

# Отчет по лабораторной работе № 3 по курсу “Фундаментальная информатика”

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Отчет сдан «                    » \_\_\_\_\_ 20\_\_ г., итоговая  
оценка \_\_\_\_\_

Подпись преподавателя  
\_\_\_\_\_

## 1. Тема: Операционная среда ОС UNIX

## 2. Цель работы: взять цель работы из текста лр

## 3. Задание (вариант № номер варианта, если есть): Приобретение основных навыков работы в ОС UNIX

## 4. Оборудование (студента):

Процессор AMD ryzen 7 5800U 8x 3.9GH с ОП 16384 Мб, НМД 512Гб. Монитор 1920x1080

## 5. Программное обеспечение (студента):

Операционная система семейства: *linux*, наименование: *ubuntu*, версия *18.10 cosmic*  
интерпретатор команд: *bash* версия *4.4.19*.

Система программирования -- версия --, редактор текстов *emacs* версия *25.2.2*

Утилиты операционной системы --

Прикладные системы и программы --

Местонахождение и имена файлов программ и данных на домашнем компьютере --

## 6. Идея, метод, алгоритм решения задачи (в формах: словесной, псевдокода, графической [блок-схема, диаграмма, рисунок, таблица] или формальные спецификации с пред- и постусловиями)

Попробовать подключиться к удаленному серверу, познакомиться с командами *tar*, *gzip*

**7. Сценарий выполнения работы** [план работы, первоначальный текст программы в черновике (можно на отдельном листе) и тесты либо соображения по тестированию].

- 1) открыть *wsl*
- 2) подключиться к удаленному серверу
- 3) передать файла на удаленный сервер
- 4) скачать файлы с удаленного сервера
- 5) создать архив

- 6) передать архив на удаленный сервер
- 7) распаковать архив на удаленном сервере

**8. Распечатка протокола** (подклеить листинг окончательного варианта программы с тестовыми примерами, подписанный преподавателем).

Протокол компьютера:

```
root@LAPTOP-HO30I6QD:/mnt/c/Users/Кирилл# su newuser
newuser@LAPTOP-HO30I6QD:/mnt/c/Users/Кирилл$ cd
newuser@LAPTOP-HO30I6QD:~$ ls
1    Lab_works java privetremix.mp4 test
1.txt c++      lab3 script1.bash test1.bash.save
newuser@LAPTOP-HO30I6QD:~$ cd lab3
newuser@LAPTOP-HO30I6QD:~/lab3$ touch server.txt
newuser@LAPTOP-HO30I6QD:~/lab3$ scp server.txt
jojithebest@shell.xshellz.com:/home/j/jojithebest
jojithebest@shell.xshellz.com's password:
server.txt                                100% 0 0.0KB/s 00:00
newuser@LAPTOP-HO30I6QD:~/lab3$ scp
jojithebest@shell.xshellz.com:/home/j/jojithebestusage: scp [-346BCpqrTv] [-c cipher] [-F
ssh_config] [-i identity_file]
[-J destination] [-l limit] [-o ssh_option] [-P port]
[-S program] source ... target
newuser@LAPTOP-HO30I6QD:~/lab3$ scp jojithebest@shell.xshellz.com:/home/j/jojithebest
.
usage: scp [-346BCpqrTv] [-c cipher] [-F ssh_config] [-i identity_file]
[-J destination] [-l limit] [-o ssh_option] [-P port]
[-S program] source ... target
newuser@LAPTOP-HO30I6QD:~/lab3$ scp jojithebest@shell.xshellz.com:/home/j/jojithebest
.
jojithebest@shell.xshellz.com's password:
Permission denied, please try again.
jojithebest@shell.xshellz.com's password:
scp: /home/j/jojithebest: not a regular file
newuser@LAPTOP-HO30I6QD:~/lab3$ scp
jojithebest@shell.xshellz.com:/home/j/jojithebest/server.txt .
jojithebest@shell.xshellz.com's password:
server.txt                                100% 0 0.0KB/s 00:00
newuser@LAPTOP-HO30I6QD:~/lab3$ ls
arc.tar.gz for_pc.txt for_server.txt server.txt
newuser@LAPTOP-HO30I6QD:~/lab3$ tar server.txt
tar: invalid option -- 'e'
Try 'tar --help' or 'tar --usage' for more information.
newuser@LAPTOP-HO30I6QD:~/lab3$ tar server.tar server.txt
tar: invalid option -- 'e'
Try 'tar --help' or 'tar --usage' for more information.
newuser@LAPTOP-HO30I6QD:~/lab3$ tar server server.txt
tar: invalid option -- 'e'
Try 'tar --help' or 'tar --usage' for more information.
newuser@LAPTOP-HO30I6QD:~/lab3$ tar --help
Usage: tar [OPTION...] [FILE]...
GNU 'tar' saves many files together into a single tape or disk archive, and can
restore individual files from the archive.
```

