Practice Exercise: Vector2D Class

A **two-dimensional vector** (think Math here, not the STL vector class) is indicated as **V**(x, y). The **dot product** of two 2D vectors **A** and **B** is equal to:

$$A \bullet B = (A_x * Bx) + (A_y * By)$$

Example:

Vector A = < 2, 3 >
Vector B = < 5, 6 >
Dot Product = (2 * 5) + (3 * 6) = 28

Using the project **ex_20_vector_2d**, create a class named **Vector2D** that creates objects representing two-dimensional vectors. Your class must include the following:

- **Member variables**
  - Two integers, x and y, representing the value of a vector.
- **Default constructor**
  - Initializes the member variables.
- **Overloaded constructor**
  - **Parameters:** An integer that stores a value for x, and an integer that stores a value for y.
  - Initializes the member variables to the given values passed by the parameters.
- **Overloaded operator ***
  - **Parameter:** An object of the class **Vector2D**
  - The asterisk sign (*) will replace the dot product sign (•).
  - Calculates and returns the dot product of the vectors (calling object and parameter object).
- **Overloaded comparison operator ==**
  - **Parameter:** An object of the Vector2D class.
  - It compares two objects of the class Vector2D and returns true is the vectors are the same, or false otherwise.
- **Overloaded insertion operator <<** to output a vector in this format (no spaces):

  <1,2>
- **Destructor**

The **Main.cpp file** already contains the code to test your functions.