**PCB Artist Introduction**

**1th Laboratory Report for ECE383**

**Microcomputers**

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**Abstract**

The objective of this lab which are getting familiar with composition, glossary and design of PCB boards and how to use PCB design software which is PCB Artist is simple, because this is our first lab in this semester. The whole lab contains 1 prelab and 3 tasks. The prelab focus on learn basic knowledge of PCB boards and PCB Artist. In the lab part, we create timer in schematic and PVB layout, then we create microcontroller in schematic symbol library and components library. In the whole process, we understand the PCB board and how to use PCB Artist.

**Introduction**

The purpose of task 1 have let us familiar with PCB board and PCB Artist, we also practice create schematic circuit through PCB Artist. In task2, we create 555 timer circuit schematics with PCB artist; then in task3, we convert the schematic to PCB layout. In the final task, we create PIC24HJ128GP502 microcontroller and save in the new library.

**Procedure/Results**

**Task1(Prelab)**

A screenshot of a cell phone

Description automatically generatedIn the task one, we firstly watch step-by-step video and create the schematic circuit.

Then we talk through the two question.

1. Materials of 4 layers of PCB board:

Silkscreens – the top layer, above the solder mask, adds different indicators for the PCB, shows

what each of the nodes and soldering should do for a better understanding of what the parts on

the board represents.

Solder Mask – Above the copper foil, makes the PCB appear green, insulates the copper.

Copper – Can be on one or two sides and is a thin layer of copper applied to the substrate.

1. Glossary

a) Finger – Metal pads that make the connection between two circuit boards.

b) Pad – A place on a PCB that has bare metal where a component is soldered to the board.

c) Panel – A larger PCB that will be later split into multiple smaller PCBs.

d) Plated through hole – Any hole on the board which has 1) an annular ring and 2) is plated through the board

e) Silkscreen – the top layer of a PCB which contains information about the board, printed directly onto the board.

f) Solder mask - a covering, insulating layer above the copper foil, which gives the PCB its color.

g) Surface mount – A method of developing PCBs that does not require leads passing through holes in a board.

h) Via – A hole in a PCB that allows a signal to pass through to the other side of the board.

**Task2**

A screenshot of a social media post

Description automatically generatedIn the task2, we create the schematic circuit for 555 timer using PCB Artist Software.

**Task3**

In the task3, we convert the schematic circuit to the PCB layout.

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**Task4**

**Part 1** Library Creation Tutorial

In this part, we mainly focus on the tutorial given by the software. Firstly, we create a schematic component and add into the library. Then we create another new PCB layout component and add to the PCB Symbols library. Finally, we create a new component through two subcomponent creates by previous two steps.

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A close up of a screen

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**A screenshot of a cell phone screen with text

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**Part 2** PIC24HJ128GP502

In this part, we create a schematic symbol through symbol wizard tool and add to schematic symbol library. Then we also create a component in the component library.

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A screenshot of a video game

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**Conclusion**

The purpose of the first lab is learning experience for the PCB Artist program. We were taught how to create basic circuits and components in PCB Artist. We now know how to properly create symbols, printed circuit board layouts, and how to access many of the libraries available in the PCB Artist program. Overall, we now have a better understanding of printed circuit boards and the PCB Artist program.