

Algorithms

What is an algorithm?

An algorithm is a procedure, recipe, process to accomplish a task. It takes value as input and delivers a value as output.

How to develop an algorithm?

The development of an algorithm has four crucial steps:

1. **Specification:** Be clear what the problem is
2. **Design:** Specify structure of the solution, usually in pseudocode
3. **Development:** Convert pseudocode in chosen language (C, Python, Java etc.)
4. **Testing:** if all inputs deliver all necessary outputs

Example: Linear search in Pseudocode

```
# Linear search last occurrence
p = NIL;
for i = 1 to n do
    if A[i]==v then p=i;
return p;

# Linear search first occurrence
i = 1;
while i less or equal n and A[i] not equal v do i++;
if i less or equal n then return i;
else return NIL;
```

Prime number filter

Sorting algorithms

Bubble sort

Selection sort

Insertion sort