Data Structures
CS 246
Department of Physics and Computer Science
Medgar Evers College
Exam 4

Direction: Modify the `"exam04.cpp"` file in your Exams directory of your GitHub repository; and then, submit your modified work in the Exams directory of your GitHub repository or Dropbox, or in your Exam04 google classroom assignment. You can only use the libraries included in the accompanying header files and the cpp file. Use of any other library will result in a 0.

Problem	Maximum Points	Points Earned
1	5	
2	5	
3	5	
4	5	
Total	20	

Problems

1. Write the definition of the function `BTRemove()` whose header is

```
template<typename T>
void BTRemove(BTNode<T>*& rt,const T& value)
```

   Given that *rt* is referencing a binary tree, the function removes the node of the tree whose data is equal to *value*. If the tree is empty or *value* is not found, it does nothing.

2. Write the definition of the function `SortedDuplicatesRemoval()` whose header is

```
void SortedDuplcatesRemoval(Node<int>*& rt)
```

   Given that *rt* is referencing a doubly linked list whose data is sorted, the function removes all duplicate values from the linked list in $O(n)$ runtime where n is the length of the list. For instances, if $rt = [1, 1, 3]$, after the call it will be $[1, 3]$.

   Hint: Use two node pointers and compare adjacent nodes.

3. Write the definition of the function `MinimumKSum()` whose header is

```
ulong MinimumKSum(Vector<ulong>& data,ulong k)
```

   It returns the minimum sum of k consecutive elements of *data*. If *data* is empty, it returns 0. If the length of *data* is less than k, it returns the sum of all the elements of *data*. For instance, if $data = [7, 2, 4, 5, 3, 8, 3, 9]$ and $k = 3$, it will return 11 (the sum of [2,4,5]).

4. Write the infix, postfix and prefix traversal of the following binary tree. Separate values with commas