

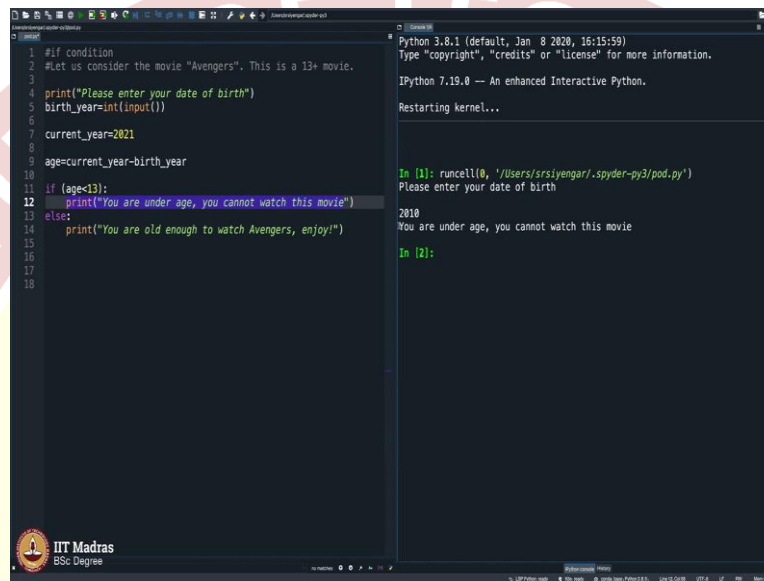


# IIT Madras

ONLINE DEGREE

**Programming in Python**  
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**Indian Institute of Technology Madras Online Degree Program**  
**Introduction to the If Statement**

(Refer Slide Time: 0:16)



```
1 #if condition
2 #Let us consider the movie "Avengers". This is a 13+ movie.
3
4 print("Please enter your date of birth")
5 birth_year=int(input())
6
7 current_year=2021
8
9 age=current_year-birth_year
10
11 if (age<13):
12     print("You are under age, you cannot watch this movie")
13 else:
14     print("You are old enough to watch Avengers, enjoy!")
15
16
17
18
```

Python 3.8.1 (default, Jan 8 2020, 16:15:59)  
Type "copyright", "credits" or "license" for more information.  
IPython 7.19.0 -- An enhanced Interactive Python.  
Restarting kernel...

In [1]: runcell(0, '/Users/srsiyengar/.spyder-py3/pod.py')  
Please enter your date of birth  
2010  
You are under age, you cannot watch this movie

In [2]:

Let us now learn a very powerful possibility in any programming language and that is called the if statement. So it is a very simple statement, but I am not a big fan of explaining the syntax of what is what in a programming language, instead let us see a nice example from which it becomes obvious as to what we are trying to explain.

So, here is an example, let us consider the movie Avengers. This is a 13 plus movie, which means only people who are 13 and above can watch it. The rating of the movie it is called PG13, it stands for parental guidance and one should be 13 plus years old. So let us write a small piece of code which checks this. Just to make it fun, I am trying to use this example, although this does not appear like we will be doing in real life. Why would you use a python piece of code to check if someone is 13 plus or not, this is just to add some fun to the example.

So, what are we trying to do is, it will be obvious in a while, I will say print please your date of birth. As and always, you take birth year is equal to input, we have discussed this, in fact, you can combine these two things on to a single line of code, but I prefer writing it like this. So it is easy on my mind. You will enter your date of birth and then I will say current year,

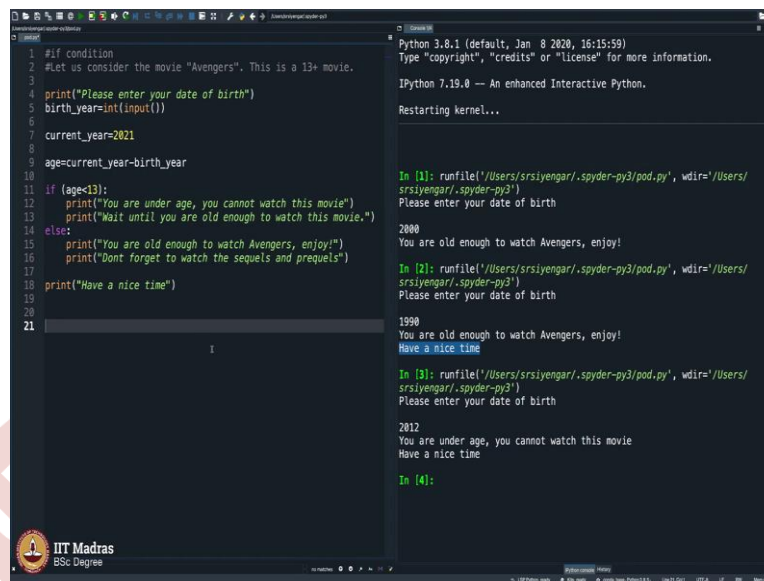
what is the current year, it is 2021 I am not so sure in which year you are watching my video, but this video is recorded in 2021, so I will put current year as 2021.

