# EE4218 PP3 - Placement/Routing

## 1 Notes

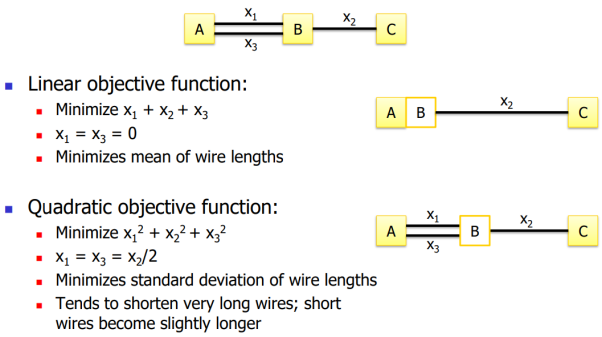


Figure 1: Analytical Placement

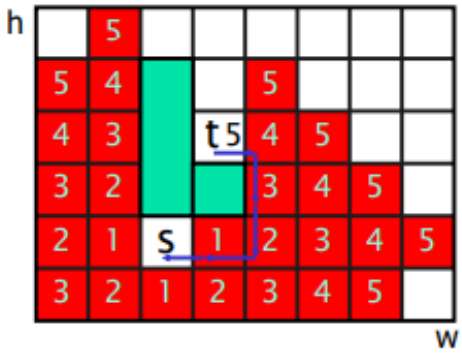


Figure 2: Two terminals

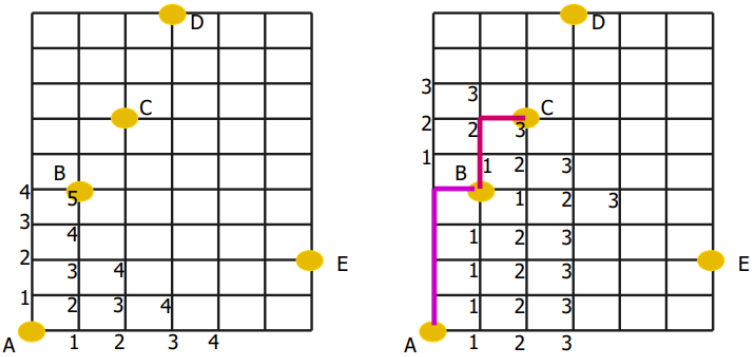


Figure 3: More than two terminals

- Suppose that we have to route from some source node $S$, to two destination nodes $D_1$ and $D_2$.
- Assume that we route to $D_1$ first, and there $\exists$ two equally optimal paths $p_1$ and $p_2$ which route $S$ to $D_1$
- Then, it is **not true** that utilizing utilizing $p_1$ to route to $D2$ is **always as** optimal as utilizing $p_2$ to route to $D_2$

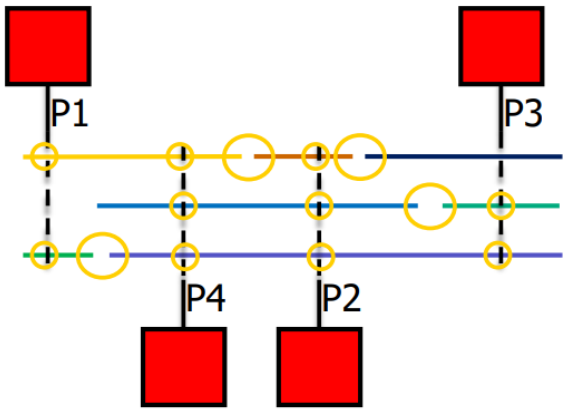


Figure 4: Connection required from P1 to P2, P3 to P4

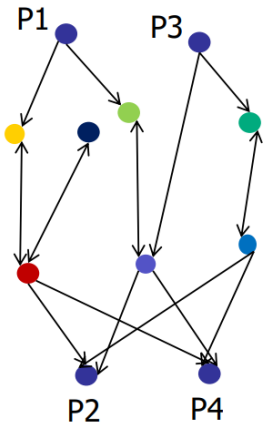


Figure 5: Graph

- *Criticality of connection* from source ($S$) to target ($T$) given by ...
  - $Crit(S,T) = 1 - \frac{Slack(S,T)}{D_{max}}$
  - $Slack(S,T)$ is amount of delay that can be added to connection, before it affects critical path delay
  - $D_{max}$ is delay of circuit's critical path
- *Cost* of using routing resource node $n$, as part of *connection* $(S,T)$ given by ...

- $Cost(n) = Crit(S,T) \cdot delay(n) + (1 - Crit(S,T)) \cdot (delay(n) + h(n))p(n)$
- $h(n)$ is historic congestion (eg. moving average of past three iterations)
- $p(n)$ is present congestion of node (ie. how many nets using node)