

Tutorial 1

Exercise 1 (Set theory).

Simplify the following expressions:

- (i) $(\{1,2,3\} \cup \{3,4,5\}) \cap \{3,4\}$
- (ii) $(\{1,2,3\} \setminus \{3,4,5\}) \cup \{3,4\}$

Solution.

- (i) $(\{1,2,3\} \cup \{3,4,5\}) \cap \{3,4\} = \{1,2,3,4,5\} \cap \{3,4\} = \{3,4\}$
- (ii) $(\{1,2,3\} \setminus \{3,4,5\}) \cup \{3,4\} = \{1,2\} \cup \{3,4\} = \{1,2,3,4\}$

Exercise 2 (Git installation).

Install Git on your computer via the official website <https://git-scm.com/downloads>. Ensure that the `git --version` command works in your terminal.

Exercise 3 (Managing Files and Directories).

Perform the following tasks using your command line interface:

- (i) Create a directory called `python-course`.
- (ii) Change the current working directory to `python-course`.
- (iii) Create a file called `hello.txt`.
- (iv) Write the string `Hello World!` to the file `hello.txt`.
- (v) View the contents of the file `hello.txt`.
- (vi) Search for the string `Hello World!` in the file `hello.txt`.
- (vii) Rename the file `hello.txt` to `hello_world.txt`.
- (viii) Move the file `hello_world.txt` to the directory `Documents`.
- (ix) Copy the file `hello_world.txt` to the file `hello_world_copy.txt`.
- (x) Delete the file `hello_world.txt`.
- (xi) Delete the directory `python-course`.

Solution.

```
# (i) Create a directory called python-course.  
mkdir python-course  
  
# (ii) Change the current working directory to python-course.  
cd python-course  
  
# (iii) Create a file called hello.txt.  
touch hello.txt  
  
# (iv) Write the string Hello World! to the file hello.txt.  
echo "Hello World!" > hello.txt  
  
# (v) View the contents of the file hello.txt.  
cat hello.txt  
  
# (vi) Search for the string Hello World! in the file hello.txt.  
grep "Hello World!" hello.txt  
  
# (vii) Rename the file hello.txt to hello_world.txt.  
mv hello.txt hello_world.txt  
  
# (viii) Move the file hello_world.txt to the directory Documents.  
mv hello_world.txt ~/Documents/  
  
# (ix) Copy the file hello_world.txt to hello_world_copy.txt.  
cp ~/Documents/hello_world.txt ~/Documents/hello_world_copy.txt  
  
# (x) Delete the file hello_world.txt.  
rm ~/Documents/hello_world.txt  
  
# (xi) Delete the directory python-course.  
cd ..  
rm -r python-course
```

Exercise 4 (Python installation).

Install Python 3.12 or 3.13 on your computer via the official website <https://www.python.org/downloads/>. Ensure that both `python --version` and `pip --version` commands work in your terminal.

Note: Do not use other distributions like from Microsoft Store etc., as they may behave differently in some cases throughout the course.

Exercise 5 (uv installation).

Install uv on your computer via the instructions on the official website <https://docs.astral.sh/uv/getting-started/installation/>. Ensure that the `uv --version` command works in your terminal.

Note: Depending on your operating system, you may need to install additional software first like `curl` on Linux. Follow the instructions on the website to install uv and do not use discouraged methods like `pip install uv`.

Exercise 6 (Optional: Vimtutor).

Open the terminal and type `vimtutor`. Follow the instructions to learn the basics of Vim and do, e.g., the first section of the tutorial.