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Delivery Driver Section

Rick Davidson

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Section Intro - Delivery Driver

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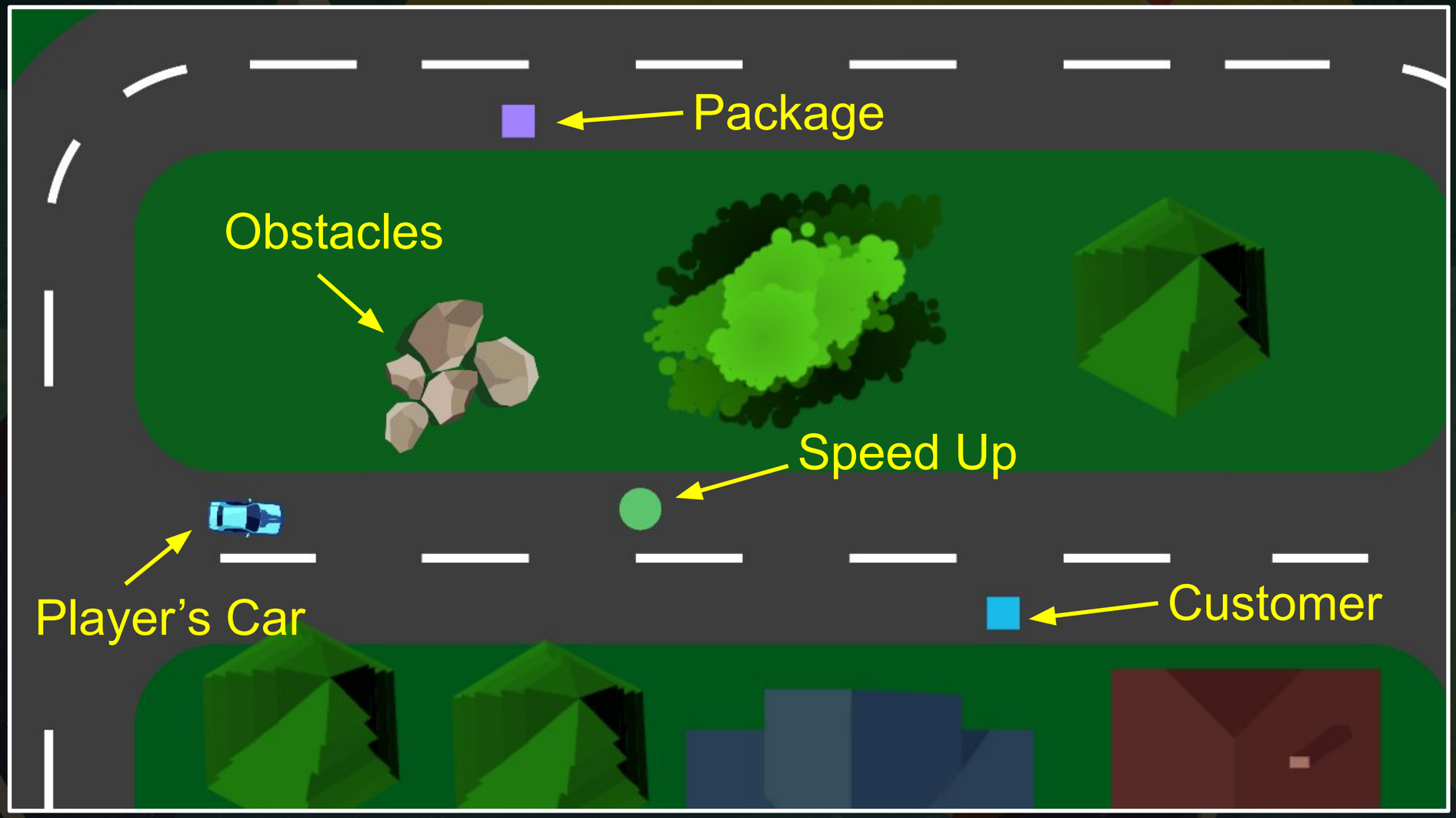
Game Design - Delivery Driver

Gameplay Overview Screen



Game Mechanics We Need

- Driving car forwards and backwards
- Turning car left and right
- Increase speed up when drive over ‘Speed Ups’
- Decrease speed when bump into ‘Slow Downs’
- Pick up packages when drive over them
- Deliver package when drive over delivery spot
- Change car color to show status

Game Design

Player Experience:

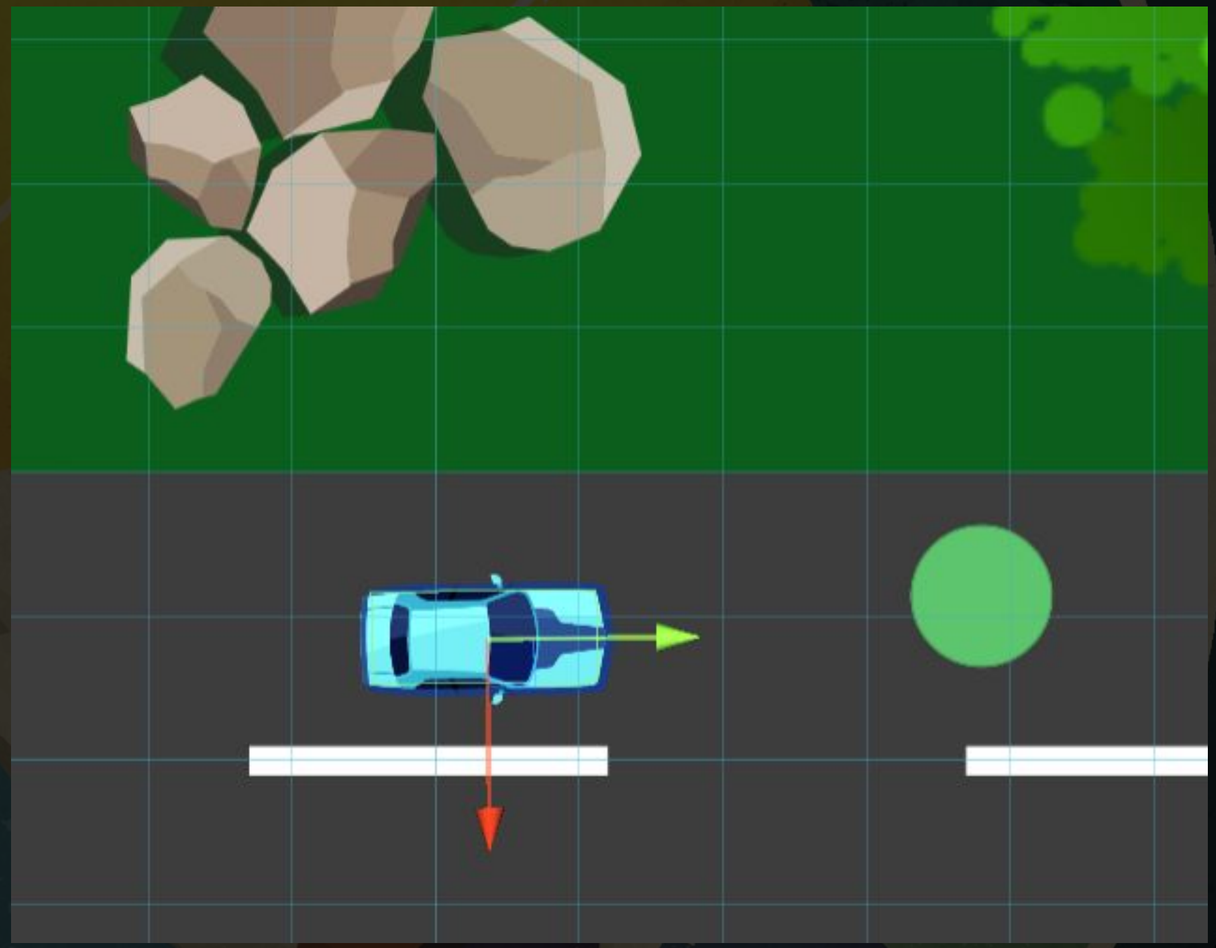
Relaxing

Core Mechanic:

Drive over pickups

Game Loop:

Find and deliver all the packages to win



A Quick Challenge

- Let us know in the forum discussions what your player is delivering. For my game:
  - You’re delivering tasty donuts to game development instructors whose wives are currently out of the house and won’t know that the game development instructor is eating junk food when he should be eating roasted kale or some other sort of “appropriate for someone your age” snack.

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Introducing Methods

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Start Your Project

- Start a new 2D project in Unity
- Add a capsule sprite (our car)
- Create a C# script called Driver
- Add the script to your capsule sprite
- Rename the capsule sprite to give your car a nifty name (mine will be called Cruisy McDrive)

What Are Methods?

