

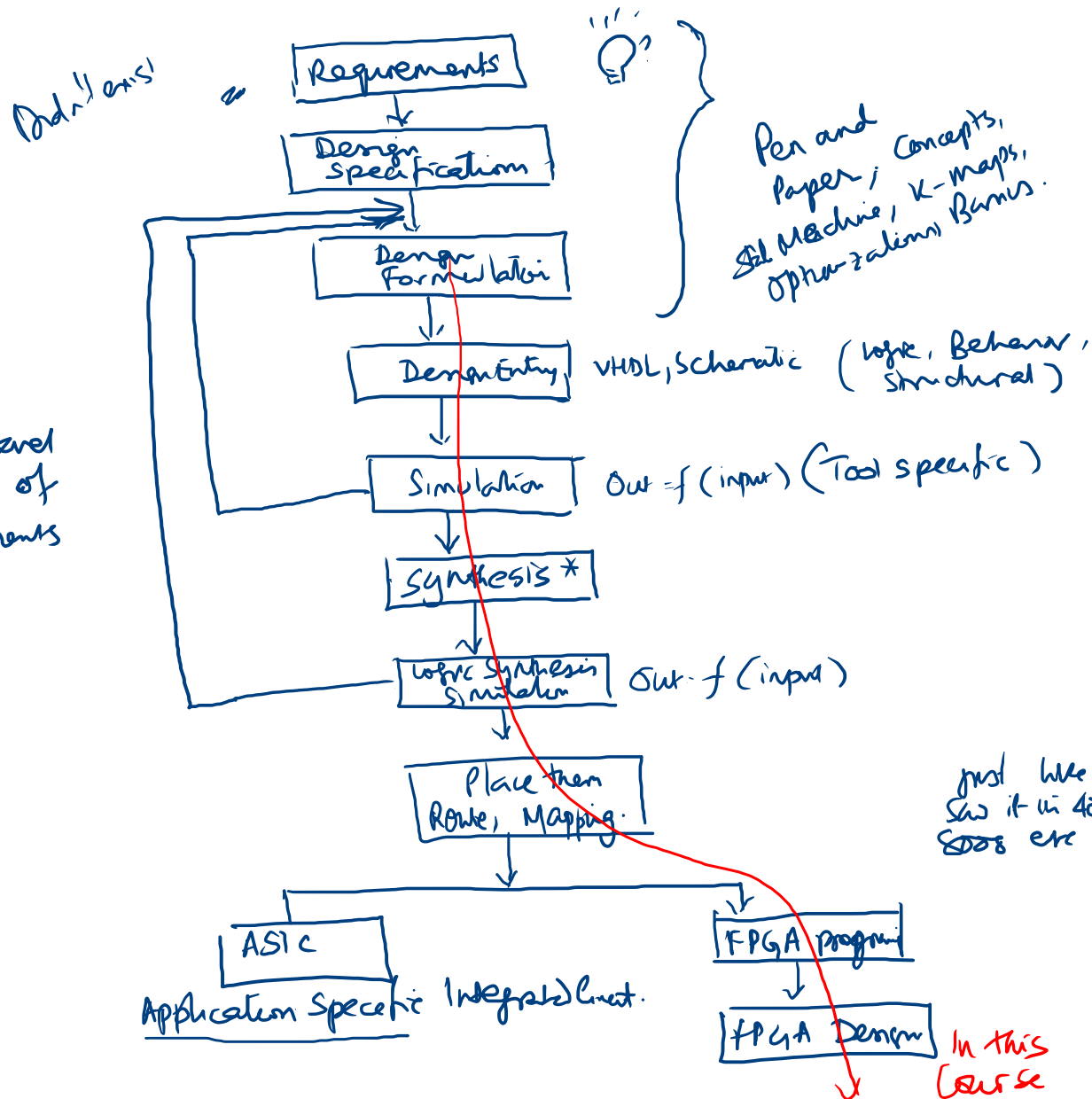
10 Tx - SSI - Small Scale Integration
 100-1000 Tx - MSI - Medium " " } By hand
 10,000 - LSI - Large " " }
 100,000 - VLSI - Very Large " " }

