# Lab Task 12

**Here vector means an image in graphics. Vector graphics is a form of computer graphics in which visual images are created directly from geometric shapes defined on a Cartesian plane**

Create a class template called Vector that contains a single private member variable v of type V. The class should have a constructor that initializes v. Additionally, the class should have a public member function called calculateDotProduct which accepts an object of the same template type as an argument. This function should call the calculateDotProduct function of the passed object and return the result.

Create two classes called My2DVector that contain two private data members x, and y, and My3DVector which contain three private member variables x, y, and z. My2DVector should have a constructor that initializes x and y, while My3DVector should have a constructor that initializes all three variables. Both classes should have a default constructor that initializes variables to zero. Additionally, each class should have a public member function called calculateDotProduct which accepts an object of the same type as an argument and returns the dot product of the two vectors.

Overload the stream extraction and insertion operators (<< and >>) for both My2DVector and My3DVector classes. The << operator should print the vector in the format (x, y) for My2DVector and (x, y, z) for My3DVector. The >> operator should prompt the user to enter the values of x, y, and z and assign them to the corresponding member variables.

In the main() function, create two objects of type My2DVector and two objects of type My3DVector. Using these objects, create two objects of type Vector. Then, use the calculateDotProduct function of each vector object to calculate the dot product of the two corresponding vectors. Finally, output the vectors and their respective dot products.

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Vector: (2, 3)
Vector: (4, 6)
Dot prod of 2D Vector: 26
Vector: (2, 3, 6)
Vector: (4, 6, 2)
Dot prod of 3D Vector: 38
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