# Building a Vampire Survivors Clone
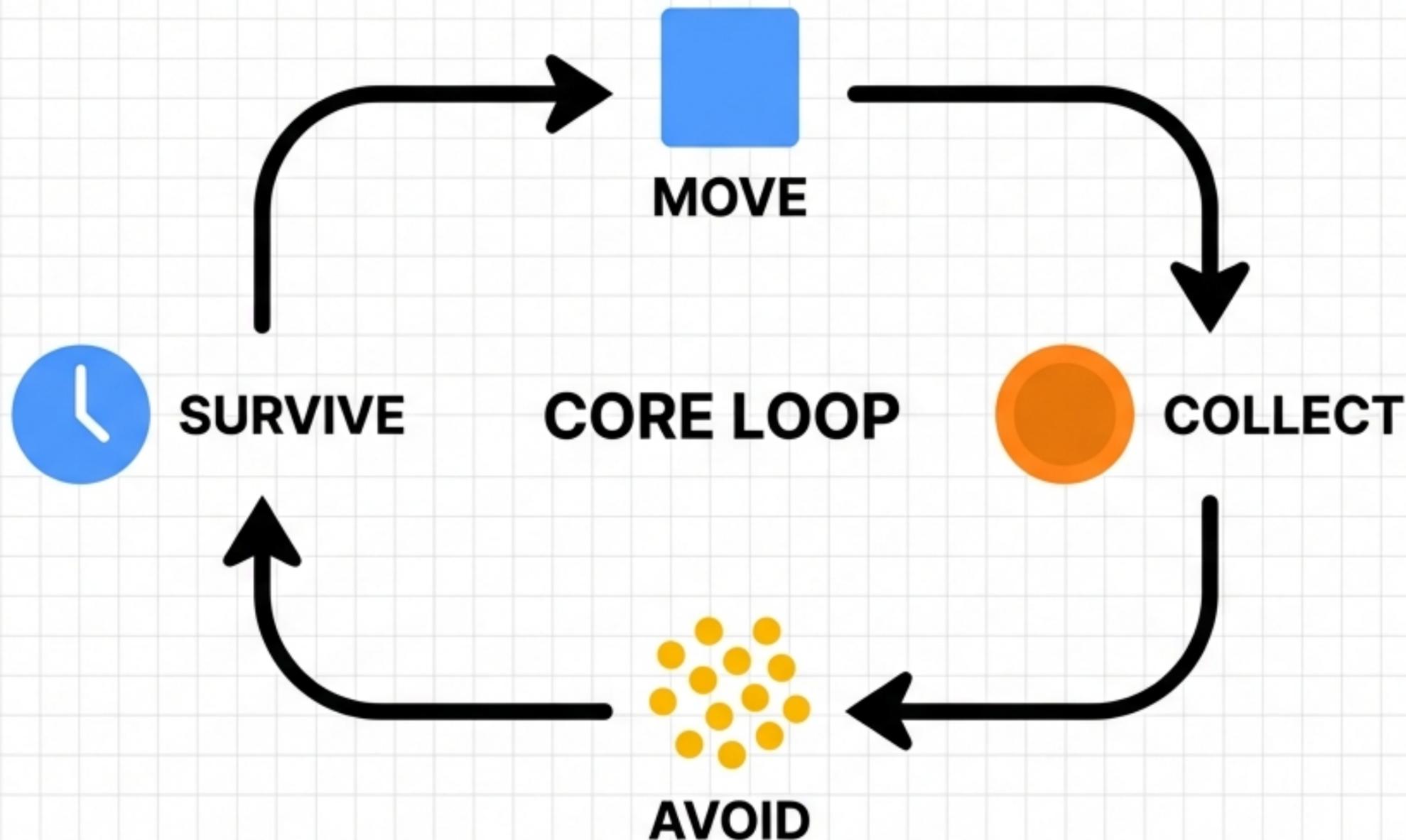
Developer Mission: A Step-by-Step Guide to Logic, Loot, and Logic Gates.

**OBJECTIVE: SURVIVE THE SWARM**

Language: Scratch 3.0 // Difficulty: Intermediate

NotebookLM

# Mission Brief: The Game Loop

Engineering the "Survive and Collect" System.



**CORE LOOP**

MOVE → COLLECT → AVOID → SURVIVE → MOVE

## SPECIFICATIONS

- **PLAYER (Main):** Controlled via Arrow Keys.

- **GOAL:** Increase Score, Decrease Timer.

- **THREAT:** Enemies (Baddies) reduce Health.

- **TWIST:** Enemies clone to form a swarm.

- **WIN CONDITION:** Timer = 0
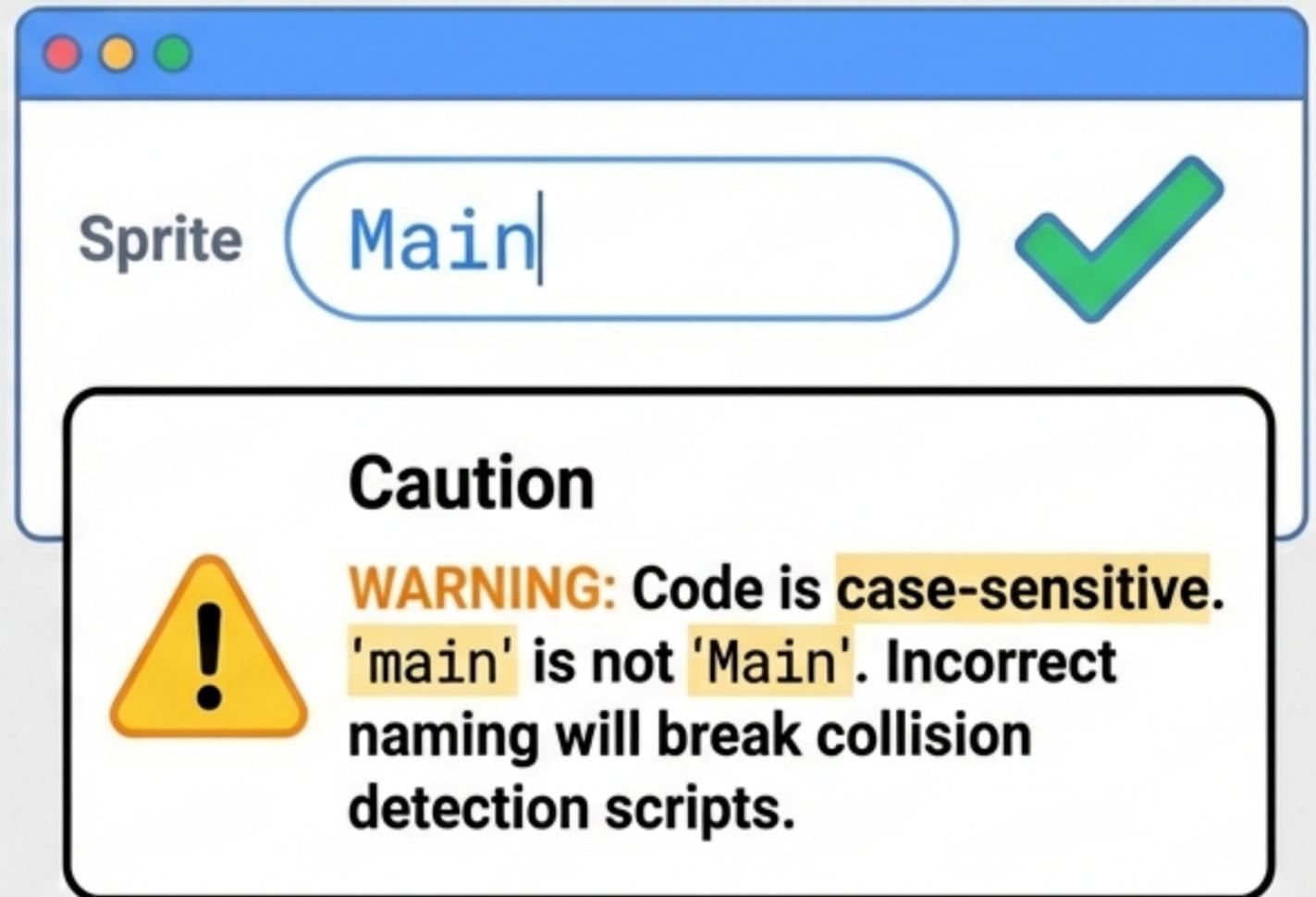
- **LOSS CONDITION:** Health = 0

