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# LAB - 5

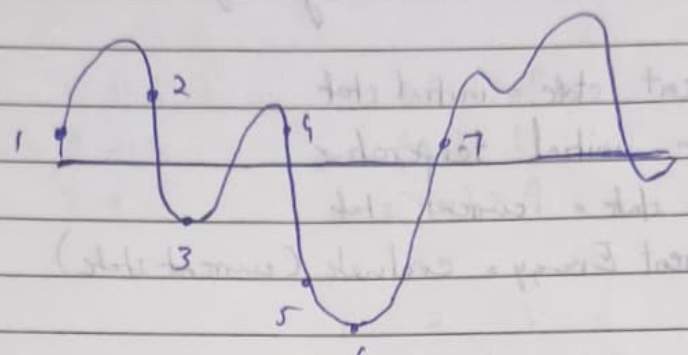
## Stimulated Annealing Algorithm

1. Set current state = initial state
2. Choose an initial temperature
3. set best state = current state
   set current Energy = evaluate (current state)

while temp > 0 and iteration < max_iteration
  for iteration = 1 to maxIteration do
  newState = generate Neighbor (current state
  newEnergy = evaluate (newState)
  energy Difference = newEnergy - currentEnergy
  if energy Difference < 0 then
    currentState = newState
    currentEnergy = newEnergy
    if currentEnergy < best Energy then
      best State = Current State
      bestEnergy = currentEnergy
  Else
    1. Accept with a certain probability
    2. Accept Probability = exp(- Energy Difference / temperature)
    3. If random(0,1) < acceptance Probability then
      1. currentState = newState
      2. currentEnergy = newEnergy
  // cool down temperature
  temperature = temperature cooling Rate
  Return bestState

2 + 1 + 1 + 1 + 0 + 0 + 1 + 1

3 + 1 + 1 + 1 + 1




Output

Enter initial state : 50

initial temperature : 20

cooling rate (0 & 1) : 0.5

the no. of iterations : 5

Iteration 1: Current state = 49.0489, Energy = 2405.7898

2 " " 49.0489 ... = 2405.7898 = 500

3 " " 48.8662 = 2387.9069 = 2.5

4 " " 48.4900 = 2351.2725 = 1.25

5 " " 48.0291 = 2306.7922 = 0.625

Best state = 48.0291, Best Energy = 2306.7922