### Examples:

```
tar -cf archive.tar foo bar # Create archive.tar from files foo and bar.
tar -tvf archive.tar       # List all files in archive.tar verbosely.
tar -xf archive.tar        # Extract all files from archive.tar.
```

### Local file name selection:

```
--add-file=FILE      add given FILE to the archive (useful if its name
                     starts with a dash)
-C, --directory=DIR  change to directory DIR
--exclude=PATTERN    exclude files, given as a PATTERN
--exclude-backups    exclude backup and lock files
--exclude-caches     exclude contents of directories containing
                     CACHEDIR.TAG, except for the tag file itself
--exclude-caches-all exclude directories containing CACHEDIR.TAG
--exclude-caches-under exclude everything under directories containing
                     CACHEDIR.TAG
--exclude-ignore=FILE read exclude patterns for each directory from
                     FILE, if it exists
--exclude-ignore-recursive=FILE
                     read exclude patterns for each directory and its
                     subdirectories from FILE, if it exists
--exclude-tag=FILE   exclude contents of directories containing FILE,
                     except for FILE itself
--exclude-tag-all=FILE exclude directories containing FILE
--exclude-tag-under=FILE exclude everything under directories
                     containing FILE
--exclude-vcs        exclude version control system directories
--exclude-vcs-ignores read exclude patterns from the VCS ignore files
--no-null            disable the effect of the previous --null option
--no-recursion       avoid descending automatically in directories
--no-unquote         do not unquote input file or member names
--no-verbatim-files-from -T treats file names starting with dash as
                     options (default)
--null              -T reads null-terminated names; implies
                     --verbatim-files-from
--recursion         recurse into directories (default)
-T, --files-from=FILE get names to extract or create from FILE
--unquote           unquote input file or member names (default)
--verbatim-files-from -T reads file names verbatim (no escape or option
                     handling)
-X, --exclude-from=FILE exclude patterns listed in FILE
```

### File name matching options (affect both exclude and include patterns):

```
--anchored          patterns match file name start
--ignore-case       ignore case
--no-anchored       patterns match after any '/' (default for
                     exclusion)
--no-ignore-case    case sensitive matching (default)
--no-wildcards      verbatim string matching
--no-wildcards-match-slash wildcards do not match '/'
```

- wildcards            use wildcards (default for exclusion)
- wildcards-match-slash   wildcards match '/' (default for exclusion)

#### Main operation mode:

- A, --catenate, --concatenate   append tar files to an archive
- c, --create            create a new archive
- d, --diff, --compare    find differences between archive and file system
- delete            delete from the archive (not on mag tapes!)
- r, --append            append files to the end of an archive
- t, --list            list the contents of an archive
- test-label        test the archive volume label and exit
- u, --update            only append files newer than copy in archive
- x, --extract, --get    extract files from an archive

