

Лабораторная работа №11

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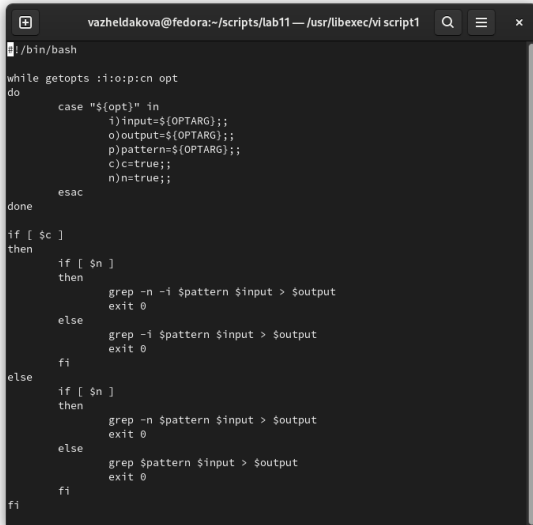
26 мая 2022 г.

Российский университет дружбы народов

Программирование в командном процессоре ОС UNIX. Ветвления и циклы

- Изучить основы программирования в оболочке ОС UNIX.
- Научиться писать более сложные командные файлы с использованием логических управляющих конструкций и циклов.

Первое задание

A screenshot of a terminal window with a dark background. The window title bar shows the user 'vazheldakova' at 'fedora' in the directory '~/scripts/lab11', editing a file named 'script1' using the 'vi' editor. The prompt is '#!/bin/bash'. The script is a shell script that processes command-line options. It starts with a 'while getopts' loop that iterates over options 'i', 'o', 'p', 'c', and 'n'. For each option, it sets a corresponding variable: 'input' for 'i', 'output' for 'o', 'pattern' for 'p', 'c' for 'c', and 'n' for 'n'. After the loop, it checks if option 'c' was provided. If so, it enters a nested 'if' loop over option 'n'. If 'n' is provided, it runs 'grep -n -i \$pattern \$input > \$output' and 'exit 0'. If 'n' is not provided, it runs 'grep -i \$pattern \$input > \$output' and 'exit 0'. If 'c' was not provided, it enters another 'if' loop over option 'n'. If 'n' is provided, it runs 'grep -n \$pattern \$input > \$output' and 'exit 0'. If 'n' is not provided, it runs 'grep \$pattern \$input > \$output' and 'exit 0'. Finally, it ends with 'fi' for the outer 'if' loop.

```
#!/bin/bash

while getopts :i:o:p:cn opt
do
    case "${opt}" in
        i)input=${OPTARG};;
        o)output=${OPTARG};;
        p)pattern=${OPTARG};;
        c)c=true;;
        n)n=true;;
    esac
done

if [ $c ]
then
    if [ $n ]
    then
        grep -n -i $pattern $input > $output
        exit 0
    else
        grep -i $pattern $input > $output
        exit 0
    fi
else
    if [ $n ]
    then
        grep -n $pattern $input > $output
        exit 0
    else
        grep $pattern $input > $output
        exit 0
    fi
fi
```

Figure 1: Первый скрипт

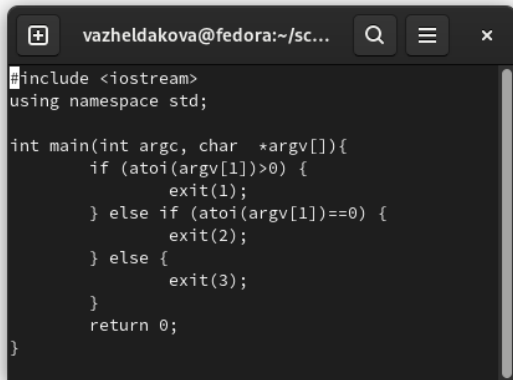
Первое задание



```
vazheldakova@fedora:~/scripts/lab11
[vazheldakova@fedora lab11]$ ./script1 -i /home/vazheldakova/file.txt -o res.txt -p "KEY" -n -c
[vazheldakova@fedora lab11]$ cat res.txt
18:brlapi.key
25:chrony.keys
199:request-key.conf
200:request-key.d
250:trusted-key.key
[vazheldakova@fedora lab11]$ ./script1 -i /home/vazheldakova/file.txt -o res.txt -p "KEY" -c
[vazheldakova@fedora lab11]$ cat res.txt
brlapi.key
chrony.keys
request-key.conf
request-key.d
trusted-key.key
[vazheldakova@fedora lab11]$ ./script1 -i /home/vazheldakova/file.txt -o res.txt -p "KEY"
[vazheldakova@fedora lab11]$ cat res.txt
[vazheldakova@fedora lab11]$
```

