

Introduction To Scratch

So trust me on this, most of your questions can be solved once we start programming. Let us start from their basics and try to build up one step at a time; most of your questions cannot be answered in plain English although I have tried my level best to do that. You will realize that the best way to answer it is to experience it all by yourself. Ok. So let us not get going with our programming journey with the very nice online package called scratch. This actually a programming language and trust me the pre requisites, the age from where one can start using this programming language is actually just eight. An eight year old can understanding this programming language really well and trust me it's actually very addictive. Look at this little cat here and look at all the commands over here. You know these commands give this cat a whole lot of power and let's see what exactly are the powers that you can enable the cat to perform something right? When you say move ten steps I think it's obvious for you all. The moment you say move ten steps she must moves ten steps ahead so let me say move ten steps! Move ten steps, she is not moving! Probably there something else I must do. What is that? So it is double clicking on the "move 10 steps" that is what is going to make her move and if you change the 10 steps to 50 steps, I type 50 here; it's going to make her move 50 steps. How? Not by just clicking on this once but click on this twice. A good thing to do is possibly open this scratch window by going to scratch.mit.edu it is there in the description of this lesson and then you can try it all by yourself as I am trying it. So move "50 steps" she moves. In another time move 50 steps, she moves. Let me say move 100 times, 100 steps she moves 100 steps. I am going to pull her by the tale and bring her back, ok so again move 100 steps, she moves. Move move perfect! And as you can see there are self explanatory stuff here. "Turn 15 degrees" says a command, when I keep it here and double click on it look she is going to move 15 degrees. Correct? Let me make her move completely right? She move she move she moves and finally she comes back to her original state ok? I can also move her in the opposite direction, I made her move clockwise, I can make her move antl clockwise, look at this double click, double click, double click she is moving and double click this she moves in the clock wise direction. Go ahead 100 steps, turn by 15 degrees go ahead 100 steps turn 15 degrees, go ahead 100 steps turn by 15 degrees go ahead turn turn turn turn turn turn turn and then go ahead, you see I can command her using these commands. She went back let me pull her back let me turn her she comes back to her original position. Ok. What have you learnt so far? You have learnt the following. Here is the cat and you can instruct her to move the way you want, the way you want here is basically the set of command given here, some of them sound complicated but don't worry with time you will be able to understand almost everything of what is given here. As of now we just learnt how to make her move ahead and how to make her turn the way we want. Let us end this lesson by making her turn by let's say 90 degrees so this will make her turn by 90 degrees, right? Again let's say 70 degrees and I am just typing it here 70 and then again let's say 80 degrees, 80 degrees and so on right? So now it's time for you all not to go ahead with the next lesson but to open the scratch window and try playing around with her and make her move around, turn around, and do whatever you want. Sky is the limit as you can see and its whole lot of fun making her do stuff ok? You

can in fact explore other things here also, although we will be covering all these things it will be good if you can go ahead and look at this mini laboratory of how to programme a small unit graphical figure? We just now made the cat rotate; move around this was just the beginning. You can do a lot more with the scratch then this let us see more of it in the forth coming videos.