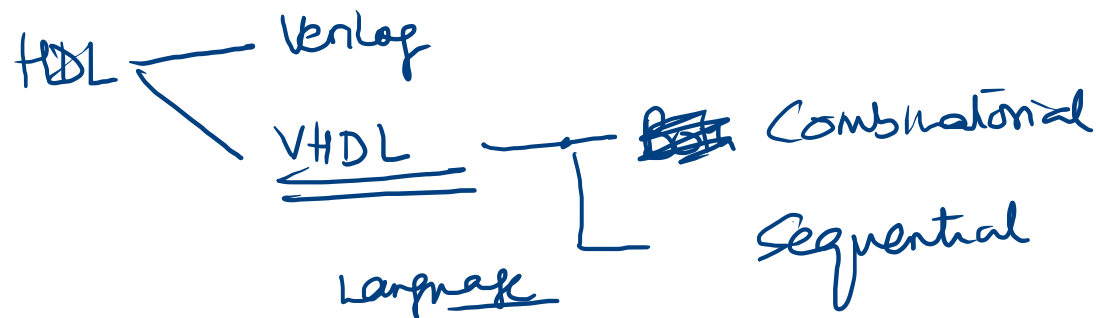
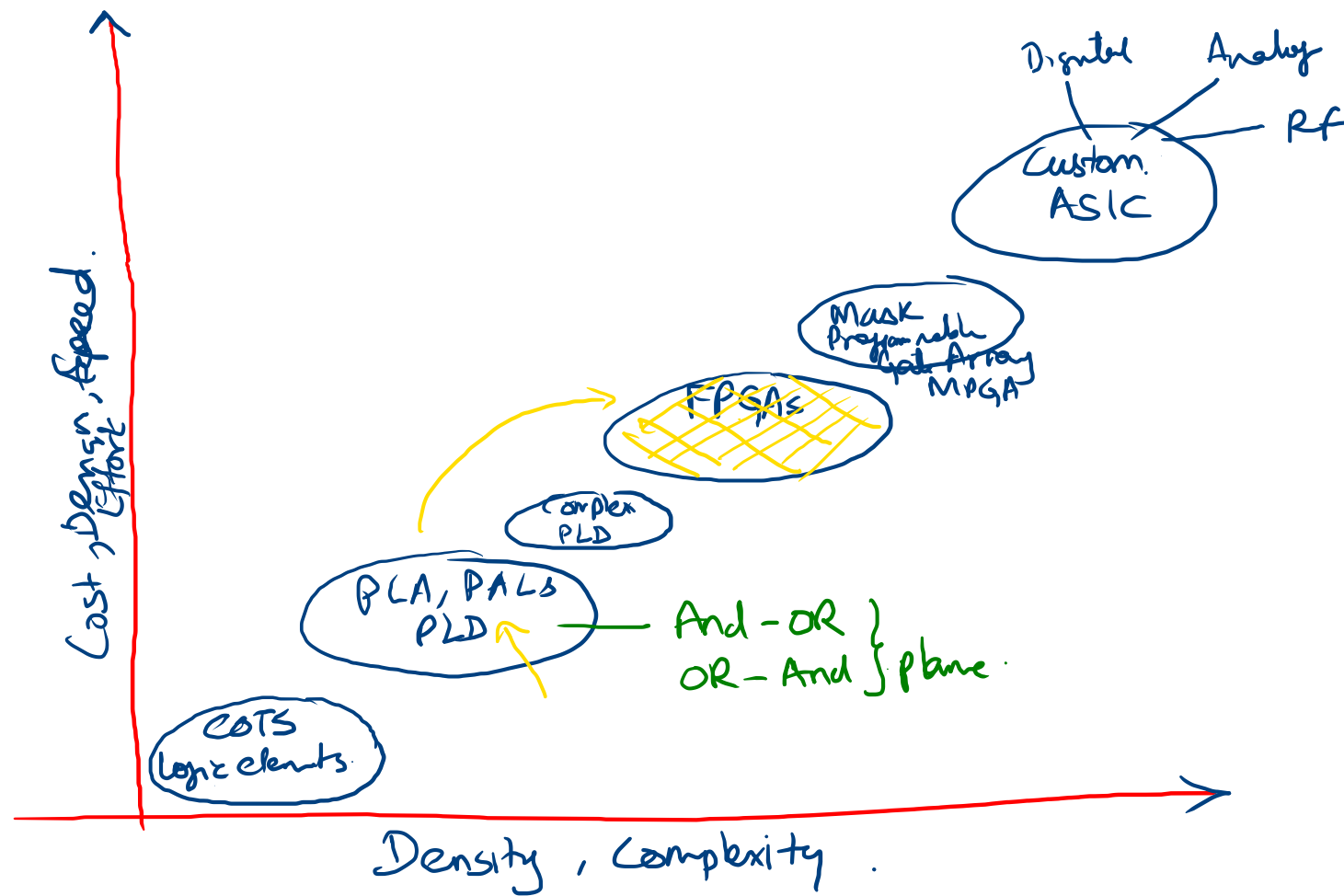
So they relied on CAD - Computer Aided Design.

