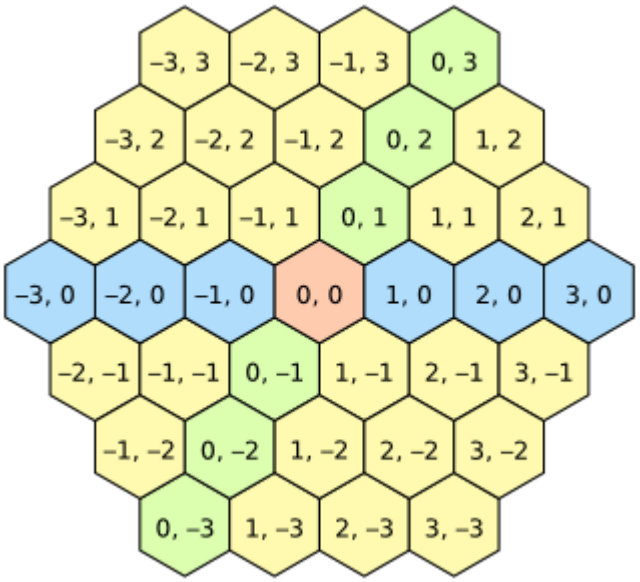
49

I once set up a hexagonal coordinate system in a game so that the *y*-axis was at a 60-degree angle to the *x*-axis. This avoids the odd-even row distinction.



(source: althenia.net)

The distance in this coordinate system is:

```
dx = x1 - x0
dy = y1 - y0

if sign(dx) == sign(dy)
    abs(dx + dy)
else
    max(abs(dx), abs(dy))
```

You can convert (*x*', *y*) from your coordinate system to (*x*, *y*) in this one using:

```
x = x' - floor(y/2)
```

So `dx` becomes:

```
dx = x1' - x0' - floor(y1/2) + floor(y0/2)
```

Careful with rounding when implementing this using integer division. In C for `int y` `floor(y/2)` is `(y%2 ? y-1 : y)/2`.

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edited Aug 9, 2019 at 1:17

Glorfindel

21.5k 13 78 105

answered Feb 22, 2011 at 23:26

aaz

5,106 22 18