# Pre-Flight Checks: Setup & Inventory

Strict Naming Conventions Required to Prevent Logic Errors.
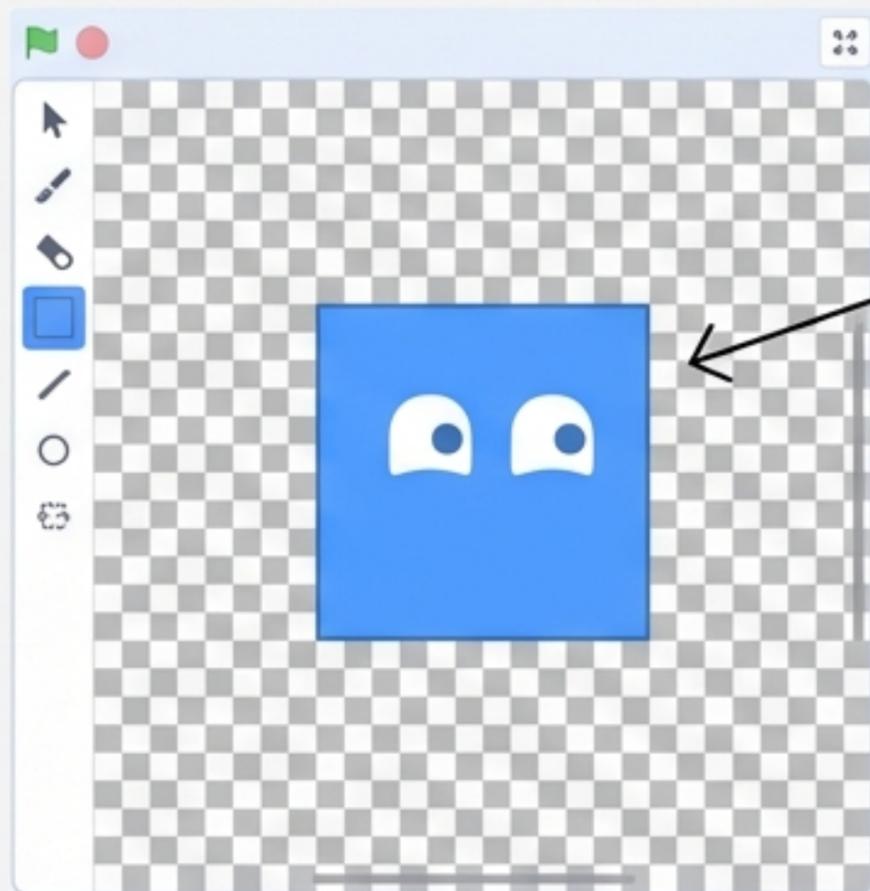
## INSTRUCTIONS

1. **Initialize Workspace:** Open Scratch. Create New Project.

2. **Asset Cleardown:** Delete the default Cat sprite.

3. **Naming Convention Protocol (CRITICAL):**
   - Player Sprite → 'Main'
   - Enemy Sprite → 'Baddy'
   - Loot Sprite → 'Coin'
   - Backdrops → 'start', 'dead', 'survived'

## VISUAL GUIDE

Sprite `Main` ✅

**Caution**

⚠️ **WARNING: Code is case-sensitive. 'main' is not 'Main'. Incorrect** naming will break collision detection scripts.

