National University
of Computer & Emerging Sciences
Peshawar Campus

Problem Set:	Assignment 01	**Semester**:	Fall 2021
Points:	10		
Date Set:	Sep 20, 2021	**Due Date**:	See slate.
Course:	CS325 Numerical Computing	**Instructor**:	Nauman

Take note of the assignment due date. Late submissions will be accepted until 48 hours after the deadline with a 2 point penalty. If you have any queries, feel free to post in Slack on the course channel.

1 Tasks

1. Install Anaconda on your machine if you don't already have it set up.
2. Practice with Python if you are not familiar with it already. You do *not* need to provide proofs of these two tasks.
3. Create the `Vector` class as discussed in the class. Also add the `add`, `mul` and `sub` functions to the class.
4. Write a function to calculate the dot product of two vectors using similar structure as the fuctions defined above. For reference, this is given as:

$$a \cdot b = \sum_{i=1}^{n} a_i b_i$$

5. This `Vector` class has been specific to vectors with two elements.
6. Create another class `Vector3`. This class should be able to handle vectors of three elements.
7. Finally, think about how you would write a `VectorN` class, which can handle vectors of any number of elements. Write a couple of points about how your code will need to change to accomodate this new requirement.

   (You do not have to write code for this last part. Bonus points if you do but it's not part of the assignment.)

2 Submission

1. Submit your assignment fo Slate. Assignments submitted through another medium cannot be accepted.
2. After writing all your code and executing it properly, you can download the whole file as HTML using: `File` → `Download as` → `HTML (.html)`. Once this HTML file is created, convert it to PDF using any method you like and submit the PDF. In the end, both your code and the output should be visible in the PDF file.
3. **Important:** Make sure you submit a PDF file. No other format will be accepted!