GB SWITCH CASE

CASE 1:

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 1 |  |  |  |  |  |  |  |  |  |  |  | (1,12) |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  | (2,11) |  | (2,13) |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  | (3,10) |  |  |  | (3,14) |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  | (4,9) |  |  |  |  |  | (4,15) |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  | (5,10) |  |  |  | (5,14) |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  | (6,11) |  | (6,13) |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  | (7,12) |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  | (8,5) | (8,6) | (8,7) | (8,8) | (8,9) | (8,10) | (8,11) | (8,12) | (8,13) | (8,14) | (8,15) | (8,16) | (8,17) | (8,18) | (8,19) |  |  |  |  |
| 9 |  |  |  | (9,4) |  |  |  |  |  | (9,10) |  |  |  | (9,14) |  |  |  |  |  | (,20) |  |  |  |
| 10 |  |  | (10,3) |  |  |  |  |  | (10,9) |  |  |  |  |  | (10,15) |  |  |  |  |  | (10,21) |  |  |
| 11 |  | (11,2) |  |  |  |  |  | (11,8) |  |  |  |  |  |  |  | (11,16) |  |  |  |  |  | (11,22) |  |
| 12 | (12,1) | (12,2) | (12,3) | (12,4) | (12,5) | (12,6) | (12,7) |  |  |  |  |  |  |  |  |  | (12,17) | (12,18) | (12,19) | (12,20) | (12,21) | (12,22) | (12,23) |

By Observation of Coordinates:

1. (1,12)(2,11)(3,10)(4,9)(8,5)(9,4)(10,3)(11,2)(12,1),(2,13)(3,14)(4,15)(8,19)(,20)(10,21)(11,22)

(12,23)

((row + col==13)||(col-row==11) )&& (row<=4 || row>=8))

i.e.

((row+col==total\_row+1)||(col-row==total\_row-1) )&& (row<=total\_row/3 || row>=2\*total\_row/3))

1. (4,9)(4,15)(5,10)(5,14)(6,11)(6,13)(7,12)(8,13)(8,11)(9,14)(9,10)(10,15)(10,9)(11,16)(11,8),

(12,17)(12,7)

(((col-row==5)||(row+col==19))&&(row>=4))

i.e.

(((col-row==total\_row/3+1)||(row+col==5\*(total\_row)/3 -1))&&(row>=total\_row/3))

1. (8,5)(8,6)(8,7)(8,8)(8,9)(8,10)(8,11)(8,12)(8,13)(8,14)(8,15)(8,16)(8,17)(8,18)(8,19)

(row==8 &&(col>=5 && col<=19)) i.e.

(row==2\*total\_row/3 &&(col>=total\_row/3 +1 && col<=5\*(total\_row)/3 -1))

1. (12,1)(12,2)(12,3)(12,4)(12,5)(12,6)(12,7)(12,17)(12,18)(12,19)(12,20)(12,21)(12,22)(12,23)

(row==12 &&((col<=7)||(col>=17))) i.e.

(row==total\_row &&((col<=2\*total\_row/3 -1)||(col>=4\*total\_row/3 +1)))

GB SWITCH CASE

CASE 2:

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 1 |  |  |  |  |  |  |  |  |  |  |  | (1,12) |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  | (2,11) | (2,12) | (2,13) |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  | (3,10) | (3,11) |  | (3,13) | (3,14) |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  | (4,9) | (4,10) |  |  |  | (4,14) | (4,15) |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  | (5,10) | (5,11) |  | (5,13) | (5,14) |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  | (6,11) | (6,12) | (6,13) |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  | (7,12) |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  | (8,5) | (8,6) | (8,7) | (8,8) | (8,9) | (8,10) | (8,11) | (8,12) | (8,13) | (8,14) | (8,15) | (8,16) | (8,17) | (8,18) | (8,19) |  |  |  |  |
| 9 |  |  |  | (9,4) | (9,5) | (9,6) | (9,7) | (9,8) | (9,9) | (9,10) |  |  |  | (9,14) | (9,15) | (9,16) | (9,17) | (9,18) | (9,19) | (9,20) |  |  |  |
| 10 |  |  | (10,3) | (10,4) |  |  |  | (10,8) | (10,9) |  |  |  |  |  | (10,15) | (10,16) |  |  |  | (10,20) | (10,21) |  |  |
| 11 |  | (11,2) | (11,3) | (11,4) | (11,5) | (11,6) | (11,7) | (11,8) |  |  |  |  |  |  |  | (11,16) | (11,17) | (11,18) | (11,19) | (11,20) | (11,21) | (11,22) |  |
| 12 | (12,1) | (12,2) | (12,3) | (12,4) | (12,5) | (12,6) | (12,7) |  |  |  |  |  |  |  |  |  | (12,17) | (12,18) | (12,19) | (12,20) | (12,21) | (12,22) | (12,23) |

By Observation of Coordinates:

1. (1,12)(2,11)(3,10)(4,9)(8,5)(9,4)(10,3)(11,2)(12,1),(2,13)(3,14)(4,15)(8,19)(,20)(10,21)(11,22)

(12,23)

((row + col==13)||(col-row==11) )&& (row<=4 || row>=8))

i.e.

