

*Official playlist for thenewboston Python Programming Tutorials!*

Python 3 Programming Introduction Tutorial What you will need for this tutorial series: You might even be new to Programming all-together. Either way, you have come to the right place, and chosen the right language! Python is very beginner-friendly. The syntax words and structure is extremely simple to read and follow, most of which can be understood even if you do not know any programming. Let me show you: When someone says to "print to the console," they are referring to where information from your program is output. This might be a command prompt CMD. You will see an example of "output to console" below. Looking at the code about cars in the garage, can you guess what will happen? You probably have a general idea. What are we doing? We are printing each car. Since "printing" outputs some text to the "console," you can probably figure out that the console will say something like "Ferrari, Honda, Porsche, Toyota. Python is a fully-functional programming language that can do anything almost any other language can do, at comparable speeds. Python is capable of threading and GPU processing just like any other language. Since there are many tasks that people commonly do, we have modules that people have written that do these tasks for you, and they usually do them in the cleanest and most efficient method possible. Sometimes you will see people refer to "DRY. Thus, Python can be used to make games, do data analysis, control robot and hardware, create GUIs , or even to create websites. The Home Page is a collection of topics and tutorials offered here on PythonProgramming. Guests can still navigate the Dashboard. Congratulations, you have finished the first of many tutorials on the topic of Python. I recommend you Sign up before proceeding so that this page is marked as complete. Using the button to get to the next tutorial will successfully mark this one as "complete", if you are logged in. To install Python, you will need to head to Python. You can either head on to the , or head to the Dashboard for other topics.

## Chapter 2 : Thonny, Python IDE for beginners

*Python Programming Tutorial - 1 - Installing Python 56 videos Play all Python Programming Tutorials thenewboston; Learn Python - Full Course for Beginners - Duration.*

Though we do our best to prevent errors, we need your help to ensure that all the information presented in this tutorial is correct and up to date. If you find spelling and grammatical errors, it will be great if you will point them out to us, so that we can fix them! We are continually improving this website and this will assist us in making it the best tutorial! The same is true of course, if you find logical problems or errors in the text or the code examples. We hope that there are only few of them left in the text! But as the saying goes, nobody is perfect! Please use the contact button! Ads for training classes This website is ad-free! There are no paid-for ads. The only things advertised here are the book by Bernd Klein, the author of this tutorial, and the training classes given by the author. Tutorial in hard copy There is no PDF version available, but you can create it yourself. You can use the print functionality of your browser to do this. Use "Print to File" and you will get a nicely formatted version of a chapter. Thank you very much for using this tutorial! We hope that you will enjoy learning Python with us! Advanced Topics System Programming with Python Python has various modules to support system focused programming. The sys module is introduced in the first chapter. A focal point are the data streams stdin, stdout, stderr and redirections of streams. The interaction between is the focus in the following chapter of our course. The interaction between Python and the Linux Shell is another topic of our advanced section. This chapter is followed by Forks and Forking. You can learn more about threads and threading in our Introduction into Threads. We show how to find the active IP addresses in a local network by using forks. So, if you need a good example of pipes and forks working together you will find it here. Graph Theory We have three chapters dealing with Graphs. A general introduction into the Graph theory and the corresponding Python code can be found in "Graphs in Python" You will also here the implementations of a graph class with essential functionalities for graph creation, manipulation and calculations. Introduction into the module pygraph Introduction into the module NetworkX Computer Science and Computer Linguistics Finite State Machines are not only used in computer science but in natural language processing as well. We cover the concept of the Finite State Machine in great detail, so that even an amateur in Computer Science can understand the examples. At least we hope so. We show a simple implementation of a Turing Machine. If you are interested in Classifying documents, the Introduction into Text Classification using Naive Bayes and our Python Implementation of Text Classification will be the right chapters for you. Numerical Computations with Python If you want to get efficient and fast results with arrays and matrices, the NumPy module of Python is definitely the right tool collection for you. You will find answers to your questions in our tutorial, i. You can find a complete working example in Creating Musical Scores With Python If you feel that the above topics are to complicated or sophisticated for you, you might like our course for beginners in Python. You find a documented link list in the following lines: We show a recursive solution to Towers of Hanoi and a game Cows and Bulls better known in a commercial version called "Mastermind". Classroom training Courses This tutorial is, as we have already mentioned, intended for self-study! But some people need to learn Python very quick or prefer to learn in a classroom with an experienced trainer. You may consider visiting one of the courses by Bernd Klein, the author of this tutorial.

