Big Homework 1

1. Write a Python program, using regular expressions, that converts a given string into snake case (style of writing in which each space is replaced by an underscore (_) character, and the first letter of each word written in lowercase; e.g. Hello JavaScript becomes hello_java_script). Provide at least 4 examples.

2. Write a Python program, using regular expressions, that as a first step, switches the case of letters and, after that, as a second step, it removes the uppercase letters from a given string. (e.g., StuDeNT becomes sTUdEnt in the first step and sdnt in the second one). Print both steps. Provide at least 4 examples.

3. Write a Python program, using regular expressions, that finds URLs in a given string (an URL has the structure: protocol://subdomain.domain-name.top-level-domain/path, where the subdomain is optional). Provide at least 4 examples.

4. Create a DFA (write the regular expression for it and draw the schema) with at least 6 nodes (including the start and the end node) and implement it in Python. It should not be linear. (e.g., a language that accepts every word of 1001011+ form can be written as a DFA with 7 nodes, but to you can go only from one state to the next consecutive one; (01)+(00)+(11)+0+ is acceptable).

5. Take the elements of a table from an HTML file and convert them to a table in an excel file and vice versa.

6. Using argparse, create a program that takes as input a csv file and splits it in multiple csv files, depending on how many rows the user wants to have in each new file. (e.g., if you use a .csv with 11 rows and the user wants it split into files with 4 rows each, then 3 csv files should be created)

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D:\Facultate\Predat\FormalLanguagesAndCompilers\Lab\Ex>python BigHw1.py -i ex.csv -o ex2.csv -r 4
```

ex.csv - Notepad

File Edit Format View Help

```
ActorsID,FirstName,LastName,Age
1,Robert,Downey Jr.,56
2,Chris,Evans,40
3,Mark,Ruffalo,54
4,Chirs,Hemsworth,38
5,Jeremy,Renner,50
6,Tom,Hiddleston,40
7,Clark,Gregg,59
8,Cobie,Smulders,39
9,Samuel L.,Jackson,72
10,Paul,Bettany,50
11,Chris,Pratt,42
```

ex2.csv-1.csv - Notepad

File Edit Format View Help

```
ActorsID,FirstName,LastName,

1,Robert,Downey Jr.,56

2,Chris,Evans,40

3,Mark,Ruffalo,54

4,Chirs,Hemsworth,38
```

ex2.csv-2.csv - Notepad

File Edit Format View Help

```
ActorsID,FirstName,LastName,Age

5,Jeremy,Renner,50

6,Tom,Hiddleston,40

7,Clark,Gregg,59

8,Cobie,Smulders,39
```

ex2.csv-3.csv - Notepad

File Edit Format View Help

```
ActorsID,FirstName,LastName,Age

9,Samuel L.,Jackson,72

10,Paul,Bettany,50

11,Chris,Pratt,42
```