

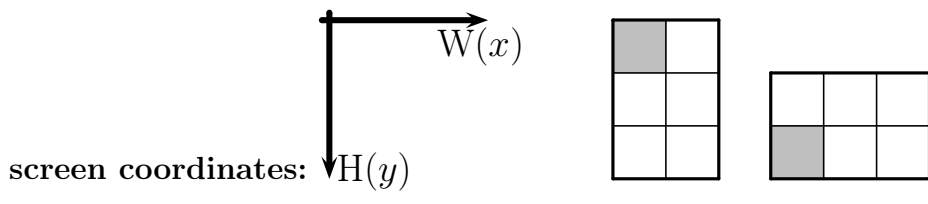
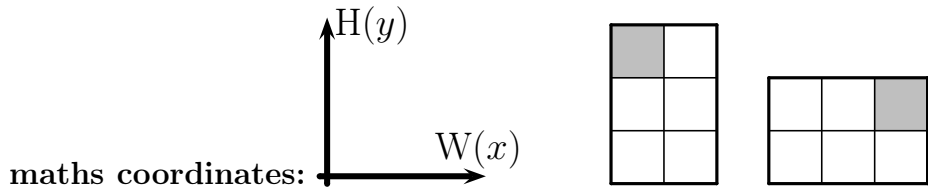
90° rotations in 2D - with maths or screen coordinates

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$$\begin{cases} x & (W) \\ y & (H) \end{cases} \Rightarrow \begin{cases} newx = y & (H) \\ newy = W - 1 - x & (W) \end{cases}$$

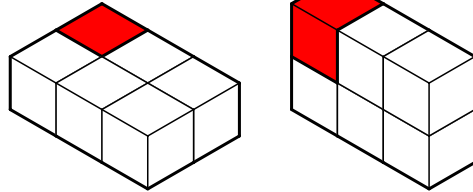
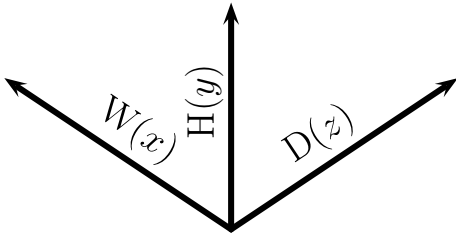
newvalue[(W - 1 - x) * H + y] = value[y * W + x]

The visual effect of this rotation depends on the coordinate system you are using:



90° rotations in 3D - with ffn2tex coordinates system

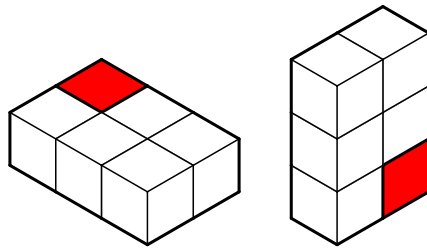
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Rotate around W:

$$\begin{cases} x & (W) \\ y & (H) \\ z & (D) \end{cases} \Rightarrow \begin{cases} newx = x & (W) \\ newy = z & (D) \\ newz = H - 1 - y & (H) \end{cases}$$

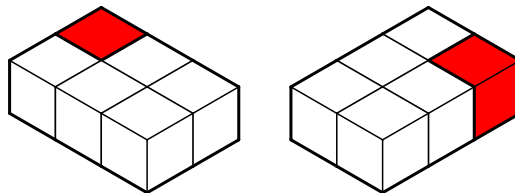
$$newvalue[(z * H + H - 1 - y) * W + x] = value[(y * D + z) * W + x]$$



Rotate around D:

$$\begin{cases} x & (W) \\ y & (H) \\ z & (D) \end{cases} \Rightarrow \begin{cases} newx = y & (H) \\ newy = W - 1 - x & (W) \\ newz = z & (D) \end{cases}$$

$$newvalue[((W - 1 - x) * D + z) * H + y] = value[(y * D + z) * W + x]$$



Rotate around H:

$$\begin{cases} x & (W) \\ y & (H) \\ z & (D) \end{cases} \Rightarrow \begin{cases} newx = D - 1 - z & (D) \\ newy = y & (H) \\ newz = x & (W) \end{cases}$$

$$newvalue[(y * W + x) * D + D - 1 - z] = value[(y * D + z) * W + x]$$