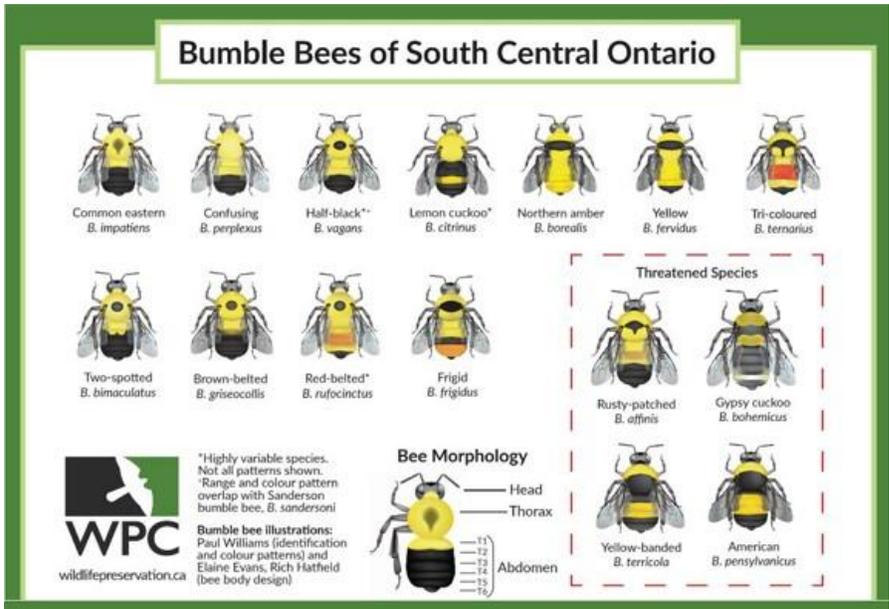


Bumble-bee Species

You may be interested to know that honey bees were introduced to North America about 1600, they aren't native to Ontario.

Our native pollinators include the bumble bee. These bees live in small colonies. They nest in the ground or in decaying wood.



Write binary search and linear search for Strings. Call them for the bumble bee species names.

```
public class bumblebee {
    public static void main (String args[]) {
        new bumblebee ();
    }

    public bumblebee () {
        //Method call for ints
        int a[] = {1, 3, 4, 5, 6, 8, 9, 12, 13, 15, 16, 18, 19, 22, 23, 25, 26, 28, 29};
        int find = IO.inputInt ("Find what? ");
        //linear search
        int location = linearSearch (a, find);
        if (location != -1)
            System.out.println ("Linear: It is in position " + location);
        else
            System.out.println ("Linear: It is not in the array");
        //binary search
        int location2 = binarySearch (a, 0, a.length - 1, find);
        if (location2 != -1)
            System.out.println ("Binary: It is in position " + location2);
        else
            System.out.println ("Binary: It is not in the array");

        //Methods for Strings ... you code both method AND call.
        //Array of bumble-bee species names is here:
        String name[] = {"American", "Brown-belted", "Common Eastern", "Confusing", "Frigid",
            "Half-back", "Lemon Cuckoo", "Northern amber", "Red-belted", "Rusty-patched", "Tri-coloured",
            "Two-spotted", "Yellow", "Yellow-banded"};

    }

    public int binarySearch (int a[], int low, int high, int find) {
        //returns -1 if not found, or index if it is found.
        if (high < low && high < a.length)
            return -1;
        else {
            int mid = (high + low) / 2;
            if (a [mid] == find)
                return mid;
            else if (a [mid] > find)
                return binarySearch (a, low, mid - 1, find);
            else
                return binarySearch (a, mid + 1, high, find);
        }
    }

    public int linearSearch (int a[], int find) {
        //returns -1 if not found, or index if it is found.
        int pos = -1;
        for (int i = 0 ; i < a.length ; i++) {
            if (a [i] == find)
                pos = i;
        }
        return pos;
    }
}
```