Figure 2: Запуск первого скрипта с разными флагами

Второе задание

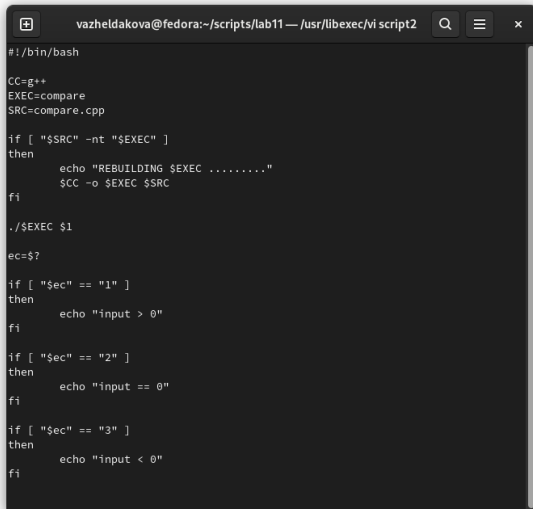
A screenshot of a terminal window with a dark background. The window title bar shows the username 'vazheldakova@fedora:~/sc...' and standard window controls (search, menu, close). The code is written in a light-colored monospaced font. It includes the <iostream> header, uses the std namespace, and defines a main function that checks the value of argv[1] using atoi and calls exit with different codes based on the result.

```
#include <iostream>
using namespace std;

int main(int argc, char *argv[]){
    if (atoi(argv[1])>0) {
        exit(1);
    } else if (atoi(argv[1])==0) {
        exit(2);
    } else {
        exit(3);
    }
    return 0;
}
```

Figure 3: Программа на языке C++

Второе задание



```
vazheldakova@fedora:~/scripts/lab11 — /usr/libexec/vi script2
#!/bin/bash
CC=g++
EXEC=compare
SRC=compare.cpp

if [ "$SRC" -nt "$EXEC" ]
then
    echo "REBUILDING $EXEC ....."
    $CC -o $EXEC $SRC
fi

./$EXEC $1

ec=$?

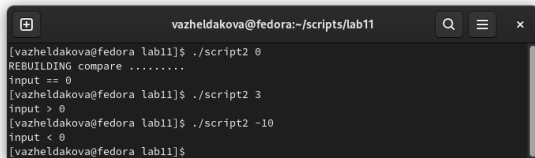
if [ "$ec" == "1" ]
then
    echo "input > 0"
fi

if [ "$ec" == "2" ]
then
    echo "input == 0"
fi

if [ "$ec" == "3" ]
then
    echo "input < 0"
fi
```

Figure 4: Второй скрипт

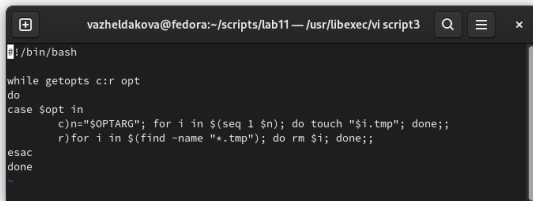
Второе задание



```
vazheldakova@fedora:~/scripts/lab11
[vazheldakova@fedora lab11]$ ./script2 0
REBUILDING compare .....
input == 0
[vazheldakova@fedora lab11]$ ./script2 3
input > 0
[vazheldakova@fedora lab11]$ ./script2 -10
input < 0
[vazheldakova@fedora lab11]$
```

