```
#include "csv.h"
#include <stdio.h>
#include <string.h>
#include "alloc.h"
#include "llist.h"
static char DELIMITER = ',';
LinkedList** csv_read(const char* const filename, size_t* const c)
 *c = 0;
 FILE* f = fopen(filename, "r");
   {\bf return}\ {\rm NULL};
 char line[256];
 size_t lineCount = 0;
 while (fgets(line, sizeof(line), f))
   ++lineCount;
 LinkedList** csv = (LinkedList**)malloc(sizeof(LinkedList*) * lineCount);
 if (!csv)
   return NULL;
 \mathbf{rewind}(f); \ /\!/ \ \textit{go back to the beginning}
 \mathbf{while}\ (\mathbf{fgets}(\mathrm{line},\ \mathbf{sizeof}(\mathrm{line}),\ f))
   LinkedList^* entry = ll_new();
   size_t p = 0;
   while (p < strlen(line))
     \mathbf{if}\ (\mathrm{line}[\mathrm{p}] == \mathrm{DELIMITER}\ ||\ \mathrm{line}[\mathrm{p}] == \ \verb|'\n'|)
       ++p;
```

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}
   else
     size_t len = 0;
    \mathbf{if}\ (\mathrm{line}[\mathrm{p}] == \texttt{'"'})
      ++p;
      size_t end = p;
      while (line[end] != '"')
       ++end;
      len = end - p;
     else
      size_t end = p;
      while (line[end] != DELIMITER && line[end] != '\n')
        ++end;
      len = end - p;
     char^* str = mt_malloc(sizeof(char) * (len + 1));
     memcpy(str, line+p, sizeof(char) * len);
     str[len] = '\0';
    ll_push_back(entry, str);
     p += len + 1;
 if (ll_size(entry))
   csv[(*c)++] = entry;
fclose(f);
return csv;
```