

# Introduction

22 April 2020 13:44

The best thing that you can work on in order to prepare for an A-Level in Computer Science is to develop your programming skills.

The A-Level Course has two exams and one NEA as follows, Paper 1 and the NEA are based on Python and programming so it accounts for 60% of the final grade.

The problem with programming though is that you can't just revise it and then answer questions on it, you have to keep on practicing and trying out new things and fixing problems, it is experience that makes you a good programmer.

Your bridging work is to practice and develop your Python skills and to learn how to do Object Oriented Programming (OOP)

You will need to create accounts for most of the websites that are given in the sections below, use your school email address so that we can monitor the emails and choose a username where you can that doesn't identify you.

## Specification

### Paper 1 - Algorithms and Programming

On-screen exam  
2 hours 30 minutes  
40% of A-level

#### Topics

Fundamentals of programming  
Fundamentals of data structures  
Fundamentals of algorithms  
Theory of computation

### Paper 2 - Computer Systems

Written exam  
2 hours 30 minutes  
40% of A-level


#### Topics

Fundamentals of data representation  
Fundamentals of computer systems  
Fundamentals of computer organisation and architecture  
Consequences of uses of computing  
Fundamentals of communication and networking  
Fundamentals of databases  
Big Data  
Fundamentals of functional programming

### NEA - Programming Project

75 marks  
20% of A-level

This website starts with beginners and has step by step tutorials and challenges

 TYP

RESOURCES LESSONS CONTACT LOGIN SIGNUP

Welcome

01 Solve and Learn

02 Challenges Basic Intermediate Advanced

03 Pygame Challenges and Learn

04 Mini Projects NEA Samples Tutorials

05 Python Databases SQLite

06 Django Web development and Python

07 Tkinter Pong OOP

08 Tinker with code online

~ OOP PROGRAMMING AND CLASSES - A GENTLE B


0 - Introduction and Pedagogy

Introduction to OOP Programming and classes

Assuming you are competent with the basics of Python, Welc

Sometimes the best way to learn something is to solve problems and learn as you go along! Do go the challenges that will take you through from absolute basics to creating a "Pong" type game using

Introducing\_OOP\_Classes.pptx ▾



It starts with beginners and goes through to OOP which is the type of programming that you need to do at A-Level.

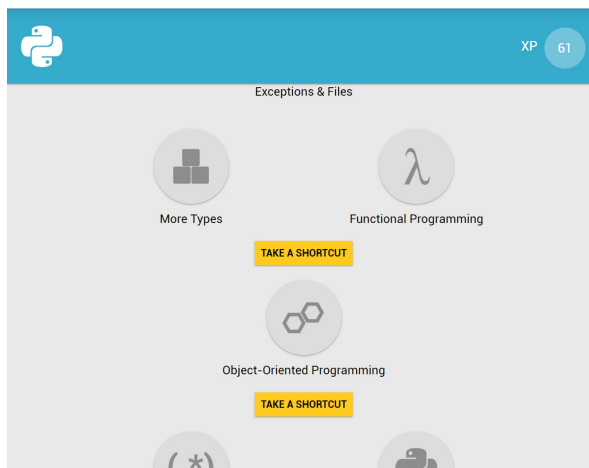
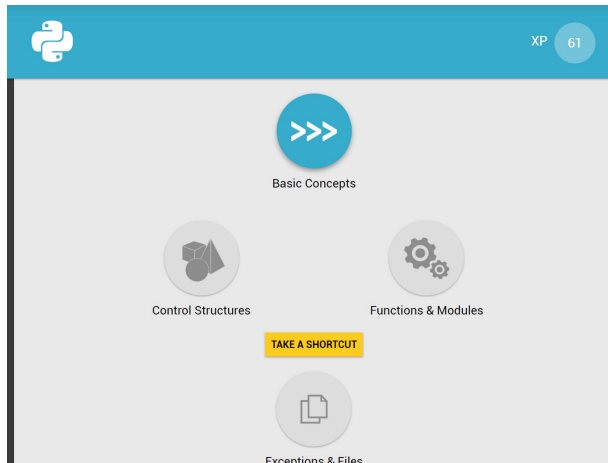
You can start straight away with OOP if you like or start at the beginning. They don't have to be done in order.

# Sololearn.com

23 April 2020 09:43

You need to create a login for sololearn. You can start at the beginning with basic concepts or you can take shortcuts and start with the harder stuff.