Figure 5: Запуск второго скрипта с разными числами

Третье задание

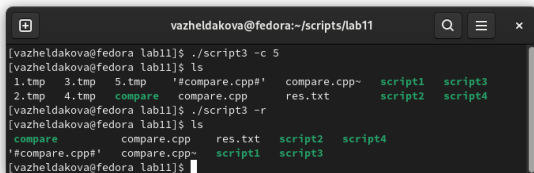
A terminal window with a dark background. The title bar shows the user 'vazheldakova@fedora' in the directory '~/scripts/lab11' editing the file '/usr/libexec/vi script3'. The prompt is 'vazheldakova@fedora:~/scripts/lab11 — /usr/libexec/vi script3'. The terminal content shows a shell script with a while loop and a case statement. The prompt is 'vazheldakova@fedora:~/scripts/lab11 — /usr/libexec/vi script3'. The terminal content shows a shell script with a while loop and a case statement. The prompt is 'vazheldakova@fedora:~/scripts/lab11 — /usr/libexec/vi script3'.

```
#!/bin/bash

while getopts c:r opt
do
case $opt in
  c)n="$OPTARG"; for i in $(seq 1 $n); do touch "$i.tmp"; done;;
  r)for i in $(find -name "*.tmp"); do rm $i; done;;
  esac
done
```

Figure 6: Третий скрипт

Третье задание



```
vazheldakova@fedora:~/scripts/lab11
[vazheldakova@fedora lab11]$ ./script3 -c 5
[vazheldakova@fedora lab11]$ ls
1.tmp  3.tmp  5.tmp  '#compare.cpp#'  compare.cpp~  script1  script3
2.tmp  4.tmp  compare  compare.cpp      res.txt      script2  script4
[vazheldakova@fedora lab11]$ ./script3 -r
[vazheldakova@fedora lab11]$ ls
compare  compare.cpp  res.txt  script2  script4
'#compare.cpp#'  compare.cpp~  script1  script3
[vazheldakova@fedora lab11]$
```

Figure 7: Запуск третьего скрипта с флагом удаления и создания файлов

Четвёртое задание



```
vazheldakova@fedora:~/scripts/lab11 — /usr/libexec/vi script4
#!/bin/bash

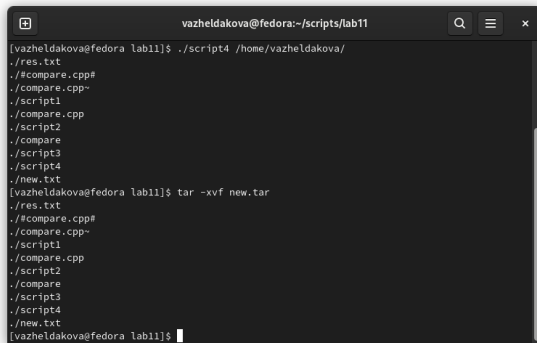
while getopts :d: opt; do
case $opt in
    d)dir="$OPTARG";;
esac
done

find $dir -type f -mtime -7 > new.txt

tar -cvf new.tar -T new.txt
```

Figure 8: Четвёртый скрипт

Четвёртое задание



A terminal window titled 'vazheldakova@fedora:~/scripts/lab11' with search, menu, and close buttons. The terminal shows the execution of a script and the extraction of a tar archive.

```
vazheldakova@fedora:~/scripts/lab11
[vazheldakova@fedora lab11]$ ./script4 /home/vazheldakova/
./res.txt
./#compare.cpp#
./compare.cpp~
./script1
./compare.cpp
./script2
./compare
./script3
./script4
./new.txt
[vazheldakova@fedora lab11]$ tar -xvf new.tar
./res.txt
./#compare.cpp#
./compare.cpp~
./script1
./compare.cpp
./script2
./compare
./script3
./script4
./new.txt
[vazheldakova@fedora lab11]$
```

Figure 9: Запуск четвёртого скрипта и проверка выполнения

- Изучили основы программирования в оболочке ОС UNIX.
- Научились писать более сложные командные файлы с использованием логических управляющих конструкций и циклов.