

Компьютерный практикум по статистическому анализу данных. Лаб №1

Julia. Установка и настройка. Основные принципы.

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14 ноября 2024

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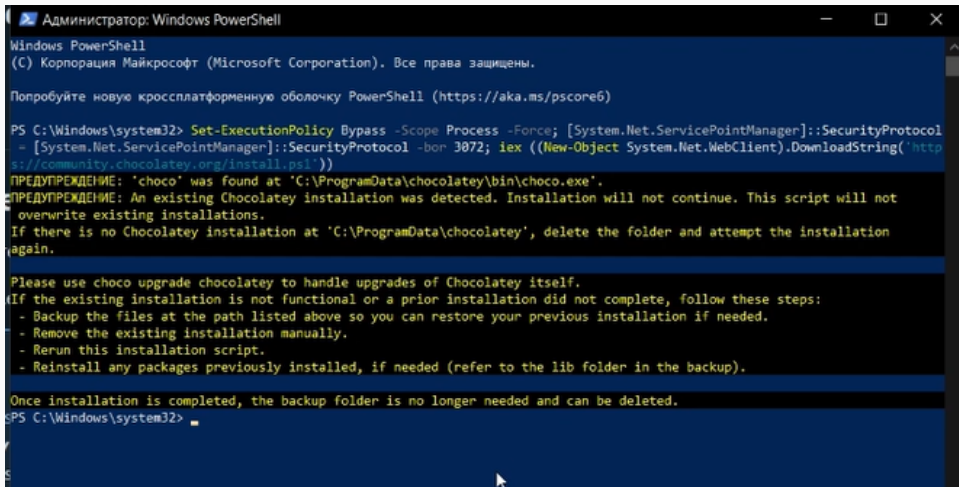
Вводная часть

Основная цель работы — подготовить рабочее пространство и инструментарий для работы с языком программирования Julia, на простейших примерах познакомиться с основами синтаксиса Julia.

Выполнение лабораторной работы

Подготовка инструментария к работе

Установите Julia (<https://julialang.org/>) и Jupyter (<https://jupyter.org/>) под вашу операционную систему.

A screenshot of a Windows PowerShell terminal window titled "Администратор: Windows PowerShell". The window shows the execution of a PowerShell script to install Chocolatey. The prompt is "PS C:\Windows\system32>". The command entered is: `Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('https://community.chocolatey.org/install.ps1'))`. The output shows a warning that 'choco' was found at 'C:\ProgramData\chocolatey\bin\choco.exe'. Another warning states: "An existing Chocolatey installation was detected. Installation will not continue. This script will not overwrite existing installations." It then instructs to delete the folder and attempt installation again. A final message says: "Please use choco upgrade chocolatey to handle upgrades of Chocolatey itself." and lists steps for handling existing installations: backup files, remove installation manually, rerun script, and reinstall packages. The prompt returns to "PS C:\Windows\system32>".

```
Администратор: Windows PowerShell
Windows PowerShell
(C) Корпорация Майкрософт (Microsoft Corporation). Все права защищены.

Попробуйте новую кроссплатформенную оболочку PowerShell (https://aka.ms/pscore6)

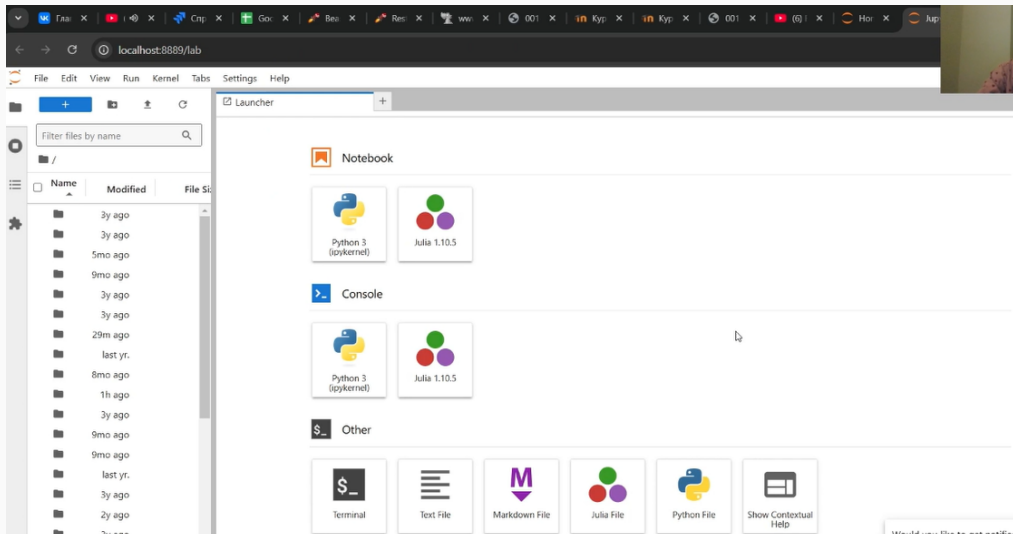
PS C:\Windows\system32> Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol
- [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('http
s://community.chocolatey.org/install.ps1'))
ПРЕДУПРЕЖДЕНИЕ: 'choco' was found at 'C:\ProgramData\chocolatey\bin\choco.exe'.
ПРЕДУПРЕЖДЕНИЕ: An existing Chocolatey installation was detected. Installation will not continue. This script will not
overwrite existing installations.
If there is no Chocolatey installation at 'C:\ProgramData\chocolatey', delete the folder and attempt the installation
again.

Please use choco upgrade chocolatey to handle upgrades of Chocolatey itself.
If the existing installation is not functional or a prior installation did not complete, follow these steps:
- Backup the files at the path listed above so you can restore your previous installation if needed.
- Remove the existing installation manually.
- Rerun this installation script.
- Reinstall any packages previously installed, if needed (refer to the lib folder in the backup).

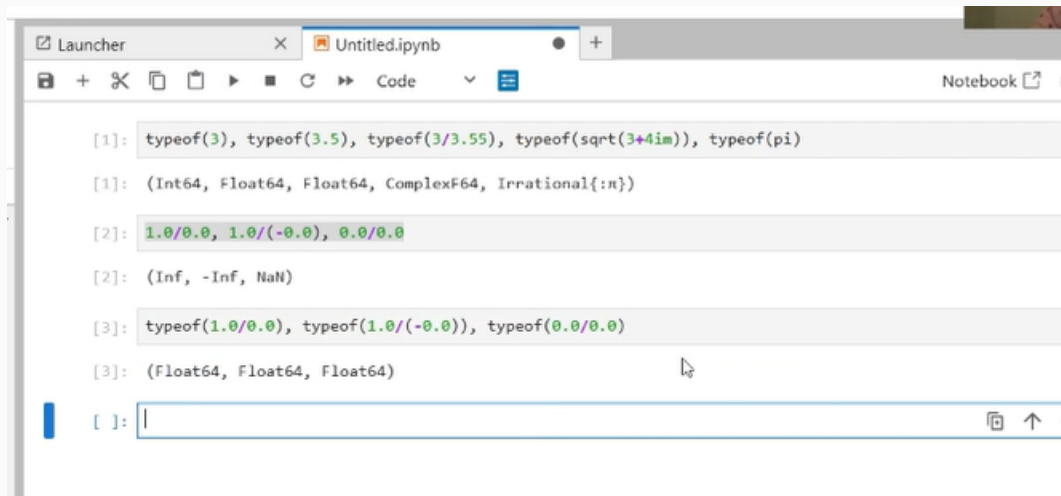
Once installation is completed, the backup folder is no longer needed and can be deleted.
PS C:\Windows\system32>
```