# Level 1: The Protagonist & The HUD

## Asset Creation



Sprite
Name: Main

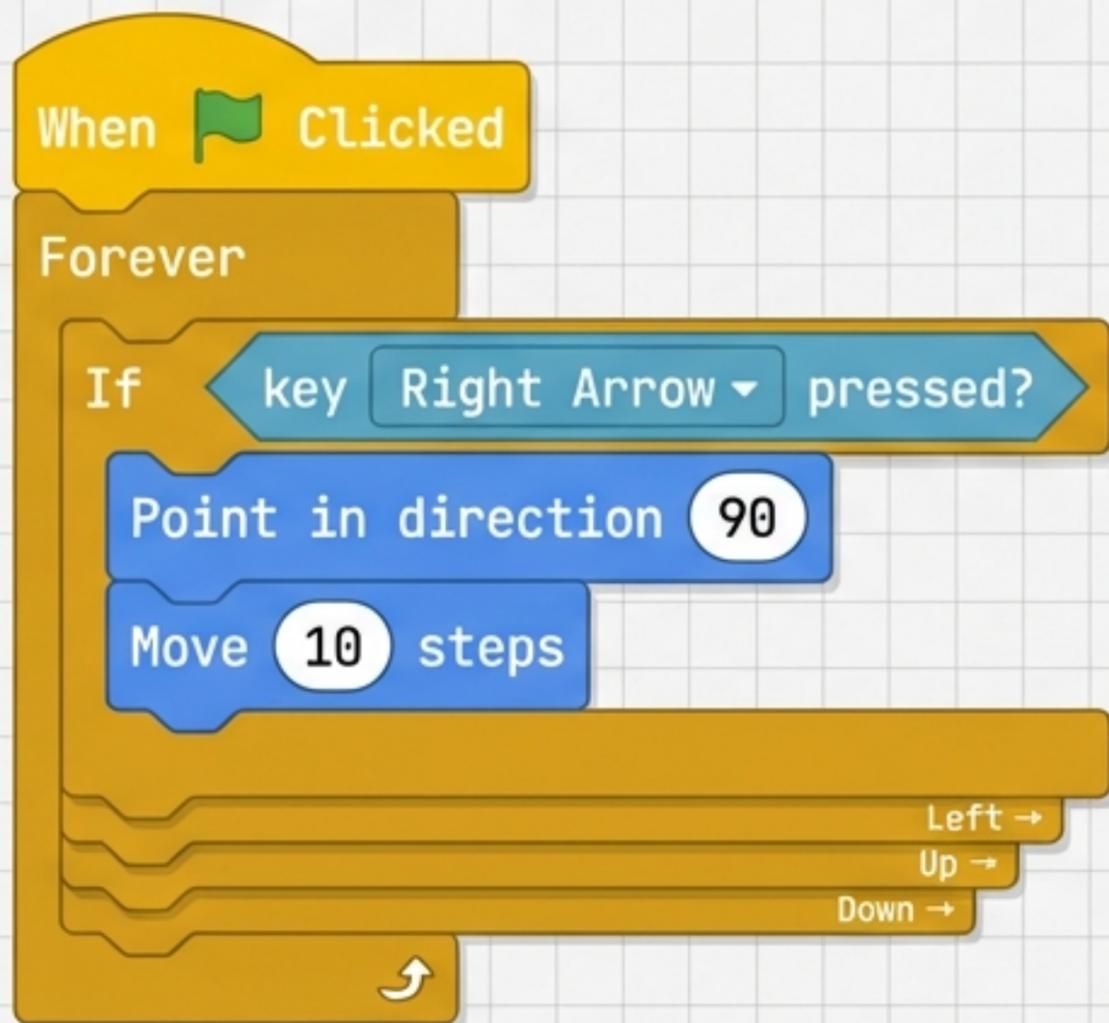## Data Initialization

Score

Time Remaining

Health

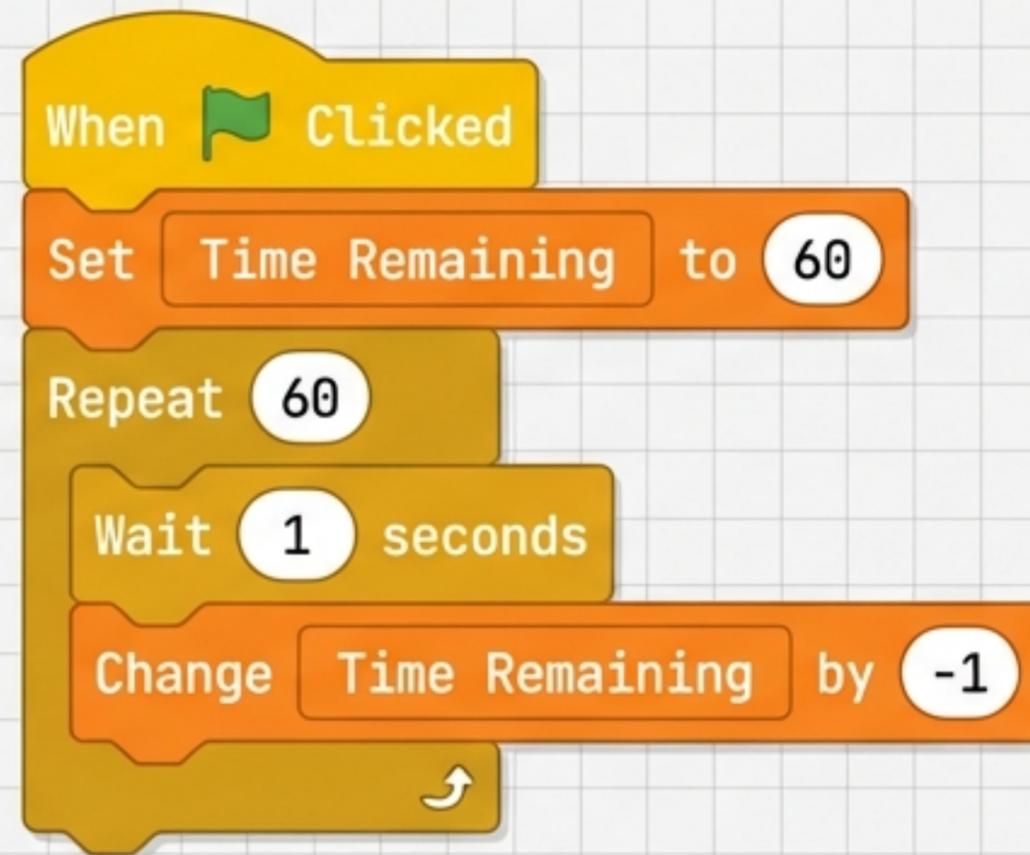Select 'For all sprites' when creating these.

✅ **CHECKPOINT:** Can you see your sprite 'Main' and the three variable boxes displayed on the stage?

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# Level 2: Physics & Time

## Movement Script (On "Main")

```
When 🚩 Clicked
Forever
    If    key  Right Arrow ▾  pressed?
        Point in direction  90
        Move  10  steps
                                    Left →
                                    Up →
                                    Down →
```

## The Timer Loop

```
When 🚩 Clicked
Set  Time Remaining  to  60
Repeat  60
    Wait  1  seconds
    Change  Time Remaining  by  -1
```
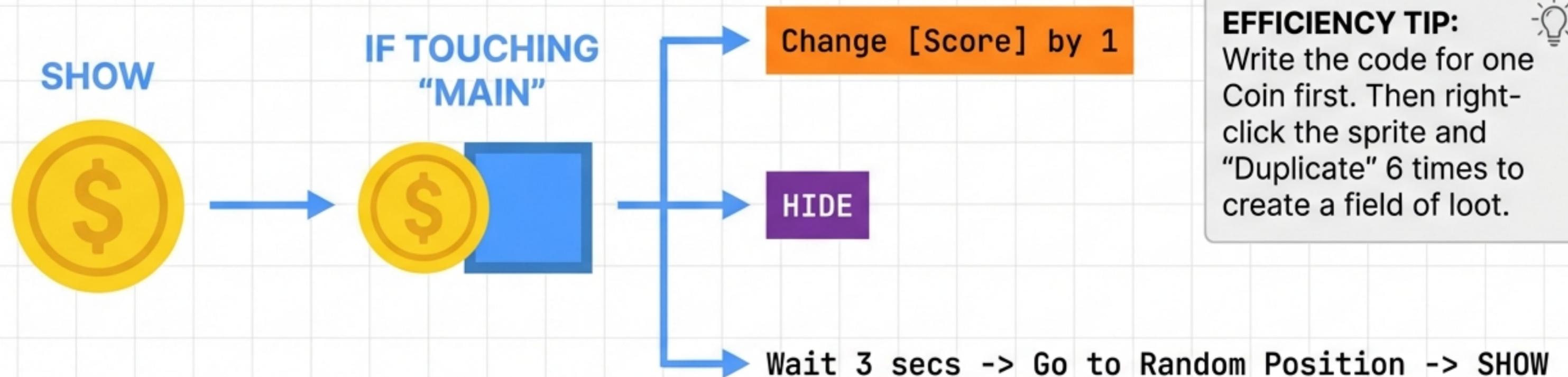
✅ CHECKPOINT: Run the code. Does **"Main"** move with arrows? Does **"Time Remaining"** count down from 60?