We saw how we can make this cat move, rotate and things like that. Now what I am gonna tell you is what is called grouping these instructions? Some I am gonna group them you easily guess what that mean? Basically I just zoomed the commands but it's easily visible for you. What I am going to do is, I am going to make her move by 100 steps and again move back by -100 steps, what is this mean? Clicking on this will make her move ahead, clicking on this will make her move back to her position it's like go ahead 100 steps and come back by 100 steps. Right? Ok. And then let me say 'I want her to turn by 90 degrees', so when I click on this she turns by 90, again turns by 90, again turns by 90, and again turns by 90. So what I want her to do is let's say first move 100 steps and then turn by 90 and again move by 100 steps so I should bring back move once again keep it here make it 100 steps and then turn by 90 degrees. What will this do? Let me keep this aside. So when I double click on this she will move back by -100 but when I double click on this she will perform all this 4 things continuously, simultaneously ok, so let me just remove this, this is not required I double click on it and click on delete. ok? And it's gone. So when I double click on this, the first one she will move 100 steps, rotate by 90 degrees and again move by 100 steps ahead and then rotate by 90 degrees, let us see whether this happens or not? Boom!! She comes here and then she settles here, we couldn't we couldn't recognise what exactly happened right? Now if I click on this once again she will move ahead by 100 rotate move ahead by 100 rotate and stop. See that happened now. I click, she comes here, I click, She goes back the movement is so sudden but we are unable to observe what's happening? Right! So there is a way in which we can actually make her wait between the commands that is called if you click on control you will see what is called wait here, you can insert wait she will move ahead wait for one second and again rotate by 90 degrees, I want her to move, I wanted to wait her for one second once again and then move 100 steps and then again wait, ok now what will this do? Very simple see most of scratch is self explanatory, I would say all these video lessons are not so important. What is important is you should experiment with what stand for what? Now let me double click on this, let's see what happens? Self explanatory isn't it? Move by 100 steps moved, waiting for one second move, rotate and stop! I repeat, move by 100 steps, rotate, move by 100 steps, rotate. Even that I have given one second time this is happened. Correct? What do I want? I want her to move ahead let's say by 200 steps, what will happen right now? She will move a whole lot, rotate, move just a little 100 rotate and stop. So I want her to move 200 steps always and go back to her original position. She went away somewhere! Let me pull her back. So I wanted to start here move by 200 steps, she is somewhere here, rotate and then she will move, rotate and then she will move, rotate and then she will move, she will complete a loop you see, she should get back to her original position. So what do I do for that, self explanatory I should again make her to move by 200 steps, go to motion click on it put move here move by 200 steps I want her to wait for a second, so go to control and then say wait for a second move by 200 steps and then again rotate right? You must again

make her rotate by 90 degrees again I want a wait in between as you can see otherwise you cannot see her move, computer is very fast, the computer will make all these commands get executed in a fraction of a second you will not be able to see her move properly ok and again rotate by 90 degrees, lets revise. 200 she comes ahead, 90 degrees-she rotates, 200 steps, she comes down, 90 degrees-she rotates, 200 steps-she goes here, 90degrees-she rotates and again I must say move by 200 steps isn't that right? She should move four times, once she goes straight, rotate and move she comes down, rotate and move she goes to the left, rotate and move she goes up once again control wait for a second tada! There we are just double click on this go, rotate, go, rotate, go rotate, go rotate. Ahh! She is not rotating because I am not rotating here so what I should do that the end I must make her rotate once again, so rotate by 90 degrees hip hip hurray!! We are done. Wait for one second and this will make her do the trick so but I will I will I am rotate her by 90 degrees right now otherwise she will not start from there, so I will create a new command just to rotate her by 90 now we are all set, bring her here and then double click on this, this is a separate command we can double click and she will rotate like this once twice thrice four times as when double click on this, this will happen but when you double click here move, rotate, move, rotate, move rotate, move and then rotate is what's happening right? These were the list of commands which made you write your first programme, a set of instructions for this cat to move and complete a square. Remember the example of coffee, tea, 5 of them, 3 of them and things like that correct! I gave you people instructions and you followed it remember? 2 coffee, 3 tea, cookies! 4 cookies and things like that right? Similarly I give him instructions, I give the cat instructions to rotate to move ahead few steps and he does that ok. We just saw how we can group a bunch of commands! And execute them in an instance. This is one of the most powerful concepts in computers and especially one of the aspects of programming that is worth appreciates it. You can write a long piece of code running through several consaflaince which will execute something very quickly, let's say you click on your icon on your computer and the programme opens this particular thing is actually a piece of code, a long piece of code but it acts so instantly that you will not realise that it is so longer code that we double click and it gets executed in fraction of a second. Fine, now we will go ahead and understand what are called the looping structures. If you want to get a bunch of things done repeatedly there is a nice way of doing it in programming and let's see more of it in forth coming sessions.