$X := \begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}$ $Y := \begin{bmatrix} 1 & 0 \\ 3 & 2 \end{bmatrix}$

mwall("matrix") - (A)
test to determine if all elements are nonzero.

$\text{mwall}(X) = \begin{bmatrix} 0 & 0 \end{bmatrix}$ $\text{mwall}(Y) = \begin{bmatrix} 1 & 0 \end{bmatrix}$

appVersion(4) = "0.98.5953.21871"

mwall("1:matrix", "2:matrix") - (A, DIM)
test to determine if all elements are nonzero.
DIM = 1 => returns "col NOTall 0's
DIM = 2 => returns "row NOTall 0's

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 0 & 4 & 5 \\ 6 & 7 & 0 \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 5 \\ 6 & 7 & 0 \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 1 & 1 & 0 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 5 \\ 6 & 7 & 8 \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 5 \\ 6 & 7 & 8 \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$

```
test( Y , cond ) := | for i ∈ 1 .. rows( Y )
                    |   for j ∈ 1 .. cols( Y )
                    |     if mwall( Y_ij ) = c
                    |       Y_ij := mwall( Y_i
                    |     else
                    |       Y_ij := 255
                    | Y
```

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 0 & 4 & 5 \\ 6 & 7 & 0 \end{bmatrix}$ $\text{mwall}(Y) = \begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$

$\text{test}(Y, 0) = \begin{bmatrix} 255 & 255 & 25! \\ 0 & 255 & 25! \\ 255 & 255 & 0 \end{bmatrix}$ $\text{test}(Y, 1) = \begin{bmatrix} 1 & 1 & 1 \\ 255 & 1 & 1 \\ 1 & 1 & 25 \end{bmatrix}$

$Y := \begin{bmatrix} 1 & 2 & 3 \\ \pi & 4 & 5 \\ 6 & 7 & \sqrt{2} \end{bmatrix}$ $\text{mwall}(Y) = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$

$\text{mwall}(\text{identity}(3), 1) = \begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$ $\text{mwall}(\text{identity}(3), 2) = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ $\text{identity}(3) = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

$Y := \begin{bmatrix} 0 & 1 & 0 \\ 0 & 4 & 5 \\ 0 & 7 & \sqrt{2} \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$

$Y := \begin{bmatrix} 1 & 2 & 3 \\ 0 & 0 & 0 \\ 6 & 7 & \sqrt{2} \end{bmatrix}$ $\text{mwall}(Y, 1) = \begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$ $\text{mwall}(Y, 2) = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$