**Part 3 Decision Tree Rubric (Solution) Group - Cape May Name - Swasti Johri**



Monthly Rev Monthly Cost Monthly (Profit) One Time Renovation Profit $85,000

1 month $382,027 $355,000 $27,027 -$57,973 2 month $382,027 $355,000 $27,027 -$30,946 3 month $382,027 $355,000 $27,027 -$3,919 4 month $382,027 $355,000 $27,027  **$23,108 (answer: profit $23,108 in 4thmonth)**

Revenue No App $435,972 Tech Add Total with App

App $303,563 $100,000 $403,563 (**$32,409) per month decrease (not worth it)**

* Total Score \_\_\_\_\_\_\_80\_\_\_\_\_\_\_\_ Explanation - In my project, I conducted an analysis of a restaurant dataset from the Tri-state area to assess the viability of opening a restaurant within 3 miles of the town center in New Jersey, catering to a population of 210,000 individuals. By utilizing a decision tree implemented in Python, I extracted valuable insights concerning the factors influencing restaurant revenue and made predictions regarding the potential success of this investment.

Through my analysis, I discovered that restaurants with outdoor dining services, located in towns with a population below 295,000, situated beyond 2.5 miles from the town center, and not providing take-out services exhibited the highest monthly revenue levels. These findings can guide the decision-making process regarding the investment in question.

According to my analysis, I arrived at the conclusion that the restaurant investment would yield a monthly revenue of $621,083, resulting in a monthly profit of $366,083. Additionally, I found that the average opportunity cost of using the app is $72,288. However, within my specific node, the cost was negative at $52,818, indicating that it falls below the promotional threshold of $100,000.

This project highlights the practical application of decision trees in gaining valuable insights and making predictions within real-world business scenarios.