#### Operation modifiers:

- check-device        check device numbers when creating incremental  
                         archives (default)
- g, --listed-incremental=FILE   handle new GNU-format incremental backup
- G, --incremental       handle old GNU-format incremental backup
- hole-detection=TYPE   technique to detect holes
- ignore-failed-read   do not exit with nonzero on unreadable files
- level=NUMBER        dump level for created listed-incremental archive
- n, --seek            archive is seekable
- no-check-device    do not check device numbers when creating  
                         incremental archives
- no-seek            archive is not seekable
- occurrence[=NUMBER]   process only the NUMBERth occurrence of each file  
                         in the archive; this option is valid only in  
                         conjunction with one of the subcommands --delete,  
                         --diff, --extract or --list and when a list of  
                         files is given either on the command line or via  
                         the -T option; NUMBER defaults to 1
- sparse-version=MAJOR[.MINOR]   set version of the sparse format to use (implies  
                         --sparse)
- S, --sparse            handle sparse files efficiently

#### Overwrite control:

- k, --keep-old-files    don't replace existing files when extracting,  
                         treat them as errors
- keep-directory-symlink   preserve existing symlinks to directories when  
                         extracting
- keep-newer-files    don't replace existing files that are newer than  
                         their archive copies
- no-overwrite-dir    preserve metadata of existing directories
- one-top-level[=DIR]   create a subdirectory to avoid having loose files  
                         extracted
- overwrite            overwrite existing files when extracting
- overwrite-dir        overwrite metadata of existing directories when

extracting (default)

- recursive-unlink empty hierarchies prior to extracting directory
- remove-files remove files after adding them to the archive
- skip-old-files don't replace existing files when extracting,  
silently skip over them
- U, --unlink-first remove each file prior to extracting over it
- W, --verify attempt to verify the archive after writing it

Select output stream:

- ignore-command-error ignore exit codes of children
- no-ignore-command-error treat non-zero exit codes of children as  
error
- O, --to-stdout extract files to standard output
- to-command=COMMAND pipe extracted files to another program

Handling of file attributes:

- atime-preserve[=METHOD] preserve access times on dumped files, either  
by restoring the times after reading  
(METHOD='replace'; default) or by not setting the  
times in the first place (METHOD='system')
- clamp-mtime only set time when the file is more recent than  
what was given with --mtime
- delay-directory-restore delay setting modification times and  
permissions of extracted directories until the end  
of extraction
- group=NAME force NAME as group for added files
- group-map=FILE use FILE to map file owner GIDs and names
- mode=CHANGES force (symbolic) mode CHANGES for added files
- mtime=DATE-OR-FILE set mtime for added files from DATE-OR-FILE
- m, --touch don't extract file modified time
- no-delay-directory-restore  
cancel the effect of --delay-directory-restore  
option
- no-same-owner extract files as yourself (default for ordinary  
users)
- no-same-permissions apply the user's umask when extracting permissions  
from the archive (default for ordinary users)
- numeric-owner always use numbers for user/group names
- owner=NAME force NAME as owner for added files
- owner-map=FILE use FILE to map file owner UIDs and names
- p, --preserve-permissions, --same-permissions  
extract information about file permissions  
(default for superuser)
- same-owner try extracting files with the same ownership as  
exists in the archive (default for superuser)
- s, --preserve-order, --same-order  
member arguments are listed in the same order as  
the files in the archive
- sort=ORDER directory sorting order: none (default), name or  
inode

Handling of extended file attributes:

--acls	Enable the POSIX ACLs support
--no-acls	Disable the POSIX ACLs support
--no-selinux	Disable the SELinux context support
--no-xattrs	Disable extended attributes support
--selinux	Enable the SELinux context support
--xattrs	Enable extended attributes support
--xattrs-exclude=MASK	specify the exclude pattern for xattr keys
--xattrs-include=MASK	specify the include pattern for xattr keys

Device selection and switching:

-f, --file=ARCHIVE	use archive file or device ARCHIVE
--force-local	archive file is local even if it has a colon
-F, --info-script=NAME, --new-volume-script=NAME	run script at end of each tape (implies -M)
-L, --tape-length=NUMBER	change tape after writing NUMBER x 1024 bytes
-M, --multi-volume	create/list/extract multi-volume archive
--rmt-command=COMMAND	use given rmt COMMAND instead of rmt
--rsh-command=COMMAND	use remote COMMAND instead of rsh
--volno-file=FILE	use/update the volume number in FILE

Device blocking:

-b, --blocking-factor=BLOCKS	BLOCKS x 512 bytes per record
-B, --read-full-records	reblock as we read (for 4.2BSD pipes)
-i, --ignore-zeros	ignore zeroed blocks in archive (means EOF)
--record-size=NUMBER	NUMBER of bytes per record, multiple of 512

Archive format selection:

-H, --format=FORMAT	create archive of the given format
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FORMAT is one of the following:

gnu	GNU tar 1.13.x format
oldgnu	GNU format as per tar <= 1.12
pax	POSIX 1003.1-2001 (pax) format
posix	same as pax
ustar	POSIX 1003.1-1988 (ustar) format
v7	old V7 tar format

  

--old-archive, --portability	same as --format=v7
--pax-option=keyword[:=value][,keyword[:=value]]...	control pax keywords
--posix	same as --format=posix
-V, --label=TEXT	create archive with volume name TEXT; at list/extract time, use TEXT as a globbing pattern for volume name

### Compression options:

- a, --auto-compress      use archive suffix to determine the compression program
- I, --use-compress-program=PROG  
                         filter through PROG (must accept -d)
- j, --bzip2              filter the archive through bzip2
- J, --xz                filter the archive through xz
- lzip              filter the archive through lzip
- lzma              filter the archive through xz
- lzop              filter the archive through lzop
- no-auto-compress   do not use archive suffix to determine the compression program
- z, --gzip, --gunzip, --ungzip   filter the archive through gzip
- zstd              filter the archive through zstd
- Z, --compress, --uncompress   filter the archive through compress

### Local file selection:

- backup[=CONTROL]   backup before removal, choose version CONTROL
- h, --dereference       follow symlinks; archive and dump the files they point to
- hard-dereference   follow hard links; archive and dump the files they refer to
- K, --starting-file=MEMBER-NAME  
                         begin at member MEMBER-NAME when reading the archive
- newer-mtime=DATE   compare date and time when data changed only
- N, --newer=DATE-OR-FILE, --after-date=DATE-OR-FILE  
                         only store files newer than DATE-OR-FILE
- one-file-system    stay in local file system when creating archive
- P, --absolute-names    don't strip leading '/'s from file names
- suffix=STRING     backup before removal, override usual suffix ('~' unless overridden by environment variable SIMPLE\_BACKUP\_SUFFIX)

### File name transformations:

- strip-components=NUMBER   strip NUMBER leading components from file names on extraction
- transform=EXPRESSION, --xform=EXPRESSION  
                         use sed replace EXPRESSION to transform file names

### Informative output:

- checkpoint[=NUMBER]   display progress messages every NUMBERth record (default 10)
- checkpoint-action=ACTION   execute ACTION on each checkpoint
- full-time            print file time to its full resolution
- index-file=FILE     send verbose output to FILE

