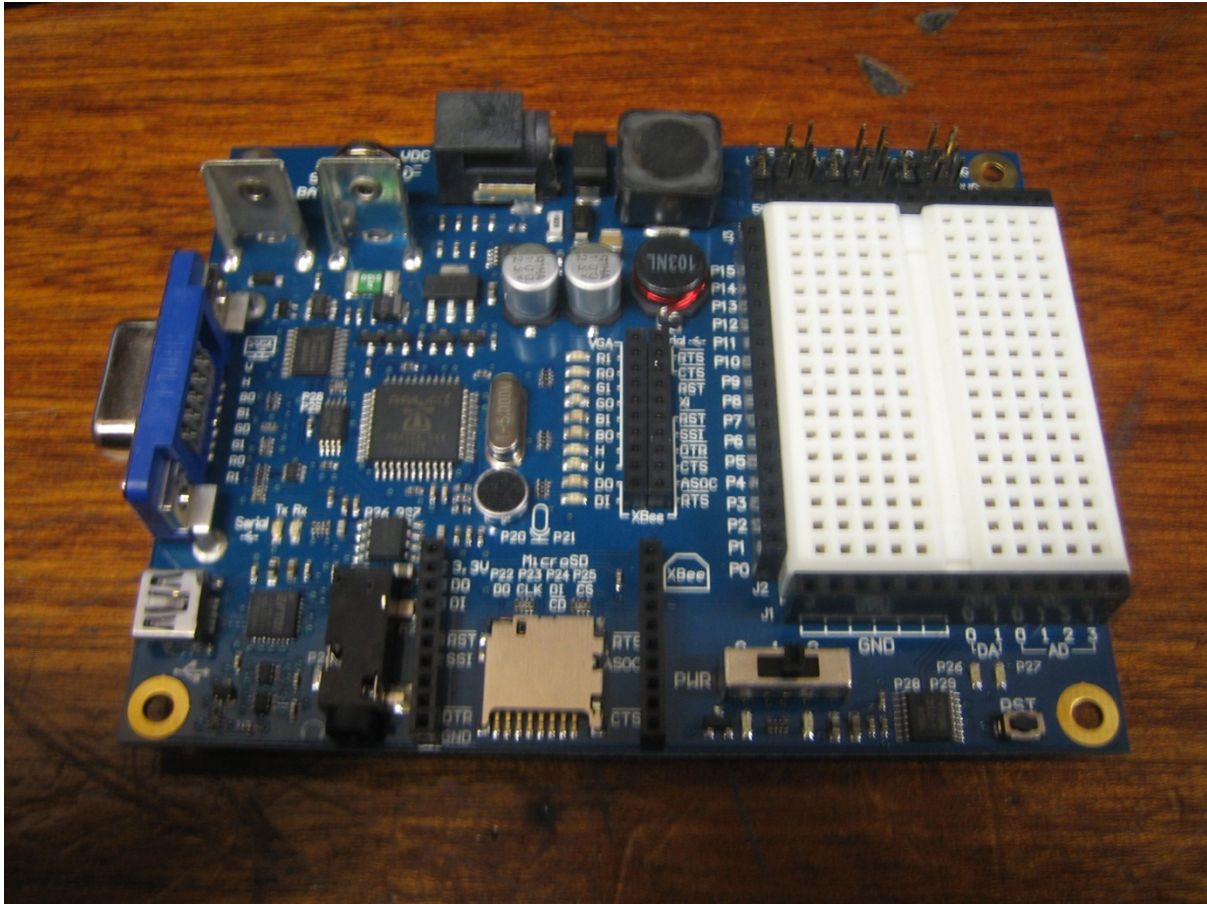# Connecting the VGA connector on the Propeller BOE

Document V1.2 – 13.4.12

You've got your fancy new Propeller Board of Education and you want to start playing with VGA graphics.
You plug your monitor in, load up some example spin code, hit F10 and………. Nothing ☹

Even though there is a VGA header on the board, it's not connected by default. This might seem like a stupid idea. Why have the port but leave it disconnected????
It's actually a very clever idea.
Let's say your latest project doesn't need VGA but it does need lots of spare I/O pins.
If the VGA connector was connected to the prop, you'd have lost 8 pins before you started.
Having the connector on the board, gives people the option to use it if they want to….. which is exactly what we're going to do.

