

Assignment	Grade: 5	Grade: 7	Grade: 9	Grade: 10
A1 - Direct Sorting Methods	Implement 1 direct sorting method, exemplify correctness and evaluate it (at least in the average case) - at least 1 chart	Compare 2 direct sorting methods (best, average and worst case), i.e. implementation, exemplify correctness and analysis (charts)	Compare 3 direct sorting methods (best, average and worst case), i.e. implementation, exemplify correctness and analysis (charts)	Discussion, interpretations, efficiency, compare, stability
A2 - Build Heap TD vs BU	Implement and exemplify correctness of bottom-up build heap procedure	Implement and exemplify correctness of top-down build heap procedure	Comparative analysis of the two build heap methods, in the average case	Interpretations, advantages/disadvantages of each approach
A3 - HeapSort vs QuickSort	HeapSort: implementation, exemplify correctness and evaluation in the average case	QuickSort: implementation, exemplify correctness and evaluation in the average case	Comparative analysis of the two methods in the average case	Generate and evaluate best and worst case for QuickSort; interpretations, efficiency
A4 - Merge k ordered lists	Generate k random sorted lists, having n elements in total (n and k given as parameters); merge 2 lists	Adapt heap operations to work on new structure (list_index, key); use min-HEAP	Correct and complete algorithm implementation, with demo on a small-sized input	Evaluation, interpretations, discussion
A5 - Hash Tables	Implement insert and search operations in a hash table; demo on a small-sized input (FillFactor=95%)	Evaluation of search operation in hash for FillFactor=95%	Correct and complete algorithm implementation and evaluation	Interpretations
A6 - Josephus Permutation	BUILD_TREE - correct and efficient implementation; demo for n=11, evaluation (n->10,000)	OS_SELECT SI OS_DELETE - correct and efficient implementation, demo	Correct and efficient implementation of the complete algorithm; demo with pretty print after each step of the algorithm	Evaluation, interpretations, discussion
A7 - MWay trees	Insert operation on a binary tree: build a tree by repeated insert operations; pretty print the resulting structure	Correct implementation of T1, exemplify on an input	Correct and efficient implementation of T1, T2 and pretty print operations; demo	Evaluation of the running time, interpretations
...more to come				