After removing the step 3 from the old game rule the whole thing became much simple and the game is now much balanced.

## Old Game Rules

R = robber, C = cop, N = number of rows, K = number of columns, m = multiplicity

1. Robbers placed randomly
2. Cops placed randomly
3. ~~Venerable cops are removed~~
4. Robbers move
5. Venerable robbers are removed
6. Cops move
7. Venerable cops are removed
8. Repeat from step 4, until either one of them is left on the board.

# Multiplicity

The multiplicity required to catch the robbers is such that

If ,

As for such m one more cop is required as compared to its higher values. But there are some exceptional cases for , which are shown below.

## Exceptional Values of Multiplicity (m) less than 3

// for some exceptional condition if multiplicity(m) = 1, 2

int FindMinM(int c, int r, int n, int k)

{

int empty = n\*k - (c+r);

// 3

if( r >= 2\*n && c%n == 0 ) return 3;

if( r > 2\*n && empty >= n - r%n ) return 3;

// 2

if( r >= 8) return 2; // diagonal

if( r >= n && c%n == 0 ) return 2;

if( r > n && empty >= n - r%n ) return 2;

if( r < n && c < 2\*r && empty >= n + (n - r) + n - (c/2) ) return 2;

// 1

return 1;

}