## Chapter 3 : Python Programming Tutorials

*The Python Tutorial¶. Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming.*

In this part of Python 3 series tutorial for beginner, we will discuss about writing conditional code using if,elif,else in Python. We will also discuss about how iteration works using while and for loop. We have a video tutorial for this chapter for Bangla speaking people: This type of code is called conditional code. In Python we can write a conditional code using if statement. So in the above example, num variable is assigned to and is divisible by 2 without any remainder. Thus the block of code runs and shows the above output. Then it checks first by if condition that whether the value is even or not. Here we also used an else block. In this case we can use elif condition after if condition as many as we want. The following program asks user to input a number then it checks if the number is 50 if not then if the number is , if not then if the number is greater than If all the if and elif condition are evaluate to false, then the default else block will run. If any of the the ifâ€œelif block meets the condition, the remaining block will not be checked. But when we assigned num to 6 the next if statement evaluates to false because, 6 is greater than 3 but 6 is not less than 5. In the following example, num variable is assigned to When we compare string data we should remember the lowercase and uppercase characters are different. It means if the condition is not true then run the following block of code. This is called nested condition. We can write iterative code by using while loop. The syntax of while loop is, after the while keyword we give condition and then after: As long as the condition is true, the body will run continuously unless the condition breaks the loop or we break the loop manually within inside the loop. The following program will print every odd number between 1 to Iterable object means a sequence or collection of values stored in a variable. Here range function generates a sequence of values 1 to 10 and the loop each time access one value at a time. That means range 1,11 actually means create a sequence from 1 to

## Chapter 4 : Python 3 Tutorial - Learn Python in 30 Minutes.

3. *An Informal Introduction to Python*. In the following examples, input and output are distinguished by the presence or absence of prompts (`>>>` and `:`): to repeat the example, you must type everything after the prompt, when the prompt appears; lines that do not begin with a prompt are output from the interpreter.

The package comes with several data structures that can be used for many different data manipulation tasks. It also has a variety of methods that can be invoked for data analysis, which comes in handy when working on data science and machine learning problems in Python.

### Advantages of Using Pandas

The following are some of the advantages of the Pandas library: It can present data in a way that is suitable for data analysis via its Series and DataFrame data structures. The package contains multiple methods for convenient data filtering.

### Installing Pandas

The standard Python distribution does not come with the Pandas module. To use this 3rd party module, you must install it. The nice thing about Python is that it comes bundled with a tool called pip that can be used for the installation of Pandas. To do the installation, you need to run the following command: However, if you want to install an older version you can specify it by running the conda install command as follows:

```
Series DataFrame Series A series is similar to a one-dimensional array. It can store data of any type. The values of a Pandas Series are mutable but the size of a Series is immutable and cannot be changed. The first element in the series is assigned the index 0, while the last element is at index N-1, where N is the total number of elements in the series. Series method and pass an array, as shown below: Series [1,2,3,4] Next, run the print statement to display the contents of the Series: The first column denotes the indexes for the elements. However, you may get an error when you try to display the Series. The major cause of this error is that Pandas looks for the amount of information to display, therefore you should provide sys output information. You can solve the error by executing the code as follows: Series [1,2,3,4] print series1 A Series may also be created from a numpy array. Let us create a numpy array then convert it into a Pandas Series: Series fruits print series2 Output: We then use Pandas Series function and pass it the array that we want to convert into a series. Finally, we call the print function to display the Series. It organizes data into rows and columns, making it a two-dimensional data structure. Potentially, the columns are of a different type and the size of the DataFrame is mutable, and hence can be modified. To create a DataFrame, you can choose to start from scratch or convert other data structures like Numpy arrays into a DataFrame. Here is how you can create a DataFrame from scratch: Column1 Column2 Column3 Column4 0 1 a 1. The first column of the DataFrame has integer values. The second column has a string, the third column has floating point values, while the fourth column has boolean values. The statement print df will display the contents of the DataFrame to us via the console, allowing us to inspect and verify its contents. However, when displaying the DataFrame, you may have noticed that there is an additional column at the start of the table, with its elements beginning at 0. This column is created automatically and it marks the indexes of the rows. To create a DataFrame, we must invoke the pd. DataFrame method as shown in the above example. It is possible for us to create a DataFrame from a list or even a set of lists. We only have to call the pd. DataFrame method and then pass it the list variable as its only argument. Consider the following example: DataFrame mylist print df Output: We then called the DataFrame method and passed the name of the list to it as the argument. This is where the conversion of the list to a DataFrame happened. We have then printed out the contents of the DataFrame. The DataFrame has a default column showing indexes, with the first element being at index 0 and the last one at index N-1, where N is the total number of elements in the DataFrame. Here is another example: Item Price 0 Phone For each item, we have a name and price. The list is then passed to the DataFrame method in order to convert it into a DataFrame object. In this example the names of the columns for the DataFrame have been specified as well. The numeric values have also been converted into floating point values since we specified the dtype argument as "float". It could also be a good way to quickly compare two separate datasets of similar data. This requires you to open and import the data from such sources into Pandas. Luckily, Pandas provides us with numerous methods that we can use to load the data from such sources into a Pandas DataFrame. Since this is a very well-known and often-used standard, we can use Pandas to read CSV files either in whole or in part. For this
```

