



## Introduction to Computer Science for Engineers

**Selectionsort** ✓✓✓😊🎓

This assignment **closed** November 17, 2024 at 23:15.

**Assignments**

1. What is the difference between `in-place` and `out-of-place` sorting algorithms?
2. Implement the function `selection_sort(array: list) -> None`. It should sort the array `array` via selection sort in-place.

For the next task you will need the external Python package `matplotlib`. It is available online via a package manager (e.g. `PyPi`). Install the package on your system, search for a tutorial online on how to install Python packages on your system, if necessary.

Place the script `animation.py` in the same folder as `selection_sort.py` and run the script. It will generate two plots, the first one will visualize your sorting algorithm at different time steps. The second one will animate the sorting process.

3. Describe how Selectionsort works with help of the two plots. Change the `animation.py` script to your needs.

**Template files**

Get all files in an archive `templates.zip` or `templates.tgz`.

- `animation.py`
- `selection_sort.py`

**Miit Dholakia** |



## Introduction to Computer Science for Engineers

# Insertionsort

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This assignment **closed** November 17, 2024 at 23:15.

## Assignments

1. Implement the function `insertion_sort(array: list) -> None`. It should sort the array `array` via insertion sort in-place.

For the next task you will need the external Python package `matplotlib`. It is available online via a package manager (e.g. `PyPi`). Install the package on your system, search for a tutorial online on how to install Python packages on your system, if necessary.

Place the script `animation.py` in the same folder as `insertion_sort.py` and run the script. It will generate two plots, the first one will visualize your sorting algorithm at different time steps. The second one will animate the sorting process.

2. Describe how insertionsort works with help of the two plots. Change the `animation.py` script to your needs.



## Template files

Get all files in an archive `templates.zip` or `templates.tgz`.

`animation.py`  
 `insertion_sort.py`

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## Introduction to Computer Science for Engineers

**Bubblesort** ✓✓✓😊🎓

This assignment **closed** November 17, 2024 at 23:15.

**Assignments**

1. Implement the function `bubble_sort(array: list) -> None`. It should sort the array `array` via bubble sort in-place.
2. Implement the improvement for bubble sort that we discussed during the lecture.

For the next task you will need the external Python package `matplotlib`. It is available online via a package manager (e.g. PyPi). Install the package on your system, search for a tutorial online on how to install Python packages on your system, if necessary.

Place the script `animation.py` in the same folder as `bubble_sort.py` and run the script. It will generate two plots, the first one will visualize your sorting algorithm at different time steps. The second one will animate the sorting process.

3. Describe how bubblesort works with help of the two plots. Change the `animation.py` script to your needs.

**Template files**

Get all files in an archive `templates.zip` or `templates.tgz`.

`animation.py`  
 `bubble_sort.py`

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