# Are you analyzing noise?

Then meet me, I am CCC

KUNAL GHOSH

A channel connected component (CCC)

For some reasons, I feel my friends in CAD company or my leads are not able to introduce me very well to you.

So here I am, like an open book, fully simplified. Glad to meet you

Myself, Channel Connected Component or CCC as I am being called by noise analysis engine architects. And to identify me in a circuit, you just need to know, I have 3 rules as shown in below image:
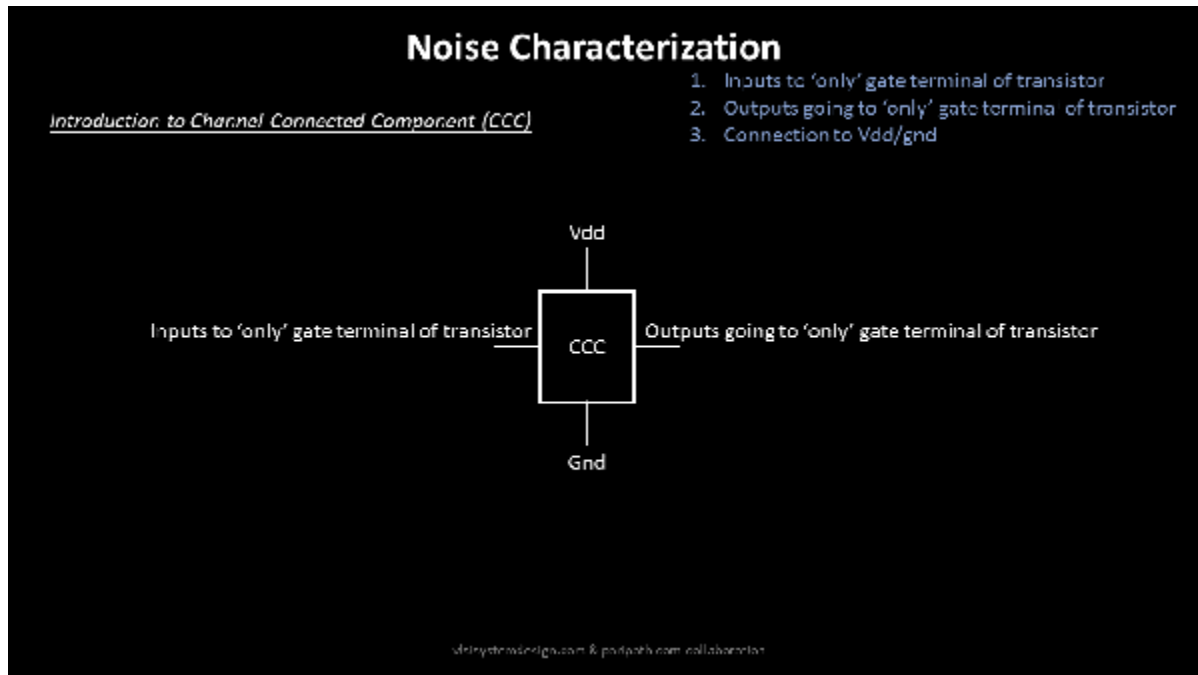
My first rule – I receive my inputs only at my gate terminal of transistor that's inside me

My second rule – I send outputs only to gate terminal of transistors lying outside my territory. I can also send outputs to a Primary Output of a logic device

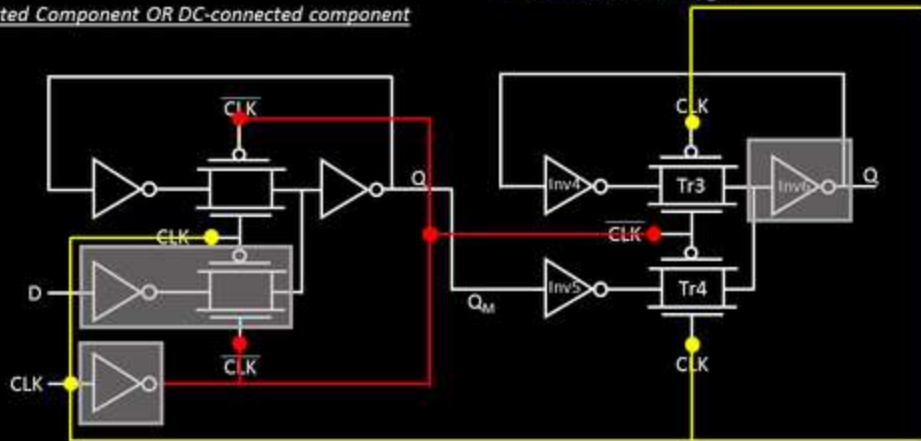**My third rule** – I have top notch connections to VDD and/or GND

