CSc600 – Homework: Ruby   **Dr. Jozo Dujmović**

The goal of this homework is to practice basic programming in Ruby and prepare for the final exam.

1. Write a Ruby demo program that illustrates the use of all main Ruby conditional statements [Reader, slide 51, and 52-74].

2. Write a Ruby demo program that illustrates the use of all main Ruby loops and iterators [Reader, slide 51, and 76-102].

3. Write a function mean_sigma(v) that returns two values: the mean value and the standard deviation of numbers stored in the array v [Slides 135,141 show how to return two values].

4. Write a function sort(v) that returns the sorted array v. Do not use Ruby sort methods; write your own sort. Array v must remain unchanged. [Slide 137 shows how to return an array]

5. Create a Ruby class **triangle** with initalizer, accessors, and member functions for computing the *perimeter* and the *area* of arbitrary triangles. Make also a member function *test* that checks sides **a**, **b**, and **c** and classifies the triangle as (1) equilateral, (2) isosceles, (3) scalene, (4) right, and (5) not a triangle. Right triangle can be either isosceles or scalene. Compute the perimeter and area only for valid triangles (verified by *test*). Show examples of the use of this class.

6. Write Ruby recognizer methods **limited?** and **sorted?** that expand the Ruby class Array. The expression **array.limited?(amin,amax)** should return **true** if amin ≤ a[i] ≤ amax for all values of i. The expression **array.sorted?** should return

    *   0   if the array is not sorted
    *   +1   if a[0] ≤ a[1] ≤ a[2] ≤ … (increasing sequence)
    *   -1   if a[0] ≥ a[1] ≥ a[2] ≥ … (decreasing sequence)

    Show examples of the use of this method.