1. Consider the following piece of incomplete pseudocode: 1 point

```
function Shift(vector, i, j)
    if i ≤ j then
        return vector
    end if
    store ← vector[i]
    for 0 ≤ k ≤ (i − j − 1) do
        MISSING
    end for
    vector[j] ← store
    return vector
end function
```

This pseudocode, when completed, is supposed to implement the Shift function. What should go in the place of **MISSING**?

- ○ $vector[i-k] \leftarrow vector[i-k-1]$
- ○ $vector[i-k-1] \leftarrow vector[i-k]$

2. Consider the following piece of incomplete pseudocode: 1 point

```
function InsertionSort(vector)
    for 2 ≤ i ≤ LENGTH(vector) do
        j ← i
        while MISSING ∧ (j > 1) do
            j ← j − 1
        end while
        Shift(vector, i, j)
    end for
    return vector
end function
```

This pseudocode, when completed, is supposed to implement to Insertion Sort algorithm. What should go in the place of **MISSING**?

- ◯ (*vector*[*j*] > *vector*[*j*-1])
- ◯ (*vector*[*j*-1] > *vector*[*i*])
- ◯ (*vector*[*j*-1] > *vector*[*j*])
- ◯ (*vector*[*i*] > *vector*[*j*-1])

3. Consider the following piece of pseudocode: 1 point

$$
\begin{array}{l}
\textbf{function } \text{InsertionSort}(vector) \\
\quad \textbf{for } 2 \leq i \leq \text{LENGTH}(vector) \textbf{ do} \\
\quad\quad j \leftarrow i \\
\quad\quad \textbf{while } (vector[j-1] > vector[j]) \wedge (j > 1) \textbf{ do} \\
\quad\quad\quad \text{Swap}(vector, j, j-1) \\
\quad\quad\quad j \leftarrow j - 1 \\
\quad\quad \textbf{end while} \\
\quad \textbf{end for} \\
\quad \textbf{return } vector \\
\textbf{end function}
\end{array}
$$

This utilises the Swap function that will swap the values at j and j-1 in a vector. The claim is that this function will implement the Insertion sort algorithm. Is this true or false?

- ◯ False
- ◯ True

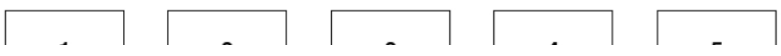
4. Why does the Insertion Sort work? 1 point

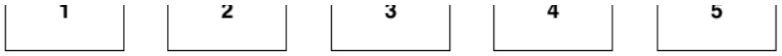
- ◯ Because all elements are compared with each other
- ◯ Because all smaller sub-vectors from left to right will be sorted
- ◯ It only works for vectors that are mostly sorted

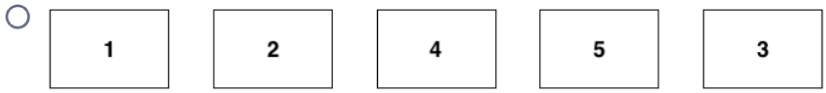
5. Consider the following sequence of vectors, where each vector is on a separate line: 1 point

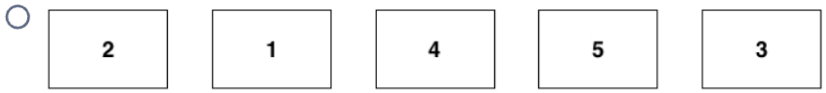
4	2	1	5	3
2	4	1	5	3
1	2	3	4	5

In each line we should have the vector after the values have been shifted according to the Insertion Sort algorithm. What values should go in the third line?

- ◯ 







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