- l, --check-links        print a message if not all links are dumped
- no-quote-chars=STRING    disable quoting for characters from STRING
- quote-chars=STRING    additionally quote characters from STRING
- quoting-style=STYLE    set name quoting style; see below for valid STYLE values
- R, --block-number        show block number within archive with each message
- show-defaults        show tar defaults
- show-omitted-dirs    when listing or extracting, list each directory that does not match search criteria
- show-snapshot-field-ranges    show valid ranges for snapshot-file fields
- show-transformed-names, --show-stored-names    show file or archive names after transformation
- totals[=SIGNAL]    print total bytes after processing the archive; with an argument - print total bytes when this SIGNAL is delivered; Allowed signals are: SIGHUP, SIGQUIT, SIGINT, SIGUSR1 and SIGUSR2; the names without SIG prefix are also accepted
- utc                print file modification times in UTC
- v, --verbose            verbosely list files processed
- warning=KEYWORD    warning control
- w, --interactive, --confirmation    ask for confirmation for every action

#### Compatibility options:

- o                when creating, same as --old-archive; when extracting, same as --no-same-owner

#### Other options:

- ?, --help        give this help list
- restrict        disable use of some potentially harmful options
- usage           give a short usage message
- version        print program version

Mandatory or optional arguments to long options are also mandatory or optional for any corresponding short options.

The backup suffix is '~', unless set with --suffix or SIMPLE\_BACKUP\_SUFFIX.  
The version control may be set with --backup or VERSION\_CONTROL, values are:

- none, off        never make backups
- t, numbered    make numbered backups
- nil, existing    numbered if numbered backups exist, simple otherwise
- never, simple    always make simple backups

Valid arguments for the --quoting-style option are:

- literal
- shell



shell-always  
shell-escape  
shell-escape-always  
c  
c-maybe  
escape  
locale  
clocale

\*This\* tar defaults to:

```
--format=gnu -f- -b20 --quoting-style=escape --rmt-command=/usr/sbin/rmt
--rsh-command=/usr/bin/rsh
newuser@LAPTOP-HO30I6QD:~/lab3$ tar --totaks -cvf server.tar server.txt for_pc.txt
tar: unrecognized option '--totaks'
Try 'tar --help' or 'tar --usage' for more information.
newuser@LAPTOP-HO30I6QD:~/lab3$ tar --totals -cvf server.tar server.txt for_pc.txt
server.txt
for_pc.txt
Total bytes written: 10240 (10KiB, 1.3MiB/s)
newuser@LAPTOP-HO30I6QD:~/lab3$ gzip -9 server.tar
newuser@LAPTOP-HO30I6QD:~/lab3$ ls
arc.tar.gz for_pc.txt for_server.txt server.tar.gz server.txt
newuser@LAPTOP-HO30I6QD:~/lab3$ ls -la
total 24
drwxrwxr-x 2 newuser newuser 4096 Sep 19 13:08 .
drwxr-xr-x 13 newuser newuser 4096 Sep 19 12:42 ..
-rw-rw-r-- 1 newuser newuser 226 Sep 19 10:49 arc.tar.gz
-rw-r--r-- 1 newuser newuser 10 Sep 19 10:48 for_pc.txt
-rw-rw-r-- 1 newuser newuser 6 Sep 19 10:42 for_server.txt
-rw-rw-r-- 1 newuser newuser 163 Sep 19 13:07 server.tar.gz
-rw-rw-r-- 1 newuser newuser 0 Sep 19 13:00 server.txt
newuser@LAPTOP-HO30I6QD:~/lab3$ gzip -d server.tar.gz
newuser@LAPTOP-HO30I6QD:~/lab3$ gzip -l server.tar
newuser@LAPTOP-HO30I6QD:~/lab3$ ls -la
total 24
drwxrwxr-x 2 newuser newuser 4096 Sep 19 13:09 .
drwxr-xr-x 13 newuser newuser 4096 Sep 19 12:42 ..
-rw-rw-r-- 1 newuser newuser 226 Sep 19 10:49 arc.tar.gz
-rw-r--r-- 1 newuser newuser 10 Sep 19 10:48 for_pc.txt
-rw-rw-r-- 1 newuser newuser 6 Sep 19 10:42 for_server.txt
-rw-rw-r-- 1 newuser newuser 214 Sep 19 13:07 server.tar.gz
-rw-rw-r-- 1 newuser newuser 0 Sep 19 13:00 server.txt
newuser@LAPTOP-HO30I6QD:~/lab3$ scp server.tar.gz
jojithebest@shell.xshellz.com:/home/j/jojithebest
jojithebest@shell.xshellz.com's password:
server.tar.gz 100% 214 1.5KB/s 00:00
newuser@LAPTOP-HO30I6QD:~/lab3$ scp
jojithebest@shell.xshellz.com:/home/j/jojithebest/for_pc.txt .
jojithebest@shell.xshellz.com's password:
for_pc.txt 100% 10 0.1KB/s 00:00
newuser@LAPTOP-HO30I6QD:~/lab3$ ls
arc.tar.gz for_pc.txt for_server.txt server.tar.gz server.txt
```