There is a shortcut to OOP if you want to go straight there but you have to take a test and pass it before it moves you on to OOP



This is a website that is for all topics at A-Level. It is funded by the Department of Education and created by University of Cambridge

You have to signup but when it asks you which school just click on 'Not associated with a school'

It is mainly reading but there are things you can try in the programming sections.

## All topics

### Theory

GCSE to A level transition

[Programming concepts](#)

[Data representation](#)

[Boolean logic](#)

[Systems](#)

[Networking](#)

### Data and information

[Number systems \(AQA\)](#)

[Number bases](#)

[Representation](#)

[Compression](#) New

[Encryption](#)

[Databases](#) New

### Programming

Programming fundamentals

[Programming concepts](#)

[String manipulation](#)

[Subroutines](#)

[Files](#)

[Recursion](#)

[GUIs \(OCR\)](#)

[Software engineering principles](#) New

### Programming paradigms

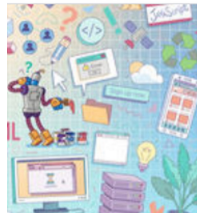
[Procedural and structured programming](#) New

[Object-oriented programming](#)

[Functional programming \(AQA\)](#)

This is a 6 week course introducing OOP. You don't need to pay, you can do it for free but you have to complete it in a set number of weeks.

It's a 'fun' course but it's a good introduction.



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## Web

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JavaScript.

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more



Raspberry Pi Foundation &  
National Centre for  
Computing Education

## Object-oriented Programming in Python: Create Your Own Adventure Game

Learn object-oriented programming  
principles by creating your own text-  
based adventure game in Python.  
Supported by Google.

⌚ 4 weeks ⌚ 2 hrs per week

🔗 Included in Unlimited

Find out more



Raspberry Pi F  
National Cent  
Computing Ec

## Programm and Struct

Learn how to sa  
in external files  
into your Pytho  
by Google.

⌚ 3 weeks ⌚

🔗 Included in l

Fin

<https://www.futurelearn.com/courses>

This website has videos rather than tasks to do but they explain the concepts and you can have a go at what he's doing as you go along.

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## Section 4. Python Functions

1. [Pythons ord\(\) function >>](#)
2. [Pythons chr\(\) function >>](#)
3. [Pythons eval\(\)function >>](#)
4. [Pythons print function >>](#)
5. [Pythons abs function >>](#)
6. [Pythons type function >>](#)
7. [Pythons id\(\) function >>](#)
8. [Pythons id\(\) function and names >>](#)

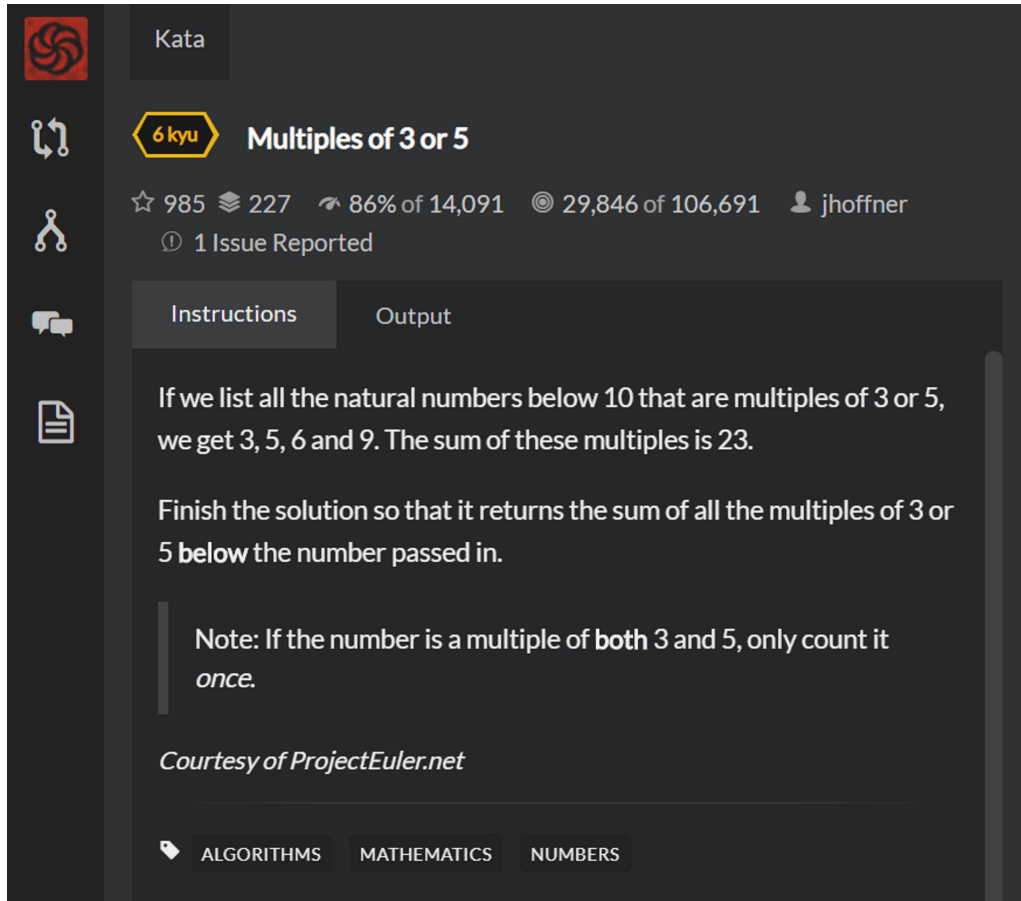
## Section 5. Introduction to Classes and Objects

