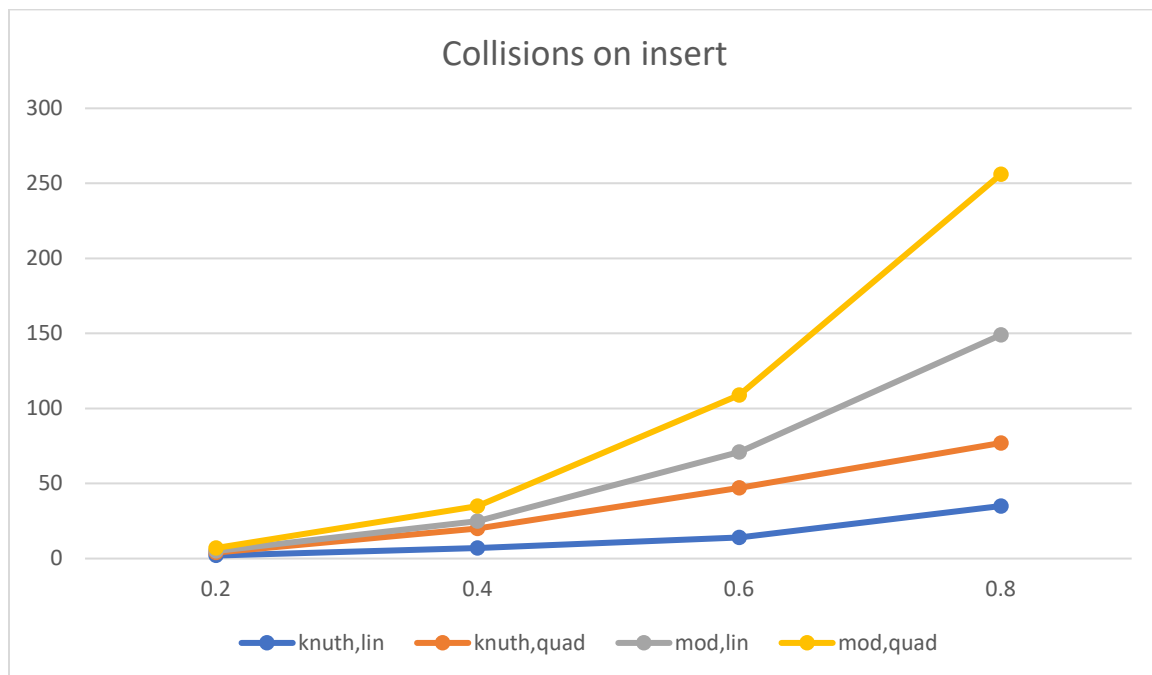**Sequential keys**

Random Number keys

Report for a hash table using linear probing and quadratic probing along with hash modulo and hash Knuth. When using the sequential keys and using the hash function modulo with the linear or the quadratic probing it had no collisions for either how the modulo works allow the sequential process to work without having any collisions, but when using the Knuth and linear we had a slow rise in collisions but with the quadratic attached to Knuth it rose much faster in collisions about double from what they got in linear. The results doing the random number keys shown many different results than from the sequential keys more collisions happened in each branch even the modulus had collisions with the random keys collisions increased a lot more. Modulus is the remainder of the division of the key and the array max hash this guarantees that the results will be in range and distributes values in the range. hash functions allow the hash table to use an array to insert or search an element. Knuth is a multiplicative hash function a variant of the modulus. Linear probing searches a table by scanning the hash table for the closest free slot location and it then inserts the new key into that position. Quadratic probing is done by using the original hash index and then adding successive values of quadratic polynomial until an open slot is found. Clustering will happen in linear probing both primary and secondary but when using the quadratic probing primary clustering will be reduced but secondary clustering will not be eliminated.