CSE108 – Computer Programming Laboratory
(Spring 2021)
Lab #12

May 29, 2021

Hand-in Policy: Via Teams. No late submissions will be accepted. File name that you submit should be as following: *StudentNo.c*
Collaboration Policy: No collaboration is permitted.
Grading: This lab will be graded on the scale of 100.

In this lab, you are going to construct a node structure named datatype containing an integer, a float, and a char array with size 10. And also you are not allowed to use libraries other than stdio.h, stdlib.h (as stated before, still, you can not use realloc, malloc, and free.) and string.h.

1. **node_list * merge_list(node_list * head_1, node_list * head_2)**: Write a function that takes two linked lists (node_list has a next field as well as a data field of datatype) and adds the second list to the end of the first list. It will return a pointer to the head of the new list. You are not allowed to allocate any new memory in this function.

2. **node_list * merge_interleaved(node_list * head_1, node_list * head_2)**: Write a function merging two linked (node_list has a next field as well as a data field of datatype) lists such that if the first list has the nodes a0 → a1 → a2 → … → a5 and the second list has the nodes b0 → b1 → b2 → … → b8, the new list will have the nodes a0 → b0 → a1 → b1 → … → a5 → b5 → b6 → b7 → b8. You are not allowed to allocate any new memory in this function. You are expected to change the links in the existing nodes.

3. **node_list * merge_array(node_list * a, int na, node_list * b, int nb)**: Write a function that takes two arrays a and b and merges them by interleaving first to the second (e.g., a[0],b[0], a[1],b[1],….). If one is longer than the other, the remainder will just be appended to the end. It will return a pointer to the new array. You are expected to free the arrays a and b before returning from the function.