FAMOUS ALGORITHMS

LESSON 14

NANODEGREE → ENGINEERING MODULE

AGENDA

01 Algorithms

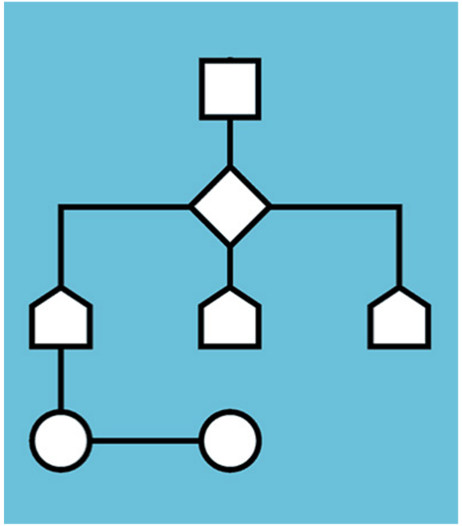
02 Algorithms types and structure

03 Practice and coding

ALGORITHMS

INTRODUCTION

- Algorithms are **rules or instructions** that are formulated in a finite, **sequential order to solve problems** and get the required results.
- They give the **pseudocode for problems** and can be implemented in several languages as they are **not language-specific.**

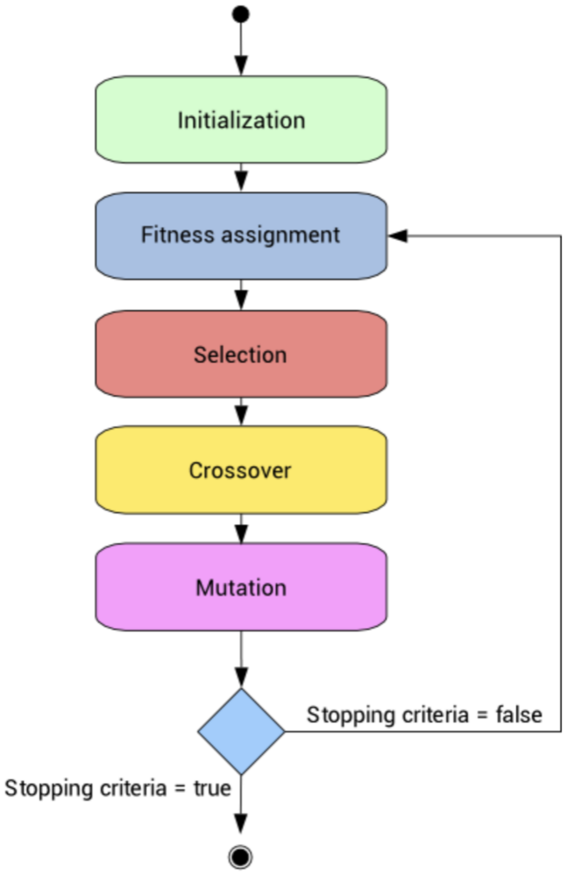


ALGORITHMS

HOW TO WRITE AN ALGORITHM?

1. Figure out what is the exact problem
2. Determine where you need to start
3. Determine where you need to stop
4. Formulate the intermediate steps
5. Review your steps

# genetic algorithm bio-lab example



ALGORITHMS

EXAMPLE

An algorithm to check if a student has passed in an exam or not:

- Step 1: START
- Step 2: Declare two variables x, y
- Step 3: Store the marks obtained by the student in x
- Step 4: Store the minimum passing score in y
- Step 5: Check if x is greater than or equal to y. If yes, then return “Pass” else return “Fail”
- Step 6: STOP

ALGORITHMS

ELEMENTS OF A GOOD ALGORITHM

1. The **steps** need to be **finite, clear and understandable**
2. There should be a clear and **precise description of inputs and outputs**
3. Each **step** need to have a **defined output** that depends only on inputs in that step or the preceding steps
4. The **algorithm should be flexible** enough to mold it in order to allow a number of solutions
5. The steps should make use of **general programming fundamentals** and should not be language-specific

ALGORITHMS

ALGORITHM CLASSES

CLASS	DESCRIPTION
Divide and Conquer	Divide the problem into sub-parts and solve each one separately
Dynamic Programming	Divide the problem into sub-parts, remember the results of the sub-parts and apply it to similar ones
Greedy Algorithms	Involves taking the easiest step while solving a problem without worrying about the complexity of the future steps

“Knowing how to solve algorithms will give you a competitive advantage during the job search process. Always!”

DEMO & EXERCISES

ALGORITHMS
EXERCISES & PRACTICE

THANK YOU!

CODE
FIRST
GIRLS