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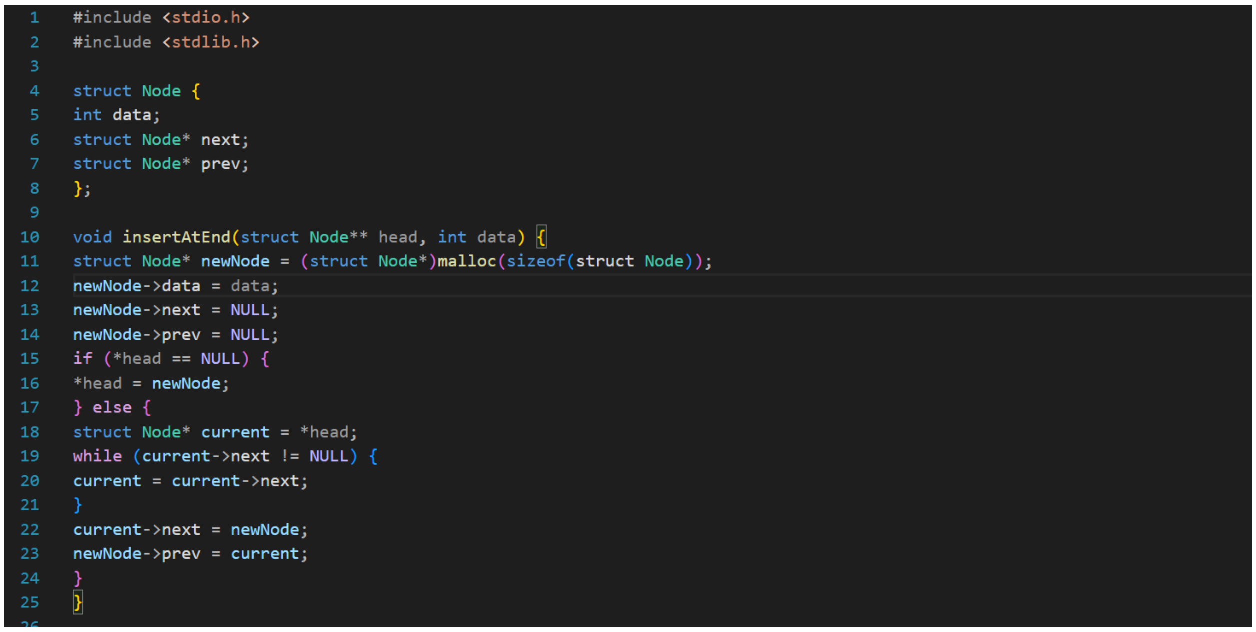
