

# Activity Task 1: Neural Network, 2021

*Set number: 6*

Instruction: Write solution in Python to given problem. Task 1: 0.3 point, Task 2: 0.3 point, Task 3: 0.4 point,

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**Task 1** \_\_\_\_\_

Write a function "stats\_list" that takes one argument "x". The x is a list of numbers. The function should calculate and print out: average, maximal and minimal value of list elements. The functions should return list of square roots of "x" elements.

**Task 2** \_\_\_\_\_

Define a function called "remove\_duplicates" that has one argument called "sequence". The "sequence" is the list of integers. The function should print out the number of times each unique number occurs in the list. The function should return "sequence" with only unique numbers (removed duplicates) in ascending order.

**Task 3** \_\_\_\_\_

Create a class "PlotXY" and fallow the steps:

1. Create a method of "PlotXY" class named "generate\_data" with two arguments "xstep" and "xrange". The function should generate data:
  - self.x1 - a sequence of numbers from 0 to xrange with step 0.1\*xstep.
  - self.x2 - a sequence of numbers from 0 to xrange with step xstep.
  - self.y1 - calculate values of sin in range of self.x1
  - self.y2 - calculate values of cosine in range of self.x2
2. Create a method of "PlotXY" class named "plot1" with no arguments. The function should plot both sin (defined by self.x1 and self.y1) and cosine (defined by self.x2 and self.y2) in the same figure. The sinues should draw with red solid line and cosine with blue solid line. The plot should have:
  - title - defined by argument "title".
  - x axis label - should be "x".
  - y axis label - should be "y".
  - legend = should be 'sin' and 'cosine'.
3. Create a method of "PlotXY" class named "plot2" with no arguments. The function should create 2 subplots of sin (defined by self.x1 and self.y1) and cosine (defined by self.x2 and self.y2). The sinues should draw with red dashed line and cosine with blue dashed line. The each subplot should have:
  - x axis label - should be "x".
  - y axis label - should be "y".
  - grid on