CSE 106

Data Structures – Practice Problem Set

Task 1: Implement a Singly Linked List

Create a singly linked list with the following functionalities:

- Insert a node at the end
- Insert a node at a position
- Insert a node after a node pointer
- Print the list.

Function Prototypes

```c
struct Node {
    int data;
    struct Node* next;
};

void append(struct Node* head, int value);
void insert_node(struct Node* head, struct Node* position, int value);
struct Node* insert_index(struct Node* head, int position, int value);
void print(struct Node* head);
```

Task 2: Merge two sorted linked list

Write a function to merge two sorted singly linked lists and return the head of the merged sorted list.

Function Prototype

```
struct Node* merge_sorted_lists(
     struct Node* head1, struct Node* head2);
```

Input Format

- First line: Size of first list **n1**
- Next line: **n1** integers (sorted) for list 1
- Next line: Size of second list **n2**
- Next line: **n2** integers (sorted) for list 2

Output Format

- A single line with the merged sorted list elements.

Sample Input

```
3
1 3 5
4
2 4 6 8
```

Sample Output

```
1 2 3 4 5 6 8
```

Submission Instructions

- Submit your .c file containing both tasks.
- Rename file to your roll number (e.g. 2305031.c).
- Ensure your code compiles without errors.
- Use functions as specified to ensure consistency.