**Shortest firings**

**List of transitions for the nets.**

* 1. **t2**
  2. **t1**

**TOTAL: 2**

* 1. **t2**
  2. **t1**
  3. **t4**
  4. **t3**
  5. **t1**
  6. **t2**
  7. **t1**

**TOTAL: 7**

* 1. **t2**
  2. **t1**
  3. **t4**
  4. **t3**
  5. **t6**
  6. **t5**
  7. **t1**
  8. **t2**
  9. **t1**
  10. **t3**
  11. **t4**
  12. **t1**
  13. **t2**
  14. **t1**
  15. **t3**
  16. **t1**
  17. **t2**
  18. **t1**

**TOTAL: 18**

**From the lists we could see that every last net has 2 transitions (green) to set it on desired state. To be able to “fix” the final net, we should fire 2\*(n-1) transactions (red). That means, for reaching and fixing the last net we could use the following formula:**

**2\*(n-1) +2**

**After fixing N+1 net N net will be having different state compared to initial, which should be restored, for that we use 0,1,3 transactions (not highlighted) for the 1nd, 2nd, 3rd nets respectively. Wolfram Alpha calculates the following formula for that sequence:**

**0.5\*(n-1)\*n**

**After each initial state restoring to we should use the same steps as in a smaller net (yellow stands for 2nd net, orange for the 1st) which could be represented with formula of summation:**

**SUM[ i=0; 0..n ] = 2\*(i-1) +2 + 0.5\*(i-1)\*i**