

March 17, 2021 at 13:13

2* Here's the layout of the C program:

```
#define abort(c, m)
    {
        fprintf(stderr, "%s!\n%s", m, buf); return c;
    }
#include <stdio.h>
#include <string.h>
#include <ctype.h>
typedef struct {
    char key[max_key];
    char entry[max_size];
} item;
item items[max_items];    ▷ all items of current group ◁
item *sorted[max_items];  ▷ pointers to items in alphabetic order ◁
char cur_page[10];        ▷ page number, as a string ◁
char buf[max_size];       ▷ current line of input ◁
char *input_status;       ▷ Λ if end of input reached, else buf ◁
int main()
{
    register char *p, *q;
    register int n;        ▷ current number of items ◁
    register item *x, **y;
    input_status ← fgets(buf, max_size, stdin);
    while (input_status) {
        ◁ Check that buf contains a valid page-number line 3);
        ◁ Read and sort additional lines, until buf terminates a group 4);
        ◁ Output the current group 5*);
    }
    return 0;             ▷ normal exit ◁
}
```

```
5* ◁ Output the current group 5* ) ≡
{
    for (y ← sorted; y < sorted + n; y++) printf("%s\n", (*y)→entry);
    printf("\\donewithpage%s\n", cur_page);
}
```

This code is used in section 2*.

10* A corresponding change to the copying loop is also needed.

```
◁ Copy the buffer to x→entry 10* ) ≡
{
    register int toggle ← 0;
    for (p ← buf + 2, q ← x→entry; (*p ≠ '␣' ∨ toggle) ∧ *p; p++) {
        if (*p ≡ '"') toggle ⊕= 1;
        if (*p ≠ '␣') *q++ ← *p;
    }
    for (; *p; p++) *q++ ← *p;
}
```

This code is used in section 6.

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- ⟨ Check that *buf* contains a valid page-number line 3 ⟩ Used in section 2*.
- ⟨ Copy the buffer to *x-entry* 10* ⟩ Used in section 6.
- ⟨ Copy *buf* to item *x* 6 ⟩ Used in section 4.
- ⟨ Output the current group 5* ⟩ Used in section 2*.
- ⟨ Process a custom-formatted identifier 7 ⟩ Used in section 6.
- ⟨ Read and sort additional lines, until *buf* terminates a group 4 ⟩ Used in section 2*.
- ⟨ Scan past α 9 ⟩ Used in section 6.
- ⟨ Sort the new item into its proper place 8 ⟩ Used in section 4.

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