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Python 101

Course Overview

Python is an easy-start programming language that fits the most students who has no coding background. As a matter of fact, Python is also an OOP, object-oriented programing language which allows programmer to simulate real-world object in a virtual way. Python is an ideal programming language for students who want to become data scientists or any fields related data analysis. In the meanwhile, it is also a good preparation for Java, C/C++, and Swift those more advanced programming language. If you are wondering how Artificial Intelligence work in real world, how to apply AI into game, how to make you a cool kid at your school, there is no doubt that you want to code with me. In the end of class, you will manage to code a game amplified with Artificial Intelligence.

Instructor Bio

I have been working in Software Engineering field for more than 7 years, and I have more than 2 years coding teaching experience. I graduated from UC Berkeley with Applied Mathematics degree that I could easily apply mathematical model in computer science and engineering. Therefore, in my class, students could learn how to code in a mathematics manner. The following is my 2021 project, if you are using Iphone, please welcome to download and test.

https://testflight.apple.com/join/Tv1UWmfM

Software Requirement

Python IDEL (I will guide students to download and install the software)

Hardware requirement

PC or Apple Mac (Windows or Mac OS)

TextBook

I will demonstrate the materials in class

Quizzes

Up to 5 quizzes at the beginning of each class in case of testing students' understanding of previous class materials and homework assignment.

Homework

Up to 2 hours every week's homework

Exam

One Mid-term and Final exam

Project

One big project will be assigned at the mid of the program and will be collected at the end of the program. Why project? As a professional software engineer, I always believe in project-oriented task allows people to learn much more than simple academic task.

Schedule and Plans

	Topic	content
Week 1	introduction to python	how to install python, how to use python. Syntax, comments
Week 1	introduction to python	Variable Names, Assign Multiple Values, Output Variables, Global Variables, Variable Exercises
Week 2	Numbers, Casting	Specify a Variable Type
Week 2	Python String and Booleans	Slicing Strings, Modify Strings, Concatenate Strings, Format Strings, Escape Characters, String Methods, String Exercises
Week 3	Python Operators	Operators are used to perform operations on variables and values.
Week 3	List	Lists are used to store multiple items in a single variable, Access list items, change list items, add list items, remove list items, loop lists, list comprehension, sort lists, copy lists, join lists, list Methods, List Exercises
Week 4	Python Tuples	Access Tuples, update tuples, unpack tuples, loop tuples, join tuples, tuple methods, tuple exercises
Week 4	Sets	Access Sets items, change Sets items, add Sets items, remove Sets items, loop Sets, Sets methods, Sets Exercises
Week 5	Dictionary	Access items, change items, add items, remove items, loop Dictionary, copy dictionary, nested dictionaries, dictionary methods, dictionary exercises
Week 6	Midterm Exam	
Week 7	control flow, if else, while loops	Python supports the usual logical conditions from mathematics:
Week 8	control flow, for loops	
Week 9	Function	A function is a block of code which only runs when it is called.
Week 9	classes/object	Python is an object oriented programming language. Almost everything in Python is an object, with its properties and methods. A Class is like an object constructor, or a "blueprint" for creating objects.
Week 10	polymorphism / inheritance	polymorphism allows many forms to work together. Inheritance allows us to define a class that inherits all the methods and properties from another class.
Week 11	Project : Maze Game part 1	Creating a maze game applying character control and artificial intelligence
Week 12	Project : Maze Game part 2	Creating a maze game applying character control and artificial intelligence
Week 13	Final Exam	submit your maze game and complete the final exam