AH Computing Science

STANDARD ALGORITHMS – **BUBBLE SORT**

Standard algorithms – Bubble Sort

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In a bubble sort, items ‘bubble’ to the top of the list.

Each item in the list is compared and swapped if not in the correct order. Over repeated passes items bubble into the correct positions.

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Efficiency

- Uses 1 list so doesn't not require extra storage
- Good to sort partially sorted lists
- Can be made more efficient by introducing a Boolean variable to see if there have been no swaps, If this is the case the list is sorted and the loops can be terminated.

Comparisons

n^2

Passes

n

Swaps

n^2

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Pseudocode:

```
PROCEDURE bubblesort(ARRAY OF INTEGER list)

DECLARE listlength INITIALLY length (list)

FOR outerloop FROM listlength -2  TO 0 STEP -1 DO
 FOR counter FROM 0 TO outerloop DO
  IF list[counter]  > list[counter+ 1]  THEN
   swap(list[counter], list[counter+1])
  END IF
 END FOR
END FOR

END PROCEDURE

PROCEDURE swap(REF a, REF b)

DECLARE temp AS INTEGER INITIALLY a
SET a TO b
SET b TO temp

END PROCEDURE
```

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