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# Level 3: The Loot Loop

## Object Pooling Logic: Respawn instead of Re-create.

**SHOW**

**IF TOUCHING "MAIN"**

`Change [Score] by 1`

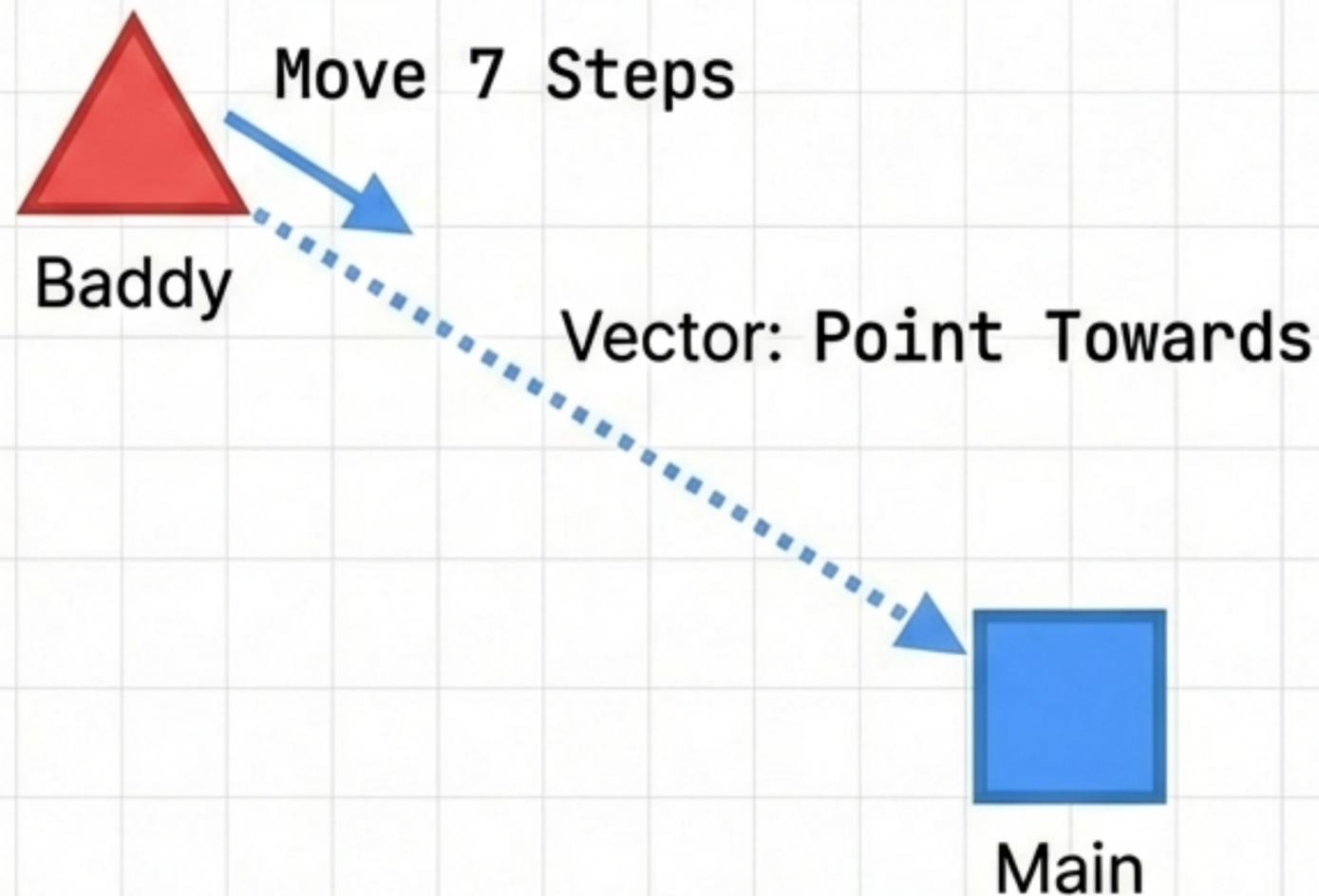`HIDE`

`Wait 3 secs -> Go to Random Position -> SHOW`

**EFFICIENCY TIP:**
Write the code for one Coin first. Then right-click the sprite and "Duplicate" 6 times to create a field of loot.

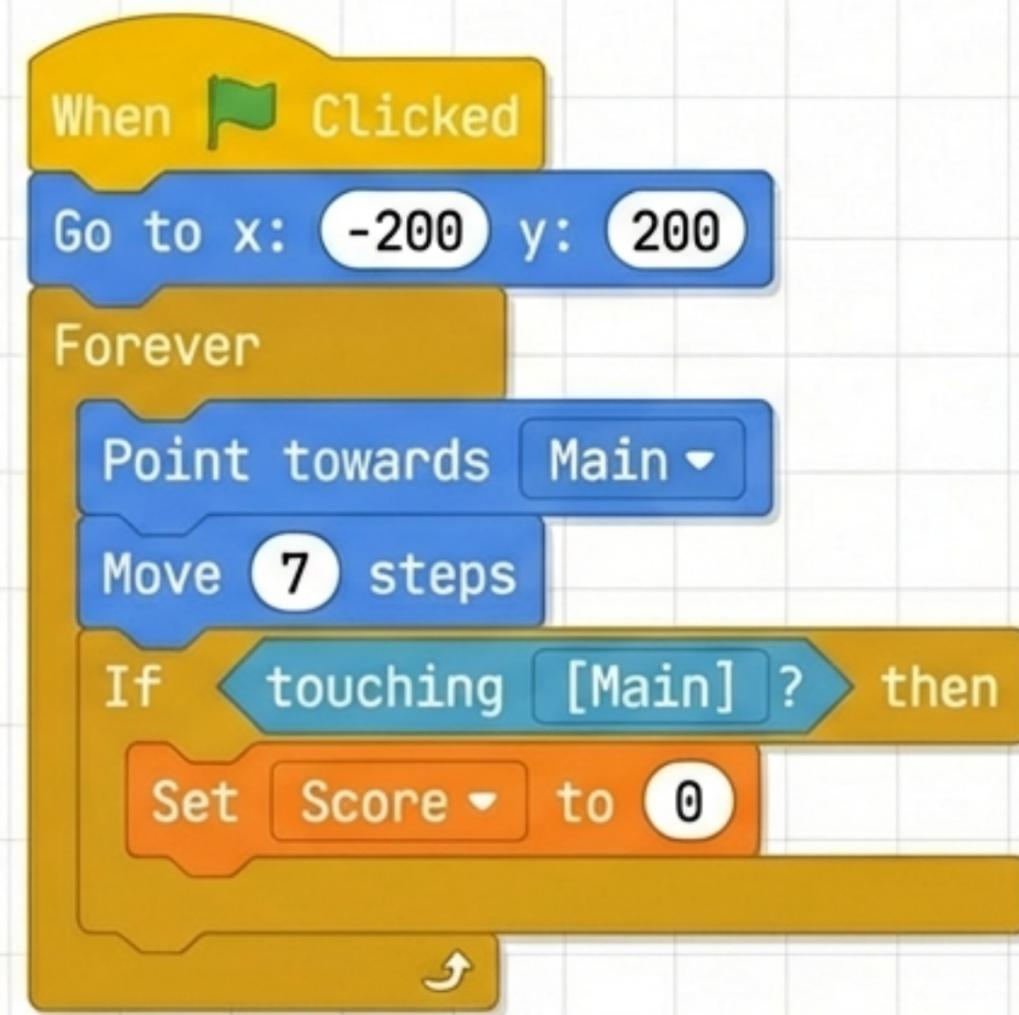✅ **CHECKPOINT:** Do coins vanish on contact? Do they reappear after 3 seconds? Does the score increase?