1. [Python Class and Object >>](#)
2. [Python Binding a Name to an Object >>](#)
3. [Python String Class and Object >>](#)
4. [Python An Empty String >>](#)
5. [A Python String is Immutable >>](#)
6. [Binding to an Existing String Object >>](#)
7. [Python Augmented Operators and Binding to Objects >>](#)

These are difficult, probably too difficult for the moment but you can have a try/keep the web page for future reference.

You have to solve a problem first before you can sign up, it's really difficult so I'll give you the answer which is  $a*b$

You can then signup, choose your language and click on Train to complete the challenges. This is the first challenge



The screenshot shows the 'Kata' section of the Codewars website. The challenge is titled 'Multiples of 3 or 5' and is rated '6 kyu'. It has 985 stars, 227 issues reported, and 86% of 14,091 users solved it. The creator is jhoffner. The challenge description states: 'If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Finish the solution so that it returns the sum of all the multiples of 3 or 5 below the number passed in. Note: If the number is a multiple of both 3 and 5, only count it once.' The challenge is attributed to ProjectEuler.net and is categorized under Algorithms, Mathematics, and Numbers.

Kata

6 kyu Multiples of 3 or 5

☆ 985 227 86% of 14,091 © 29,846 of 106,691 jhoffner

1 Issue Reported

Instructions Output

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.

Finish the solution so that it returns the sum of all the multiples of 3 or 5 below the number passed in.

Note: If the number is a multiple of both 3 and 5, only count it once.

Courtesy of ProjectEuler.net

ALGORITHMS MATHEMATICS NUMBERS

This website has tutorials down the left hand side and you have the option to 'try it yourself' and edit the code

The screenshot shows the w3schools.com website with the URL `w3schools.com/python/` in the browser address bar. The page features a dark navigation bar with links for `HTML`, `CSS`, `JAVASCRIPT`, `SQL`, `PYTHON` (highlighted), `PHP`, `BOOTSTRAP`, and `HO`. Below this, a sidebar on the left lists various Python topics under the heading "Python Tutorial", including "Python HOME", "Python Intro", "Python Get Started", "Python Syntax", "Python Comments", "Python Variables", "Python Data Types", "Python Numbers", "Python Casting", "Python Strings", "Python Booleans", "Python Operators", "Python Lists", "Python Tuples", "Python Sets", "Python Dictionaries", "Python If...Else", "Python While Loops", "Python For Loops", "Python Functions", "Python Lambda", and "Python Arrays". The main content area has a header with a colorful code snippet image and the text "oXygen XML Editor Ideal tool for learning XML Speci". Below this is the main title "Python Tutorial" and a green button labeled "< Home". A large green box contains the Python logo, the text "Python is a programming language. Python can be used on a server to create", and a green button labeled "Start learning Python now »". At the bottom, the section "Learning by Examples" is visible, with the text "With our 'Try it Yourself' editor, you can edit Python code ar".

Python Tutorial

Python HOME  
Python Intro  
Python Get Started  
Python Syntax  
Python Comments  
Python Variables  
Python Data Types  
Python Numbers  
Python Casting  
Python Strings  
Python Booleans  
Python Operators  
Python Lists  
Python Tuples  
Python Sets  
Python Dictionaries  
Python If...Else  
Python While Loops  
Python For Loops  
Python Functions  
Python Lambda  
Python Arrays

oXygen XML Editor  
Ideal tool for learning XML Speci

## Python Tutorial

< Home

Python is a programming language.  
Python can be used on a server to create

Start learning Python now »

### Learning by Examples

With our "Try it Yourself" editor, you can edit Python code ar