((row+col==total\_row+1)||(col-row==total\_row-1) )&& (row<=total\_row/3 || row>=2\*total\_row/3))

1. (4,9)(4,15)(5,10)(5,14)(6,11)(6,13)(7,12)(8,13)(8,11)(9,14)(9,10)(10,15)(10,9)(11,16)(11,8),

(12,17)(12,7)

(((col-row==5)||(row+col==19))&&(row>=4))

i.e.

(((col-row==total\_row/3+1)||(row+col==5\*(total\_row)/3 -1))&&(row>=total\_row/3))

1. (8,5)(8,6)(8,7)(8,8)(8,9)(8,10)(8,11)(8,12)(8,13)(8,14)(8,15)(8,16)(8,17)(8,18)(8,19)

(row==8 &&(col>=5 && col<=19)) i.e.

(row==2\*total\_row/3 &&(col>=total\_row/3 +1 && col<=5\*(total\_row)/3 -1))

1. (12,1)(12,2)(12,3)(12,4)(12,5)(12,6)(12,7)(12,17)(12,18)(12,19)(12,20)(12,21)(12,22)(12,23)

(row==12 &&((col<=7)||(col>=17))) i.e.

(row==total\_row &&((col<=2\*total\_row/3 -1)||(col>=4\*total\_row/3 +1)))

1. (2,12)(3,11)(3,13)(4,10)(4,14)(9,5)(9,19)(10,4)(10,20)(11,3)(11,21)

((row+col==14 || col-row==10)&&((row<=4 && row>=2)|| (row>=9 && row<=11))) i.e.

(((row+col==7\*total\_row/6||col-row==5\*total\_row/6)&&((row<=total\_row/3

&& row>=total\_row/6)|| (row>=3\*total\_row/4 && row<=11\*total\_row/12))

1. (4,10)(4,14)(5,11)(5,13)(6,12)(9,15)(9,9)(10,16)(10,8)(11,17)(11,7)

((row+col==18 || col-row==6)&&((row>=4 && row<=6)||((row>=9 && row<=11)))) i.e.

((row+col==3\*total\_row/2||col-row==total\_row/2)&&((row>=total\_row/3

&& row<=total\_row/2)||(row>=3\*total\_row/4 && row<=11\*total\_row/12)))

1. (9,5)(9,6)(9,7)(9,8)(9,9)(9,15)(9,16)(9,17)(9,18)(9,19)

(row==9 && ((col>=5 && col<=9)||(col>=15&& col<=19))) i.e.

(row==3\*total\_row/4&&((col>=5\*total\_row/12&&col<=3\*total\_row/4)||(col>=5\*total\_row/4 && col<=19\*total\_row/12)))

1. (11,3)(11,4)(11,5)(11,6)(11,7)(11,17)(11,18)(11,19)(11,20)(11,21)

(row==11 && ((col>=3 && col<=7)||(col>=17 && col<=21))) i.e.

(row==11\*total\_row/12&&((col>=total\_row/4&&col<=7\*total\_row/12)||(col>=17\*total\_row/12 && col<=21\*total\_row/12))))

GB SWITCH CASE

CASE 0:

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 1 |  |  |  |  |  |  |  |  |  |  |  | (1,12) |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  | (2,11) | (2,12) | (2,13) |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  | (3,10) | (3,11) | (3,12) | (3,13) | (3,14) |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  | (4,9) | (4,10) | (4,11) | (4,12) | (4,13) | (4,14) | (4,15) |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  | (5,10) | (5,11) | (5,12) | (5,13) | (5,14) |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  | (6,11) | (6,12) | (6,13) |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  | (7,12) |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  | (8,5) | (8,6) | (8,7) | (8,8) | (8,9) | (8,10) | (8,11) | (8,12) | (8,13) | (8,14) | (8,15) | (8,16) | (8,17) | (8,18) | (8,19) |  |  |  |  |
| 9 |  |  |  | (9,4) | (9,5) | (9,6) | (9,7) | (9,8) | (9,9) | (9,10) |  |  |  | (9,14) | (9,15) | (9,16) | (9,17) | (9,18) | (9,19) | (9,20) |  |  |  |
| 10 |  |  | (10,3) | (10,4) | (10,5) | (10,6) | (10,7) | (10,8) | (10,9) |  |  |  |  |  | (10,15) | (10,16) | (10,17) | (10,18) | (10,19) | (10,20) | (10,21) |  |  |
| 11 |  | (11,2) | (11,3) | (11,4) | (11,5) | (11,6) | (11,7) | (11,8) |  |  |  |  |  |  |  | (11,16) | (11,17) | (11,18) | (11,19) | (11,20) | (11,21) | (11,22) |  |
| 12 | (12,1) | (12,2) | (12,3) | (12,4) | (12,5) | (12,6) | (12,7) |  |  |  |  |  |  |  |  |  | (12,17) | (12,18) | (12,19) | (12,20) | (12,21) | (12,22) | (12,23) |

