SYNOPSIS

Project Group No: 21SOCUGE022

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Project Title: Open Source Python Library For Hardware Design

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Abstract:

Electronic devices are presently used in a lot of homes, industries and almost in every nook and corner of the world. Most of the devices are built based on circuits and circuit logic. Circuit designing and visualization is necessary before implementing them in real world applications. To perform this, programming languages like HDL and Verilog HDL (VHDL) are used. But the drawback is that simulation is a time consuming process and the software is a licensed one.To overcome this Python is used for Hardware design which has richer programming semantics and also is much easier to compile.For visualization, the already existing packages do not give a good representation and hierarchy is not good. Hence a package for creating hardware design is built from scratch using some layout algorithms to give a beautiful, hierarchical and neat circuit with reduced number of crossovers.

Specific Contribution:

- Providing hierarchical visualization for the circuits
- Reduce the crossover of circuits

Specific Learning:

- Creating data structures for components of circuits
- Logic and Simulation for hardware designing

Technical Limitations:

- Calculation of crossover summation of the whole hierarchy is mathematically tough to decode based on the graphical representation. Matrix representation helps to overcome it.

Keywords: Hardware definition Language(HDL), Verilog HDL, Python, Crossover

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