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Project 3 Report

Country	**NN Tour**	**Optimal Tour**	**NN Time**	**Optimal Time**
Yemen	298958	238314	6154ms	236494s
Luxemburg	14212.7	11340	159ms	1681.68s
Oman	120542	8689`	643ms	9809.2s
Qatar	11892.9	9352	6ms	2.09 s

In this analysis, the Nearest Neighbor (NN) algorithm's performance for the Traveling Salesman Problem (TSP) across four countries was evaluated. The data demonstrated a consistent trade-off between speed and accuracy. While NN algorithm proved to be much faster, it generally produced longer tours than the known optimal solutions. This highlights the utility of heuristic methods like NN in scenarios where computational resources are limited. For large datasets or complex problems, such methods can offer a viable balance between computational feasibility and solution precision, making them particularly relevant in practical applications. This experience has been valuable in understanding the importance of algorithm selection based on the specific needs and constraints of a problem.