Object-Oriented Fun

Drivin’ Around Decomposphere

Welcome back to the scenic landscape of Decomposphere! Get ready to follow Dot around in his Dot-mobile to learn about object-oriented programming.

Vroom Vroom...

We can use object-oriented programming to model objects using variables and functions. We can represent just about anything using variables and functions, from cars to dogs to houses!

In Decomposphere, Dot and his friends love driving around town and catching the summer breeze. Let’s take a deeper look at object-oriented programming through Dot’s car: the Dot-mobile!

More cars!

On the right, we can see that the Dot-mobile, minivan, and taxi are all different types of cars.

Looking at the complete picture, Dot-mobile belongs to a large group of cars. Since all of these cars share similar features, we can create specific types of vehicles like the
Dot-mobile, Minivan, and Taxi (these are called child objects) from the car (this is called the parent object).

We call the car our parent object because it **passes down shared variables and functions** to its child objects.

Let's take a closer look at the parent object:

Since all cars have a specific color, number of seats, owner, and can start and stop, **every child car** (the Dot-mobile, Minivan, and Taxi) **shares the same structure as the parent car**.

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**Why is Object-Oriented Programming useful?**

Programs often have lots of code, which can become **messy and complicated**. When we have similar objects that share similar qualities but are not exactly the same, we can use inheritance (the passing down of features) in object-oriented programming to take the features of a parent object and apply them to its child objects. This template saves us time when creating child objects.

Referencing back to our car example, we can use our parent car object to create other cars like limousines or electric cars!
Let’s Review Functions!

A function includes actions used to complete a task. Here’s a quick refresher on how we can create our own functions:

- Write the steps necessary to accomplish our function
- Honk a Car Horn
- Include a descriptive title
- Press the button at the middle of the steering wheel
Mystical Elements: The Game

Use your knowledge of object-oriented programming to play a fun game of Mystical Elements with a friend! The first six cards each represent an object (a character from our six planets) with its unique variables and functions on your Card sheet. Each function is a superpower that relates to water, snow, or fire.

Setup

- Customize three different child objects on your Card sheet from the parent Card object. Assign your child objects variables (name and home) and a superpower function!

- Once you finish customizing your child object cards, carefully cut the cards out along dashed lines.

How to Play

- From your nine cards, pick one card to play and place it face down.
- Once both of you have placed your cards down, flip them face up and compare your object’s element variable to decide the winner! Water puts out fire, fire melts snow, and snow freezes water.
- The player who wins the round takes both cards.
- The player with the most cards wins!

Ex. Water beats fire
WATER BEATS FIRE
FIRE BEATS SNOW
SNOW BEATS WATER

WINNER
WATER CARD
FIRE CARD
VARIA BLES
Name = Lex
Home = Logicland
Element = Snow

FUNCTION
Icy Attack
Freezes water into large ice crystals

VARIA BLES
Name = Ellis
Home = Evaluatus
Element = Water

FUNCTION
Whopping Waves
Destroys fire with a tide of waves

VARIA BLES
Name = Dot
Home = Decomposphere
Element = Water

FUNCTION
Water Spiral
Destroys fire with a tornado of water

VARIA BLES
Name = Ansel
Home = Algorithopoly
Element = Fire

FUNCTION
Fireball
Melts snow with a mighty ball of fire

VARIA BLES
Name = Alon
Home = Abstractopia
Element = Snow

FUNCTION
Snowstorm
Freezes water with a gust of snow

VARIA BLES
Name = Pancho
Home = Patteron
Element = Fire

FUNCTION
Fire Frenzy
Melts snow with a blazing fire