

# Лабораторная работа №10. Программирование в командном процессоре ОС UNIX. Командные файлы.

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Цель работы:

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Приобрести простейшие навыки разработки, анализа, тестирования и отладки приложений в ОС типа UNIX/Linux на примере создания на языке программирования С калькулятора с простейшими функциями.

## Выполнение лабораторной работы

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Выполните компиляцию программы калькулятора посредством gcc:

```
grigori@Venus:~/work/os/lab_prog$ gcc -c calculate.c
^[[Agrigori@Venus:~/work/os/lab_prog$ gcc -c main.c
grigori@Venus:~/work/os/lab_prog$ ls
calculate.c calculate.h calculate.o main.c main.o Makefile
grigori@Venus:~/work/os/lab_prog$ gcc calculate.o main.o -o calcul -lm
grigori@Venus:~/work/os/lab_prog$ ls
calcul calculate.c calculate.h calculate.o main.c main.o Makefile
```

Figure 1: picture1

Создайте Makefile со следующим содержанием:

```
#
# Makefile
#

CC = gcc
CFLAGS =
LIBS = -lm

calcul: calculate.o main.o
    gcc calculate.o main.o -o calcul $(LIBS)

calculate.o: calculate.c calculate.h
    gcc -c calculate.c $(CFLAGS)

main.o: main.c calculate.h
    gcc -c main.c $(CFLAGS)

clean:
    -rm calcul *.o *~

# End Makefile
```

Figure 2: picture2

С помощью gdb выполните отладку программы calcul (перед использованием gdb исправьте Makefile):

```
grtgoril@Venus:~/work/os/lab_prog$ gdb ./calcul
```

Figure 3: picture3

## С помощью утилиты splint попробуйте проанализировать коды файлов calculate.c и main.c.

```
grigorii@Venus:~/work/os/lab_prog$ splint calculate.c
Splint 3.1.2 --- 21 Feb 2021

calculate.h:7:37: Function parameter Operation declared as manifest array (size
        constant is meaningless)
    A formal parameter is declared as an array with size. The size of the array
    is ignored in this context, since the array formal parameter is treated as a
    pointer. (Use -fixedformalarray to inhibit warning)
calculate.c:10:31: Function parameter Operation declared as manifest array
        (size constant is meaningless)
calculate.c: (in function Calculate)
calculate.c:16:5: Return value (type int) ignored: scanf("%f", &Sec...
    Result returned by function call is not used. If this is intended, can cast
    result to (void) to eliminate message. (Use -retvalint to inhibit warning)
calculate.c:22:5: Return value (type int) ignored: scanf("%f", &Sec...
calculate.c:28:5: Return value (type int) ignored: scanf("%f", &Sec...
calculate.c:34:5: Return value (type int) ignored: scanf("%f", &Sec...
calculate.c:35:8: Dangerous equality comparison involving float types:
        SecondNumeral == 0
    Two real (float, double, or long double) values are compared directly using
    == or != primitive. This may produce unexpected results since floating point
    representations are inexact. Instead, compare the difference to FLT_EPSILON
    or DBL_EPSILON. (Use -realcompare to inhibit warning)
calculate.c:38:13: Return value type double does not match declared type float:
        (HUGE_VAL)
    To allow all numeric types to match, use +relaxtypes.
calculate.c:46:5: Return value (type int) ignored: scanf("%f", &Sec...
calculate.c:47:11: Return value type double does not match declared type float:
        (pow(Numeral, SecondNumeral))
calculate.c:50:11: Return value type double does not match declared type float:
        (sqrt(Numeral))
calculate.c:52:11: Return value type double does not match declared type float:
        (sin(Numeral))
calculate.c:54:11: Return value type double does not match declared type float:
        (cos(Numeral))
calculate.c:56:11: Return value type double does not match declared type float:
        (tan(Numeral))
calculate.c:60:11: Return value type double does not match declared type float:
        (HUGE_VAL)
```

Finished checking --- 15 code warnings

```
grigorii@Venus:~/work/os/lab_prog$ splint main.c
Splint 3.1.2 --- 21 Feb 2021
```



## Вывод

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В ходе работы я приобрел простейшими навыками разработки, анализа, тестирования и отладки приложений в ОС типа UNIX/Linux на примере создания на языке программирования С калькулятора с простейшими функциями.