EPITA
ÉCOLE D'INGÉNIEURS EN INFORMATIQUE

version **#**

IT IS MY JOB TO MAKE SURE YOU DO YOURS.

Copyright

This document is for internal use at EPITA ([website](#)) only.

Copyright © 2021-2022 Assistants `<assistants@tickets.assistants.epita.fr>`

Contents

---

*https://intra.assistants.epita.fr

1 Int Vector Insertion Sort

Files to submit:

- int_vector_insert_sort/int_vector_insert_sort.c

Provided files:

- int_vector_insert_sort/int_vector_insert_sort.h

Authorized headers: You are only allowed to use the functions defined in the following headers:

- assert.h
- err.h
- stddef.h
- errno.h

1.1 Goal

Write a function that takes a vector of integers and sorts it completely in ascending order. You will be using the sorting algorithm called *Insertion Sort*. The size of the table will always be correct and superior to zero.

Structure of the vector:

```
struct int_vector
{
    size_t size;
    int data[INT_VECTOR_LENGTH];
};
```

To help you in this endeavor, you will have to first write another function: `swap`.

```
static struct int_vector swap(struct int_vector vec, size_t i, size_t j);
```

As the name entails, you need to swap the values at index `i` and `j` and returns the vector. Using a temporary value could help greatly.

1.2 Example Swap

```
int main()
{
    struct int_vector vec =
    {
        .size = 5,
        .data = { 3, 4, 12, 2, 8 }
    };

    vec = swap(vec, 0, 1);
```

```
    /* vec should be 4 3 12 2 8 */

    return 0;
}
```

1.3 Insertion sort

Once done, you can use the swap function to code the insertion sort.

```
struct int_vector int_vector_insert_sort(struct int_vector vec);
```

It is my job to make sure you do yours.