example we will create a CSV file named cars. The file should have the following data: The method takes the path to the CSV file as the argument. If you have saved your file in a different path, ensure you pass the correct path as the argument to the method. This can either be a relative path, like ".. In some cases, you may have thousands of rows in your dataset. In such a case, it would be more helpful to you to print only the first few rows on the console rather than printing all the rows. This can be done by calling the head method on the DataFrame as shown below: This is shown below: Type 0 Premio 4 Range 7 Fielder Here we used the loc method to only read the elements at indexes 0, 4, and 7 of the Type column. At times Wwe may need to only read certain columns and not others. This can be done using the loc method as well, shown below in this example: In this example, we will use an Excel file named workers. The following code can be used to load the contents of the Excel file into a Pandas DataFrame: And just like with our CSV example, this function can be combined with the loc method to help us read specific rows and columns from the Excel file. Name Salary 1 Kate 4 Lucy 7 Alice We have used the loc method to retrieve the Name and Salary values of the elements at indexes 1, 4, and 7. Pandas also allows us to read from two Excel sheets simultaneously. Suppose our previous data is in Sheet1, and we have some other data in Sheet2 of the same Excel file. The following code shows how we can read from the two sheets simultaneously: The variable x was created when calling the wrapper class and with Python keyword, which we use to temporarily open the file. From the ExcelFile variable x, we have created two more variables, s1 and s2 to represent the contents that were read from the different sheets. We then used print statements to view the contents of the two sheets in the console. The blank print statement, print "" , is only used to print a blank line between our sheet data. Data Wrangling Data wrangling is the process of processing data to prepare it for use in the next step. Examples of data wrangling processes include merging, grouping, and concatenation. Merging The Pandas library allows us to join DataFrame objects via the merge function. Let us create two DataFrames and demonstrate how to merge them. Here is the first DataFrame, df1: We simply call the merge function as shown below: There are many other ways to use the pd. For more information, check out the official documentation on the merge function. Grouping Grouping is the process of putting data into various categories. Here is a simple example: Marks Name Position Year 1 John 1 3 Grace 4 5 Benjamin 4 In this simple example, we have grouped the data by year, which in this case was We could have also grouped by any of the other columns, like "Name", "Position", etc. Concatenation Concatenation of data, which basically means to add one set of data to another, can be done by calling the concat function. DataFrame data print df Output: English Maths Name 0 64 76 John 1 78 54 Alice 2 68 72 Joseph 3 58 64 Alex We only have to call the describe function on the DataFrame and get the various measures like the mean, standard deviation, median, maximum element, minimum element, etc: English Maths count 4. Conclusion Pandas is an extremely useful Python library, particularly for data science. Various Pandas functionalities make data preprocessing extremely simple. This article provides a brief introduction to the main functionalities of the library. In this article, we saw working examples of all the major utilities of Pandas library.

## Chapter 5 : BeginnersGuide - Python Wiki

*Python 3 Tutorial for Beginners - Learn Python 3 in simple and easy steps starting from basic to advanced concepts with examples including Python 3 Syntax Object.*

