Université de Haute-Alsace
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Master DSAI
2020-2021

Project-Mode applied Programming in Python

Practical Work : AI for Tic Tac Toe

Goals

Implement Min Max
Implement $\alpha - \beta$

Instructions

Use Python at 100%, Python comes with lot of tools to make your life easy, use them.

Think "object", use object programming at your advantage.

Code neatly with well-chosen variables and functions/methods names. Add useful comments to your code in order to be able to understand it in some days.

Try to respect coding styleguides. I advise you to follow python styleguide PEP8 [1] or Google Python Styleguide [2].

Simple is beautiful. Do not try to code complicated, keep it simple, it will be more efficient and less error-prone.

Think before you code, take some time to draw/write your idea on a sheet. The tinking time before you code will save you a lot of debugging time after.

Read the documentation links that I give you. When using a new library, a coder spends lot of time on its documentation to understand how it works. There is an expression dedicated to this : RTFM which means 'Read The F...Manual'.

Read carefully my instructions, they are here to help you (or try to ;-)).

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1 AI for Tic Tac Toe

1.1 Implement Min Max for Tic Tac Toe

Implement Min Max for Graphical Tic Tac Toe.

⚠ You will have to modify the code to handle an AI player! And to choose who is a human (player 1 and/or player 2) and who is AI ((player 1 and/or player 2).

1.2 Implement $\alpha - \beta$ for Tic Tac Toe

Implement $\alpha - \beta$ for Graphical Tic Tac Toe.

⚠ You will have to modify the code to handle an AI player!

1. PEP8 : https://www.python.org/dev/peps/pep-0008/
2. Google Python Styleguide : https://google.github.io/styleguide/pyguide.html

1.3 Analysis

Add some time measures to compare the two algorithm.

2 Bonus

You already finished? Congratulations, now you can do an AI for Connect 4!