

## 1. The Basics: Traffic Light System

**Goal:** Create a simple enum and use it in a switch statement.

- **Task:** Define an enum called TrafficLight with values: Red, Yellow, and Green.
- **Logic:** Write a method GetAction(TrafficLight light) that returns a string:
  - Red  $\rightarrow$  "Stop"
  - Yellow  $\rightarrow$  "Caution"
  - Green  $\rightarrow$  "Go"
- **Bonus:** Add a default case that handles an undefined enum value.

## 2. Enums with Custom Integer Values

**Goal:** Understand that enums are backed by integers.

- **Task:** Create an enum `HttpError` where:
  - `BadRequest` = 400
  - `Unauthorized` = 401
  - `NotFound` = 404
  - `InternalServerError` = 500
- **Logic:** Ask the user to input an integer. Cast that integer to the `HttpError` enum and print the name of the error. If the number doesn't match a defined error, handle it gracefully.

### 3. Bitwise Flags: File Permissions

**Goal:** Use the [Flags] attribute to combine multiple enum values.

- **Task:** Define an enum Permission with the [Flags] attribute.
  - Values: None = 0, Read = 1, Write = 2, Execute = 4, Delete = 8.
- **Logic:** 1. Create a variable myPermissions that combines Read and Write.  
2. Write code to check if myPermissions has the Write flag.  
3. Add the Execute flag to the variable and print the result.

## 4. Parsing Strings to Enums

**Goal:** Handle external data (like API responses or user input) safely.

- **Task:** Create an enum Difficulty (Easy, Medium, Hard).
- **Logic:** Take a string input from the user. Use `Enum.TryParse<Difficulty>(input, out var result)` to convert the string to the enum.
  - If successful, print "Difficulty set to [result]".
  - If failed, print "Invalid difficulty level."

## 5. Iterating and Descriptions

**Goal:** Use Enum.GetValues to automate logic.

- **Task:** Create an enum DaysOfWeek.
- **Logic:** Use a foreach loop to iterate through every value in the DaysOfWeek enum.  
For each value:
  1. Print the integer value.
  2. Print the name.
  3. Check if the day is Saturday or Sunday and print "(Weekend)" next to it.