Then, in fact there is also ways in which you can actually put the current year as of that day, when the program is executed. But like that is a little off route, so we will not take that route as of now, let us go ahead and say age is equal to the obvious current year minus birth year. And then observe, if age is less than 13, then see as I press enter, the cursor comes a little away from the beginning, you see, that is called a tab character, you leave a tab like that.

So, my editor does it automatically, in fact you should do it manually in case you are not using a nice environment like this, I am using spyder here, which I am typing python code. If you are using a simple editor, you may have to type that tab manually, so details aside, what should we type here, I must say print you are under age, you cannot watch this movie. As I say, the more restrictions we put, more curious the kid becomes to watch the movie, jokes aside. And then I will say else print you are old enough to watch Avengers, enjoy! Perfect.

So, what exactly happens here, I am executing it and it says enter your date of birth assume I am 2010 born, which I am not by the way, I am 2010 born, it says it calculates, it computes that your age is indeed less than 13. Because it is 2010, 2020 minus 2010, age happens to be 10 here and 10 is less than 13 and it comes inside and says, hey you are under age, you cannot watch this movie, which is precisely what it does here.

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```
1 #if condition
2 #let us consider the movie "Avengers". This is a 13+ movie.
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4 print("Please enter your date of birth")
5 birth_year=int(input())
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7 current_year=2021
8
9 age=current_year-birth_year
10
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12     print("You are under age, you cannot watch this movie")
13     print("Wait until you are old enough to watch this movie.")
14 else:
15     print("You are old enough to watch Avengers, enjoy!")
16     print("Don't forget to watch the sequels and prequels")
17
18 print("Have a nice time")
19
20
21
```

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Restarting kernel...

In [1]: runfile('/Users/srsiyengar/.spyder-py3/pod.py', wdir='/Users/srsiyengar/.spyder-py3')  
Please enter your date of birth  
2000  
You are old enough to watch Avengers, enjoy!  
Have a nice time

In [2]: runfile('/Users/srsiyengar/.spyder-py3/pod.py', wdir='/Users/srsiyengar/.spyder-py3')  
Please enter your date of birth  
1990  
You are old enough to watch Avengers, enjoy!  
Have a nice time

In [3]: runfile('/Users/srsiyengar/.spyder-py3/pod.py', wdir='/Users/srsiyengar/.spyder-py3')  
Please enter your date of birth  
2012  
You are under age, you cannot watch this movie  
Have a nice time

In [4]:

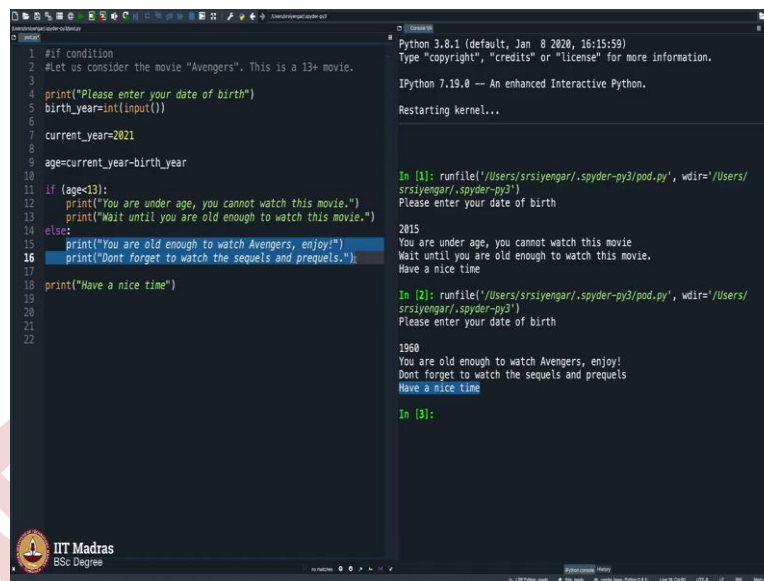
Let me re-execute this and try to see if I type my age greater than 13, will it let me watch the movie. So let me say, execute this; enter your date of birth, I will say 2000 is my date of birth. That makes me 21 years old, it says you are old enough to watch Avengers, enjoy! So you clearly understand what exactly happened, in fact, there is no much of, there is no details here per se.

I clearly say it is very sort of English like a statement. I say if age is less than 13, then do this; else, else means what, if age is not less than 13, then whatever is inside this else you will do this. And then please note, as you come out of this and then say print; have a nice time and execute this, enter your date of birth, I say 1990, it says you are old enough to watch Avengers, enjoy! Have a nice time.