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# Level 4: Enter the Villain

## Basic AI Tracking Logic

Move 7 Steps

Baddy

Vector: Point Towards

Main

### The Code Stack (On "Baddy")

```
When [🏴] Clicked
Go to x: -200 y: 200
Forever
    Point towards  Main ▾
    Move  7  steps
    If   touching [Main] ?   then
        Set  Score ▾  to  0
```
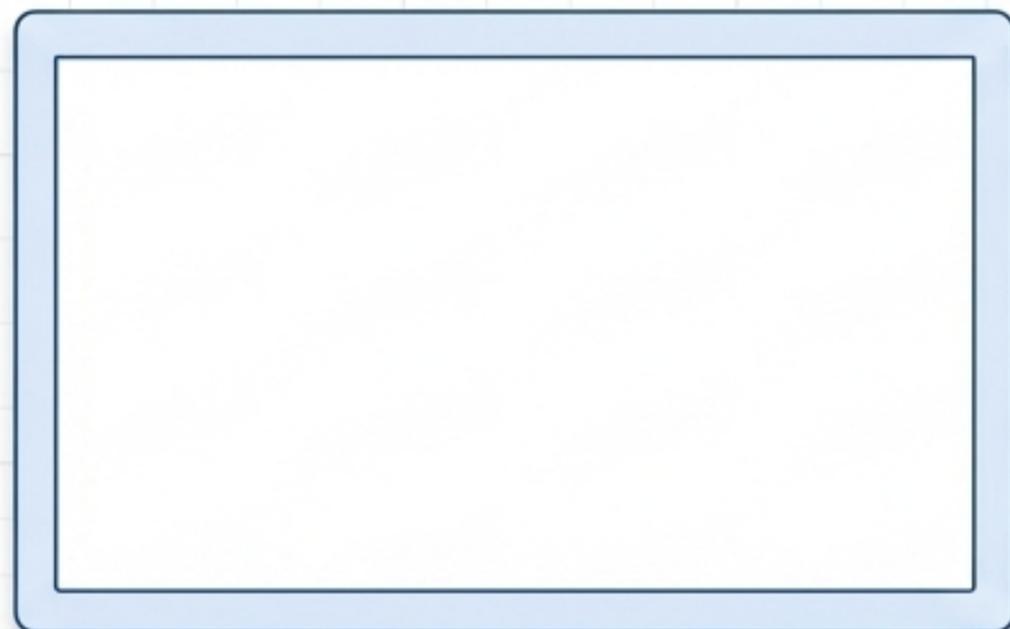
✅ **CHECKPOINT:** Does the enemy relentlessly chase you? Does contact reset the score?

# Level 5: World States (Backdrops)

Preparing the Stage for Victory and Defeat.