Open a file for reading. Creates a new file if it does not exist or truncates the file if it exists. If the file already exists, the operation fails. Creates a new file if it does not exist. To close a file, you use close method. This ensures that the file is closed when the block inside with is exited. How to read files? To read a file in Python, you must open the file in reading mode. There are various methods available for this purpose. We can use the read size method to read in size number of data. Python Directory A directory or folder is a collection of files and sub directories. Python has the os module , which provides many useful methods to work with directories and files. Python Exception Handling Errors that occur at runtime are called exceptions. Visit this page to learn about all built-in exceptions in Python. If exceptions are not handled, an error message is spit out and our program come to a sudden, unexpected halt. In Python, exceptions can be handled using try statement. The entry is a Oops! The entry is 0 Oops! The entry is 2 The reciprocal of 2 is 0. Also, you can create user-defined exceptions in Python. For that, visit this page. Rather, this section focuses on creating your own classes and objects. Class and Objects Object is simply a collection of data variables and methods functions that act on data. And, class is a blueprint for the object. How to define a class? This class object allows us to access the different attributes as well as to instantiate new objects of that class. This is because, whenever an object calls its method, the object itself is passed as the first argument. Creating Objects You can also create objects of the class yourself. This method is automatically called when an object is instantiated. Python Inheritance Inheritance refers to defining a new class with little or no modification to an existing class. To learn more about inheritance and method overriding, visit Python Inheritance. We also suggest you to check multiple inheritance and operator overloading if you are interested. Miscellaneous and Advance Topics Iterators Iterator in Python is simply an object that can be iterated upon. An object which will return data, one element at a time. An object is called iterable if we can get an iterator from it. Most of built-in containers in Python like: This is both lengthy and counter intuitive. Generator comes into rescue in such situations. Python generators are a simple way of creating iterators. Learn more about Python Generators. Closures This technique by which some data gets attached to the code is called closure in Python. The criteria that must be met to create closure in Python are summarized in the following points. We must have a nested function inside a function. The nested function must refer to a value defined in the enclosing function. The enclosing function must return the nested function. Visit Python closures to learn more about closures and when to use them. Decorators Python has an interesting feature called decorators to add functionality to an existing code. This is also called metaprogramming as a part of the program tries to modify another part of the program at compile time. To learn about decorators in detail, visit Python Decorators. Did I miss anything in this Python tutorial?

## Chapter 6 : Beginner's Tutorial on the Pandas Python Library

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Jul 21, Python is one of the most elegant and complete programming language and comes packed with tons of features to develop web applications as well as applications that run on your computer. Python is high level language, simple to learn and comes with multiplatform support. There is no dearth of Python tutorials out there in the wild that train you on fundamentals of coding in Python, but finding the right set of tutorials is crucial to master the concepts fast with lesser effort. One can learn Python basic concepts within an hour by following a good Python tutorial or spend hours struggling with a low quality learning material. In an attempt to make it easier for everyone to find the right Python tutorials, I have listed down various Python tutorials and learning resources, each labelled by complexity and delivery media. Go From Zero to Hero in Python. Complexity of every tutorial and resource is marked as beginner, intermediate or advanced level Python tutorials. Delivery media is marked either as online reading, downloadable pdf, video tutorial or interactive Python tutorial. All the Python resources and tutorials mentioned in this article are absolutely free at the time of writing this article. Code Academy – Interactive, Beginners There are many interactive tutorials available for Python that let you write code in the browser and see the results live, right there. That is what makes learning fun! Code Academy hosts the best interactive Python tutorials for beginners. As of today, there are 2. The course length is 13 hours, approximately. It covers Python syntax, strings and console output, conditional and control flow, functions, lists and dictionaries, loops, file input and output and also talks about advanced python options. You get to build small projects as you learn, step by step instructions make coding these projects easy, right there in the browser. It starts by giving high level overview of Python, talks about environment setup, basic syntax, and variable types, operators, decision making, loops etc. This is not about step by step Python learning guide but comes with tutorials to complete specific development tasks using Python. This website keeps on adding new tutorials on regular basis and you can keep yourself updated with latest tutorials by signing up to their newsletter. Given below are few examples of the kinds of Python tutorial you will find on Codementor. Visit this website, if you want to keep your creative juices flowing. There are 33 levels at the moment and the very first one itself has the potential to get you engaged and addicted to the website. It is all about theory though, without any practical step by step instructions to build projects. This entire Python tutorial set is organized in three sections – Python Course – This section talks about Python setup, basics of Python like strings, lists, sorting, regular expressions, utilities etc. Lecture videos day1, day2 – Not the reading kinds, no problem, you can go through the video lectures divided into day1 and day2 and grasp the fundamentals of the python language. Python Exercises – This is what makes python learning interesting. You need to get your head around to understand and get these exercises done. You can download the Python code used in the exercises and run locally on your machine. You can also ask questions to clarify your doubts in google groups. Official python documentation is a complete reference to the language and always updated with the latest features and release notes. It is always good to skim through the official guide at least once to ensure that you are not missing on anything basic. The official Python guide covers what is new in Python, Python installation guides, library references, python how-tos, embedding, extending and distributing Python modules. Learn Python the Hard Way – eBook, Beginners Learn python the hard way is one of the sure shot ways to get on-boarded to Python programming. As per the official website, 1. The paper and digital versions of the book come at a cost but you can read the online version of complete book, for free. Arguably the best Python tutorial out there in the wild. The current interpreter runs Python 2 but the tutorial highlights key differences between Python 2 and Python 3 programming. The tutorial starts off with Hello world, explains variables and types, lists, basic operators, string formatting, basic string operations, loops, functions, classes and objects, dictionaries, modules and packages. You also get exercises at the end of each chapter to get your head working around with the depths of Python web programming. Invent with Python – Free Book, Online My colleague has been teaching students earlier, learning programming by building games