newuser@LAPTOP-HO30I6QD:~/lab3\$

Протокол сервера:

root@LAPTOP-HO30I6QD:~# su newuser

newuser@LAPTOP-HO30I6QD:/root\$ cd

newuser@LAPTOP-HO30I6QD:~\$ ssh jojithebest@shell.xshellz.com

jojithebest@shell.xshellz.com's password:

Linux xshellz-free 5.10.0-12-amd64 #1 SMP Debian 5.10.103-1 (2022-03-07) x86\_64

Welcome back to xShellz Free Server.

```
      _//_\\
     , "  //" .
    /      \
   _/      |
  (.-,--.  |
Hmmm,      /o/ o \ /
Interlicious \_\ / ^\
 \ ( _'--' .-)
  / `-. |
 ( , `-. |
  `-,--\ _ )|-.

```

Users of the Rizon IRC Network: Please connect to the sli.rizon.net server using the shell.xshellz.com vhost.

Use xshellzhhelp to list all available commands.

Thanks for using xShellz Shell Services.

Start with typing: xshellzhhelp

[IMPORTANT]: This server is now using only one IP: 158.69.251.105

jojithebest@xshellz-free:~\$ pwd

/home/j/jojithebest

jojithebest@xshellz-free:~\$ ls

arc.tar for\_pc.txt for\_server.txt server.txt

jojithebest@xshellz-free:~\$ rm arc.tar

jojithebest@xshellz-free:~\$ rm for\_pc.txt

jojithebest@xshellz-free:~\$ rm for\_server.txt

jojithebest@xshellz-free:~\$ ls

server.txt

jojithebest@xshellz-free:~\$ pwd

/home/j/jojithebest

jojithebest@xshellz-free:~\$ ls

server.tar.gz server.txt

jojithebest@xshellz-free:~\$ gzip -d server.tar.gz

jojithebest@xshellz-free:~\$ ls

server.tar server.txt

jojithebest@xshellz-free:~\$ tar -xvf server.tar

server.txt

for\_pc.txt

jojithebest@xshellz-free:~\$

**9. Дневник отладки** должен содержать дату и время сеансов отладки и основные события (ошибки в сценарии и программе, нестандартные ситуации) и краткие комментарии к ним. В дневнике отладки приводятся сведения об использовании других ЭВМ, существенном участии преподавателя и других лиц в написании и отладке программы.

№	Лаб. или дом.	Дата	Время	Событие	Действие по исправлению	Примечание
1	лаб	20.09.2020	17:20	Не смог подключиться к удаленном серверу	Перезагрузил систему	Мне грустно

**10. Замечания автора** по существу работы  
Замечаний нет

**11. Выводы**

Было очень интересно взаимодействовать с сервером, архивировать и разархивировать файлы. Работа была не сложная, но изначально не понял теорию. По ходу выполнения работы пришлось изучить дополнительную информацию, которой не было на занятии. Думаю, что данные навыки очень полезны в современном мире, так как очень часто приходится взаимодействовать с серверами. Недочёты при выполнении задания могут быть устранены следующим образом: --

Подпись студента

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