Inputs:
- N_{spins} (= 4)
- N_{steps}
- $T_{simulation}$

Data storage:
- magnetisation (list) = []

Initialise the spin-state → spin_state = np.random.choice([-1,1], N_spins)

N_{steps} → Repeat N_{steps} times

spin_state → Propose a move → flip a random spin → new_spin_state

accept / reject the move

spin_state → Calculate ΔE
new_spin_state →

is $\Delta E > 0$?

No → accept

Yes → Calculate Boltzmann factor $\exp(-\Delta E / kT)$ → boltz
$T_{simulation}$ →

boltz → np.random.rand() < boltz

No → reject

Yes → accept

if the move is accepted → spin_state = new_spin_state.copy()

spin_state → Calculate the magnetisation → M → append to magnetisation

magnetisation → Output mean magnetisation → mean_magnetisation