“Київський фаховий коледж зв’язку”

Циклова комісія комп’ютерної та програмної інженерії

**ЗВІТ ПО ВИКОНАННЮ**

**ЛАБОРАТОРНОЇ РОБОТИ №6**  
з дисципліни: «Операційні системи»  
Тема: “Команди Linux для архівування та стиснення даних. Робота з текстом”

Виконали студенти

групи БІКС-13

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Перевірив викладач

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Київ 2023

**The goal of the work: (робила студентка Андрущик Поліна)**  
Getting hands-on skills with the Bash shell.  
Familiarity with basic commands for archiving and compressing data.  
Getting to know the basic actions when working with text in the terminal.  
  
1. \*Read the short theoretical information for the laboratory work and make a small dictionary of basic English terms for the assignment of commands and their parameters.

|  |  |
| --- | --- |
| **The term in English** | **The term in Ukrainian** |
| Compression | Зменшення розміру файлу або каталогу на диску за допомогою різних алгоритмів і математичних розрахунків. |
| Bandwidth | Обсяг даних, який можна передати за фіксований проміжок часу, часто використовується в контексті мережевого зв’язку. |
| Lossless Compression | Метод стиснення, який створює менший файл, ніж оригінальний, але може реконструювати вихідний файл без втрати інформації. |
| Decompression | Процес відновлення стисненого файлу до початкового розміру та формату. |
| Extraction | Процес отримання файлів або каталогів з архіву. |

**Based on the missing material, answer the following questions: (робила студентка Андрущик Поліна)**

**\*What is the purpose of the command tar, xz, zip, bzip, gzip? Make a brief description of each team and highlight their main parameters. How to install them.  
tar** - command for archiving files and directories into one archive.  
Main parameters:  
-c, --create: Create a new archive.  
-x, --extract: Extract the archive.  
-v, --verbose: Print more information at runtime.  
-f, --file: Specify the name of the archive.  
Installation: On many Linux systems, tar is installed by default. For other systems, installation can be done via a package manager (eg apt, yum, brew).

**xz** - command for compressing and decompressing files in XZ format.  
Main parameters:  
-z, --compress: Compress the file.  
-d, --decompress: Decompress compressed file.  
-v, --verbose: Print more information at runtime.  
-c, --stdout: Output the result to standard output.  
Installation: Available for installation via package managers (eg apt, yum, brew).  
  
**zip** - a command for creating, extracting and managing ZIP archives.  
Main parameters:  
-r, --recurse: Create archive recursively (for folders).  
-d, --delete: Delete files from the archive.  
-u, --update: Update files in the archive.  
-l, --list: Display a list of files in the archive.  
Installation: Usually installed using a package manager (eg apt, yum, brew).  
  
**bzip** - the bzip2 command is used to compress and decompress files using the Burrows-Wheeler compression algorithm.  
Main parameters:  
-z, --compress: Compress the file.  
-d, --decompress: Decompress compressed file.  
-v, --verbose: Print more information at runtime.  
-k, --keep: Keep the original file.  
Installation: Available for installation via package managers (eg apt, yum, brew).  
  
**gzip** - a command for compressing and decompressing files in GZIP format.  
Main parameters:  
-c, --stdout: Output the result to standard output.  
-d, --decompress: Decompress compressed file.  
-f, --force: Force overwrite existing file.  
-r, --recursive: Compress directory recursively.  
Installation: Usually installed using a package manager (eg apt, yum, brew).

**\*\*Enter three examples of implementing data archiving and compression with a full team.  
Archiving and compression with tar and gzip:**The command to create an archive: tar -czvf archive.tar.gz directory  
Description: This command will create an archive named "archive.tar.gz" containing the contents of directory "directory" by compressing it with gzip.

**Archiving and compression with zip:**The command to create an archive: zip -r archive.zip directoryDescription: This command will create an archive named "archive.zip" containing the contents of directory "directory" by compressing it using the zip algorithm.

**Archiving and compression with tar and xz:**The command to create an archive: tar -cJvf archive.tar.xz directoryDescription: This command will create an archive named "archive.tar.xz" containing the contents of directory "directory" by compressing it with xz.

**\*What is the command purpose of cat, less, more, head and tail? Make a brief description of each team and highlight their main parameters. How to install them  
cat -** a command for outputting the contents of text files to standard output.  
Main parameters:  
-n, --number: Line numbering.  
-b, --number-nonblank: Number non-blank lines only.  
-s, --squeeze-blank: Replace a sequence of blank lines with a single blank line.  
Installation: The cat command is usually available in installed system programs.  
  
**less -** a command for viewing text files page by page with the ability to scroll up and down.  
Main parameters:  
-N, --LINE-NUMBERS: Show line numbers.  
-i, --IGNORE-CASE: Ignore character case when searching.  
-F, --quit-if-one-screen: Quit if the entire file fits on one screen.  
Installation: less is a standard utility in many Unix-like operating systems.  
 **more -** A command for viewing text files page by page with the ability to scroll down.  
Main parameters:  
Control keys used for navigation: Scroll Down (Space), Scroll Up (B), Exit (Q).  
Installation: The more command is also available on many Unix-like operating systems.  
  
**head** - A command to output the first few lines from a text file.  
Main parameters:  
-n, --lines: Specify the number of lines to output.  
-c, --bytes: Specify the number of bytes to output.  
Installation: head is a standard utility in many Unix-like operating systems. **tail -** A command to output the last few lines from a text file.  
Main parameters:  
-n, --lines: Specify the number of lines to output.  
-c, --bytes: Specify the number of bytes to output.  
-f, --follow: Stay active and output new lines as they are added to the file.  
Installation: tail is a standard utility in many Unix-like operating systems.

**\*\*Explain the principles of command line operation with channels, streams and filters**The command shell uses pipes, streams, and filters to process data: pipes pass the output of one command as input to another, streams allow data to be passed directly between processes, and filters process command output for later use.

**\*What is the purpose of the grep command?**The grep command is designed to search for a specified text expression in the contents of files or in standard input and output for lines that contain that expression.  
  
**The main positions of the course of work:   
  
Answers to control questions:   
  
Conclusion:**