“Debug-It” Activities

These activities are intended to be used by students individually with little to no direct instruction from the teacher. These would be great to assign for students who finish the assigned project early.

Debugging is the process of locating and fixing problems in a section of computer code. This process is a great way to evaluate students' logical reasoning and problem solving skills when it comes to both the Scratch interface in particular and computer programming in general.

The basic process the students should follow is given below:

• 1. Run the program
• 2. Verify an error exists
• 3. Find the problem in the code
• 4. Fix the problem in the code
• 5. Go back to the first step

As a reference for teachers, each of the programs are displayed below with possible solutions as well. Please note there are many ways for the student to solve the problem and each answer is just one of the possibilities.

1. “I want the cat to spin in a circle but it’s not working. Can you fix it?”

   **Broken Code**

   ```
   when [green flag clicked]
   turn 90 degrees
   turn 90 degrees
   turn 90 degrees
   turn 90 degrees
   ```

   **Possible Solution**

   ```
   when [green flag clicked]
   turn 90 degrees
   wait 1 secs
   turn 90 degrees
   wait 1 secs
   turn 90 degrees
   wait 1 secs
   ```

2. “I want the cat to walk back and forth across the screen but he keeps flipping upside down. Can you fix it?”

   **Broken Code**

   ```
   when [green flag clicked]
   forever
   move 5 steps
   if [touching edge]?
   turn 90 degrees
   ```

   **Possible Solution**

   ```
   when [green flag clicked]
   forever
   move 5 steps
   if [touching edge]?
   turn 90 degrees
   ```
3. “I want the cat to dance to some music but instead it's dancing after the music. Can you fix it?”

**Broken Code**

```
when [ ] clicked
play sound GuitarChords1\ until done
repeat 3
move 10 steps
wait 0.5 secs
move -10 steps
wait 0.5 secs
```

**Possible Solution**

```
when [ ] clicked
play sound GuitarChords1
repeat 3
move 10 steps
wait 0.5 secs
move -10 steps
wait 0.5 secs
```

4. “I want the cat to start with his hat on and then run in place. It works the first time but not the second. Can you fix it?”

**Broken Code**

```
when [ ] clicked
wait 1 secs
repeat 5
switch to costume costume2
wait 0.5 secs
switch to costume costume3
wait 0.5 secs
```

**Possible Solution**

```
when [ ] clicked
switch to costume costume1
wait 1 secs
repeat 5
switch to costume costume2
wait 0.5 secs
switch to costume costume3
wait 0.5 secs
```

5. “I want the cat to be able to move around the screen by using the arrow keys but it’s not working. Can you fix it?”

**Broken Code**

```
when [ ] clicked
if [ ] key up arrow pressed?
    point in direction 0
    move 1 steps
if [ ] key down arrow pressed?
    point in direction 180
    move 1 steps
if [ ] key right arrow pressed?
    point in direction 90
    move 1 steps
if [ ] key left arrow pressed?
    point in direction -90
    move 1 steps
```

**Possible Solution**

```
when [ ] clicked
forever
    if [ ] key up arrow pressed?
        point in direction 0
        move 1 steps
    if [ ] key down arrow pressed?
        point in direction 180
        move 1 steps
    if [ ] key right arrow pressed?
        point in direction 90
        move 1 steps
    if [ ] key left arrow pressed?
        point in direction -90
        move 1 steps
```