It's very easy to connect the port, you just need to use the little jumper wires that came with the board. If you've misplaced your wires (like I have) you can use any solid core jumper wires (like I have).
First of all, have a look at the board itself. You'll notice that there is a row of headers down the left hand side of the breadboard (1). These are labelled P0 to P15 and these are the I/O pins from the propeller chip.

Just to the left of those headers are another group of headers (2). The pins we're interested in are on the left hand strip, labelled VGA going from the top pin labelled R1 down to the pin labelled V (3). We can ignore the 2 pins below V, they're for something else (An Xbee module which we don't need for this purpose).
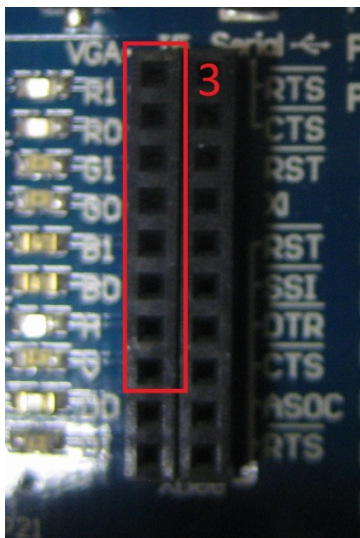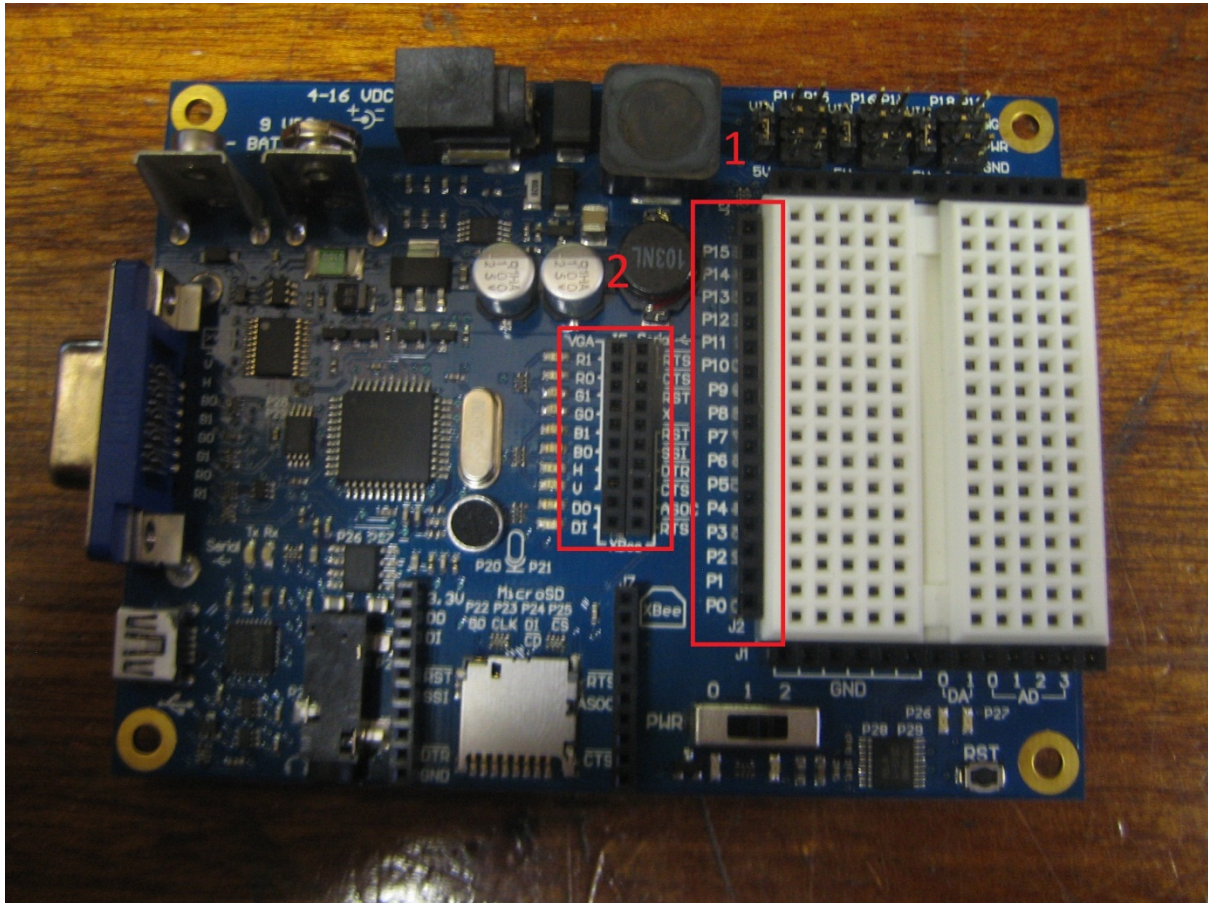