Основы работы в блокноте Jupyter

Запустите Jupyter Lab.



Основы синтаксиса Julia на примерах



The screenshot shows a Julia REPL window with the title bar "Launcher" and "Untitled.ipynb". The window contains several code snippets and their corresponding outputs:

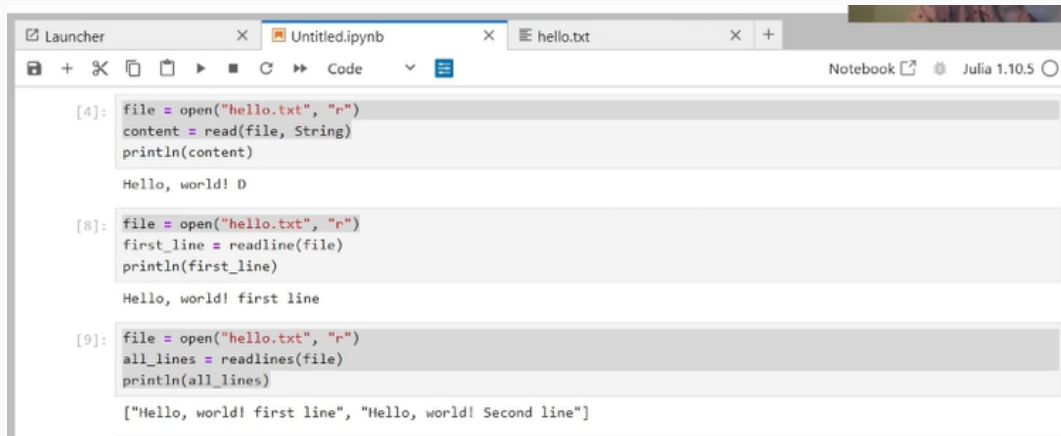
```
[1]: typeof(3), typeof(3.5), typeof(3/3.55), typeof(sqrt(3+4im)), typeof(pi)
[1]: (Int64, Float64, Float64, ComplexF64, Irrational{:π})

[2]: 1.0/0.0, 1.0/(-0.0), 0.0/0.0
[2]: (Inf, -Inf, NaN)

[3]: typeof(1.0/0.0), typeof(1.0/(-0.0)), typeof(0.0/0.0)
[3]: (Float64, Float64, Float64)
```

The input prompt is shown as `[]:` followed by a vertical bar `|`.

Рис. 7: Примеры основ синтаксиса Julia



The screenshot shows a Julia notebook with three code cells. The first cell uses `read` to read the entire content of `hello.txt`. The second cell uses `readline` to read the first line. The third cell uses `readlines` to read all lines, which are then printed as a list.

```
[4]: file = open("hello.txt", "r")
      content = read(file, String)
      println(content)

      Hello, world! D

[8]: file = open("hello.txt", "r")
      first_line = readline(file)
      println(first_line)

      Hello, world! first line

[9]: file = open("hello.txt", "r")
      all_lines = readlines(file)
      println(all_lines)

      ["Hello, world! first line", "Hello, world! Second line"]
```

Рис. 8: Примеры `read`, `readline`, `readlines`

Выводы

Мы подготовили наше рабочее пространство и инструментарий для работы с языком программирования Julia, а также познакомились с основами синтаксиса Julia

Список литературы

1] Julia Documentation: <https://docs.julialang.org/en/v1/>