



## 3AIT – Quick project

### Functional Programming

The analysis of a guided world

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Programming  
State Space  
Lisp

Version 1.0

Last update: 02/07/2019

Use: Students/Staff

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## 1 PREAMBLE: GENERAL INSTRUCTIONS

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Your response folder should conform to the following:

1. The folder should be named: **[3AIT]-IDOpenCampus-SURNAME-FirstName-VC-MP**.
2. In the folder, files **.pdf** and **.lsp** are acceptable.
3. Use an archive tool to zip your response file and src folder into a zipped file name **[3AIT]-IDOpenCampus-SURNAME-FirstName-VC-TP.zip** (e.g. **[3AIT]-123456-Lutin-Marc-VC-MP.zip**)
4. Store your archive in website: **sce.sad.supinfo.com**.

You can use LispWork or Python tools.

If you are found cheating by your supervisor your examination session will be **CANCELLED**. Your transcript will be reviewed by the disciplinary committee.

## 2 TOWN CREATOR (20 POINTS)

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Persons in charge of a town command a system to visualize population and needs of the town.

A resident is identified by:

Surname, First name, name or number of Street, Postal Code, Age, [Quantity of dwelling, Owner or not], [Quantity of car, Owner or not], Man, Woman, Alone, Father, Mother, [Child, Schooled or No].

A building is identified by:

Name or number of street, Postal code, Quantity of rooms, Apartment, House, Public building, Area.

Additional data:

Area of the town, Area per inhabitant needed to live.

Work 1: Build the structure and the database

Work 2: Create a function to display the database, distinguishing datasets

Work 3: Create a simulator to query the database

Work 4: Propose an AI to exploit and propose solutions to problems according to the data:

- How much inhabitant must town have, with the links between them?
- How much food shops must town have?
- How much public buildings must town (school, medical office, pharmacy...) have?
- How much sparking space must town have?

For practical reasons, you can increase the information in the database.

You can use Lisp and Python languages. You must realize your quick project in functional programming (**the ideal is to manipulate calculus lambda, it is more suitable in Lisp**).

You must return:

- 1 – Source code with the executable. (**3 points** – Readability, code structure)
- 2 – Presentation manual, implementation, running. (**1 point**)
- 3 – A technical manual with:
  - a- Presentation of AI realized. (**3 points**)
  - b- Detailed description of algorithms (data structures, heuristics, constraints, properties...). (**8 points**)
  - c- Simulations, tests and graphs of the simulation. (**4 points**)