Petri Net Liveness

- **L0-Live (dead)**: a particular transition can never fire
  - In the figure below, $t_0$ can never fire (see reachability graph)
Petri Net Liveness

- **L1-Live**: a particular transition can fire at least once for any firing sequence
  - In the figure below, $t_1$ can only fire once, for any firing sequence (see reachability graph)
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- **L2-Live**: a particular transition can fire $k$ times for a particular firing sequence, for any $k$.
  - In the figure below, $t_2$ can only fire once, twice, thrice, etc, for different firing sequences
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• **L3-Live:** a particular transition can fire infinitely in a particular firing sequence.
  
  – In the figure below, \( t_3 \) can fire infinitely for the firing sequence \( t_3, t_3, t_3, t_3, \ldots \).
  
  – Note that the number of times \( t_1 \) and \( t_2 \), fire is finite for any firing sequence.