Count Words in a File

Yung-Hsiang Lu

(Our) Definition of Words

- one single character in {a, b, c, … z} or {A, B, C, … Z}.
- If x is a word and y is a word, xy (concatenation) is a word.
  - h is a word
  - i is a word
  - “hi” is a word
- Two words are separated by at least one **non**-word character, i.e. anything not in

  $\{a, b, c, \ldots z\} \cup \{A, B, C, \ldots Z\}$.
  - “hi this is C.” contains four words: “hi”, “this”, “is”, “C”.
  - “%^&76u th -0(*& mn” contains three words: “u”, “th”, “mn”.

Regular Expression

- [a - z] means one character in {a, b, c, … z}
- [a - z | A - Z] means one character in {a, b, c, … z} ∪ {A, B, C, … Z}.
- [a - z | A - Z] + means one or multiple characters in

  {a, b, c, … z} ∪ {A, B, C, … Z}
- examples in [a - z | A - Z] +

  u

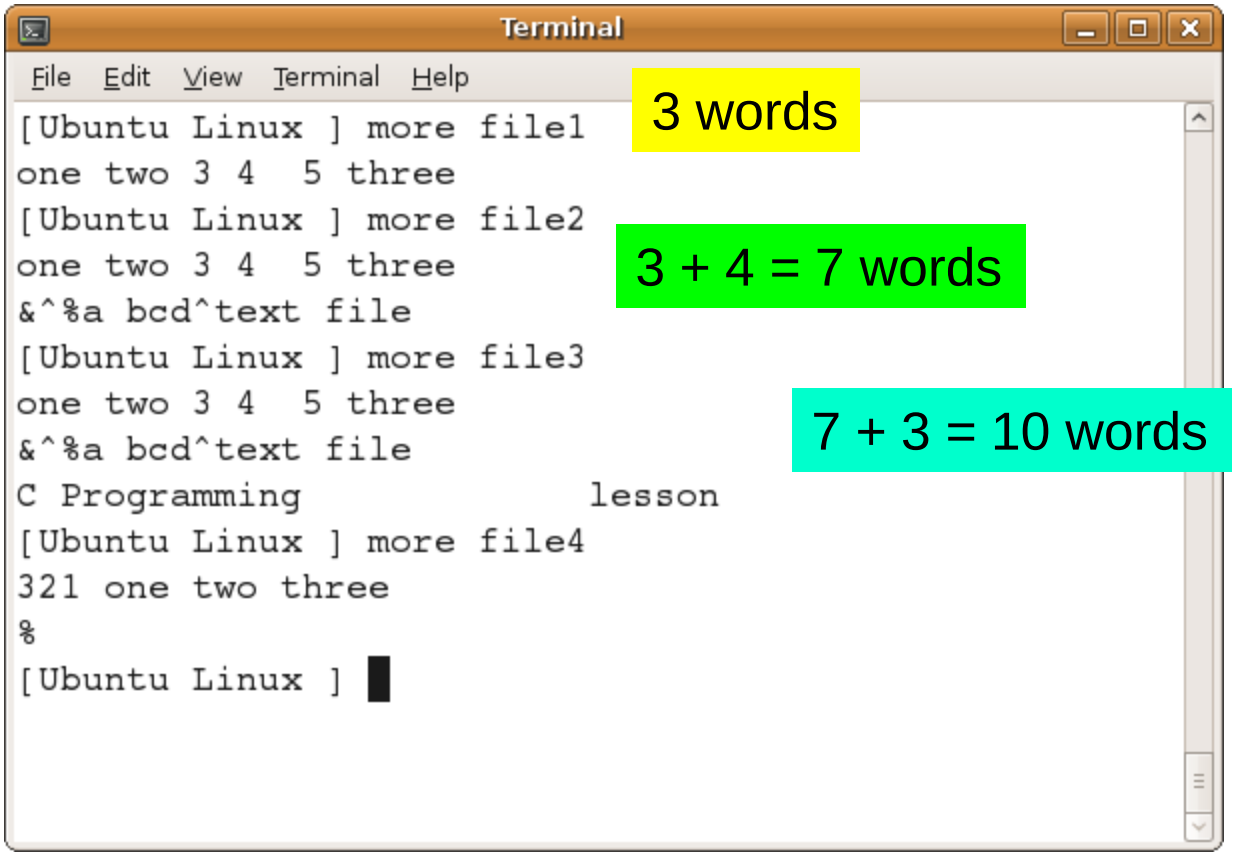
  hy

  bYTm

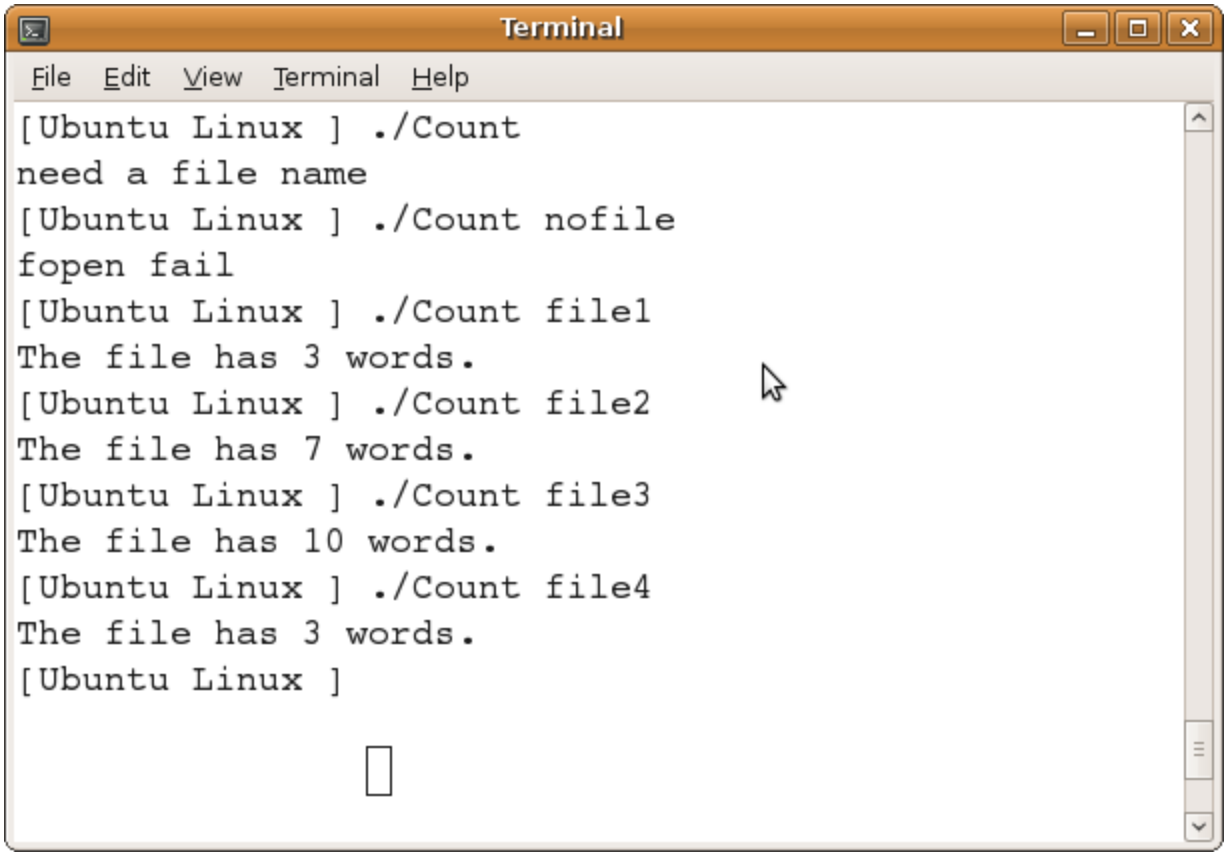
  oNe

Write a Program Counting the Number of Words in a File

Input Files


Terminal
File Edit View Terminal Help
[Ubuntu Linux] more file1
one two 3 4 5 three
[Ubuntu Linux] more file2
one two 3 4 5 three
&^%a bcd^text file
[Ubuntu Linux] more file3
one two 3 4 5 three
&^%a bcd^text file
C Programming lesson
[Ubuntu Linux] more file4
321 one two three
%
[Ubuntu Linux]
3 words
3 + 4 = 7 words
7 + 3 = 10 words

