

Talk about these steps with your students so they are thoughtful when preparing and troubleshooting their solutions.

## Work to Avoid Errors

### Step 1: Understand the Task at Hand

- \* Do you understand the situation or puzzle prompt?
- \* Can you restate the problem in your own words?
- \* Do you understand the code you are given and why?
  - What role does the code play?
- \* Do you know what the goal of the puzzle is?
- \* Is this problem similar to another puzzle you have solved?

### Step 2: Pay Attention to Directions & Work

- \* Make sure that you review the directions several times while you work. It is possible that you will see something new once you understand the task a little more.
- \* Check your work frequently to make sure that it behaves the way that you intended.

### Step 3: Take it Slow

- \* When you rush through a task, you're more likely to make mistakes that you could have avoided if you were paying attention.

### Step 4: One Step at a Time

- \* Add only one element at a time, and make sure the solution still works. It's much harder to find mistakes when you add lots of new things all at once.

## Debugging

### Step 1: Something's Wrong!

\* Watch your progress carefully so that you notice errors as soon as they happen.

### Step 2: What Was Supposed to Happen?

\* If you noticed that something was wrong, then your solution probably does something different from what was asked.

- What does it do?
- What does that tell you?

### Step 3: Where Does it First Stop Working?

\* Step through little by little until you find the first place that your solution goes wrong, then fix that error.

\* Step through again to find the next place it goes wrong, then fix that.

\* Repeat until your program works!

### Step 4: Hidden Bugs

\* If you still can't find your error, try leaving "breadcrumbs" in your program. You can put statements in special places to see which ones activate and which ones don't. Those should provide much needed additional information.

\* If you're still stuck, try going away for a bit, then coming back. A fresh point of view can work wonders!

\* Sometimes it helps to have an extra set of eyes. If you're out of ideas, see if someone else will come take a look with you.