

Using NS BASIC with Visual Designer: A Tutorial

In just a few minutes, you can use NS BASIC to create your own Newton application. Here's a step by step tutorial which gets you going. It takes about half an hour to do.

The sample program lets you set up an event driven, object oriented application in BASIC. It's fairly short, and should be easy to understand. It will give you a feel of how quick and easy it is to create fairly sophisticated applications in NS BASIC.

O. Install NS BASIC

Download the following packages:
NSBDEMO .PKG and Vdesign.pkg

1. Try a little program.

Start up NS BASIC. Using the keyboard, tap in the following program. If you don't have a Newton keyboard, tap the on screen keyboard icon. (If you wanted, you could also use the keyboard and screen of your Mac or PC)

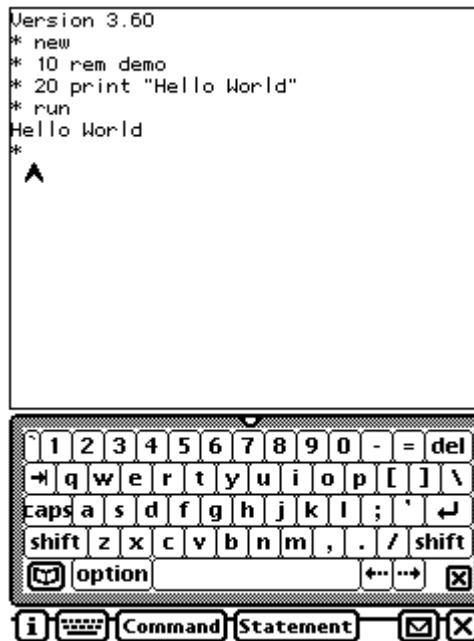
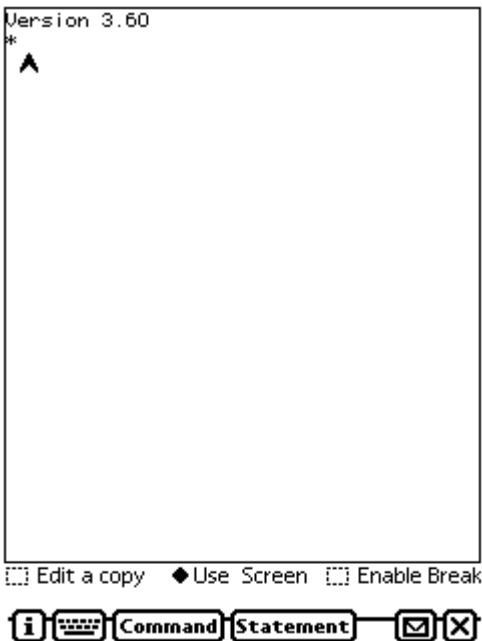
```
* new
* 10 rem demo
* 20 print "Hello World"
* run
```

The NS BASIC Examples

All the examples in the NS BASIC Handbook can be loaded into NS BASIC. Here's how:

1. Download Examples.pkg
2. Start NS BASIC
3. Type NEW
4. Type ENTER "examples/<x.>"
(replace x with a name of a command)

You'll get "Hello World" back. You've just written and run your first program on a Newton.

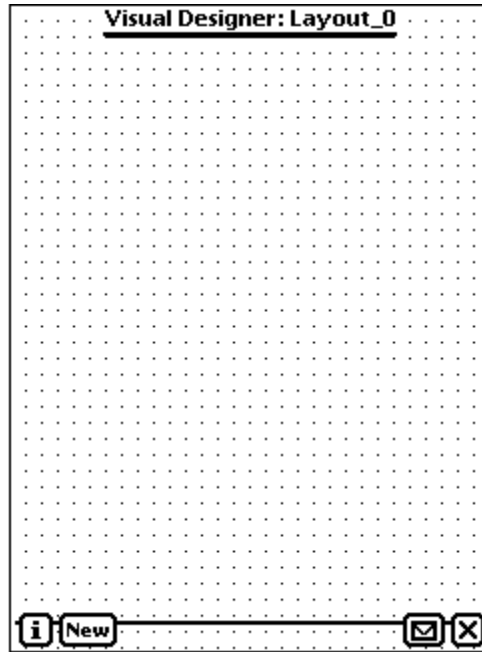
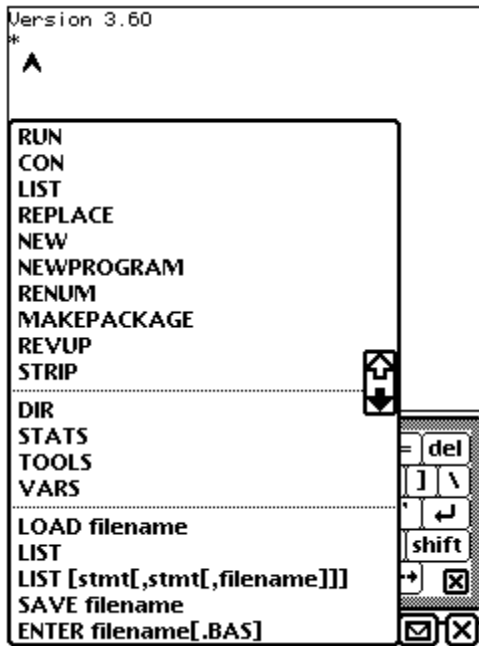



