

# Лабораторная работа 14

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Изучить основы программирования в оболочке ОС UNIX/Linux. Научиться писать командные файлы.

Написать программы

## Выполнение лабораторной работы

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# Создал файлы, запустил их

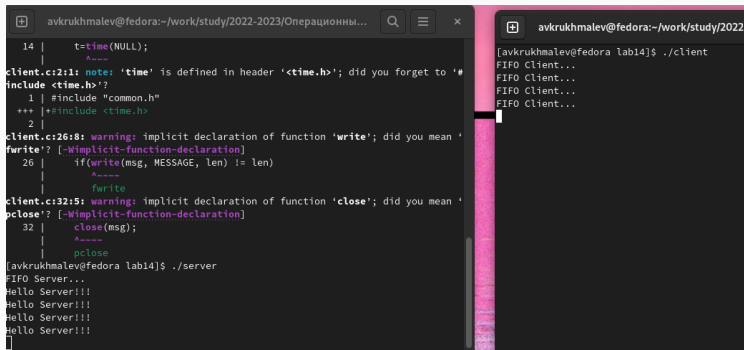
```
avkrukhmalev@fedora:~/work/study/2022-2023/Операционны...  
fread? [-Wimplicit-function-declaration]  
25 | while((n = read(readfd, buff, MAX_BUFF)) > 0)  
    | ^~~~~  
    | fread  
server.c:28:14: warning: implicit declaration of function 'write'; did you mean  
'write'? [-Wimplicit-function-declaration]  
28 |     if(write(1, buff, n) != n)  
    |     ^~~~~  
    | write  
server.c:37:3: warning: implicit declaration of function 'close'; did you mean '  
fclose'? [-Wimplicit-function-declaration]  
37 |     close(readfd);  
    |     ^~~~~  
    | fclose  
server.c:39:6: warning: implicit declaration of function 'unlink' [-Wimplicit-fu  
nction-declaration]  
39 |     if(unlink(FIFO_NAME) < 0)  
    |     ^~~~~  
    | unlink  
gcc client.c -o client  
client.c:13:5: warning: implicit declaration of function 'sleep' [-Wimplicit-fu  
nction-declaration]  
13 |     sleep(3);  
    |     ^~~~~
```

```
avkrukhmalev@fedora:~/work/study/2022-2023/Операционны...  
[avkrukhmalev@fedora lab14]$
```

```
client.c - GNU Emacs at fedora  
File Edit Options Buffers Tools C Help  
[Include "common.h"]  
#define MESSAGE "Hello Server!!\n"  
int  
main()  
{  
    int msg, len, i;  
    long int t;  
    for(i=0; i<20; i++)  
    {  
        sleep(3);  
        t=time(NULL);  
        printf("FIFO Client...\n");  
        if((msg = open(FIFO_NAME, O_WRONLY)) < 0)  
        {  
            fprintf(stderr, "%s: невозможно открыть FIFO (%s)\n",  
                __FILE__, strerror(errno));  
            exit(-1);  
        }  
        len = strlen(MESSAGE);  
        if(write(msg, MESSAGE, len) != len)  
        {  
            fprintf(stderr, "%s: ошибка записи в FIFO (%s)\n",  
                __FILE__, strerror(errno));  
            exit(-2);  
        }  
        close(msg);  
    }  
    exit(0);  
}
```

```
client2.c - GNU Emacs at fedora  
File Edit Options Buffers Tools C Help  
[Include "common.h"]  
#define MESSAGE "Hello Server!!\n"  
int  
main()  
{  
    int writefd, msglen, count;  
    long long int t;  
    char message[10];  
    for(count=0; count<5; ++count)  
    {  
        sleep(5);  
        t=(long long int) time(0);  
        printf(message, "%lli", t);  
        if((writefd = open(FIFO_NAME, O_WRONLY)) < 0)  
        {  
            fprintf(stderr, "%s: невозможно открыть FIFO (%s)\n",  
                __FILE__, strerror(errno));  
            exit(-1);  
        }  
        msglen = strlen(MESSAGE);  
        if(write(writefd, MESSAGE, msglen) != msglen)  
        {  
            fprintf(stderr, "%s: ошибка записи в FIFO (%s)\n",  
                __FILE__, strerror(errno));  
            exit(-2);  
        }  
    }  
}
```

