当Python遇上FPGA

PYNQ开源项目的实践与体会

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目录

- FPGA 35th
- Computer Architecture Golden Age
- PYNQ Open Source Framework
- How Python helps, really a lot..
National Inventors Hall of Fame

Integrated Circuit
Jack Kilby, 1958

Moore’s Law
Gordon Moore, 1968

FPGA
Ross Freeman, 1984
Field Programmable Gate Array

Look-Up Tables (LUT)
* Look-up table with N-inputs can be used to implement any combinatorial function of N inputs
* LUT is programmed with the truth-table

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>A B C D</td>
<td>Y</td>
</tr>
<tr>
<td>0 0 0 0</td>
<td>0</td>
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<tr>
<td>0 0 0 1</td>
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<td>0 0 1 0</td>
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</table>
Field Programmable Gate Arrays (FPGAs)

Unprogrammed configuration memory

Unconfigured logic circuit

‘Programmed’ configuration memory

‘Configured’ logic circuit

Credit: ‘Bebop to the Boolean Boogie: An Unconventional Guide to Electronics’
Transformation Through Innovation

World's First FPGA

1980

Virtex-2 Pro

First Virtex FPGA

1990

First 3D FPGA & HW/SW Programmable SoC

2000

First MPSoC & RFSoC

2010

ACAP

2020
Driving Adaptive Computing with Versal

The World’s First Adaptive Compute Acceleration Platform

Scalar Processing Engines

Adaptable Hardware Engines

Intelligent Engines
SW Programmable, HW Adaptable

Breakout Integration of Advanced Protocol Engines
THANK YOU

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