Now, let's do something a bit more substantial. An example follows where you create a real program.

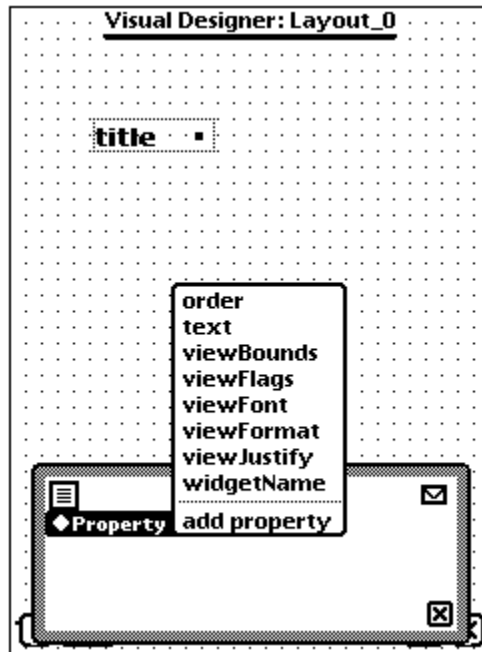
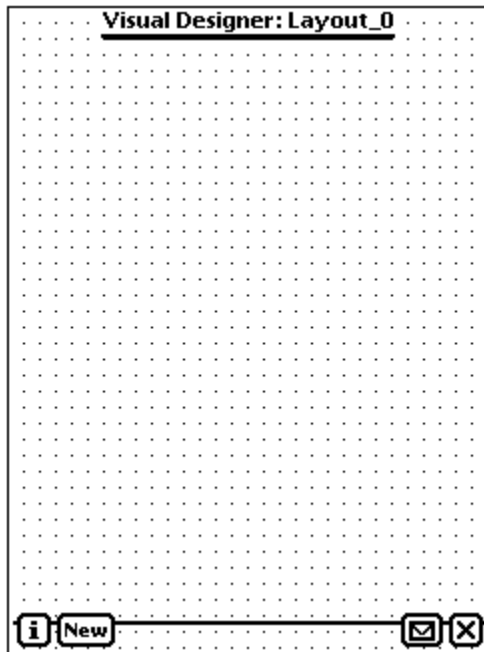
Shortcut	Download TRYME.pkg. From NS BASIC type ENTER "TRYME". In 30 secs, the program will be automatically entered., and you can skip to Step 4.
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2. Create a real program using the Visual Designer

Tap the **Command** button, then select **NEWPROGRAM**. Some asterisks will appear and the Visual Designer will pop up. The Visual Designer lets you layout and customize the visual object of your program.



To create an object, use the Newton insertion carat (Write ) or tap **New**. Scroll down to the Title object, and select it. It will display on the screen along with the Property floater: tap on **Property** to see a list of properties for this object.



The Visual Designer is a WYSIWYG editor. You can drag the objects around the screen to where you want them, or drag the little square box inside to resize them. Using the Properties, you can customize in all sorts of ways. Here are some of the options.

