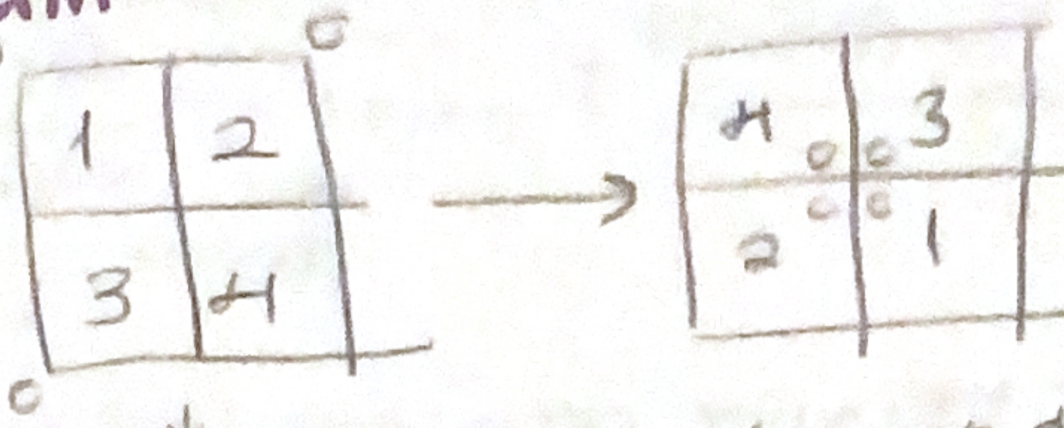
Fourier Transform

fftshift ⟶



↓ we want to put zeros in the middle

↳ what does zero freq mean? zero change.

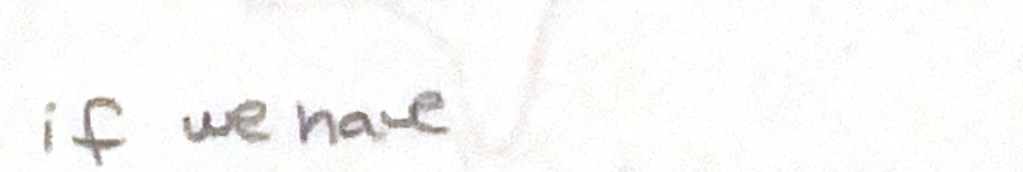
High freq → high change.

Smooth by removing high frequency. (details of the image)
If we want to remove details (smooth) we remove high frequencies.

5 4 3 2 0 1 2 4 9 → Remove frequencies > 3

↓ Multiply with [0 0 1 1 1 1 1 0 0]

0 0 3 2 0 1 2 0 0



With convolution theorem $f * h \longleftrightarrow F \cdot H$

spatial domain — freq domain

↳ with FT we can do filtering in freq domain (better for isolating frequencies)

$$f \xrightarrow{FT} F \xrightarrow{F \cdot H} G \xrightarrow{IFT} g$$

In 2D if we have