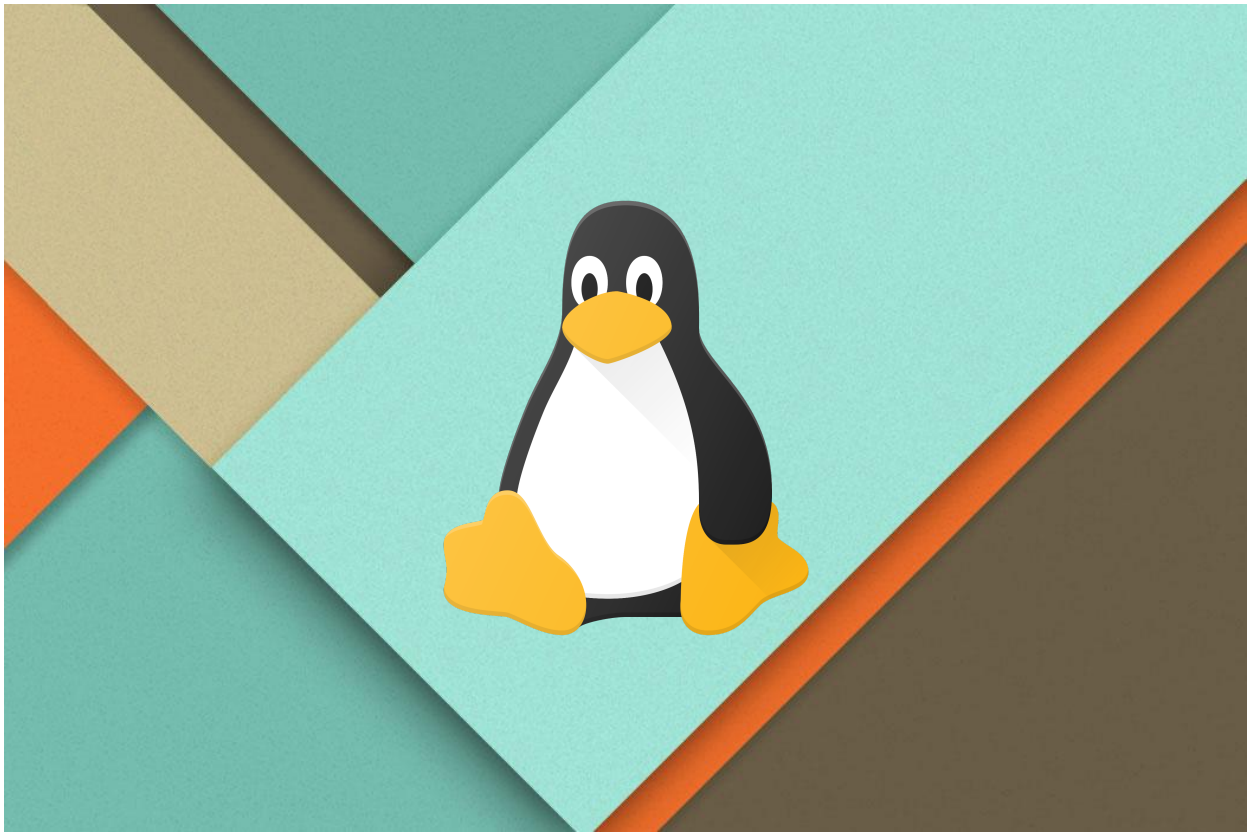

Operating Systems Lab

Experiment No. 8

29.03.2022

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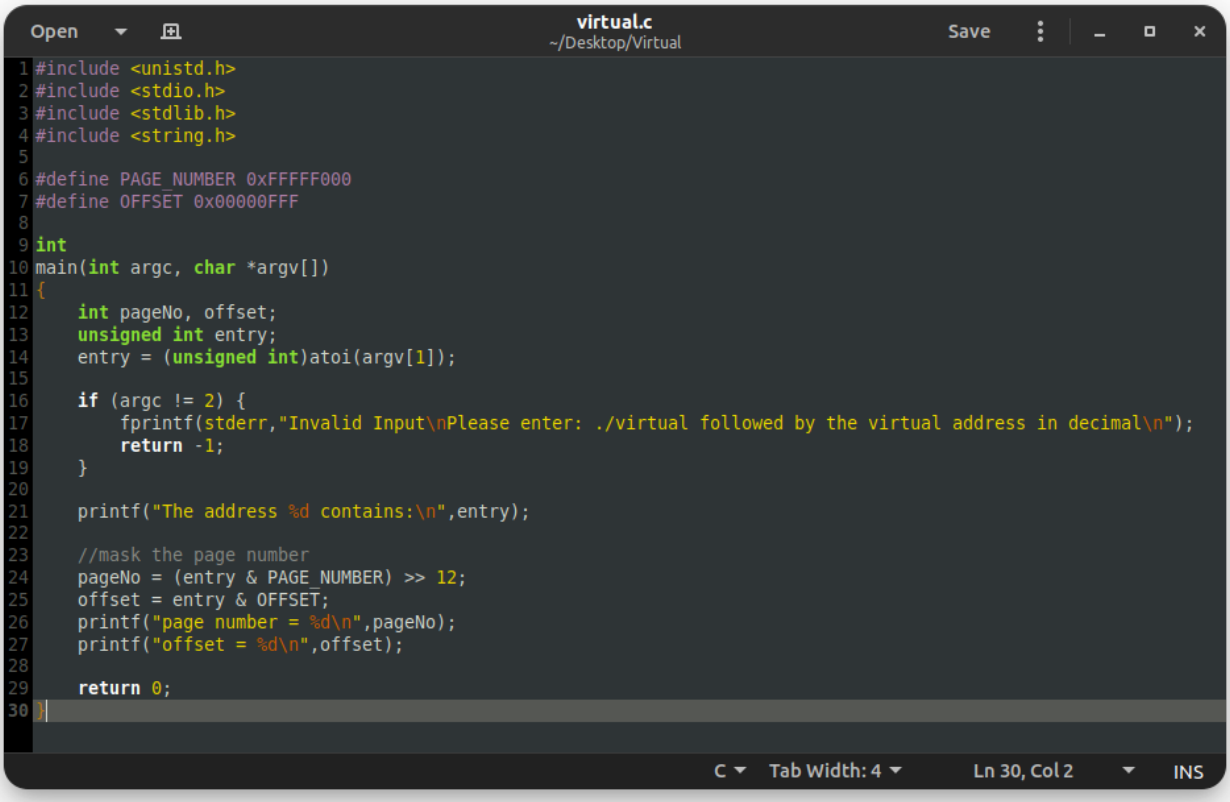
Aim

