

# TODAY QUANTUM SEARCH

Why?  
 → What (very basic)  
 → Walkthrough process (kind a basic)  
 WHY?? (50/4 AD.)

101

SEARCH

Q.A. >>>>> C.A.

T.S.P. <= T ✓

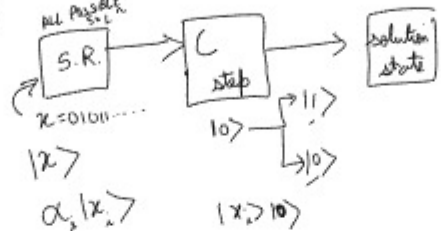
> T X

$O(N)$   
 $O(1000 \text{ ops})$   
 $O(800 \text{ ops})$   
 !!!



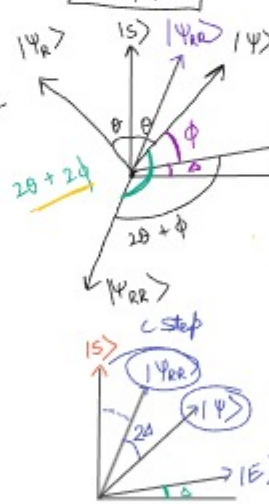
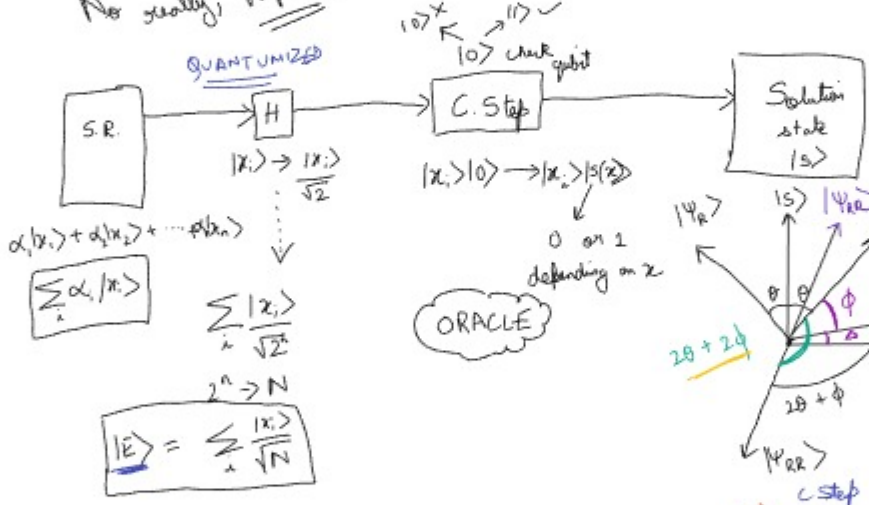
WHAT??

BASIC



Not really, WHAT??

QUANTUMIZED



$$\theta + \phi + \Delta = \frac{\pi}{2} \text{ (rad)}$$

$$\Rightarrow \Delta = \frac{\pi}{2} - \theta - \phi$$

$$\Rightarrow 2\Delta = \pi - 2\theta - 2\phi$$

$$\Rightarrow 2\theta + 2\phi = \pi - 2\Delta$$

How many times??

$$\frac{\pi}{2} - \Delta = \frac{\pi}{2} - \left( \frac{\pi}{2} - \Delta \right) \times \frac{1}{2\Delta}$$

$$= \frac{\pi}{4\Delta} - \frac{1}{2}$$

upper bound of no. of times =  $\frac{\pi}{4\Delta} + 1$

$O(\sqrt{N})$

😊  $O(N)$  X

$$|0\rangle \xrightarrow{H} \frac{|0\rangle + |1\rangle}{\sqrt{2}}$$

$$|1\rangle \xrightarrow{H} \frac{|0\rangle - |1\rangle}{\sqrt{2}}$$

