Based on the pdf, I implemented a decision tree regression. First, I split the data into training and test sets based on the pdf. The first 150 data was for training and the remaining 122 was for test dataset. This algorithm splits each node into two parts until the leaf nodes have a value less than p which is a user defined variable. Root mean squared error was used to calculate the error for both training and test set and chose the smallest w value.

Based on the data structure, which was implemented on lab 7, each child was on 2\* parent\_node or 2\* parent\_node +1. To predict new values, I calculated the mean of every terminal node. Based on the needs split or is\_terminal array, each node was labled either needs split or terminal. The pre-pruning step was based on the following logic : If a node had 𝑃 or fewer data points, converted this node into a terminal node and I did not split further.