is what keeps students engaged for hours. Invent with Python does the same, each chapter has step by step instructions to build a small game. As you keep learning, the complexity of games keeps on increasing and learning becomes more fun. The online version of the book is free but you can also download the pdf version of the book at a nominal price. Dive into Python 3 " Beginners, Online This is one of the good reads for beginners as well as for those who already know Python 2 and want to move to Python 3. Author clearly highlights differences between Python2 and Python 3, wherever applicable, and ensures that readers grasp the concepts by citing relevant examples. Python Crash Course - Intermediate, Online If you are already a programmer and want to quickly get on-boarded with Python, this is the right place for you. This course is meant for intermediate level programmers and assumes that you already understand object oriented programming. The target of the course is not to go into depths of programming but to highlight what python brings on the table and how you can code in python if you already know programming. Magic methods have anything and everything to do with object oriented programming, but it looks like the official documentation is not good enough. Refekkettler has tried to explain ins and outs of magic methods using good examples. A must read for anyone looking to master the magic methods of Python. In this tutorial, you not only get to learn fundamentals of python but also learn how you build interactive web applications. Towards the end, this tutorial hosts Python quiz to test your knowledge. Quiz is pretty useful to check where you stand in terms of Python basics.

## Chapter 7 : Python 3 tutorial

*A quiz to understand your understanding of Python. This quiz only covers parts of the beginners series and not all of the topics covered on this site including variables, functions, classes, objects and many more.*

Books Each of these books can be purchased online and is also available as a completely free website. It was updated to Python 3 by Peter Wentworth. Python 3 website print version Interactive Courses These sites give you instant feedback on programming problems that you can solve in your browser. Python on Codecademy Python 2 Code the blocks combines Python programming with a 3D environment where you "place blocks" and construct structures. It also comes with Python tutorials that teach you how to create progressively elaborate 3D structures. Computer Science Circles has 30 lessons, exercises, and a message system where you can ask for help. Teachers can use it with their students. It is also available in Dutch, French, German and Lithuanian. It has 57 interactive exercises and 11 videos. Finxter - How good are your Python skills? How to Think Like a Computer Scientist: Interactive Edition Python 3. Python story-based game Python 2 Merscythe: Adventures with the Codue is a story-based game for learning Python. The tutorials provide feedback and hints. K Oriented for Children please keep this list alphabetized Build a "Pypet" Learn programming fundamentals in Python while building a tamagotchi style "Pypet" by Tatiana Tylosky. Guido van Robot A teaching tool in which students write simple programs using a Python-like language to control a simulated robot. Field-tested at Yorktown High School, the project includes a lesson plan. PythonTurtle A learning environment for Python suitable for beginners and children, inspired by Logo. Geared mainly towards children, but known to be successful with adults as well. Young Coders tutorial Python 3 This is the full text of the tutorial taught annually at PyCon North America , with examples and exercises throughout. This tutorial starts with basic skills and builds to working with complex logic and games. Appropriate for ages 10 and up, including adult beginners, Tutorials and Websites please keep this list alphabetized A Byte of Python , by Swaroop C. Python 2 Learning to Program An introduction to programming for those who have never programmed before, by Alan Gauld. It introduces several programming languages but has a strong emphasis on Python. Learn Python An Introductory yet in-depth tutorial for Python beginners. This tutorial by Danny Yoo has been translated into nine different languages. Python 2 The Python tips blog includes Python tips and tutorials for beginners and professional programmers. It is available for both Python 2 and Python 3. Pythonspot Tutorials Python tutorials. The Python Guru A beginner friendly guide for aspiring programmers. Top Courses to Learn Python - gitconnected. This course material is still preliminary and assumes some high school-level maths. It does not cover object-oriented programming or graphical applications. Python 2 The Programming Historian is a tutorial-style introduction to programming for practicing historians. Python 2 Python for Number Theory is a series of Python notebooks for Jupyter for applications to number theory and cryptography. They assume no prior programming experience, and are suitable for someone learning elementary number theory at the same time.

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