

CRT Ring Guide — Ledger Closure over 24 Rings

Base–Prime–Coprime Scheduling: (mod 3, mod 8) → unique ring

We index rings $r = 1..24$. Parity and flips derive from modulus constraints. Key fact: $24 = 3 \times 8$ with $\gcd(3,8)=1$. By the Chinese Remainder Theorem (CRT), the pair of residues $(r \bmod 3, r \bmod 8)$ identifies a unique ring modulo 24. Mod 2 and mod 4 derive from mod 8; mod 6 derives from mod 2 and mod 3. Thus, scheduling by (mod 3, mod 8) covers all ledger constraints exactly once, guaranteeing closure.

Ring-by-Ring Residues and Windows

| Ring | Parity | $r \bmod 3$ | $r \bmod 8$ | $r \bmod 2$ | $r \bmod 4$ | $r \bmod 6$ | Joker Window? |
|------|----------|-------------|-------------|-------------|-------------|-------------|---------------|
| 1 | Red(+) | 1 | 1 | 1 | 1 | 1 | No |
| 2 | Black(–) | 2 | 2 | 0 | 2 | 2 | No |
| 3 | Red(+) | 0 | 3 | 1 | 3 | 3 | No |
| 4 | Black(–) | 1 | 4 | 0 | 0 | 4 | No |
| 5 | Red(+) | 2 | 5 | 1 | 1 | 5 | No |
| 6 | Black(–) | 0 | 6 | 0 | 2 | 0 | No |
| 7 | Red(+) | 1 | 7 | 1 | 3 | 1 | No |
| 8 | Black(–) | 2 | 0 | 0 | 0 | 2 | Yes |
| 9 | Red(+) | 0 | 1 | 1 | 1 | 3 | No |
| 10 | Black(–) | 1 | 2 | 0 | 2 | 4 | No |
| 11 | Red(+) | 2 | 3 | 1 | 3 | 5 | No |
| 12 | Black(–) | 0 | 4 | 0 | 0 | 0 | No |
| 13 | Red(+) | 1 | 5 | 1 | 1 | 1 | No |
| 14 | Black(–) | 2 | 6 | 0 | 2 | 2 | No |
| 15 | Red(+) | 0 | 7 | 1 | 3 | 3 | No |
| 16 | Black(–) | 1 | 0 | 0 | 0 | 4 | Yes |
| 17 | Red(+) | 2 | 1 | 1 | 1 | 5 | No |
| 18 | Black(–) | 0 | 2 | 0 | 2 | 0 | No |
| 19 | Red(+) | 1 | 3 | 1 | 3 | 1 | No |
| 20 | Black(–) | 2 | 4 | 0 | 0 | 2 | No |
| 21 | Red(+) | 0 | 5 | 1 | 1 | 3 | No |
| 22 | Black(–) | 1 | 6 | 0 | 2 | 4 | No |
| 23 | Red(+) | 2 | 7 | 1 | 3 | 5 | No |
| 24 | Black(–) | 0 | 0 | 0 | 0 | 0 | Yes |

CRT Map: Each $(r \bmod 3, r \bmod 8)$ pair appears exactly once

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------------------|----|----|----|----|----|----|----|----|
| $r \equiv 0 \bmod 3$ | 24 | 9 | 18 | 3 | 12 | 21 | 6 | 15 |
| $r \equiv 1 \bmod 3$ | 16 | 1 | 10 | 19 | 4 | 13 | 22 | 7 |
| $r \equiv 2 \bmod 3$ | 8 | 17 | 2 | 11 | 20 | 5 | 14 | 23 |

Operational Notes

- Joker gating requires $r \equiv 0 \pmod{8}$: rings 8, 16, 24 — exactly three per 24-ring cycle.
- Parity alternates by $r \bmod 2$; tower alternation follows ring parity.
- Any constraint set of the form $r \equiv a \pmod{3}$ and $r \equiv b \pmod{8}$ has a unique solution $r \in \{1..24\}$.
- Mod 4 and mod 2 are implied by mod 8; mod 6 is implied by (mod 2, mod 3).
- Therefore, all ledger constraints derived from $\{2,3,4,6,8\}$ schedule without conflict across 24 rings.

CRT Closure Sketch. Let $M=24$ and moduli set $\{3,8\}$ with $\gcd(3,8)=1$. For any residues (a,b) with $0 \leq a < 3$, $0 \leq b < 8$, there exists a unique r modulo 24 such that $r \equiv a \pmod{3}$ and $r \equiv b \pmod{8}$. Since mod 2 and mod 4 divide 8, and mod 6 is lcm-derived from 2 and 3, all constraints over $\{2,3,4,6,8\}$ lift to constraints over $(3,8)$. Hence a 24-ring cycle enumerates all compatible constraints exactly once. Ledger operations bound to these residues (parity, flip gates, tower pushes) cannot conflict and must terminate in 24.

Per-Ring Quick Guide (r = 1..24)

| Ring | (mod3,mod8) | Parity | Joker | Implication |
|------|-------------|----------|-----------|--|
| 1 | (1,1) | Red(+) | — | Standard ϕ -placement, snaps only |
| 2 | (2,2) | Black(−) | — | Standard ϕ -placement, snaps only |
| 3 | (0,3) | Red(+) | — | Phase checkpoint |
| 4 | (1,4) | Black(−) | — | Quarter-cycle |
| 5 | (2,5) | Red(+) | — | Standard ϕ -placement, snaps only |
| 6 | (0,6) | Black(−) | — | Phase checkpoint |
| 7 | (1,7) | Red(+) | — | Standard ϕ -placement, snaps only |
| 8 | (2,0) | Black(−) | Gate open | Flip allowed (OMPS+Joker); Quarter-cycle |
| 9 | (0,1) | Red(+) | — | Phase checkpoint |
| 10 | (1,2) | Black(−) | — | Standard ϕ -placement, snaps only |
| 11 | (2,3) | Red(+) | — | Standard ϕ -placement, snaps only |
| 12 | (0,4) | Black(−) | — | Phase checkpoint; Quarter-cycle |
| 13 | (1,5) | Red(+) | — | Standard ϕ -placement, snaps only |
| 14 | (2,6) | Black(−) | — | Standard ϕ -placement, snaps only |
| 15 | (0,7) | Red(+) | — | Phase checkpoint |
| 16 | (1,0) | Black(−) | Gate open | Flip allowed (OMPS+Joker); Quarter-cycle |
| 17 | (2,1) | Red(+) | — | Standard ϕ -placement, snaps only |
| 18 | (0,2) | Black(−) | — | Phase checkpoint |
| 19 | (1,3) | Red(+) | — | Standard ϕ -placement, snaps only |
| 20 | (2,4) | Black(−) | — | Quarter-cycle |
| 21 | (0,5) | Red(+) | — | Phase checkpoint |
| 22 | (1,6) | Black(−) | — | Standard ϕ -placement, snaps only |
| 23 | (2,7) | Red(+) | — | Standard ϕ -placement, snaps only |
| 24 | (0,0) | Black(−) | Gate open | Flip allowed (OMPS+Joker); Phase checkpoint; Quarter-cycle |