0 Edit Properties
 ◆Property viewBounds
 Left 28 Right 128
 Top 54 Bottom 114

0 Edit Properties
 ◆Property text
 Checkbox

0 Edit Properties
 ◆Property viewFlags

0 Edit Properties
 ◆Property viewFont
 ◆Family espy
 ◆Face Normal
 ◆Size 10

0 Edit Properties
 ◆Property viewFormat
 ◆Pen 1 ◆Round 0 ◆Frame Black
 ◆Inset 0 ◆Shadow 0 ◆Fill White
 ◆Lines None

0 Edit Properties
 ◆Property viewJustify
 ◆Horizontal Left
 ◆Vertical Center
 ◆TextLimits noLineLimits

3 Edit Properties
 ◆Property gosub
 'cChanged

- ☐ Visible
- ☐ Application
- ☐ CalculateBounds
- ☐ Clipping
- ☐ Floating
- ☐ ReadOnly
- ☒ Clickable
- ☐ NoFlags
- ☐ NothingAllowed
- ☐ AnythingAllowed
- ☐ StrokesAllowed
- ☐ GesturesAllowed
- ☐ ShapesAllowed
- ☐ SingleUnit

Select Text, and change the contents to Temperature Converter, and stretch the title box to fit by dragging the square.

Add the rest of the objects

Now add the following widgets:

1. A title called Celsius
2. A title called Fahrenheit
3. A NumberPicker to the right of Celsius
4. A NumberPicker to the right of Fahrenheit
5. The width of the NumberPicker objects gets set by the MinValue and MaxValue properties automatically.
6. Use Add Property to add a GOSUB slot to the two NumberPickers. Set the value of celsius to 'cChanged and fahrenheit to 'fChanged. (The single quote is important).
7. Set the value of the widget_name property to Celsius and Fahrenheit in the NumberPickers.

Your screen should look like this:

Visual Designer: Layout_0

Temperature Converter

Celsius: 000

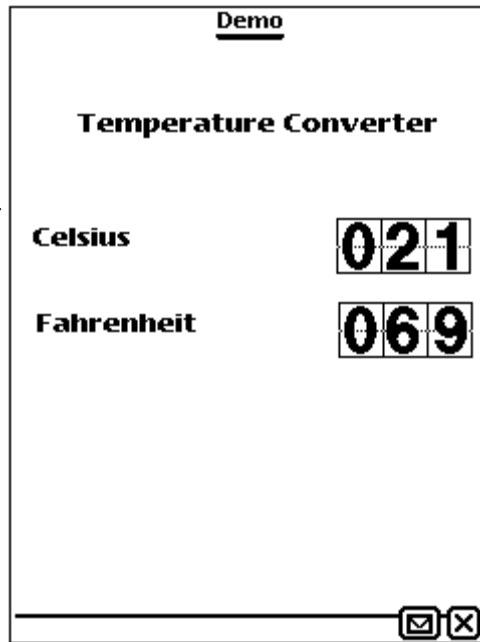
Fahrenheit: 000

[i] New [X]

3. Customize the program

Exit the Visual Designer. You will return to the NS BASIC "*" prompt after a few seconds. You already have a running program: to test it, type RUN. Use the close box in the lower right corner to exit your program. You can also type LIST to have a look at it.

If you'd like to get back to the Visual Designer to make some further changes, type EDIT 50.



To make it do the actual calculations, you'll need to add a bit of code. Type in the following lines:

```
200 cChanged:
210 setValue(layout_0.fahrenheit,'value,floor(layout_0.celsius.value*9/5+32))
220 return

300 fChanged:
310 setValue(layout_0.celsius,'value,floor((layout_0.fahrenheit.value-32)*5/9))
320 return

9020 bye
```

Run the program again to test it.

Here's the complete listing of the program, for your reference. If you'd like to know more about some of the statements used in the program, check out the NS BASIC Handbook.

```
0010 REM program template
0020 appSpec={goto:'endProgram,title: "Demo"}
0030 window app,appSpec,"APP"
0040 show app
0050 widgetdef Layout_0
0060 window wlist,Layout_0
0070 show wlist
0100 wait -1 // indefinitely

200 cChanged:
210 setValue(layout_0.fahrenheit,'value,floor(layout_0.celsius.value*9/5+32))
220 return

300 fChanged:
310 setValue(layout_0.celsius,'value,floor((layout_0.fahrenheit.value-32)*5/9))
320 return

9000 endProgram: rem
9010 hide
9020 bye
```