Mini-project Topics – ICT Global Software Engineering Introduction

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Guidelines:

- All the mini-projects must be designed and implemented in Java and by students themselves. If the teacher find out that students don't write the source code (even a part of it), the score will be 0.
- Milestones:
    o 8th week: Choosing mini-project topic, starting to study the mini-project
        ▪ Monitor should submit the list of groups and corresponding mini-project topic by the end of the 15th week.
    o *9th week: Midterm day off*
        ▪ Working in group for the mini-project
    o 16th week: Presenting your results at lab: 15 minutes for each group
- Requirements:
    o Graphical User Interface based on Java FX

Please choose one topic below, but you should keep the balance for the number of groups for each topic. Visual demonstration here means using visual objects/shapes to present algorithm (this is one way to present: https://www.youtube.com/watch?v=es2T6KY45cA).

1. An application to (visually) demonstrate three clustering algorithms: (Group 2)
    a. k-means
    b. k-nearest neighbours
    c. mean shift clustering
2. An application to (visually) demonstrate the following evolutionary algorithm: (Group 5)
    a. Genetic Algorithm
    b. Particle Swarm Optimization
    c. Hill Climbing
3. An application to (visually) demonstrate following meta-heuristic search algorithms: (Group 6)
    a. Simulated Annealing
    b. Tabu Search
    c. Artificial Bee Colony
4. An application to (visually) demonstrate following algorithms: (Group 1)
    a. Kruskal minimum Spanning Tree
    b. Prim Algorithm
    c. Dijkstra Shortest Path
5. An application to (visually) demonstrate following sorting algorithms (Group 3)
    a. Bubble sort
    b. Quick sort
    c. Heap sort

d. Radix sort
e. Merge sort
f. Bucket sort
6. An application to (visually) demonstrate minimum flow cost algorithms (Group 7)
   a. Cycle canceling
   b. Out of kilter
   c. Minimum mean cycle canceling
7. An application to (visually) demonstrate Traveling Salesman Problem (Group 4)
   a. Using MST (minimum spanning tree)
   b. Using dynamic programming
   c. Naïve programing