ITCS 6114/8114 Sec. 091 Fall 2012

Due October 2

Project 1. One way to improve the performance of QuickSort is to switch to InsertionSort when a subfile has <= M elements instead of recursively calling itself. Implement a recursive QuickSort with a cutoff to InsertionSort for subfiles with M or less elements. Include counters in the codes, empirically determine the value of M for which it performs fewest total number of key comparisons and key assignments on inputs of 10000 random natural numbers each ess than K for K = 100, 1000, 10000, 100000. You should repeat the experiments 1000 times before making conclusions. Does the optimal value M depend on K? Prepare a project report to present your approach and finding. The source code listing should be documented and attached to your project report.