

Creating a program (Tutorial E4)

http://www.atomiclearning.com/k12/en/movie/85866/play_window?type=Tutorial&sid=2410

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You can write your own functions and programs using the Program Editor in the Calculator application. I'll insert

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the Calculator application by pressing the Home key, and then choosing Calculator. The TI-Nspire™ handheld considers

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Functions and Programs very similar things. One difference is that Functions can return a value that can be graphed

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or entered into a table, just like $\sin(x)$. In this case, I want to write a simple set of instructions that will

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randomly generate a number, and then display the word "heads" or "tails" depending on which number was generated. I'll

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write this as a program. I'll press the Menu key, choose Functions & Programs, and then Program Editor, New. I'll

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call this program coins by typing "c-o-i-n-s", and I'll make sure that the Type is set to Program. I'll leave the

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Library Access set to the default, and then press Enter to move into the Program Editor. I'll enter into a split

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screen view, with my calculator entry on the left, and the Program Editor on the right. As you can see, the program

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framework has already been entered. I'll press the down arrow key once to move into the field below the Program

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statement. I'll be using the variable x in my program, but I need to be careful whenever I do that, because other

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programs and functions might be sharing a variable named x". This is called a global variable. I don't want that

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type of variable; I want to tell the handheld to make a version of the variable x that only applies within my program.

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This is called a local variable, and I can create that by pressing the Menu key, then choosing Define Variables,

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Local. Now, I'll type my variable name, "x". To start a new line, I'll press the carriage return key in the lower

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right corner of the keypad. Now, I need to tell the program to generate my random number and store it in my local x

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variable. I'll open the Catalog by pressing the Catalog key, and then I'll press "R" on the keypad to move to the

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r's. Now I'll scroll down using the Touchpad until I highlight the random Integer function, randInt(). Notice that in

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the rectangle at the bottom of the catalog there's a hint that shows me what this function requires. According to

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the hint, I'll need to supply both the lower and upper bounds, separated by a comma. I'll press Enter to copy

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randInt() to the program line, and then I'll enter my bounds. I only want it to generate a 1 or a 2; 1 will represent

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heads, and 2 will represent tails. I'll type "1" then a comma, and then "2" so randInt can only return a 1 or a

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2. Those are the only two possibilities. I'll press the right-arrow key to move the cursor past the close parenthesis.

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Once a number is generated, I'll need to store it in my local x variable so I can test it. I'll press the Ctrl

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key and then the Var key to select the right-arrow symbol. This symbol allows me to store an expression or value in

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a variable. Now I'll type "x". When I run the program later, the line "randInt(1,2) -> x" will generate a random value

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of 1 or 2 and store it in my local variable, X. Now I'll press the carriage return to start a new line. To test

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the stored x value, I'll need a programming statement called If... Then...Else" This is called a conditional statement,

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because it executes commands based on conditions. In this case, we want to tell the handheld "If x=1, then display

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the word 'heads. Otherwise, display the word 'tails.'" Another template helps you enter this statement - just press the

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Menu key, choose Control, and then "If...Then...Else...EndIf. After the template is inserted, I'll leave the cursor right

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where it's sitting, just to the right of the word "If," and I'll type "x=1". Then I'll press the down arrow key to

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start a new line, and I'll press the Menu key and choose I/O> Disp. Now I'll press Control and the multiplication

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symbol to insert quotation marks. Next I'll type "heads" This means that if $x=1$, the handheld will display the word

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Heads". Now I'll press the down- arrow key twice to move to the blank line under "Else," and I'll press the Menu

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key and choose I/O, Disp. Now I'll press Control and the multiplication symbol again to get quotes, and I'll type

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tails." Since x can only be 1 or 2, I know that if it's not 1, it must be 2, so if x doesn't equal 1, then I want

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my program to display the word "tails." Now, I'll press Menu, Check Syntax & Store, and then choose the Check Syntax

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Store option. If I've entered the program correctly, I'll see a message towards the top of the screen letting me

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know the syntax is correct and that it's been stored. If there's a problem with the syntax, the handheld will display

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an Error dialog box instead. To run the program, I'll press Ctrl- Tab to move to the Calculator entry line, and then

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press Var, highlight my "coins" program, and then press Enter. Now, I see a set of empty parentheses to the right

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of the word "coins." I can press Enter to run the program. I can run the program repeatedly by just continuing to

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press Enter. Notice that it randomly generates either the word “heads” or “tails” and displays one of those words

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every time I press Enter.

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