- Methods (also called Functions) execute blocks of code that makes our game do things
- We can:
  - Use the methods already available in Unity
  - Create our own methods

Creating And Calling

- When we CREATE a method, we are giving it a name and saying what it should do
- When we CALL a method we are saying “do the things now please”

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Transform.Translate()

Make Our Car Move

- We used `transform.Rotate()` to rotate our car
- Now let's use `transform.Translate()` to move the car
- We also need to provide the x, y, z amounts we want to move.

Make Our Car Move Forward

- In `Update()`, call `transform.Translate()`
- Add the x, y, z values so that our car slowly moves forward.

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Introducing Variables

Variables Are Like Boxes

- Variables help us store, manipulate and refer to information
- Each variable has a NAME
- Each variable contains DATA
- Each variable is of a particular TYPE

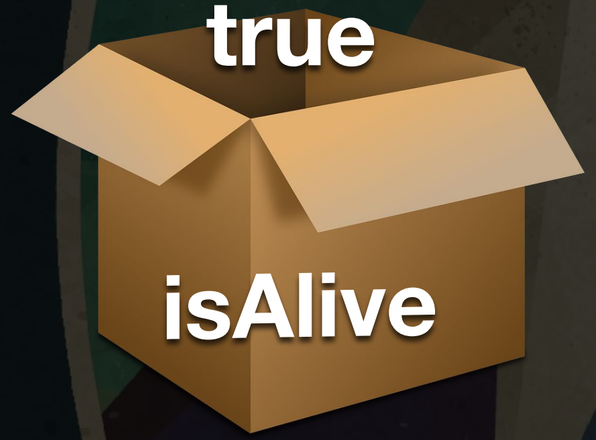
Some Common Types Of Variables

- `int` - whole numbers
- `float` - fractional numbers (up to 6 decimal places)
- `double` - fractional numbers (up to 15 decimal places)
- `bool` - true or false
- `string` - sequence of characters

Variables Are Like Boxes

```
float speed = 3.8f;
```


```
bool isAlive = true;
```




```
string myName = “Rick”;
```

Create A Variable

- Create a variable called `moveSpeed` and use that variable in your `transform.Translate()` method.

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How To Use SerializeField

Rick Davidson

Serialize Your steerSpeed

- Use `[SerializeField]` to make `steerSpeed` available in the inspector.
- “Drive” your car using the inspector. See if you can keep it on the screen for 10 seconds.

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Using Input.GetAxis()

Unity Input System

- Input System: converting the player's physical action (eg. button press, key press) into information for the game
- Unity has used a few different input systems
- Currently there is "old" system and "new" system
- We'll use both in this course
- Use "old" system for this current project

Add the Vertical Axis For Moving

- Use the Vertical Axis to allow the player to drive forward and backwards using the arrow keys.

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Using Time.deltaTime

Rick Davidson

Using Time.deltaTime

- Using `Time.deltaTime` Unity can tell us how long each frame took to execute.
- When we multiply something by `Time.deltaTime` it makes our game “frame rate independent”.
- Ie. The game behaves the same on fast and slow computers

On Update (each frame) move 1 unit to the left

	Slow Computer	Fast Computer
Frames per second	10	100
Duration of frame	0.1s	0.01s
Distance per second	1 x 10 x 0.1 = 1	1 x 100 x 0.01 = 1

Framerate Independence

- Change your speed amounts in the inspector to have your car respond to input as you want it to

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Colliders & Rigidbodies

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Using OnCollisionEnter2D

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Print Something To Console

- Use `Debug.Log()` to print a witty message to the console when we collide with something.

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Using OnTriggerEnter2D

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Print When We Trigger Something

- Use `OnTriggerEnter2d()` and `Debug.Log()` to print yet another witty message to the console when we trigger something.