Name: **start**

Name: **dead**
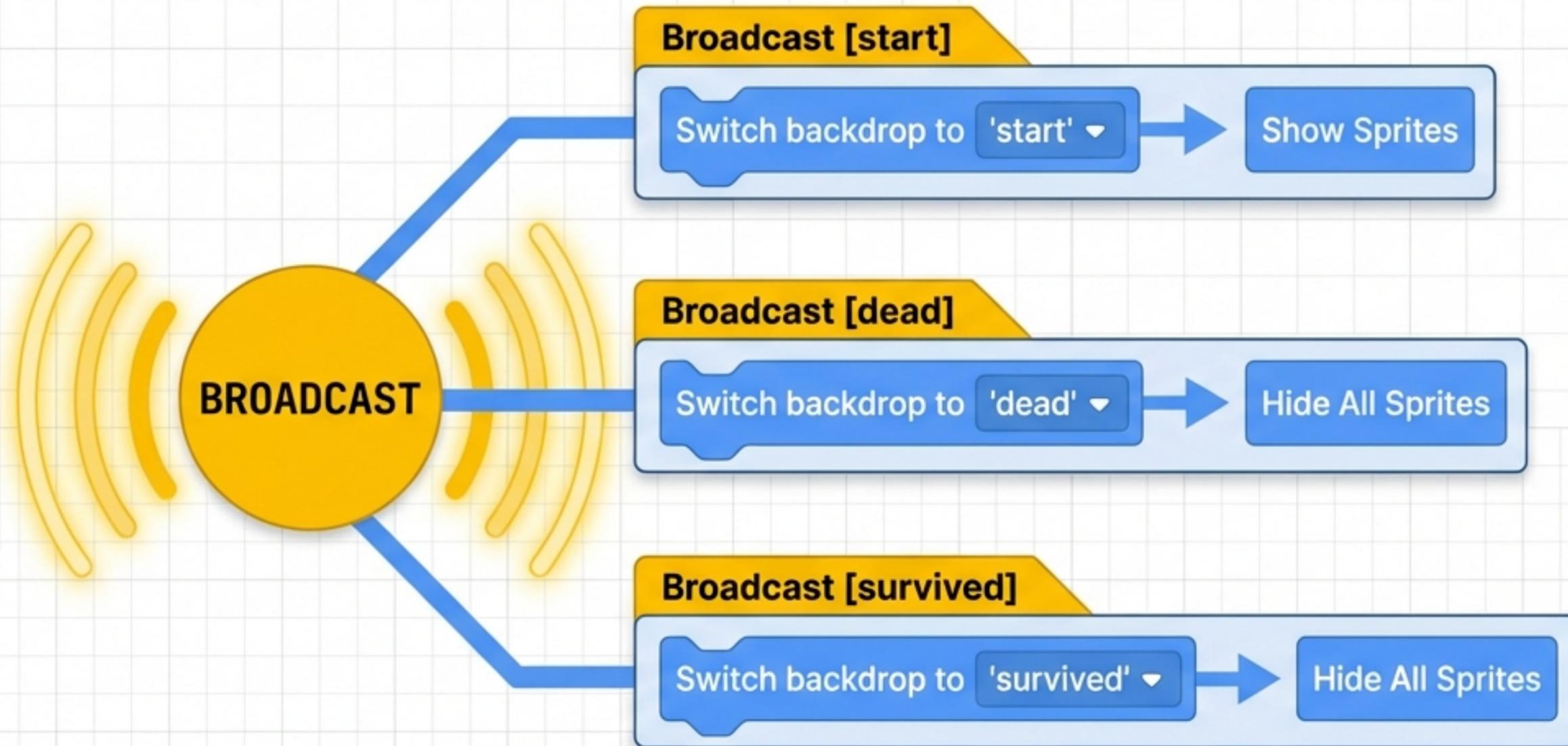
YOU DIED

Name: **survived**

VICTORY

**Action**: Click the 'Stage' pane and create these three backdrops. Ensure the names match exactly.

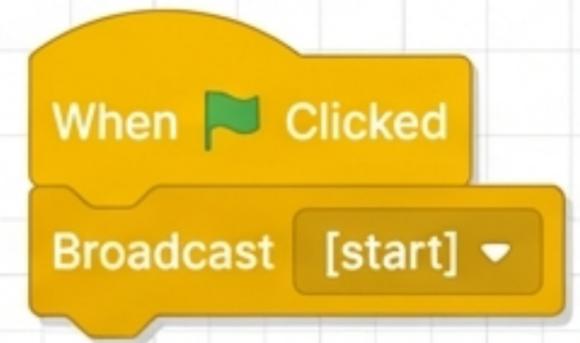✅ **CHECKPOINT:** Do you have 3 backdrops named precisely 'start', 'dead', and 'survived'?

# Level 6: The Broadcast System

The Game's Nervous System

**BROADCAST**

**Broadcast [start]**
Switch backdrop to 'start' → Show Sprites

**Broadcast [dead]**
Switch backdrop to 'dead' → Hide All Sprites

**Broadcast [survived]**
Switch backdrop to 'survived' → Hide All Sprites

The Code Stack (On 'Main Sprite Controller')

When 🚩 Clicked
Broadcast [start]

✅ **CHECKPOINT:** When you click the 🚩, does the game reset to the 'start' backdrop and show the characters?

# Level 7: Damage Logic & Game Over
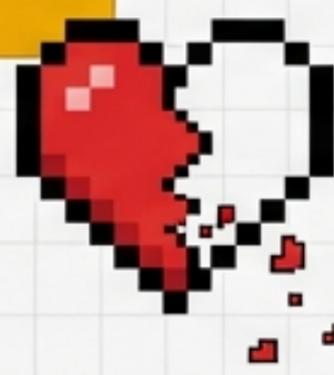
## 1. Setup (On 'Main')
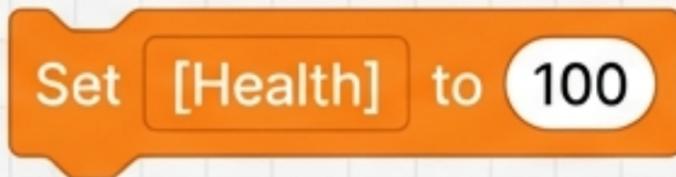
Set [Health] to 100

## 2. The Attack (On 'Baddy')

Replace previous collision code.

If touching [Main]?

Change [Health] by -1

## 3. The Death Trigger (On 'Main')

If [Health] = 0?

Broadcast [dead]
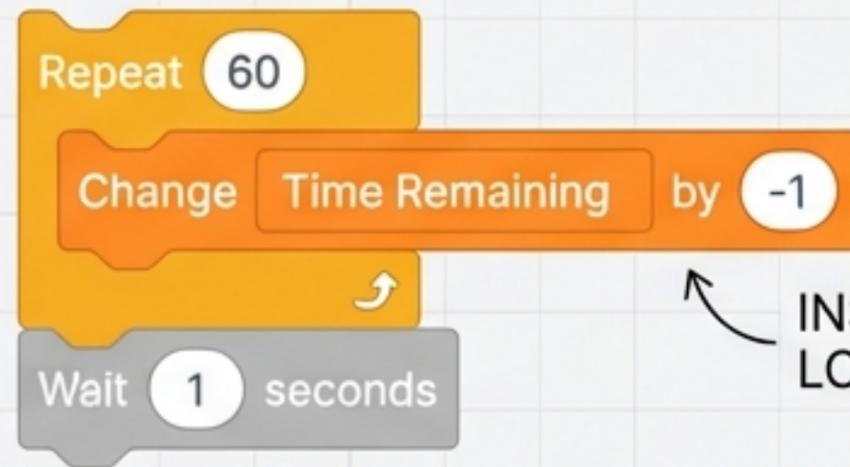
Stop [other scripts in sprite]

✅ **CHECKPOINT:** Does touching the enemy drain the Health variable? Does the 'dead' screen trigger at 0?
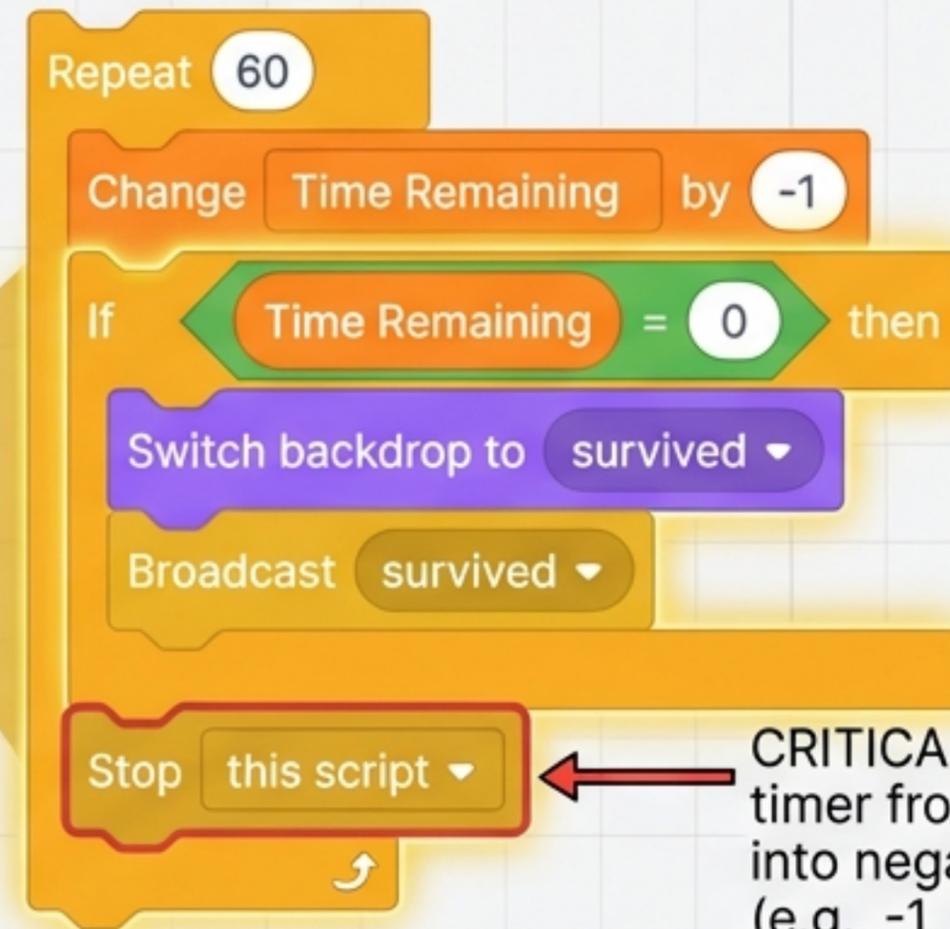
# Level 8: Victory Conditions

Closing the Loop.

