**Grid Checking**

Example: 3x5 grid

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 |

Let i = current index

Let row = 3

Let col = 5

Let TotalGridIndex = row\*col-1 = 14

**Getting index:**

|  |  |
| --- | --- |
| left | = i - 1 |
| right | = i + 1 |
| top | = i - col |
| bottom | = i + col |
| topleft | = top - 1 |
| topright | = top + 1 |
| bottomleft | = bottom - 1 |
| bottomright | = bottom + 1 |

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**Checking Conditions (Check only if condition is true):**

|  |  |  |
| --- | --- | --- |
| Checks |  | Alternative/explanation |
| Check left | if (i % col) | if (i % col != 0) |
| Check right | if(right % col) | if(right % col != 0) |
| Check top | if( i >= col ) | if(top >= col) |
| Check bottom | if( i + col < TotalGridIndex )  if( bottom < TotalGridIndex ) | if(i / col < (row-1)) **(don’t use this, its expensive)** |
| Check topleft | if (i % col && i >= col ) |  |
| Check topright | if (right % col && i >= col) |  |
| Check bottomleft | if (i % col && ( bottom < TotalGridIndex )) ) |  |
| Check bottomright | if (right % col && (bottom < TotalGridIndex )) ) |  |

**Categorise/group the checks:**

Categorise it as:

* V1:(left, topleft, bottomleft), (right, topright, bottomright), (top), (bottom)

Instead of:

* V2:(left), (right), (top, topleft, topright), (bottom, bottomleft, bottomright)

As visually seen from the grid above, there are special cases such as the 4 corners (0, 4, 10, 14). V2 is not used for grouping up the checks

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| 10 | 11 | 12 | 13 | 14 |

**V1:**

//check left

if (i % col)

{

//top

if( i >= col )

{

}

//bottom

if( bottom < TotalGridIndex )

{

}

}

//check right

if( (i+1) % col) {

//top

if( i >= col )

{

}

//bottom

if( bottom < TotalGridIndex )

{

}

}

//check top

if( i >= col )

{}

//check bottom

if( bottom < TotalGridIndex )

{}

**V2:**

//check left

if (i % col)

{}

//check right

if( (i+1) % col)

{}

//check top, topleft, topright

if( i >= col )

{

//check topleft

if (i % col)

{

}

//check top right

if( (i+1) % col)

{

}

}

//check bottom, bottomleft, bottomright

if( bottom > TotalGridIndex )

{

//check bottomleft

if (i % col)

{

}

//check bottomright

if( (bottom +1) % col)

{

}

}