Program's Output



count.c

```c
#include <string.h>
int main(int argc, char * argv[])
{
    if (argc < 2)
    {
        printf("need a file name\n");
        return -1;
    }
    FILE * fh = fopen(argv[1], "r");
    if (fh == NULL)
    {
        printf("fopen fail\n");
        return -1;
    }
    int numWord = 0;
    int isWord = 0;
    int ch;
    while ((ch = fgetc(fh)) != EOF)
    {
        if (((ch >= 'a') && (ch <= 'z')) || ((ch >= 'A') && (ch <= 'Z')))
        {
            if (isWord == 0)
            {
                numWord ++;
            }
            isWord = 1;
        }
        else
        {
            isWord = 0;
        }
    }
    fclose(fh);
    printf("The file has %d words.\n", numWord);
    return 0;
}
```

read one character until reaching the end of file

check whether
ch $\in$ {a, b, c, … z} $\cup$ {A, B, C, … Z}

man fgetc(3) - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.manpagez.com/man/3/fgetc/
Google

DESCRIPTION

The **fgetc**() function obtains the next input character (if present) from the stream pointed at by *stream*, or the next character pushed back on the stream via **ungetc(3)**.

The **getc**() function acts essentially identically to **fgetc**(), but is a macro that expands in-line.

The **getchar**() function is equivalent to **getc**(*stdin*).

The **getw**() function obtains the next *int* (if present) from the stream pointed at by *stream*.

The **getc_unlocked**() and **getchar_unlocked**() functions are equivalent to **getc**() and **getchar**() respectively, except that the caller is responsible for locking the stream with **flockfile(3)** before calling them. These functions may be used to avoid the overhead of locking the stream for each character, and to avoid input being dispersed among multiple threads reading from the same stream.

