Brian Rodriguez
U0853593

Quiz 10a

John Owen's did a phenomenal job explaining the Scan algorithm. The YouTube videos were well structured and not to mention easy to follow. Going into the lectures, the only knowledge I had about the Scan algorithm were from our previous lectures. The lectures explained scan but I was still not grasping the concepts. The YouTube videos solidified the concept as well as introduce new parallel Scan algorithms that I was unaware of.

The YouTube videos gently and seamlessly, introduced new information and different types of Scan algorithms. John Owen's first explained the Scan algorithm by using a sum Scan. He took a series of integers in an array and explained that Scan can be used to do a summation of an integer and its predecessors. This was concise and easy enough to follow. John Owen's explains that with a Scan operation there must be an identity operator as well as a binary operator.

The identity operator serves the purpose of taking any number and receiving the same number after the operator is applied. The binary operator is essentially the operator that the Scan algorithm is using such as sum Scan. In the case of the sum Scan, the identity operator would be adding zero to a number to receive the same number. The identity operator is used to insert an identity at the start of the array.

After, John Owen's explains the two types of Scans; inclusive and exclusive. Inclusive Scan, uses the number at the index of operation and all of the numbers preceding it. Exclusive Scan, uses only the number preceding it, excluding the number at the index of operation. John Owen's did not go into the use cases of the different types of Scan and I was unable to find any solid documentation of the types online.

John Owen's then goes into detail of the two types of parallel Scan algorithms; the Blelloch Scan and the Hillis/Steele Scan. The two algorithms are of different work and step complexities. Both serve different purposes in different situations so John cautions the viewer choose depending on the situation.

Explaining the two types of parallel Scans would take a complete page just to explain. Essentially, the two algorithms perform similar computations but take portions of the array and perform the binary operator on specific portions of the array. After, the two algorithms diverge on different methods of completion but both produce the same output.