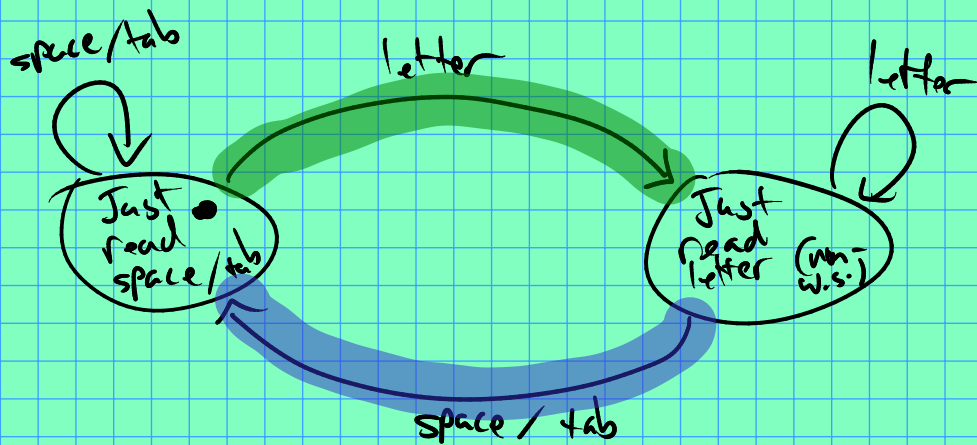


Exercise: count the # of words in a string. For simplicity, let's assume words will be separated by spaces or tabs ('t').

Consider the following picture:



(terminology: this is called a "finite state machine".)

How to program in C/C++??

Idea: use one variable to hold the current state (location of the marker).

Datatype? Bool (since we have only 2 states)  
or more generally, int.

Let's try to sketch it out:

size\_t wordcount(const string & s)

```
{  
    int state; // 0 ≡ just read space/tab  
               // 1 ≡ just read a letter.
```

```
    state = 0; // as if there's a space before  
               // the start of s.
```

size\_t count = 0; // hold # of words  
// found so far.

// look at every character in s, follow  
// the state diagram, and count # of  
// times we cross the green arrow.

```
for (size_t i = 0; i < s.length(); i++) {  
    if (state == 0) { // just read space  
        if (s[i] != ' ' && s[i] != '\t') {  
            // green arrow!!  
            count++;  
            state = 1;  
        }  
    } else { // just read a letter  
        if (s[i] == ' ' || s[i] == '\t') {  
            // blue arrow.  
            state = 0;  
        }  
    }  
}  
return count;  
}
```

---

Harder exercise: remove comments from a C/C++ program.