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Add Assets To Project

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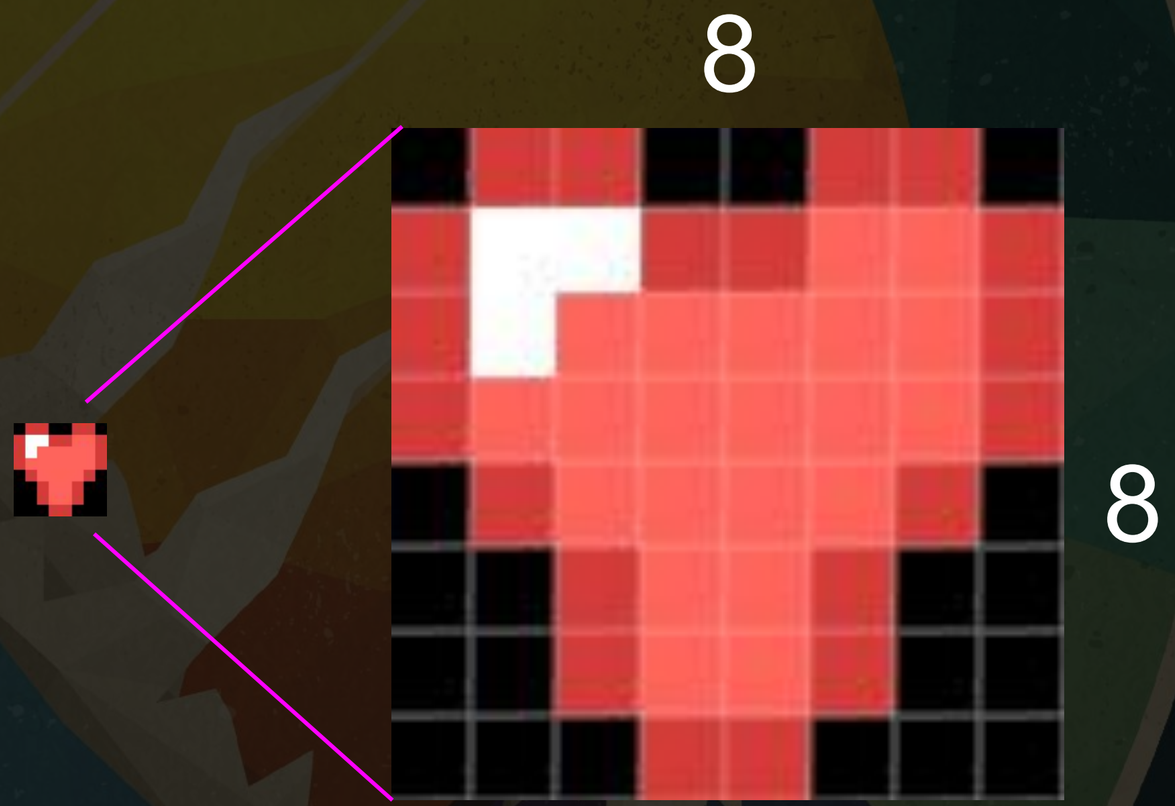
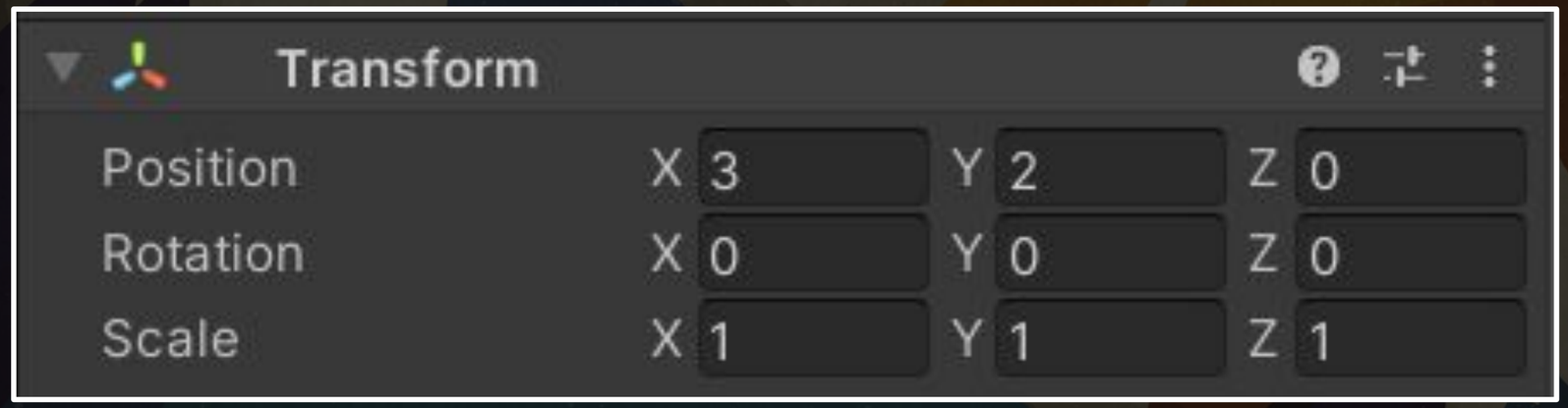
Sprites Are Made Of Pixels

