

## COLLATZ CONJECTURE 02

Hi guys in this video will see the programming part of collatz conjecture this is the last screen cast of week twelve and last screen cast of me also so it has been a nice journey let's see the last program it's a very simple program of collatz conjecture. Let me review the conjecture once again so what you have to do so given a number  $n$  you have to every time you have to check whether if  $n$  is even number then you divide it by two that means that  $n$  becomes  $n$  by two and if it is an odd number then you have to do  $n$  is equal to three  $n$  plus one. so you repeat it every time until and unless until  $n$  becomes one and the point you have to check whether is it possible to make any number one using these methods so this was the conjecture actually we can see it through a program whether can we do it with a any number or not so i will create a definition in python and you can supply any number as an argument to this function and you can check whether we can achieve one or not. So let's see this so i told you i will create a definition so let me write it here ok ok so my definition name will be check numb an argument is number numb let say ok i will check how many iterations i want so for that i will keep a variable iterations so as initially as one now what i have to check every time i have to do two operations one is if  $n$  is an even number then i have to reduce it divide it by two and if it is a odd number then i have to make it three  $n$  plus one until it becomes one so my check some should be check should be let me put the while loop while numb is not equal to one until it doesn't become one i have to do this operations every time ok so until numb doesn't become one is not equal to one i will check first if numb is a numb mode two is equal equal to zero which means that i am checking whether it fully divides this number fully divides by two or not if it fully divides then it means it is even number so what i have to do if it is an even number then numb my number becomes number i can write like this also numb divide by two and i just make it as an integer because you know when you divide a number it becomes a floating point number it doesn't matter here but still ok and yeah since it is an even number it will divide by two and i will just make my iteration plus one iterations is plus equal to one and if it is not an even number then what i have to do numb is equal to numb into three plus one isn't it and again i will i will increase my iterations value by one ok ok after this it means the loop has been executed successfully after that i will just print my number what is my numb after all these iterations and what are my how many iterations it took to become one off course it will print one just to take check if numb is becoming one or not and this iteration will tell me who many iteration it took to finally reach one of my definition is complete so i will just run it check numb let say twelve great let's just run it. Ok you can see the output one and ten it becomes one it is becoming one after ten iterations let me put twenty let's see it is becoming one after fight iterations see you can check various numbers and see whether yeah it is becoming one after eleven iterations so this is it this was the program there is nothing much to do it was the very basic program to show you how the conjecture behave actually you can read about the conjecture online and so this program was just to show you their limitation of computing also it has been a nice journey with you guys in joy of computing course we hope we will meet again in some other course lets see this thank you every one. Have a nice day.