## Before and After focusing the Timer Script

**EXISTING TIMER STACK**

Repeat 60
  Change Time Remaining by -1
Wait 1 seconds

INSERT NEW LOGIC HERE

**UPDATED TIMER STACK (WITH VICTORY)**

Repeat 60
  Change Time Remaining by -1
  If Time Remaining = 0 then
    Switch backdrop to survived
    Broadcast survived
  Stop this script

CRITICAL: Prevents the timer from counting down into negative numbers (e.g., -1, -5).
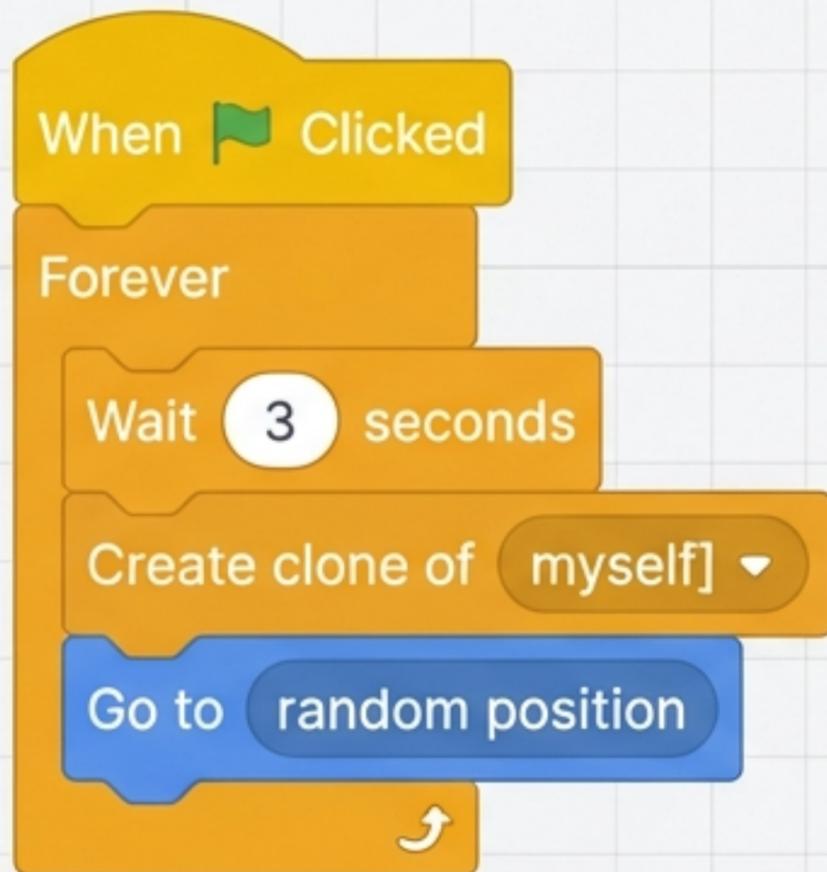
✅ **CHECKPOINT:** Set timer to 5 seconds for a test. Does the game end with the Victory screen when it hits 0?

# Boss Mechanics: The Clone Swarm

From Single Enemy to Infinite Horde.

## The Spawner (Original Baddy)

```
When 🚩 Clicked
Forever
    Wait 3 seconds
    Create clone of myself]
    Go to random position
```

## The Clone (The Copy)

```
When I start as a clone
Forever
    Point towards Main]
    Move...
```
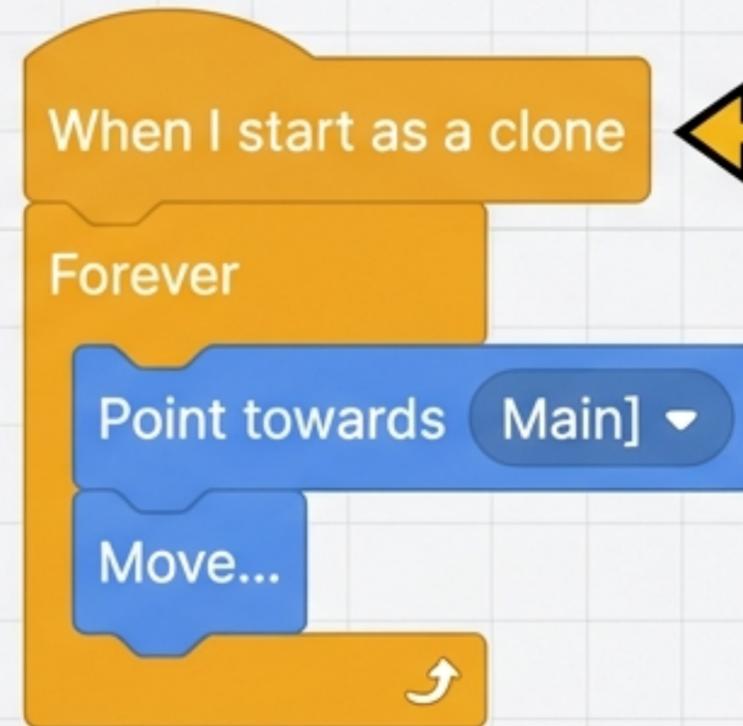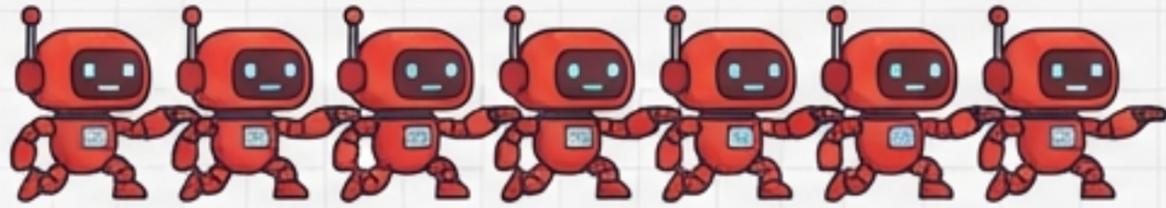
← Attach all Movement and Damage logic here!

