UCS1504 - Artificial Intelligence Lab

Department of CSE, SSN College of Engineering

5. Genetic algorithm – Solving 8 queens' problem

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8-queen's problem: Place 8 queens in a chessboard of 8x8, no queen is under attack from any other queen in horizontal, vertical and diagonal directions.

State: Position of 8 queens (assume 1 to 8 with position of queen in each column)
Population: K randomly generated states (fix K value)
Fitness function: Non-attacking pairs in 8-queens as shown below

	1	2	3	4	5	6	7	8
1				Q				
2						Q		
3								Q
4		Q						
5							Q	
6	Q							
7			Q					
8					Q			

For the given problem description do the following.

1. Find the suitable fitness function to solve 8queens problem.
   Hint: non-attacking pairs of queens in horizontal, vertical and diagonal
2. Implement Genetic algorithm to find any one safe configuration
3. Analyze the time complexity (no. of evolutions) by changing the K value Justify your answer.

Note: Write the answer of each subdivision in observation.