

## Final Sample Questions

### Trees

1. What is the difference between a binary tree and a binary search tree?

2. Recall the following definition of a binary search tree class that was used in homework:

```
class BinarySearchTree:
    #Initializes a tree node to be empty
    def __init__(self):
        self._value = None
        self._left = None
        self._right = None
```

Using the definition above, write a function `same_shape(t1, t2)` that compares the shape of two different binary search trees. Return `True` if they have the same shape and `False` if they are different.

Do **not** compare the `_value` attributes. Only check to see if each node has the same number of children.

Make sure to handle the case of comparing two empty trees. You may access the attributes directly in your function.

## Lists

3. Recall the definition of a linked list:

```
class LinkedList:
    def __init__(self):
        self._head = None

class Node:
    def __init__(self, value):
        self._value = value
        self._next = None
```

Write a function `concat(a_list, b_list)` that takes two linked lists, `a_list` and `b_list`, and returns the concatenation of the two lists, that is, it returns `a_list` followed by `b_list`.

Either (or both) of the lists may be empty.