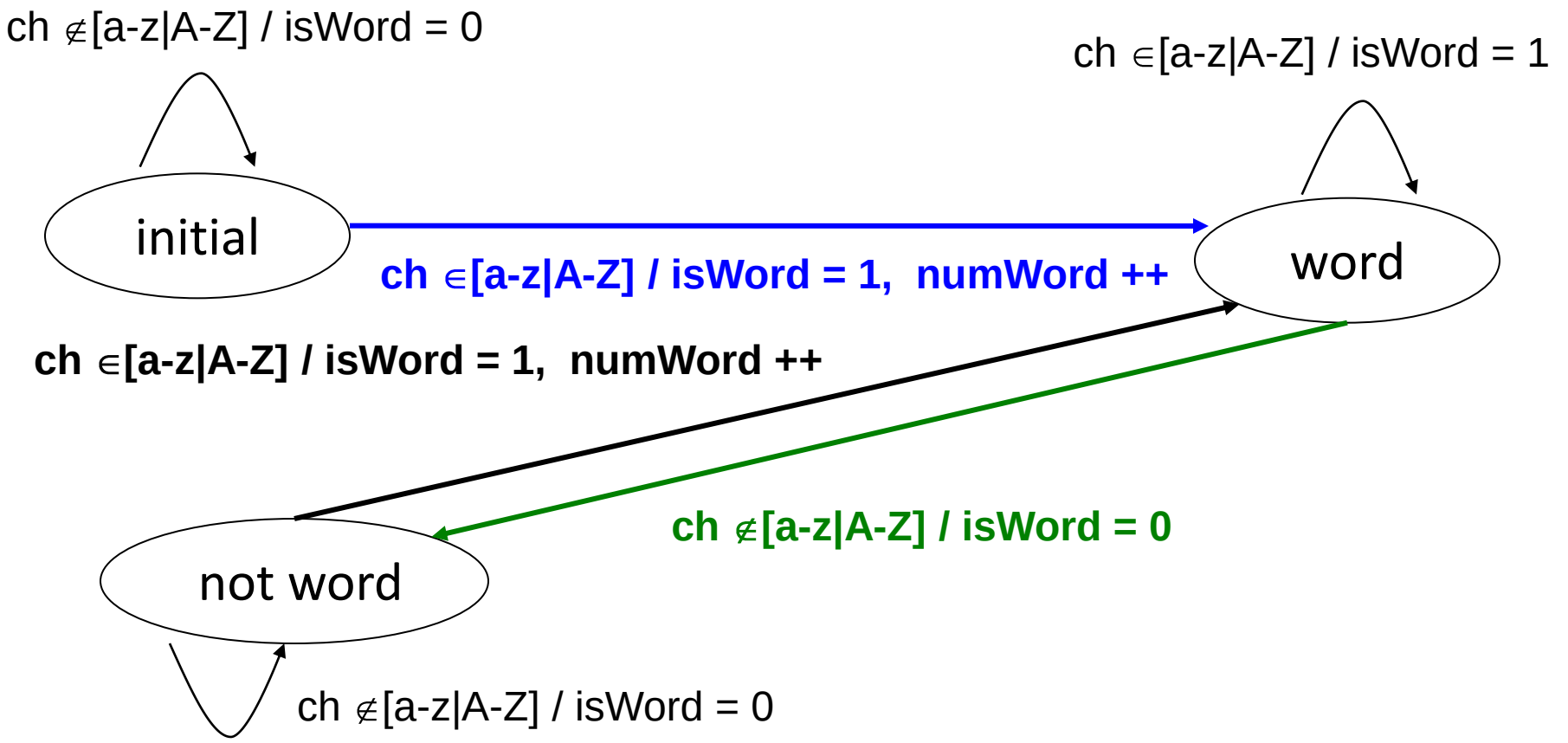
RETURN VALUES

If successful, these routines return the next requested object from the *stream*. Character values are returned as an *unsigned char* converted to an *int*. If the stream is at end-of-file or a read error occurs, the routines return EOF. The routines **feof(3)** and **ferror(3)** must be used to distinguish between end-of-file and error. If an error occurs, the global variable *errno* is set to indicate the error. The end-of-file con-

Done

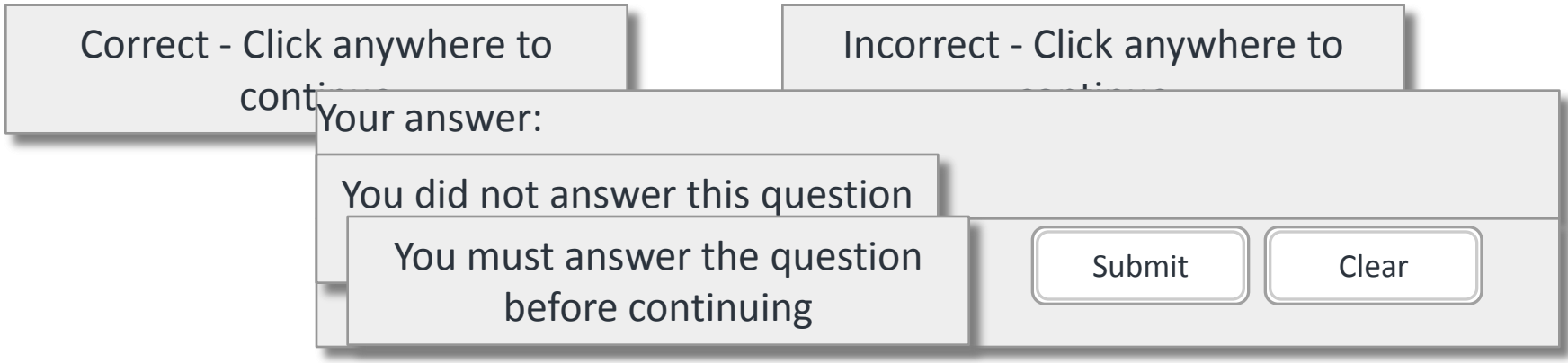
State Diagram

condition / action
condition / action1, action2



In the program, if
int isWord = 0;
is replaced by
int isWord = 1;
Which statement is true?

- A) The program will report 2 words in file1.
- B) The program will report 3 words in file1.
- C) The program will report 4 words in file1.
- D) The program will report 0 word in file1.



Count Word

Your Score	{score}
Max Score	{max-score}
Number of Quiz Attempts	{total-attempts}

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