We are going to place our jumper wires into the headers on both the VGA header strip and the I/O pin header strip.
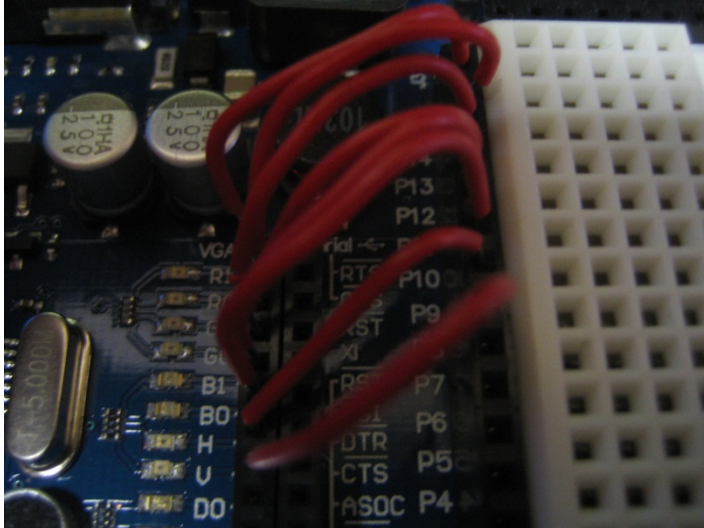
You can choose any of the propeller I/O pins but for neatness, I've chosen to use pins P8 to P15.
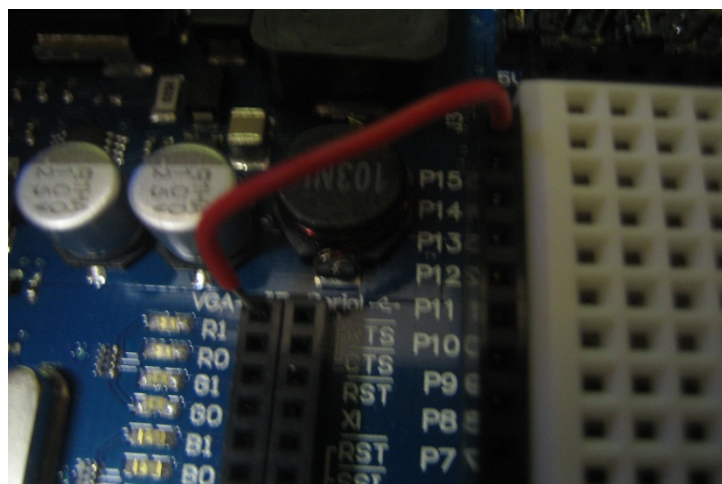
I'm going to work downwards just to make life easier so I'll be starting at P15 and ending at P8. Don't confuse this as our starting pin when it comes to spin code. I'll explain more about this later.
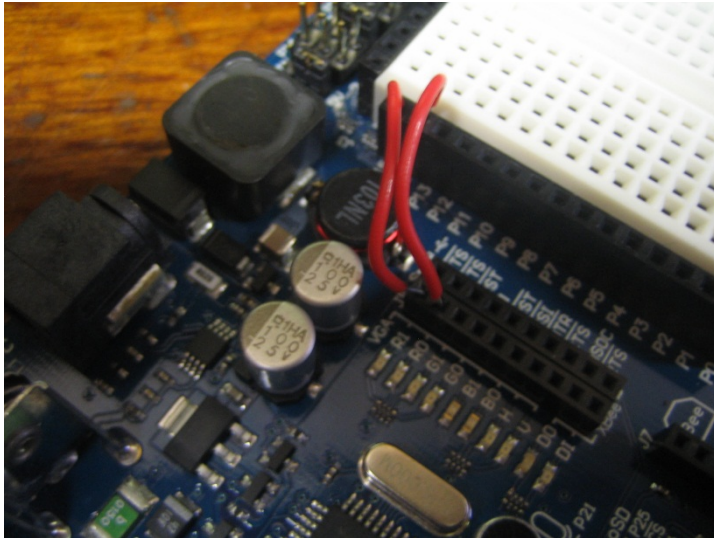
Then insert a jumper wire into the next pins down. Keep doing this until you get to pin P8.


