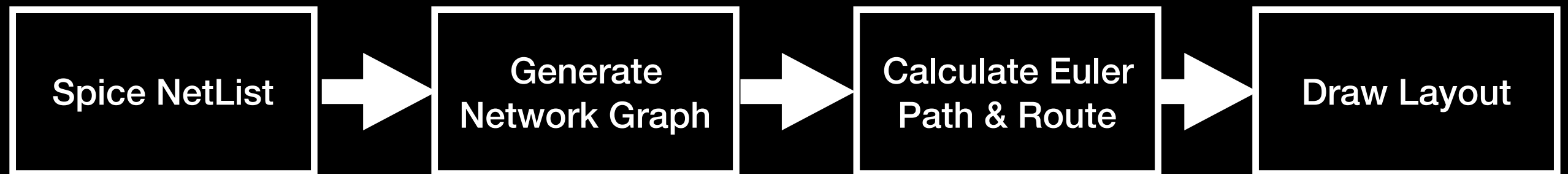


# Understanding Layout Generator

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# Tool Flow



- Write code to convert spice netlist to generate network graph and calculate Euler path.
- This seems to be very hard to do for me at the moment.
- And this is exactly what lc\_layout does.
- However, the problem is to generate layout for analog circuits.

# Challenges

- Generating the graph out of the netlist.
- Finding out the Eulerian Trail from the Graph.
- Not only that, finding out the Eulerian trail that is the same for both PMOS and NMOS graph.
- Routing the circuit after finding Euler Trail.
- I need a lot of time to think through this problem.

# Observations

- The layout painter tcl file only paints the layout if the calculations are already in place.
- The real challenge is to find the Euler Tour of the network graph. Not only that, we need to do the routing after finding the optimal placement using Euler Tours.
- The task is particularly very challenging since it asks to almost replicate lc\_layout engine.

# What is Do-able?

- Generating the Euler Path from the Graph. (That too after a lot of efforts).

# Challenges

- Finding Euler Tour is a very challenging task for me at the moment. After a lot of research, I got the source code. I tried to understand it. I am not able to completely understand it. I have tried to reproduce it. It works on my machine.
- There are certain concepts like Articulation Points and Bridges on a graph. I am yet to understand these concepts completely.
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# Work Done

- Things that I understood —> Finding if the Graph has an Euler Path. Can be found here —>
- [https://github.com/sethupathib/final\\_layout\\_generator/blob/master/EulerPath.cpp](https://github.com/sethupathib/final_layout_generator/blob/master/EulerPath.cpp)
- Things that I need to understand better —> Returning the Euler Path from the Graph. (Needs a lot of work here)

# Things to Take Care

- I have realised that there are a lot of “voids” in my Knowledge levels. I need to fill them.
- Need to write a lot of CPP code even further.
- Need to solve a lot of sub problems before solving this problem of finding Eulerian Path.
- Eulerian Path is a DIV-2/D problem on [codeforces.com](https://codeforces.com). This is a site when professional competitive programmers solve problems. I haven't reached that level yet. But hoping to reach someday.



# Sources

- <https://www.geeksforgeeks.org/fleury-s-algorithm-for-printing-eulerian-path/> (This problem is rated 4.2/5. i.e this is a very hard problem to solve)
- [https://cp-algorithms.com/graph/euler\\_path.html](https://cp-algorithms.com/graph/euler_path.html)