Machine Learning and Data Mining
Exercise sheet 1

Example 1) Write a Python program that accepts an integer (n) and computes the value of $n+nn+nnn$.

Example: for value of n=5 expected result is 615.

Example 2) Write a Python program to check whether a specified value is contained in a group of values. Precisely, the program accepts specific value and group of values (data), and the program outputs either 'True' or 'False'.

Test Data:

3 → [1, 5, 8, 3] : True

-1 → [1, 5, 8, 3] : False

Example 3) Write a Python program to print all even numbers from a given numbers list in the same order and stop the printing if the number 237 is in the sequence, and it prints the number 237.

Example. Sample numbers list = [386, 462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 615, 953, 345, 399, 162, 758, 219, 918, 237, 412, 566, 826, 248, 866, 950, 626, 949, 687, 217, 815, 67, 104, 58, 512, 24, 892, 894, 767, 553, 81, 379, 843, 831, 445, 742, 717, 958,743, 527]

The result is: [386 462 418 344 236 566 978 328 162 758 918 237]

Example 4) Write the following Python functions

(a) Write a Python function to find the Max of three numbers which are given as arguments of that function.

(b) Write a Python function to multiply all the numbers in a list. The function accepts the list as an argument.

(c) Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.

(d) Write a Python program to compute the greatest common divisor (GCD) of two positive integers. The function accepts two integers as arguments.

(e) Write a Python program, to sum up three given integers. However, if two values are equal sum will be zero. The function accepts three integers as arguments.

(f) Write a Python program, to sum up two given integers. However, if the sum is between 15 to 20 it will return 20. The function accepts two integers as arguments.

Example 5) Determine the coefficients β_0 and β_1 such that the function $f(x) = \beta_0 + \beta_1 x$ the best approximates in terms of the least-squares method a set of points $(0.3, 1.3)$, $(0.7, 2.35)$, $(1.7, 3.7)$ i $(-0.9, 1.7)$ in plane.