Now I think, that's not enough unless I show up myself to you inside a flip flop. So meet me in below image. I am sitting inside every logical gate, like Flipflop below:

Now my friend 'inverter' is not called as a CCC, unless he follows the rules I just mentioned above. Sometimes, he does follows all rules and gets recognized as a CCC. So, in above image, some of my 'inverter' friends do follow the rules, while few of them doesn't. The highlighted one's are me, being categorized as CCC.
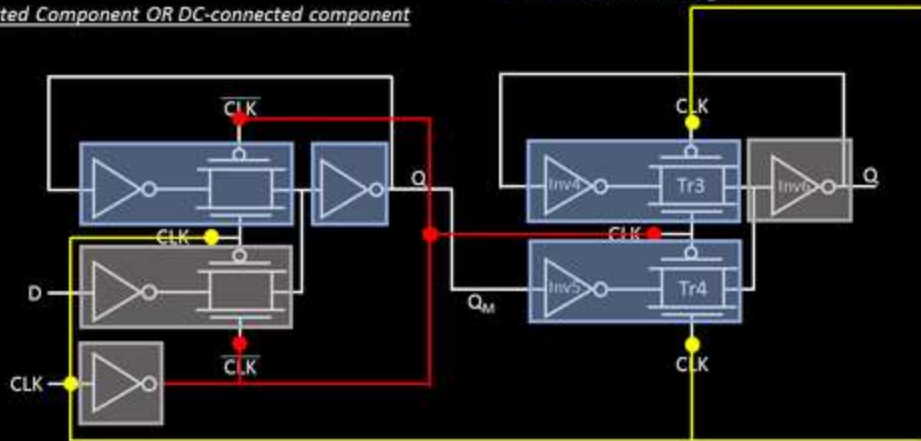
I do have some more friends like me inside above flipflop. I am shading them as blue in below image, for a reason.

Noise Characterization

Introduction to Channel Connected Component (CCC)

Strongly Connected Component OR DC-connected component

1. Inputs to 'only' gate terminal of transistor
2. Outputs going to 'only' gate terminal of transistor
3. Connection to Vdd/gnd

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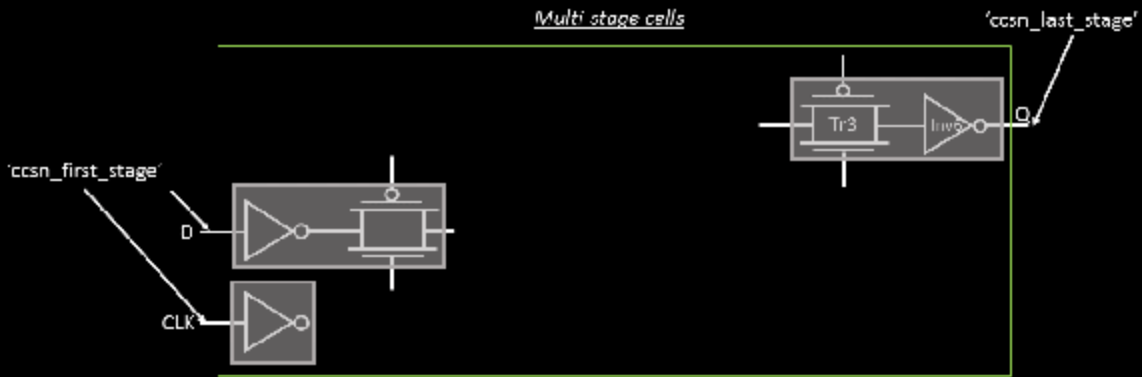
Noise Characterization

For gates like inverter, I am alone, as the inverter, by design, follows all rules which I want him to follow to be categorized as CCC. So inverters are being categorized as single-stage cells, while gates like NAND or AOI, where I am present twice, they are being categorized as 2-stage cells.

People don't talk about me much, and so I am being neglected, but not anymore, and Thanks to Kunal for bringing me on this platform before all of you…" ***The most important thing in communication is hearing what isn't said***" – Peter Drucker

happy learning