All done. Your board should now look something like this.

Double check your wiring, make sure that all the jumpers are in firmly and that none of the wires have been crossed over.

Now we have all our jumper wires in place, it's time to add a monitor and link the board to our PC ready to get some spin code running.

The example code I've chosen to run can be found here on the Propeller Object Exchange.
First, Download and extract the object to a folder on your computer.
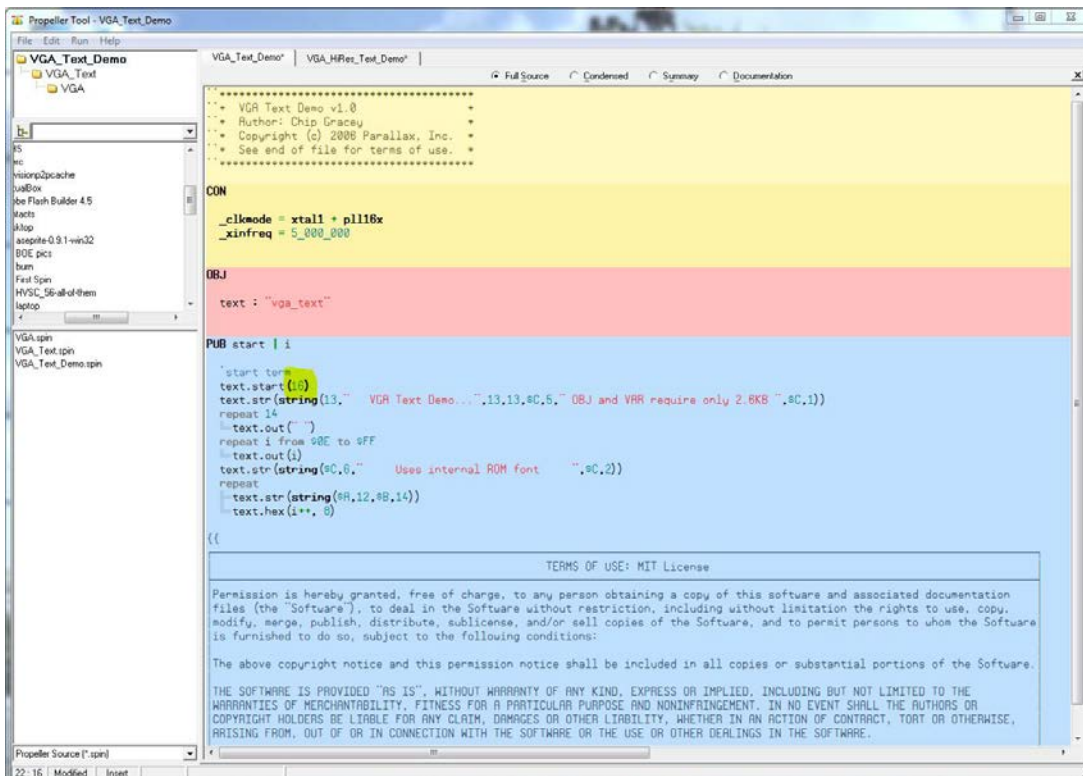
Continued…
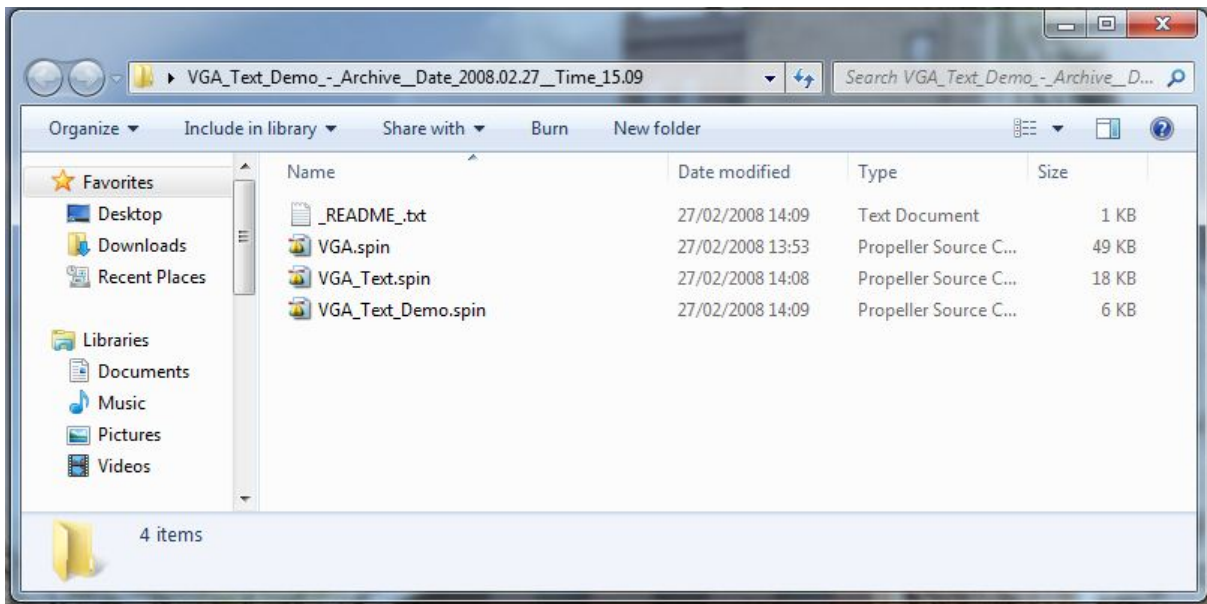
The double click the file called "VGA_Text_Demo.spin"
This will load the file into the Propeller Tool.

