Digital Electronics

Practice

Bachelor in Computer Vision

Cedric Lemaitre
c.lemaitre58@gmail.com

Digital Electonic simulation tools

We propose in this labs to create a tools to make to automatized the simulation and the understand of a logic function. Use python language to create the following tools. The tool is based on 2 major class : Wire and Gate.

- Wire allows to connected component. Wire is connected on a unique output component and is connected on a multiple input component.
- Gate contains function which describe behavior : AndGate, OrGate...

Problem 1

Create a class Wire with the following attributes :

- a constructor (__init__)
- a method addDownstream which add a component addDownstream
- methods setState and getState which allow to manipulate state

Problem 2

Create some class for the gates : AndGate, OrGate, NotGate and XorGate. Each Gate have the following attributes :

- a constructeur with input and output as parameters
- an update method

Problem 3

Create a class named Senser which is a special component (Gate). This component have one input and one output. Its input is displayed each time that update function is called.

Problem 4

Create a class Display which allow to display chronogram

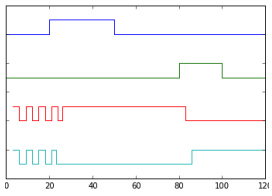

Figure 1: Example of chronogram

Problem 5

Create a class which allow to realize the Karnaugh simplification

Problem 6

Try your software on the following function

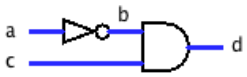

Figure 2: Example 1