Northern Michigan University (Marquette Co, MI)
CS 222-61-21W: Data Structures

Program 2
Due: Wednesday 17 February 2021 10:00 A.M. EST

Linked List Shell Sort

Create a folder called "PG2" in the top level of your CS222-61-21W folder. Place all files pertaining to this assignment into the top level of your PG2 folder. Place a (possibly empty) file called "DONE" into this folder when you are ready to have your programs graded. The only files you need to turn in are the .cpp and the .h files. Please don't turn in any files other than these!!

For this program you need to write the indicated methods in the included code. The methods you have to write can be very short, but they are not allowed to contain loops. Your methods, plus the ones I am providing, will result in a Linked List Shell Sort. We will go over it in class, but here is an example:

Consider the string Q W E R T Y U I O P

I separate them into 9 lists and sort each list:

Q P ==> P Q
W
E
R
T
Y
U
I
O

I reintegrate the lists: P W E R T Y U I O Q

I separate them in to 8 lists and sort each list:

P O ==> O P
W Q ==> Q W
E
R
T
Y

U
I

I reintegrate the lists: O Q E R T Y U I P W

I separate them in to 6 lists and sort each list:

O U ==> O U
Q I ==> I Q
E P ==> E P
R W ==> R W
T
Y

I reintegrate the lists: O I E R T Y U Q P W

I separate them into 4 lists and sort each list:

O T P ==> O P T
I Y W ==> I W Y
E U ==> E U
R Q ==> Q R

I reintegrate the lists: O I E Q P W U R T Y

I separate them into 3 lists and sort each list:

O Q U Y ==> O Q U Y
I P R ==> I P R
E W T ==> E T W

I reintegrate the lists: O I E Q P T U R W Y

I separate them into 2 lists and sort each list:

O E P U W ==> E O P U W
I Q T R Y ==> I Q R T Y

I reintegrate the lists: E I O Q P R U T W Y

I sort the list: E I O P Q R T U W Y

Notice that EVERY LIST I sort is already almost sorted. Every list I sort somehow magically has all of its elements no more than one position out of place, making the list very easy to sort.

We will go over this in detail in class.