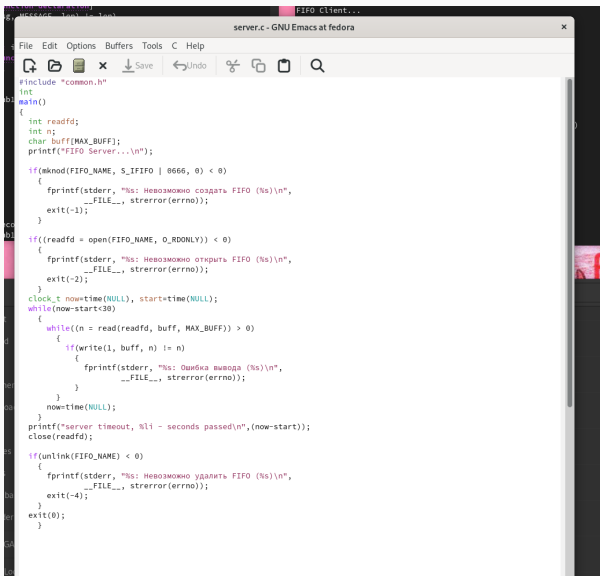
U:--- client2.c Top L1 (C)=1 Abbrev  
[Back Tutorial Learn basic keystroke commands  
Emacs Guided Tour Overview of Emacs features at gnu.org  
U:NN- +GNU Emacs+ 11% L3 (Fundamental)]



The image shows two terminal windows side-by-side. The left window displays the compilation of a C program with several compiler warnings. The right window shows the execution of the compiled program, where the server prints 'Hello Server!!!' and the client prints 'FIFO Client...'. The terminal windows have a dark background with light-colored text.

```
avkrukhmalev@fedora:~/work/study/2022-2023/Операционны...  
14 | t=time(NULL);  
    |  
    |  
client.c:2:1: note: 'time' is defined in header '<time.h>'; did you forget to '#  
include <time.h>'?  
1 | #include "common.h"  
+++ |+#include <time.h>  
2 |  
client.c:26:8: warning: implicit declaration of function 'write'; did you mean '  
fwrite'? [-Wimplicit-function-declaration]  
26 |     if(write(msg, MESSAGE, len) != len)  
    |         fwrite  
client.c:32:5: warning: implicit declaration of function 'close'; did you mean '  
pclose'? [-Wimplicit-function-declaration]  
32 |     close(msg);  
    |     pclose  
[avkrukhmalev@fedora lab14]$ ./server  
FIFO Server...  
Hello Server!!!  
Hello Server!!!  
Hello Server!!!  
Hello Server!!!  
[  
[avkrukhmalev@fedora lab14]$ ./client  
FIFO Client...  
FIFO Client...  
FIFO Client...  
FIFO Client...
```

Рис. 2: 2



```
#include "common.h"
int
main()
{
    int readfd;
    int n;
    char buff[MAX_BUFF];
    printf("FIFO Server...\n");

    if(mknod(FIFO_NAME, S_IFIFO | 0666, 0) < 0)
    {
        fprintf(stderr, "%s: Невозможно создать FIFO (%s)\n",
            __FILE__, strerror(errno));
        exit(-1);
    }

    if((readfd = open(FIFO_NAME, O_RDONLY)) < 0)
    {
        fprintf(stderr, "%s: Невозможно открыть FIFO (%s)\n",
            __FILE__, strerror(errno));
        exit(-2);
    }

    clock_t now=time(NULL), start=time(NULL);
    while(now-start<30)
    {
        while((n = read(readfd, buff, MAX_BUFF)) > 0)
        {
            if(write(1, buff, n) != n)
            {
                fprintf(stderr, "%s: Ошибка вывода (%s)\n",
                    __FILE__, strerror(errno));
            }
        }
        now=time(NULL);
    }
    printf("server timeout, %li - seconds passed\n",now-start);
    close(readfd);

    if(unlink(FIFO_NAME) < 0)
    {
        fprintf(stderr, "%s: Невозможно удалить FIFO (%s)\n",
            __FILE__, strerror(errno));
        exit(-4);
    }
    exit(0);
}
```

Научился писать небольшие командные файлы