✅ **CHECKPOINT:** Do enemies multiply every 3 seconds? Do the clones chase and damage you?
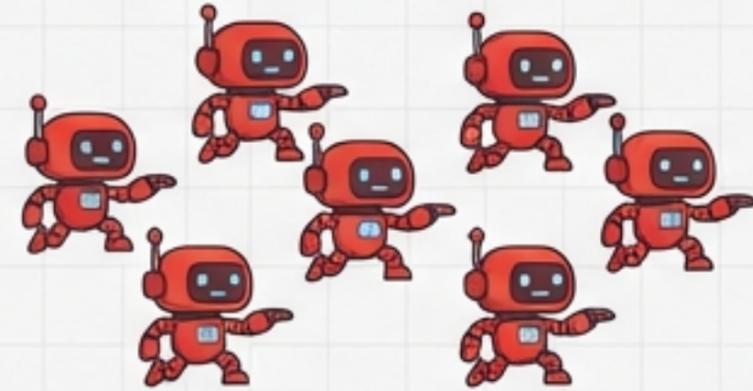
# Difficulty Tweak: Randomisation

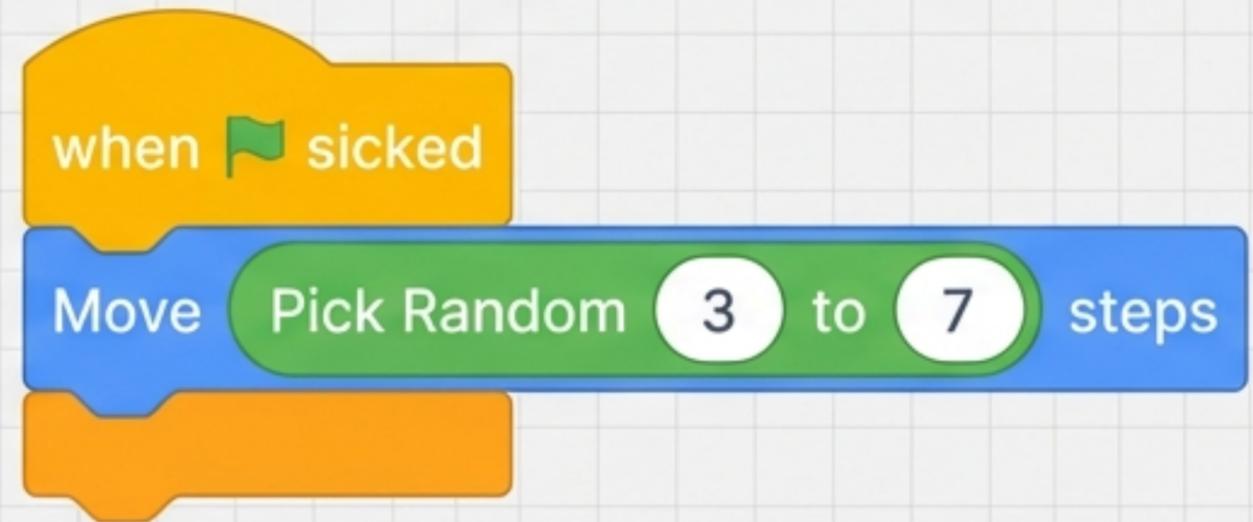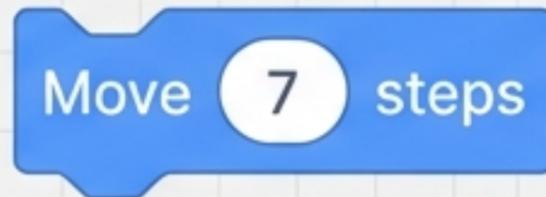Breaking the 'Conga Line' Effect.

## Fixed Speed (7)



Robotic.

## Random Speed (3 to 7)



Organic Swarm.

## The Code Fix



Move 7 steps → when 🚩 sicked / Move Pick Random 3 to 7 steps

✅ **CHECKPOINT:** Do the enemies separate out into a cloud/swarm pattern as they chase you?

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# Debugging Suite: Common Errors

If it's broken, check these first.

## Code Not Triggering?

Check Sprite Names.
'Main' must be 'Main'.
Code is case-sensitive.

## Negative Time?

Ensure [Stop this script]
is added immediately after the
Timer=0 check.

## Clones Harmless?

Damage logic must be under
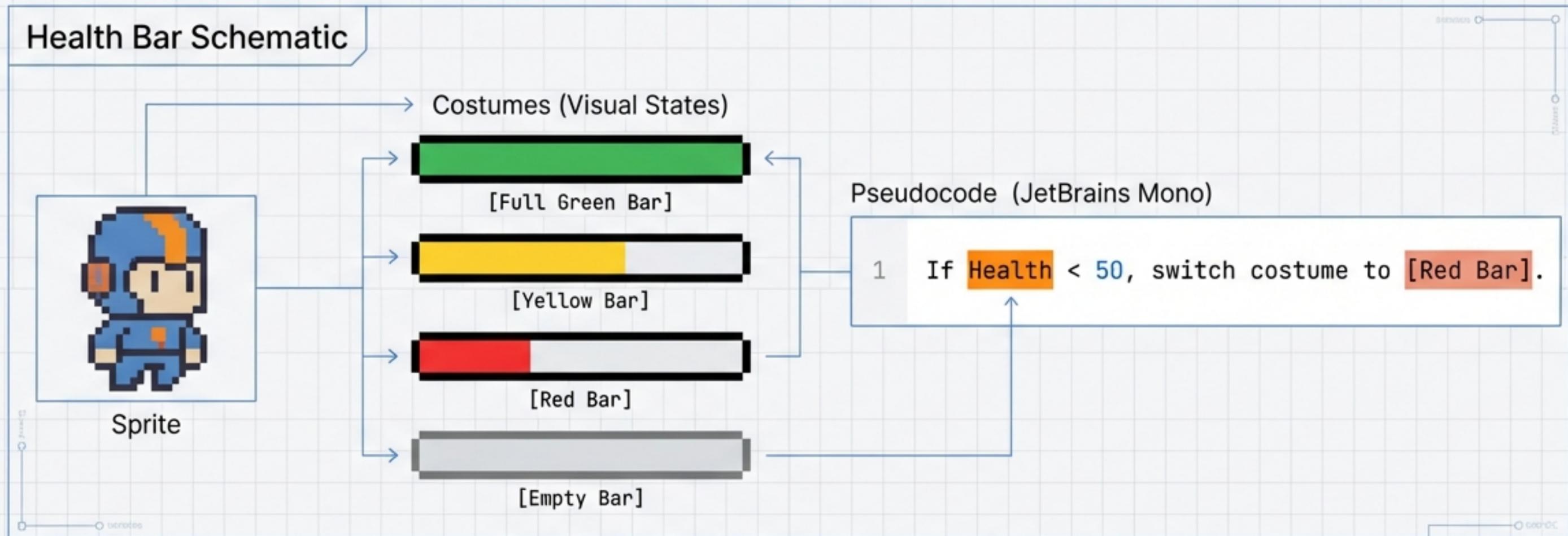'When I start as clone', not
'When Green Flag clicked'.

## Ghosts on Game Over?

Check receivers:
'When I receive [dead]' ->
[Hide].

# Expansion Pack: Next Steps

You have the engine. Now build the game.

## Health Bar Schematic

### Costumes (Visual States)

[Full Green Bar]

[Yellow Bar]

[Red Bar]

[Empty Bar]

Sprite

### Pseudocode (JetBrains Mono)

```
1   If Health < 50, switch costume to [Red Bar].
```

**CHALLENGE: Replace the orange variable box with a visual health bar.**

**Play. Test. Share.**