By Observation of Coordinates:

1. (1,12)(2,11)(3,10)(4,9)(8,5)(9,4)(10,3)(11,2)(12,1),(2,13)(3,14)(4,15)(8,19)(,20)(10,21)(11,22)

(12,23)

((row + col==13)||(col-row==11) )&& (row<=4 || row>=8))

i.e.

((row+col==total\_row+1)||(col-row==total\_row-1) )&& (row<=total\_row/3 || row>=2\*total\_row/3))

1. (4,9)(4,15)(5,10)(5,14)(6,11)(6,13)(7,12)(8,13)(8,11)(9,14)(9,10)(10,15)(10,9)(11,16)(11,8),

(12,17)(12,7)

(((col-row==5)||(row+col==19))&&(row>=4))

i.e.

(((col-row==total\_row/3+1)||(row+col==5\*(total\_row)/3 -1))&&(row>=total\_row/3))

1. (8,5)(8,6)(8,7)(8,8)(8,9)(8,10)(8,11)(8,12)(8,13)(8,14)(8,15)(8,16)(8,17)(8,18)(8,19)

(row==8 &&(col>=5 && col<=19)) i.e.

(row==2\*total\_row/3 &&(col>=total\_row/3 +1 && col<=5\*(total\_row)/3 -1))

1. (12,1)(12,2)(12,3)(12,4)(12,5)(12,6)(12,7)(12,17)(12,18)(12,19)(12,20)(12,21)(12,22)(12,23)

(row==12 &&((col<=7)||(col>=17))) i.e.

(row==total\_row &&((col<=2\*total\_row/3 -1)||(col>=4\*total\_row/3 +1)))

1. (2,12)(3,11)(3,13)(4,10)(4,14)(9,5)(9,19)(10,4)(10,20)(11,3)(11,21)

((row+col==14 || col-row==10)&&((row<=4 && row>=2)|| (row>=9 && row<=11))) i.e.

(((row+col==7\*total\_row/6||col-row==5\*total\_row/6)&&((row<=total\_row/3

&& row>=total\_row/6)|| (row>=3\*total\_row/4 && row<=11\*total\_row/12))

1. (4,10)(4,14)(5,11)(5,13)(6,12)(9,15)(9,9)(10,16)(10,8)(11,17)(11,7)

((row+col==18 || col-row==6)&&((row>=4 && row<=6)||((row>=9 && row<=11)))) i.e.

((row+col==3\*total\_row/2||col-row==total\_row/2)&&((row>=total\_row/3

&& row<=total\_row/2)||(row>=3\*total\_row/4 && row<=11\*total\_row/12)))

1. (9,5)(9,6)(9,7)(9,8)(9,9)(9,15)(9,16)(9,17)(9,18)(9,19)

(row==9 && ((col>=5 && col<=9)||(col>=15&& col<=19))) i.e.

(row==3\*total\_row/4&&((col>=5\*total\_row/12&&col<=3\*total\_row/4)||(col>=5\*total\_row/4 && col<=19\*total\_row/12)))

1. (11,3)(11,4)(11,5)(11,6)(11,7)(11,17)(11,18)(11,19)(11,20)(11,21)

(row==11 && ((col>=3 && col<=7)||(col>=17 && col<=21))) i.e.

(row==11\*total\_row/12&&((col>=total\_row/4&&col<=7\*total\_row/12)||(col>=17\*total\_row/12 && col<=21\*total\_row/12))))

1. (10,5)(10,6)(10,7)(10,17)(10,18)(10,19)

(row==10 && ((col>=5 && col<=7)||(col>=17 && col<=19))) i.e.

(row==10\*total\_row/12&&((col>=5\*total\_row/12&& col<=7\*total\_row/12)||(col>=17\*total\_row/12 && col<=19\*total\_row/12)))

1. (4,11)(4,12)(4,13)

(row==4 &&(col>=11 && col<=13)) i.e.

(row==total\_row/3 &&(col>=11\*total\_row/12 && col<=13\*total\_row/12))

1. (3,12)(4,12)(5,12)

(col==12 && (row<=5 && row>=3)) i.e.

(col==total\_row && (row<=5\*total\_row/12 && row>=total\_row/4))))