Once the file has loaded, we need to make a slight change to the code.
Find the line that *says text.start(16)* (I've highlighted it in the image) and change the number 16 to number 8.

Original Code

```
PUB start | i

  'start term
  text.start(16)
  text.str(string(13,"   VGA Text Demo...",13,13,$C,5," OBJ and VAR require only 2.6KB ",$C,1))
  repeat 14
    text.out(" ")
  repeat i from $0E to $FF
    text.out(i)
  text.str(string($C,6,"     Uses internal ROM font     ",$C,2))
  repeat
    text.str(string($A,12,$B,14))
    text.hex(i++, 8)

{{
```

Modified Code

```
PUB start | i

  'start term
  text.start(8)
  text.str(string(13,"   VGA Text Demo...",13,13,$C,5," OBJ and VAR require only 2.6KB ",$C,1))
  repeat 14
    text.out(" ")
  repeat i from $0E to $FF
    text.out(i)
  text.str(string($C,6,"     Uses internal ROM font     ",$C,2))
  repeat
    text.str(string($A,12,$B,14))
    text.hex(i++, 8)

{{
```

I'll explain why we've made this change.....
The original code was written with a different propeller board in mind. On that particular board, the first pin used for VGA was P16.
We've wired our board up to use pins P8 to P15. The spin code doesn't need to know about any of the pins other than the first pin we've used for the VGA connector. The propeller then knows that the other pins must follow P8.

It's worth noting at this point that you can't just choose any pins to start from. You must pick a pin group boundary, i.e P0, P8, P16, P24 etc. You can't use P4 as the start pin and all the wires must be consecutive too. You can't choose P0 then P3 then P4 etc.

