 of "Programming OpenPLC"
4. sudo has to be used only in Linux machine