

Due Thursday, November 10

Flesh out the code from `BSTStart.py` by first copying it into a file called `BinarySearchTree.py` and then expanding it into a working binary search tree by adding code to both class `BinarySearchTree` and class `TreeNode`. Besides the `get()` and `put()` operations discussed in class, your binary search tree should also contain a `keys()` operation which gathers all the keys into a list in sorted order and returns that list as its value. Test your class implementations in the following way:

Your test code should be a program which solves CSC 115 Program 5, as follows, but using `BinarySearchTree` instead of `dict`. The difference between their output and yours is that the output should always be in order by the key value (man's name).

Write a program which uses a ^{binary search tree}~~dictionary~~ to keep track of who is married to whom. Control the ~~dictionary~~ by giving one-line commands. For example,

^{binary search tree}
m Fred Alice

means that Fred is married to Alice, and

d Fred Alice

means Fred and Alice got divorced. Finally,

w Fred Alice

means one of Fred or Alice has died, leaving a widow or widower. At the beginning of the program you should explain what you require of the user, and when you react to a command, let the user know what you have done. At the end of the program, the user will enter "exit", and you should then print on the screen all the couples that are married. For example, the conversation with the user might go as follows.

Married couples registry. Enter commands one line at a time. To register a couple, for example where the man's name is Wilson and the woman's name is Mary, use the 'm' command, as follows:

```
m Wilson Mary
To remove a couple, use either...
d Wilson
to indicate there was a divorce, or...
w Wilson Mary
to indicate that either Wilson or Mary has died.
Enter exit to stop.
```

```
m Bob Anna
```

```
Bob and Anna are registered.
```

```
m Steve Lia
```

Steve and Lia are registered.

m Eddie Liz

Eddie and Liz are registered.

m Calvin Barbara

Calvin and Barbara are registered.

d Eddie

Eddie and Liz are removed from the registry.

m John Agnes

John and Agnes are registered.

m Monroe Bobbie

Monroe and Bobbie are registered.

w John Agnes

Sorry for your loss. John and Agnes are removed from the registry.

m John Frances

John and Frances are registered.

w Monroe Bobbie

Sorry for your loss. Monroe and Bobbie are removed from the registry.

Exit

Program ending. There remain 4 couples in the registry, as follows:

John and Frances
Bob and Anna
Calvin and Barbara
Steve and Lia