Introduction to Chess and Computer Programming with Python

Purpose

This course will introduce basic programming concepts in python through a set of programming exercises that will teach the participants chess. Therefore at the end of the course, participants will be able to code in python, as well as play chess.

The course is appropriate for anyone, no prior knowledge is required.

Covered topics include showing messages in python, using variables, lists, basic arithmetic operations, strings, string formatting and string operations. Regarding chess the covered topics include a basic introduction to chess, how each piece moves, starting position, ending the game.

Participants while learning python, they will write code that will allow two players to play chess against each other while the computer will comment on their game.

Objectives

- Learn basic chess concepts (moves, winning/losing/tie, chess notation).

- Learn basic python code (getting/printing data, simple data processing).

Agenda

DAY 1

- Introduction to the course, place and time arrangements, team formation of two.
- Presentation of python, example code, extended use of python around the globe.
- Introduction to chess.
- Combining chess and python: course overview.
- Chess notation: how each piece is named and noted.
- Showing things on a screen using python. The print method. Teamwork: Use print to print the list of chess pieces and their names in chess notation.
- Showing things in a more structured way using print. Teamwork: Use formatted print to display a chess board in python.

DAY 2

- Storing information provided by a user (python variables and the input method).
- Chess notation: how a move is written in chess, chess board coordinates.
- Using python to read a chess move and inform the user what is moved and where.
- Teamwork: Write collaborative code that reads a user's move and displays what is moved and where for every possible chess piece.

DAY 3

- More on chessboard coordinates. How to check the validity of a given coordinate. Introduction to python methods.
- Valid moves for each piece. How to check a move given the starting coordinates and the ending coordinates.
- Teamwork: create methods that check the validity of each move for each piece.

DAY 4

- Playing in turns, how to ask a user to play his/her move, then ask the next one and back again.
- How to alter what is printed on a screen so as to show a

Methods

- Lectures
- Exercises
- Hands-on activities
- Teamwork

Target Groups

- Teachers working in primary schools
- Teachers working in secondary schools
- Teachers working in vocational schools

Place

Heraklion, Crete, Greece

new chess board after each move.

DAY 5

- Checkmate in chess: When does one win or lose? Is there a tie?
- Detecting checkmates using python.
- Teamwork: implement python code to comment upon a move whether is a checkmate / a tie or just a check.
- Course overview.