

## <Report of the Bug World FX>

### ✧ OVERCOME ISSUES:

1.The biggest issue is to add another setting pane over the game pane when the game is paused, and return the value from the control component to the program after make the setting. I overcome this issue by keep trying different way and test the result. Debug mode is not quite efficient in Java FX program, I normally use system print method to I narrow the defect area, and test frequently for a smaller block of code, so that it's easier to address if defect comes up.

### ✧ KNOW ISSUES:

1.Sometimes when a bug moves along the edge, it will get stuck, keep shaking, and is very difficult to bounce back.

### ✧ MOST PROUD FEATURES:

1.Bugs move naturally.

Bugs are neither just moving in a straight, nor completely randomly. Instead, they move in a smooth arc, and with a small chance they change direction slightly, which reflects the laws of kinematics. To achieve this, I used the direction angle and speed to calculate the next position a bug will appear. To let the bug move smoothly, I used a valuable to record the angle offset in last turn. There's 85% chance that bugs move with a same angle offset with last turn.

2.Bugs always face the direction they are moving.

By using the solution of direction angle, which is designed for the feature 1, it's very easy to let the bug image rotate with the right angle.

3.The tank can fire to the bugs, and the bugs will also attack the tank.

The missile from the tank's gun, and fly to the direction the tank is facing. When it hit the bug, it stops and disappears, and the bug lose HP. When the bug touches the tank, tank will also lose hp. After the tank's HP drops below 0, the game is over, and the program stops.

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### ✧ DESIGN CHANGE IN THE LATER VERSION:

This is literally a brand-new project which has very little relation with the former Bug World. So, a lot of function is still pending. In this version, different kinds of bug have different value of speed, HP, damage, but they are in the same class. In the later version they will have separate classes to write different methods.