

## LESSON 11

# Car Collector

60 minutes

Advanced Game Development

### WHAT THIS LESSON DOES

In this step-by-step lesson, you'll create a fun game using MakeCode Arcade. You'll learn how to create a player character, add items to collect, and create an enemy. The lesson includes creating a new project, adding a background, creating a player character, moving your car, changing the sprite image, creating food sprites, detecting overlap with food, creating an enemy, and setting up game over conditions.

### WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop skills in creating and controlling a player character in MakeCode Arcade.
- Learn to add collectable items within the game environment.
- Understand how to create an enemy character and implement game over conditions.
- Gain experience in using code to generate random positions for game elements.
- Enhance problem-solving and game design skills through coding practice.

### BEFORE THE LESSON

- Open [arcade.makecode.com](https://arcade.makecode.com) yourself first and confirm it loads and is not blocked by the school filter. New pupil projects save to the browser, so use the same device each time.
- One device per pupil, or one per pair if devices are short. Sound is helpful but not essential.
- Have your own finished Car Collector ready to show, so pupils can see the target before they build.

## Car Collector

### HOW THE LESSON RUNS

Introduction to Car Collector

Create a new project

Add a background

Create Player Character

Move your car

Change the sprite image

Create the Food sprites

Detect overlap with food

Create an enemy

Game over

Wrap Up

### TEACHING MOVES

- 2. Create a new project. Get every pupil to a fresh project and a saved name before anyone starts coding, so no one loses work switching devices later.
- 4. Create Player Character. Show where the sprite gallery opens and point out the red car specifically. Pupils often add the block but skip choosing the image, leaving a blank sprite.
- 5. Move your car. Test movement together on the simulator. Stress the stay on screen block, or the car drives off and vanishes and pupils think it broke.
- 6. Change the sprite image. This is four near-identical blocks, one per direction. Warn pupils to match each image to its button, up to up, before they copy the next one.
- 7. Create the Food sprites. Point out the interval block spawns an apple on a timer. Have them run it and watch apples appear before adding scoring.
- 8. Detect overlap with food. Stop the class here. The two dropdowns must read Player and Food, and the destroy block needs otherSprite, not mySprite. Check these before they move on.
- 9. Create an enemy. Same spawn pattern as the apple but a different sprite and a lifespan. Let pupils pick their own enemy from the gallery to keep it their game.
- 10. Game over. Check the overlap dropdowns read Player and Enemy and the game over block is set to LOSE. Then let them play and compare high scores.

### WHAT TO WATCH FOR

- In the overlap blocks pupils use mySprite in the destroy step instead of otherSprite, so the wrong car disappears or nothing happens. Walk them through it: the block gives you two sprites, and otherSprite is the apple you touched. That is the one to destroy.
- Pupils leave the overlap dropdowns on the default kinds instead of setting Player, Food and Player, Enemy, so collisions never register. Have them read each overlap block aloud and check both dropdowns match the lesson before testing.
- The direction image blocks get mismatched, so pressing up shows a sideways car. Ask them to press each arrow and watch the car. If it faces the wrong way, open that button's block and reselect the image.

### DIFFERENTIATION

- Emerging: Pair them with a partner and let them build one step behind, testing after each block so nothing piles up. Sit with them for the two overlap steps, which are the hardest part, and check the dropdowns together.
- Developing: Ask them to run the game after each new block and predict what should change before they press play. Have them explain back to you what the interval block does before they copy the enemy version of it.