IT University of Copenhagen

Operativsystemer og C

BOSC

Obligatorisk Opgave 3

Author:
Omar Khan (omsh@itu.dk)
Mads Ljungberg (malj@itu.dk)

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```
1  /*
2  Main program for the virtual memory project.
3  Make all of your modifications to this file.
4  You may add or rearrange any code or data as you need.
5  The header files page_table.h and disk.h explain
6  how to use the page table and disk interfaces.
7  */
8
9  #include "page_table.h"
10 #include "disk.h"
11 #include "program.h"
12
13 #include <stdio.h>
14 #include <stdlib.h>
15 #include <string.h>
16 #include <errno.h>
17
18 void page_fault_handler( struct page_table *pt, int page )
19 {
20   printf("page fault on page #%d\n",page);
21   exit(1);
22 }
23
24 int main( int argc, char *argv[] )
25 {
26   if(argc!=5) {
```

```
27      printf("use: virtmem <npages> <nframes> <rand|fifo|custom>
            <sort|scan|focus>\n");
28      return 1;
29    }
30
31    int npages = atoi(argv[1]);
32    int nframes = atoi(argv[2]);
33    const char *program = argv[4];
34
35    struct disk *disk = disk_open("myvirtualdisk",npages);
36    if(!disk) {
37      fprintf(stderr,"couldn't create virtual disk:
            %s\n",strerror(errno));
38      return 1;
39    }
40
41
42    struct page_table *pt = page_table_create( npages, nframes,
          page_fault_handler );
43    if(!pt) {
44      fprintf(stderr,"couldn't create page table: %s\n",strerror(errno));
45      return 1;
46    }
47
48    char *virtmem = page_table_get_virtmem(pt);
49
50    char *physmem = page_table_get_physmem(pt);
51
52    if(!strcmp(program,"sort")) {
53      sort_program(virtmem,npages*PAGE_SIZE);
54
55    } else if(!strcmp(program,"scan")) {
56      scan_program(virtmem,npages*PAGE_SIZE);
57
58    } else if(!strcmp(program,"focus")) {
59      focus_program(virtmem,npages*PAGE_SIZE);
60
61    } else {
62      fprintf(stderr,"unknown program: %s\n",argv[3]);
63
64    }
65
66    page_table_delete(pt);
67    disk_close(disk);
68
69    return 0;
```

```
70 }
```