CS202

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assignment #4.5

For this assignment, it is also very similar with assignment two. However, now we are using a whole new language, Java. We are going to plan program four and program five together. They are similar as well, but using different interface. Program four uses binary search tree to handle its data structure. However, program five uses array of linear linked list.

Binary search tree is more complicated. Each node has two pointers, which is left and right, which is pointing to the left child and right child. The insertion algorithm is all the same as normal binary search tree, but it is not comparing integers but characters. By checking if the keyword matches the data, if it is matched, add it at the head of the linear linked list. If it is bigger, which means ASCII value is bigger, keep going to its right child and do the same thing recursively until it hits the null node. Then create a new node with a new keyword. The display is just displaying all the data in it. There are two remove function. One is removing all the data in it and the other is remove the specific one.

Array of linear linked list is simpler. In the array, each node contains a pointer to the head of a linear linked list and a key word. This time, the insertion algorithm is through a for loop, which add the index by one each time to check if the keyword is the same. If yes, add the data at the head of the linear linked list. If not, go to next index and do the same thing until hit the last one. Then create a new index with a new keyword. The display function and the remove function algorithm are the same as binary search tree.

Now, let’s say about the data. My base class is even, which has a keyword, array of characters, a name, array of characters and three member functions. They are add, remove and display. There is no remove all function because each object just has to remove itself. For the remove all function in the interface, I will call the function many times recursively until the end. Also, there are three categories for the event. First one is sport, which has integer for the number of people need playing and another integer for weather limitation, which each number represent different weather condition required. The second one is travel, which has a integer for date and another integer for the price of ticket. The third one is art, which also has a integer for the price of ticket and the characters for the category for what kind of art is it. Of course, I am using abstract data type again. Sport, travel and art are all derived classes of event class. They all have same member functions with same argument and return type. No matter the object is allocated to any of them, I can call the function call evenly, The program will choose the write function to run for me properly.

For the program four, I will build up the system with an external file to implement the database. The program can read the file automatically. If the user wants to apply other information to the program. They can follow the instruction and edit the external file properly. For the program five, it is more about interaction with the program and the user. The program will prompt to the user asking what kind of activity they are interested in and search for the activities with a key word. Then, display all the options for the user.