CSC 225 Assignment 4

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Question 1:

a) Selection Sort

Steps	Result of steps
(0) Initial Array	1 6 2 4 3 0 7 5
(1) Swap: $0 \leftrightarrow 1$	0 6 2 4 3 1 7 5
(2) Swap: $6 \leftrightarrow 1$	0 1 2 4 3 6 7 5
(3) No change since 2 is already in order	0 1 2 4 3 6 7 5
(4) Swap: $4 \leftrightarrow 3$	0 1 2 3 4 6 7 5
(5) No change since 4 is already in order	0 1 2 3 4 6 7 5
(6) Swap: $5 \leftrightarrow 6$	0 1 2 3 4 5 7 6
(7) Swap: $7 \leftrightarrow 6$	0 1 2 3 4 5 6 7

Array is Sorted (1)

(b) Bubble Sort

Steps	Result of steps
(0) Initial Array	1 6 2 4 3 0 7 5
(1) Swap $6 \leftrightarrow 2$, $6 \leftrightarrow 4$, $6 \leftrightarrow 3$, $6 \leftrightarrow 0$, $7 \leftrightarrow 5$	1 2 4 3 0 6 5 7
(2) Swap $4 \leftrightarrow 3$, $4 \leftrightarrow 0$, $6 \leftrightarrow 5$	1 2 3 0 4 5 6 7
(3) Swap $3 \leftrightarrow 0$	1 2 0 3 4 5 6 7
(4) Swap $2 \leftrightarrow 0$	1 0 2 3 4 5 6 7
(5) Swap $1 \leftrightarrow 0$	0 1 2 3 4 5 6 7
(6) Check Array is Sorted	0 1 2 3 4 5 6 7

Array is Sorted (2)

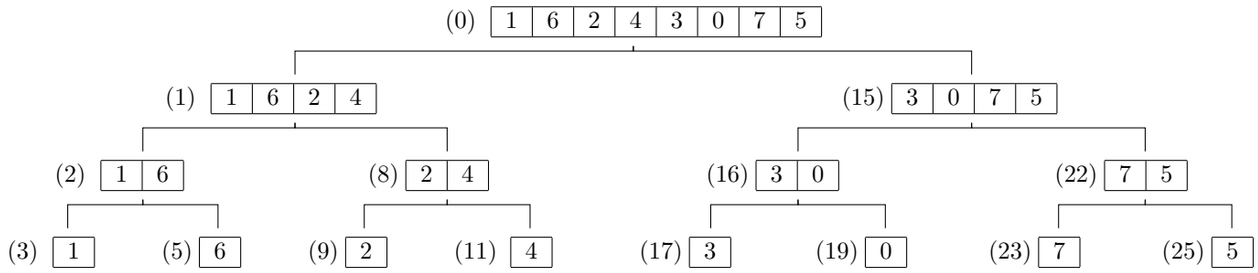
(c) Insertion Sort

Steps	Result of steps
(0) Initial Array	1 6 2 4 3 0 7 5
(1) No change since 6 is larger than one	1 6 2 4 3 0 7 5
(2) Insert 2 at index 1	1 2 6 4 3 0 7 5
(3) Insert 4 at index 2	1 2 4 6 3 0 7 5
(4) Insert 3 at index 2	1 2 3 4 6 0 7 5
(5) Insert 0 at index 0	0 1 2 3 4 6 7 5
(6) No change since 7 is larger than 6	0 1 2 3 4 6 7 5
(6) Insert 5 at index 5	0 1 2 3 4 5 6 7

Array is Sorted (3)

d) Merge Sort

Divide:



Merge: