

## Lab 1: Software tool, debugging and the first script

1. Run IDLE Python
  - a. possibility to run in interpreter or program mode
  - b. `2+2` <Enter>
  - c. if you want to run again a function or expression, mark it and press Enter. It will be copied to another use.
2. Some useful features of the IDLE environment:
  - a. Menu Edit (both modes: interpreter and program)
    - i. Show Completions (Ctrl+Space) – function prompts in the form of a submenu (it does not work on Mac ☹)
    - ii. Expand Word (Alt+/) – function name completion (it does not always work on Mac ☹)
      1. `from datetime import date`
      2. `print(date.today())`
      3. `print(date.today().strftime("%A"))`
    - iii. Show call tip (Ctrl+\) – speech bubble with command syntax hint
      1. `print(`
    - iv. Show surrounding parents (Ctrl+0) – put cursor in the selected area of parentheses to check if there is a pair of parentheses
  - b. Menu Format (in program mode) – Indent Region, Dedent Region, Comment Out Region, Uncomment Region
    - i. in new file write a short text:
      1. `print("Start")`
      2. `for x in range(5):`
      3.  `print(x)`
      4. `print("The end")`
    - ii. check all aboved mentioned functions (from menu Format)
  - c. Run – Run Module
  - d. Debug – first: run debugger, mark the “Source” option, then run your script. Remember: use Over function if you want to run a line of code without going into the line.
  - e. Good practice: use TAB key to indent region. Do not mix SPACE and TAB.

### Task 1:

In Python's Shell, write `print('Hello world')` and then execute (press Enter). Then write your first script containing the same statement. Select **File->New file** from the Menu. Name your script e.g. `script1.py`.

Run it up from Shell. What happens when a script is running from Windows? Complete the script by adding the instruction `input('Press enter to continue ...')` at the end of the script. Check what is happen.

**Task 2:**

In Shell make the calculation: the human heart beats 72 times a minute on average. How many beats does the 70-year-old's heart have?

**Task 3:**

Write a script that draws a square on the screen (unfortunately visible as a rectangle). Use instruction **print**:

```
*****
*   *
*   *
*   *
*****
```

**Task 4:**

Knowing that 5 spiders eat 5 houseflies in 5 hours, write a script that counts how many houseflies will be eaten by 100 spiders in 100 hours?

**Task 5:**

Find the error in the script below (you can copy the script and try to run it). There are 2 errors :)

```
#definitionOfVariables
daysOfWorkPerMonth = 20
monthsInYear = 12
vacation = 26
yearsOfWork = 40
#result
print((daysOfWorkPermonth * monthsInYear - Vacation)*yearsOfWork)
```

**Task 6:**

The instruction **print()** – observe how particular lines work (rewrite or paste the code):

```
print('TVP1','TVN','Polsat','BBC')
print('TVP1','TVN','Polsat','BBC', sep='\n')
print('TVP1','TVN','Polsat','BBC', sep='\t')
print('TVP1','TVN','Polsat','BBC', sep=';')
print('TVP1','TVN','Polsat','BBC', sep='-')
print('I like computers ','TVP1','TVN','Polsat','BBC', sep=' but better is ')
#variables definition
ProgramName = 'BBC'
Item = 'News'
Time = '18:00'
print('I like watching',Item,'at',Time,'on',ProgramName, '.')
print('I like watching ',Item,' at ',Time,' on ',ProgramName, '.', sep='')
print('\u03A3') # the sum character as a Unicode character code
print('this is a backslash: \\') #backslash has a particular meaning...
```

**Task 7:**

Write a script that calculates the circle area and circle circumference, the area of the rectangle and the area of the trapezoid. Create variables in the program, e.g. ValuePi (assign it a value of 3.14), CircleRadius (assign it a value of 5), AreaCircle (assign it a value

