VISUAL DESIGNER FOR RASPBERRY Pi

Visual Designer for Raspberry Pi® is a breakthrough product allowing you to design, simulate and debug complete embedded systems using the Raspberry Pi 3 and Zero W baseboards.

Embedded Raspberry Pi® Design

What is it?

The Raspberry Pi® is a popular micro-computer platform which runs a full copy of Linux, enabling it to be used for wide variety of general computing tasks.

However, the Pi is also extremely suitable for embedded design projects where it is typically deployed without a screen or keyboard. It is in this field that the Visual Designer for Raspberry Pi product can make development really easy.

The user connects electronic components or Raspberry Pi 'hats' to the header pins and the processing power of the Pi's ARM® CPU is then harnessed to control the attached electronics.

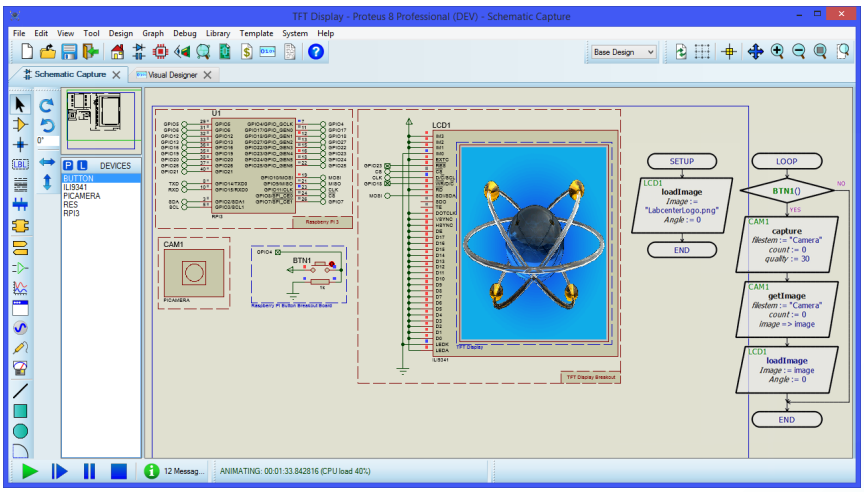
Visual Designer for Raspberry Pi makes both of these tasks fun and accessible to everyone. Electronics from the peripheral gallery are auto-placed and connected to the Raspberry Pi on the schematic whilst the software can be created visually, using high level flowchart blocks. Best of all, the entire system can be simulated - the user can press play at any time to simulate or single step debug their entire Raspberry Pi circuit.

What can I do with it?

You can use Visual Designer for Raspberry Pi to create and test new embedded products before deploying them to the real hardware. Visual Designer is unique in its ability to bring both hardware and software design together, enabling you to simulate your embedded Raspberry Pi system directly within Proteus.

When you simulate, the program code executes through the Raspberry Pi simulation model on the schematic and interacts with all of the connected electronics. If the program code writes to a port, the logic levels in circuit change accordingly, and if the circuit changes the state of the processor's pins, this will be seen by your program code, just as in real life.

You can also create IoT applications by combining Visual Designer for Raspberry Pi with our IoT Builder product. This allows you to design, simulate and test a remote user interface for your Raspberry Pi application so that you can control the hardware from your mobile phone or tablet device.



How it works

- Design your hardware by selecting hats or circuit blocks from the Peripheral Gallery.
- Create the program by drag and drop flowchart design or Python script.
- Simulate the entire system in Proteus using the built in debugging tools.
- Program the equivalent Raspberry Pi® hardware at the press of a button.

VISUAL DESIGNER

Use Peripheral Gallery to simplify the schematic design.

Create your software program with drag and drop flowchart or Python script.

HARDWARE DESIGN

The schematic is your virtual hardware. You can use the peripherals gallery to choose from a range of popular Raspberry Pi hats, grove sensors or general breakout boards that you want to add to your design. These will be auto-placed onto the schematic and connected to GPIO lines on the Raspberry Pi.

More advanced users can also choose from the thousands of electronic components in the Proteus libraries and then manually connect them up on the schematic. Building your system on the schematic makes it easy to change, simulate and test your application before deploying to the real hardware.

PROGRAM CONTROL

The flowchart editor makes it really easy to create the logic that will control the electronics.

Any hardware blocks that you added from the Peripheral Gallery are presented with a set of high level method functions that can be dragged onto the flowchart. For example, you might see methods such as drawBitmap(), setDCMotor(), spinForwards() that allow you to drive complex hardware from the flowchart without needing to understand any low level interconnect protocols that may be involved.

Again, more advanced users can switch to Python script or drive the electronics manually using CPU methods such as digitalWrite() and digitalRead().

SIMULATE & DEBUG

Visual Designer uses Proteus VSM Simulation technology so that your firmware program is simulated along with any electronics you have added to the schematic. Once your design is completed just press the play button to simulate and interact with the system.

You can set breakpoints and single step to see the effects of your code on the virtual electronics and you can interact with the running simulation by pressing buttons, flipping switches and so on. You can also use virtual instruments such as oscilloscope or logic analyzer to inspect signals at the waveform level during simulation.

DEPLOY

Once you have designed your application and debugged it in the simulator, you can easily transfer it to the physical Raspberry Pi hardware.

Proteus manages the initial configuration of your Raspberry Pi so that it can run code generated by Visual Designer.

Once this is done, the software and associated resources can be uploaded wirelessly at the push of the button, directly from within the Proteus software.

Simulate and debug your entire embedded system directly on the schematic.

Wirelessly program your configured Raspberry Pi Hardware.

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