Assume that a system has a 64-bit virtual address with a 4KB page size.

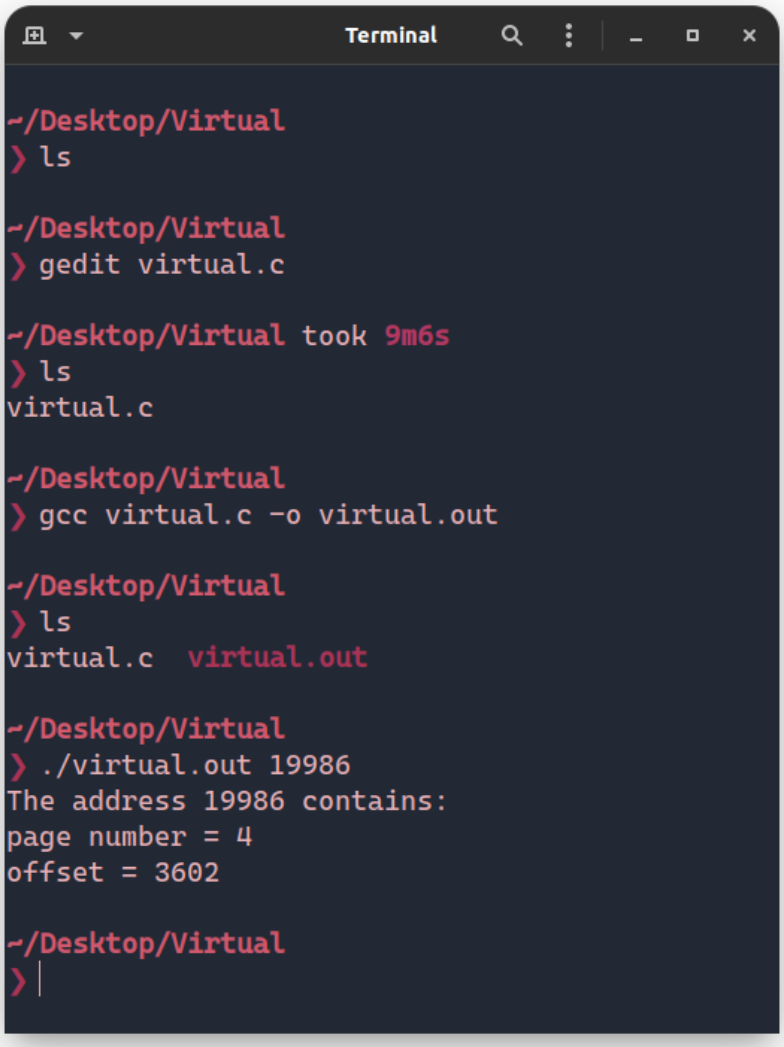
Write a C program that is passed a virtual address (in decimal) on the command line and have it output the page number and offset for the given address.

Program




```c
#include <unistd.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define PAGE_NUMBER 0xFFFFF000
#define OFFSET 0x00000FFF

int
main(int argc, char *argv[])
{
    int pageNo, offset;
    unsigned int entry;
    entry = (unsigned int)atoi(argv[1]);

    if (argc != 2) {
        fprintf(stderr,"Invalid Input\nPlease enter: ./virtual followed by the virtual address in decimal\n");
        return -1;
    }

    printf("The address %d contains:\n",entry);

    //mask the page number
    pageNo = (entry & PAGE_NUMBER) >> 12;
    offset = entry & OFFSET;
    printf("page number = %d\n",pageNo);
    printf("offset = %d\n",offset);

    return 0;
}
```

Output


Terminal
~/Desktop/Virtual
❯ ls
~/Desktop/Virtual
❯ gedit virtual.c
~/Desktop/Virtual took 9m6s
❯ ls
virtual.c
~/Desktop/Virtual
❯ gcc virtual.c -o virtual.out
~/Desktop/Virtual
❯ ls
virtual.c virtual.out
~/Desktop/Virtual
❯ ./virtual.out 19986
The address 19986 contains:
page number = 4
offset = 3602
~/Desktop/Virtual
❯