MATLAB Programming NYCU Fall 2022 LAB#9 2022/11/22

This lab task extends the previous one on class **`Vec3`**. The main objectives include more functionalities and the capabilities of the methods to handle object arrays. Below are the tasks in this lab:

- The constructor: It should accept the following types of inputs:
  - No input argument (as a default constructor): A single object for point **`(0,0,0)`** is created.
  - Three input arguments (numerical arrays of identical size) for **`x`**, **`y`**, and **`z`** elements. The output is an object of **`Vec3`**.
- The **`norm`** function should return a **`double`** array of the same size as the input array.
- The **`iszero`** function. It takes a **`Vec3`** array as input, and outputs a logical array indicating whether the elements are zero vectors.
- The **`normalize`** function. It takes a **`Vec3`** array as input, and outputs a **`Vec3`** array of corresponding unit vectors. If any element in the input is a zero vector, generate an error message.
- The **`inner_prod`** function. It takes two inputs of class **`Vec3`** and return their inner products as a **`double`** array. This should handle the cases when one input is a scalar and the other is an array.
- The **`cross_prod`** function. It takes two inputs of class **`Vec3`** and return their cross (outer) products as a **`Vec3`** array. This should handle the cases when one input is a scalar and the other is an array.
- The **`disp`** function: Show the object in the form **`(x,y,z)`**. You should handle the display of 2-D **`Vec3`** arrays.
- Operator overloading functions: **`plus`** and **`minus`**, which does addition and subtraction of two **`Vec3`** arrays, respectively. One or both inputs can be scalars.
- Operator overloading function: **`eq`**, which checks whether two **`Vec3`** arrays are equal elementwisely. The output is a logical array. One or both inputs can be scalars.
- Operator overloading function: **`times`**. This is the function name of the elementwise multiplication operator **`.*`**. One of the input should be **`Vec3`** and the other input should be numeric. One or both inputs can be scalars.