5.8. Incremental Programming

By now you've likely come across occasions where your code will be long or complex. If you approach problems like this by writing out all the code and *then* running it, you'll likely find yourself frustrated by the debugging process. There are ways to make programming easier though!

1. **Start Small** This is probably the single biggest piece of advice for programmers at every level. Of course it's tempting to sit down and crank out an entire program at once. But, when the program – inevitably – does not work then you have a myriad of options for things that might be wrong. Where to start? Where to look first? How to figure out what went wrong? I'll get to that in the next section. So, start with something really small. Maybe just two lines and then make sure that runs ok. Hitting the run button is quick and easy, and gives you immediate feedback about whether what you have just done is ok or not. Another immediate benefit of having something small working is that you have something to turn in. Turning in a small, incomplete program, is almost always better than nothing.

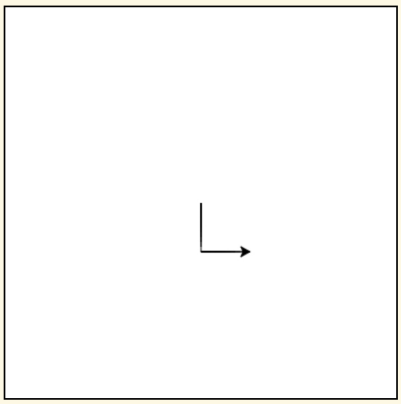
2. **Keep it working** Once you have a small part of your program working the next step is to figure out something small to add to it. If you keep adding small pieces of the program one at a time, it is much easier to figure out what went wrong, as it is most likely that the problem is going to be in the new code you have just added. Less new code means its easier to figure out where the problem is.

This notion of **Get something working and keep it working** is a mantra that you can repeat throughout your career as a programmer. It's a great way to avoid the frustrations mentioned above. Think of it this way. Every time you have a little success, your brain releases a tiny bit of chemical that makes you happy. So, you can keep yourself happy and make programming more enjoyable by creating lots of small victories for yourself.

Below we have already started to build a house. To practice incremental programming, try drawing the rest of the house. Each time you draw something new on the screen, run the program to see if it executed in the way that you expected!

Save & Run 4/17/2021, 5:58:15 PM - 2 of 2 Show in CodeLens

```
1 import turtle
2 wn = turtle.Screen()
3 bob = turtle.Turtle()
4 bob.right(90)
5 bob.forward(50)
6 bob.left(90)
7 bob.forward(50)
8
9 # Add your code below!
10
```



Activity: 1 -- ActiveCode (ac3_100_1)

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5.7. Summary of Turtle Methods">
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5.9. Common turtle Errors">

✔ Completed. Well Done!

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