if then else
for ...

Analog Digital
 Logic - Languages
 (high level)

HDL - Hardware Description Language
 Verilog (C like) VHDL - VHSIC Hardware Description Language
 Very high speed Integrated Circuit





Difference between the Verilog & VHDL

with the language construct.

- Verilog - C like language construct
- VHDL - more customized specifically to express/define hardware.

Both do the something

- they produce or help in defining the digital circuit as HW.
- They tools are the same (Compiler, Simulation)

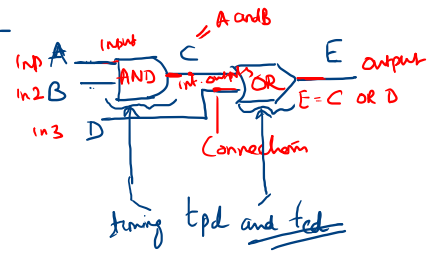
tool friendly.

Reserved words, Identifiers

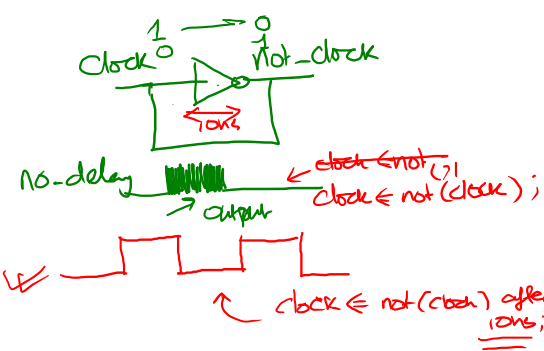
Governed by a standard called as IEEE VHDL-87 IEEE VHDL-93

VHDL for Combinational Circuits:-

$C \leftarrow A \text{ AND } B$ after t_{pd} ;
 $E \leftarrow C \text{ OR } D$ after t_{pd} ;
 5ns

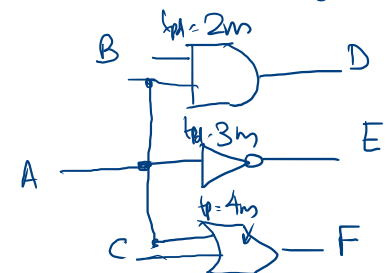


In the absence of any delay.
 These are called zero delay and the models or constructs are called zero delay models.



In any languages-

- Identifiers
- Reserved words.
- Special Symbols.
- Literals
- etc.



$D \leftarrow A \text{ AND } B$ after 2ns;
 $E \leftarrow A \text{ OR } C$ after 3ns;
 $F \leftarrow C \text{ OR } D$ after 4ns;

You can also define bus wide signals.

$E : \text{in bit-vector}(7:0);$
 or
 $\text{in bit-vector}(3:0);$
 or
 $\text{in std-logic-vector}(3:0);$

