Hi everyone,

It is a great pleasure for me to be here today to welcome all our online learners. I am Boon Thau Loo, the Associate Dean of graduate programs at our engineering school, and a faculty member of computer science.

When our engineering school was first approached by Penn Global to participate in the Global Learners program, we were very excited and said yes on the spot. Kudos to the leadership of Prof. Zeke Emmanual, Amy Gadsden, Scott Moore and Rebecca Stein, the program is now a reality within a few short months. My special thanks also to the Penn Engineering online team, specifically our executive director Rebecca Hayward, and Dylan Fenton, our director of instructional design and delivery, for making this possible.

I first like to introduce our course on computational thinking. This is one of our most popular online courses on the Coursera platform, taught by Prof. Susan Davidson, who is an ACM fellow, award-winning teacher, and the founder of Penn's Advancing Women in Engineering program.

The Computational thinking course is not just an introductory programming course. It is a course that teaches one to think computationally, so that one can take a complex problem in our lives and solve it systematically. The concept of computational thinking is so powerful now that within the US, there are now initiatives to introduce such computational thinking in our high school curriculum even to students who are not pursuing a technology-related major in college.

Let me illustrate computational thinking using an example. Suppose I give you a mountain of data, say on the order of the size of the web pages on the Internet, and I want to order them all alphabetically by title of home page. I only give you one computer with a small amount of memory space. How can you order such a mountain of data? As it turns out, you can use a technique called decomposition, where you break up this mountain into smaller hills of data, order them separately, and then combine these smaller sorted datasets simply by merging them. This is how large search engines like Google do ordering of web content. This technique does not apply just to computers. A while ago, after grading paper exams, my TAs and I ordered hundreds of exam papers by names together within minutes using this technique!

Here's another example. If I want to fly from one city to another and there's no direct flight. What is the fastest way to do this? As it turns out, it is mathematically proven that the best approach is a greedy approach, where you find the next city that is the shortest distance from you that is along the way to the destination. If you keep doing this and greedily find the shortest 2-city route, 3-city and up to as many cities as it takes to get to your destination, you will end up finding the shortest route that takes the least amount of time.

This is just a sneak preview of what computational thinking is all about. There are so many cool problems there that I can spend a day just talking about it. This is a really fun class that I hope will get you excited about computer science as a field of study.

I like to end on a more personal note. I spent my childhood in a small town in Malaysia. My mum migrated from China to Malaysia during the chaos caused by the Chinese Civil War. She settled with her parents in Perak, a state in Malaysia. She and her parents worked in the tin mines along the rivers of Perak. While my mum could only attend six years of school, she made sure that all of her children were able to go to college. Education helped to transform post colonial countries like Malaysia and Singapore after WW2, and uplifted a whole generation.

Your life experiences are different from mine, and no doubt, are in much more challenging circumstances. However, all of you here represent the hope and aspirations of your country and your generation. We are all rooting for your success and will provide you the support necessary to complete our courses.

Our Penn Engineering Online office shares a similar philosophy in using education to empower people. We started an online master's degree program, called MCIT Online, that is offered at tuition only a fraction of that of our on-campus programs, with the goals of increasing accessibility. This program is targeted at students without a computer science background, looking to reskill to prepare for a tech-driven world. Today, we have over 2000 students enrolled in our program all over the world from all walks of life.

In a time where there are continuing wars and conflicts , it is my sincere hope that through programs such as the Global Learner's program, we can bring our world closer together. By learning together, we can promote cultural understanding, bring about peace and positive change around the world.

I wish all of you success in the Global Learners program.