Assignment for laboratory work 2

Data exploration and visualization with Python

Objective: Gain basic skills in using Python for data exploration and visualization

Assignment:

1. Install Jupyter notebook via `pip` or Anaconda Distribution.
2. Download `russia_losses_equipment.csv` file from Kaggle.com https://www.kaggle.com/datasets/piterfm/2022-ukraine-russian-war
3. **Choose one variant for this lab, using formula**
   `N = ord("LLL") % 3 + 1,`
   where `N` is a variant number, `LLL is` the first letter of your name
4. Tips:
   a. Use `csv.reader()` function for reading csv file
   b. Skip the first row (with columns titles)
   c. Do not use loops or other iterative construction for numpy arrays. Use only slicing or/and universal (vectorized) functions.
   d. Create functions for tasks 3-7 of each variant.

5. Requirements for plots:
   a. set up the type of line (dotted, dashed, etc.);
   b. plots should be labelled;
   c. add a legend;
   d. add a grid and specify the color and type of lines;
   e. add title of the plot, axis labels and ticks;
   f. change the figure size (for example, 8x16 inches) and resolution (for example, 100 dpi);
   g. save plot in `png` format file.

Variant 1. Aircrafts losses exploration

1. Create a function, that takes filename and column name as a parameter and return a numpy array of a column values.
2. Using function from task1, create a numpy array out of values of “aircraft” column.
3. Find daily aircrafts losses.
4. Find the 3 greatest daily losses of aircrafts.
5. Determine how many aircrafts were shot down in the summer of 2024.
6. Find the mean value of aircraft losses in last 300 days of war.

7. Create a plot of aircraft losses of first year of war(starting from the first date in the dataset)

Variant 2. Tanks losses exploration

1. Create a function, that takes filename and column name as a parameter and return a numpy array of a column values.
2. Using function from task1, create a numpy array out of values of “tank” column.
3. Find daily tanks losses.
4. Find the 4 greatest daily losses of tanks.
5. Determine how many tanks were destroyed in the spring of 2024.
6. Find the mean value of destroyed tanks in last 100 days of war.
7. Create a plot of tanks losses of last year (starting from last date in dataset)

Variant 3. Armored personnel carriers (APC) losses exploration

1. Create a function, that takes filename and column name as a parameter and return a numpy array of a column values.
2. Using function from task1, create a numpy array out of values of “APC” column.
3. Find daily APC losses.
4. Find the 5 greatest daily losses of APC.
5. Determine how many APC were destroyed in the summer of 2024.
6. Find the mean value of destroyed APC between 100 and 500 days of war.
7. Create a plot of APC losses of last 200 days (starting from last date in dataset)

Report content:

As a report submit Jupyter notebook with title and objective of the lab, tasks statements, functions code, calls and outputs.