If I again execute this and I say 2012, I become a 9 year old kid, it says you are under age, you cannot watch this movie. If again says, have a nice time. How a nice time is said here too? Which means irrespective of whether this line gets executed or this line gets executed; this part is definitely getting executed. So, if something is true, then do this, else means if that is not true, then do this.

In fact, what you can do is you can paste and see, what if you type another line here print wait until you are old enough to watch this movie, you can state this. You are old enough to watch Avengers, enjoy! Do not forget to watch the sequels and prequels. So what will does this do? This will obviously take this to the next line, just so that it looks nice, so this will execute both these statements if the age is less than 13, else it will execute both these statements. That is my guess; let us see what it does.

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The screenshot shows a Jupyter Notebook interface with a code editor on the left and an IPython console on the right. The code in the editor is a Python script that checks if a user is old enough to watch the movie 'Avengers' based on their birth year. The script sets the current year to 2021 and asks the user for their date of birth. It then calculates the age and prints a message based on whether the user is under 13 or old enough. The output in the console shows the script being executed twice. In the first execution, the user enters 2015, and the output is 'You are under age, you cannot watch this movie. Wait until you are old enough to watch this movie. Have a nice time'. In the second execution, the user enters 1960, and the output is 'You are old enough to watch Avengers, enjoy! Dont forget to watch the sequels and prequels. Have a nice time'.

```
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2 #let us consider the movie "Avengers". This is a 13+ movie.
3
4 print("Please enter your date of birth")
5 birth_year=int(input())
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In [1]: runfile('/Users/srsiyengar/.spyder-py3/pod.py', wdir='/Users/srsiyengar/.spyder-py3')  
Please enter your date of birth  
2015  
You are under age, you cannot watch this movie  
Wait until you are old enough to watch this movie.  
Have a nice time

In [2]: runfile('/Users/srsiyengar/.spyder-py3/pod.py', wdir='/Users/srsiyengar/.spyder-py3')  
Please enter your date of birth  
1960  
You are old enough to watch Avengers, enjoy!  
Dont forget to watch the sequels and prequels  
Have a nice time

In [3]:

So enter your date of birth, let me reset this. Executing it, so let me reset it once again. I am executing this which is please enter your date of birth, when I say 2015, it says; you are under age, you cannot watch this movie. Wait until you are old enough to watch this movie. I am little crazy about the punctuations, so let me be perfect here. So if I say my date of birth is 1960, it says; you are old enough to watch Avengers, enjoy! Do not forget to watch the sequels and prequels. Have a nice time. Good.

So do you see what is happening, this have a nice time is coming in both the places, that is because it is outside the if loop, but then this gets executed only if your age is less than 13, and this gets executed only if your age is not less than 13, which means your age is 13 and above. At least 13 or you are 14 15 16 and more. Anyways this is best not explained in detail, in fact you will get to know more of it as we progress, we will be using as I said if statement is used in almost every piece of code that I have known. 99 percent the code that you write, will somewhere use the if condition.

So with practice you can achieve perfection of how this if statement works. So with this let us end this lecture and let me also try to tell you that you can in fact write if statement within another if statement. All those details will be covered in the forthcoming lectures. Thank you.