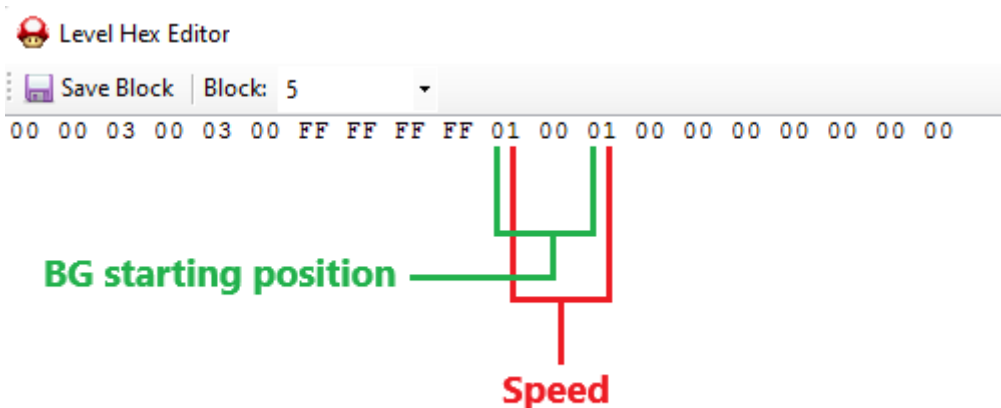# Background Scrolling Data Info

> TODO: Info for BG start position nybble. Would also be nice to know which BG speeds are all used.

Foregrounds and backgrounds scroll differently in many levels — sometimes they have a fast speed ratio and sometimes they can be completely static. This can be adjusted by hex editing your level.

- **Background only** --> Change block 3 only.
- **Foreground only** --> Change block 5 only.
- **Both** --> Change both blocks 3 and 5.

- Byte 11: Control BG horizontal scrolling.
- Byte 13: Control BG vertical scrolling.

And for each byte:

- First Nybble: Control where the background starts when the player enters the views.
- Second Nybble: Control speed.

(*Image source: MarioSunshine*)

Scroll speed data

- 0x0: Same as FG speed. Used in w2-3 (sewer level) for example.
- 0x1: 50% FG speed.

- 0x2: 25% FG speed. Common for top backgrounds.
- 0x3: 12.5% FG speed. Common for bottom backgrounds.
- 0x4: 120% FG speed. Unused.
- 0x5: 75% FG speed.
- 0x6: 6.25% FG speed.
- 0x7: 9.375% FG speed.
- 0x8: 20.3125% FG speed.
- 0x9: Same as FG speed.
- 0xA: Same as FG speed.
- 0xB: Same as FG speed.
- 0xC: Same as FG speed.
- 0xD: 200% FG speed. Unused.
- 0xE: 400% FG speed. Unused.
- 0xF: 800% FG speed. Unused.

(*Source: [RoadrunnerWMC](#)*)

Disabling vertical scrolling

- **Background only** --> Change both bytes 13 and 16 of block 3 only.
- **Foreground only** --> Change both bytes 13 and 16 of block 5 only.
- **Both** --> Change both bytes 13 and 16 of both blocks 3 and 5.

- Byte 13: enters 40.
- Byte 16: enters 10.

(*Source: [MeroMero](#)*)

Automatic horizontal scrolling

Works for both foregrounds and backgrounds.

It only works for backgrounds that already have a horizontal animation, this can be achieved by putting a value of 10 for byte 16 and it will animate the whole background instead of partially animating it.
(Note: if byte 13 value is somewhere between 40 and 4F, this effect will be overridden and instead the vertical scrolling will be disabled).

(*Source: [MeroMero](#)*)