Once you've made the change to the code, hit F10 and watch the end result of your work ☺
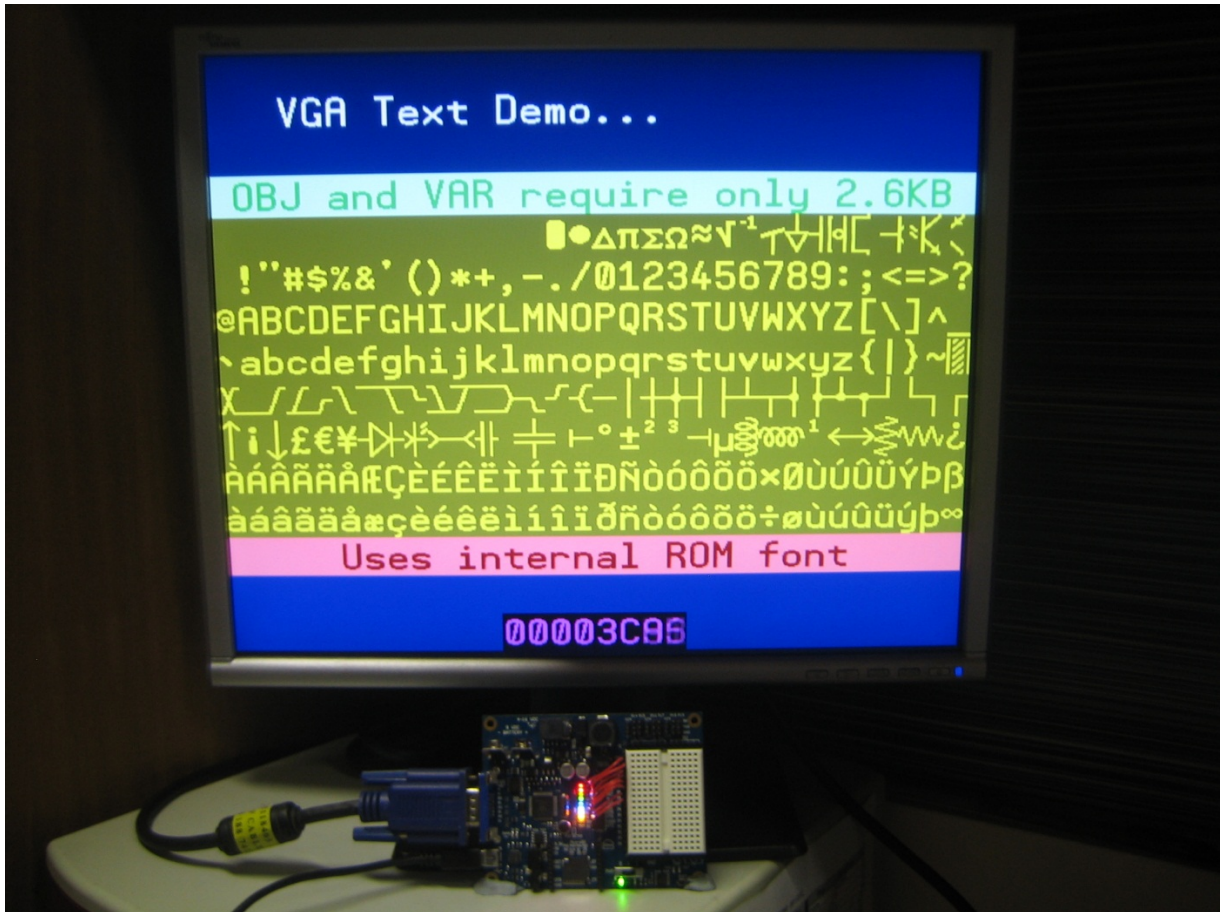
There you go. You've now wired up your VGA port, altered an object and made it work on your own BOE.

If you have any questions or comments, please visit the Propeller. It's full of friendly people who are willing to answer any questions you have, no matter how trivial. http://forums.parallax.com

I can be found on the forums too and I'll be happy to answer any beginners questions. Just look for a guy called Nurbit.

Have fun with your Prop ☺

(I know it says Continued at the end of this page but this is the last page really)