



AH Computing Science

STANDARD ALGORITHMS – INSERTION SORT

Standard algorithms – Insertion Sort

Insertion sort

- ▶ Starts at one end of a list and progressively sorts each subsequent item until it reaches the last item
- ▶ The algorithm uses 2 loops, The outer loop counts from 1 to list length. The inner counts down from 1 less than the outer loop value to 1, reducing the number of items to be checked each round

Standard algorithms – Insertion Sort

Pseudocode:

```
PROCEDURE insertionSort (ARRAY OF INTEGER list)

  DECLARE listlength INITIALLY length (list)

  FOR outerLoop FROM 1 TO listlength DO
    FOR innerLoop FROM outerloop TO 1 STEP -1 DO
      IF (list[innerLoop -1] > list[innerLoop]) THEN
        swap(list[innerLoop -1] , list[innerLoop])
      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
```