REPORT ASSIGNMENT 2

STRUCTURE FEATURES:

Binary tree:
- A separate node class was defined for the nodes having the x coordinate , y coordinate and name
- The Binary Tree has been made with name of the city as key
- It is accessed with the name of the city in order to get the location details of the city.
- A separate copy pointer is made in order to include duplicate names
- The insertion and removal functions have defined with pointers to effectively work
- A find function is defined in order to facilitate the searching of the city by its name.

PR Quadtree:
- Three separate node classes have been defined
- A base class and two child classes (leaf and internal) have been defined where the child classes have been derived from the base class
- The concept of inheritance has been used.
- Dynamic initialization of pointers has been done quite often in the functions of the quadtree.
- A separate getnode function has been defined in order to get the new x,y coordinates and range for the internal nodes.
- A function is defined that gives the location of the input coordinate depending on the position of the internal node

Precautions in the code:
- The ranges of each of the input coordinates have been defined in the function
- Any input that is out of the range is shown as an invalid input in the project.
- The corner conditions of the coordinate system are also taken into consideration while designing the code.
- The overflow of the int is taken into consideration while defining the search function