- Resolution refers to the number of pixels in an image.
- Higher resolution = more pixels



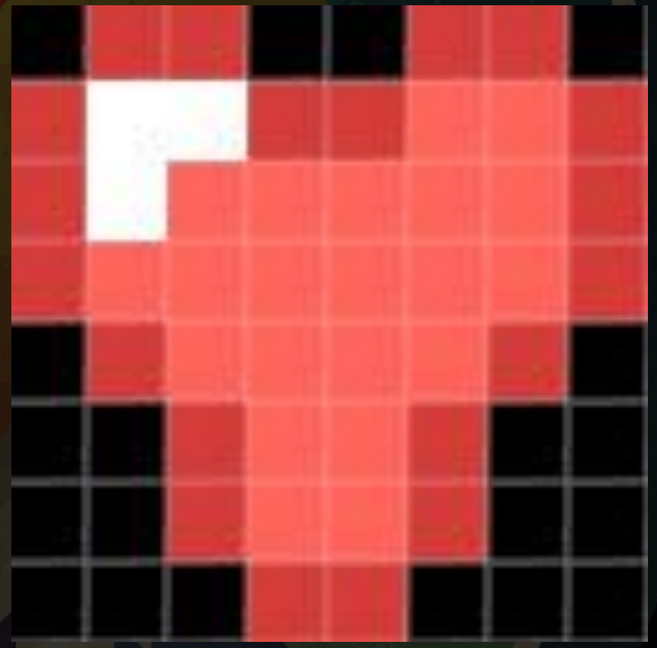
Unity Units

- 1 Unity Unit has no meaning, just whatever we want it to represent. It could be meters, kilometers, miles, inches, whatever we want.



Pixels Per Unit

- New assets default to 100 pixels per Unity unit.
- Bigger: less pixels per unit
- Smaller: more pixels per unit



Set Up Your Assets

- Set up the assets in your scene so they look the right size compared to each other
- Hint: you can change multiple sprites at a time

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Basic Level Layout

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Build A Simple Neighborhood

- Add roads, houses and trees to make a simple neighborhood that your delivery driver can drive around in.
- Share a screenshot!

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Simple Follow Camera

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Creating A “Reference”

- If we want to access / change / call anything other than this game object’s transform, we need to create a reference.
- Ie. We need to tell Unity what the “thing” is that we are referring to.

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If Statements & Tags

Rick Davidson

If Statements

- If statements let us check if something is true or not and then do something based upon the result.

```
if (this thing is true)
{
   do this thing;
}
```

If Statements

- If statements let us check if something is true or not and then do something based upon the result.

```
if (I’m hungry)
{
   Eat junk food while wife isn’t watching;
}
```

Why Use Tags?

- Tags allow us to easily check in code if something belongs to a particular category of thing.

Set Up Our Delivery Location

- Create a “customer” that we can print “delivered package” to console if we drive over it.
- HINTS:
  - Create a game object that has a collider on it
  - If you cant see the object, check your sorting layer
  - Set isTrigger to true on the collider
  - Create a “Customer” tag and assign it to the object
  - Print your message if we touch the customer object

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How To Use Bools

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What Is A Bool?

- Bools are types of variables that can store one of two values - true or false
- They are often used with if statements to decide whether something happens or not

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How To Destroy Objects

Rick Davidson

Destroying Game Objects

- We call `Destroy()` to delete game objects from the scene
- Destroy requires us to tell it (“pass in”) 2 things:
  - Which game object to destroy
  - How much delay until its destroyed

```
Destroy(theMonster.gameObject, 0.5f);
```

Destroy Packages After 1 Second

- Use `Destroy()` to remove packages after we pick them up.
- Use `SerializeField` so that we can tune how long the delay is before the package disappears.

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How To Use GetComponent

Change Our Car’s Color

- Find the right place in our code to update the color of the car when it picks up and delivers a package.
- Hint: we need to assign our new color to the Sprite Renderer’s color.

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Boosts & Bumps

Rick Davidson

A Bigger Challenge

- Create a boost and bump system:
  - Boosts are triggers which speed up the player
  - Bumps are colliders which slow down the player
- You can do all this in the Driver.cs script
- You might want to use a tag
- Essentially you are changing `moveSpeed` to be either `slowSpeed` or `boostSpeed`.