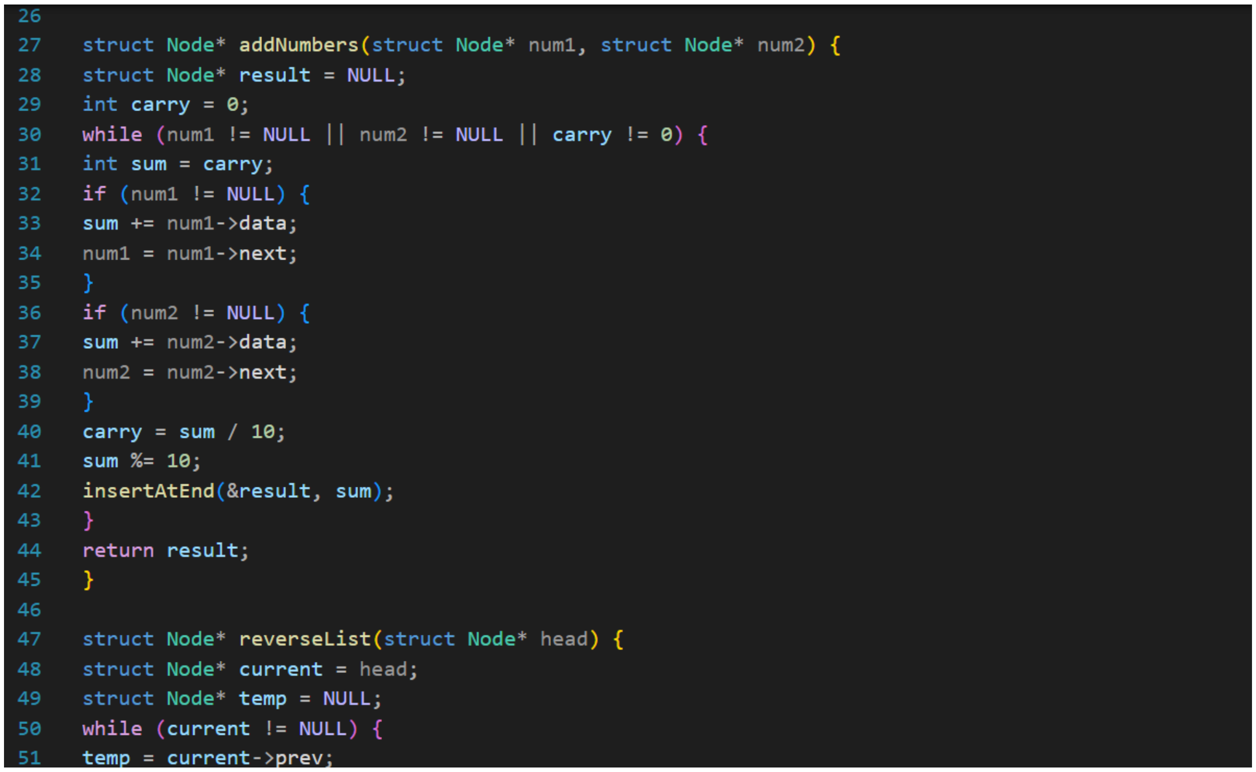
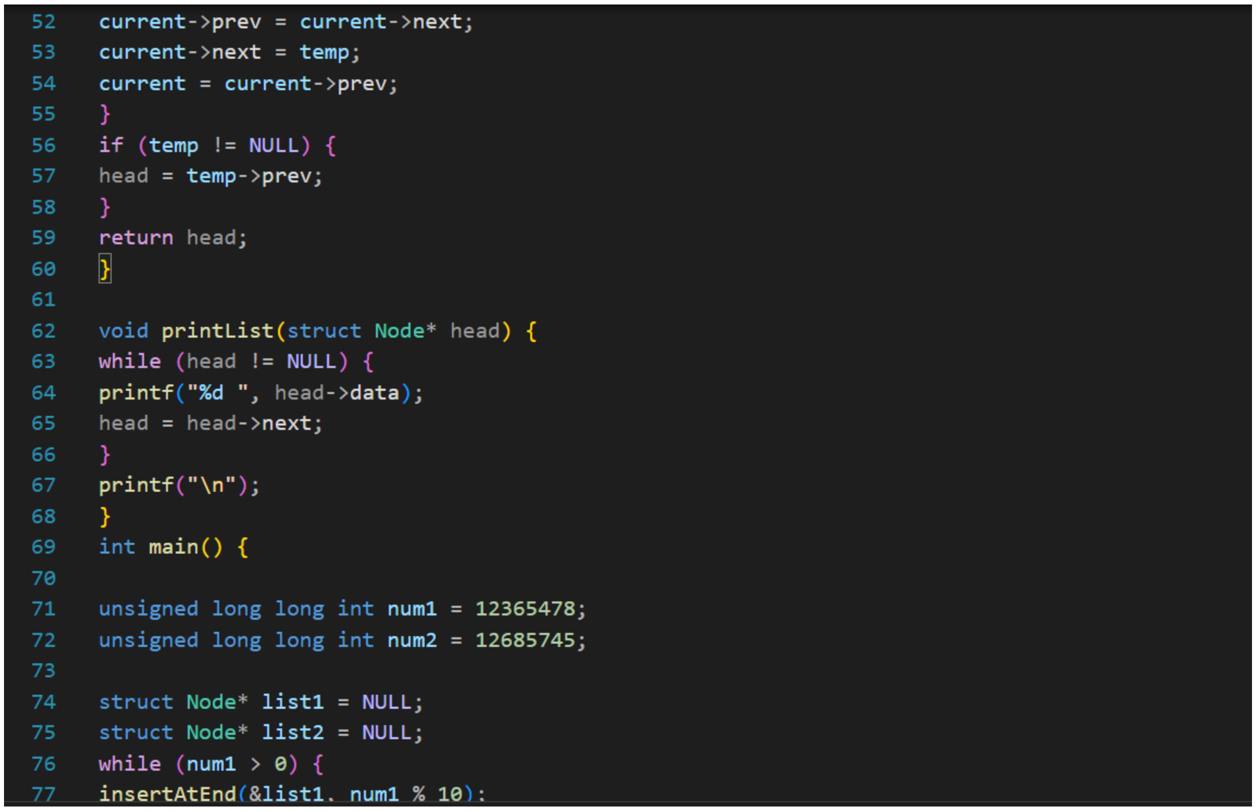
BT22CSH009
ASSIGNMENT - 4



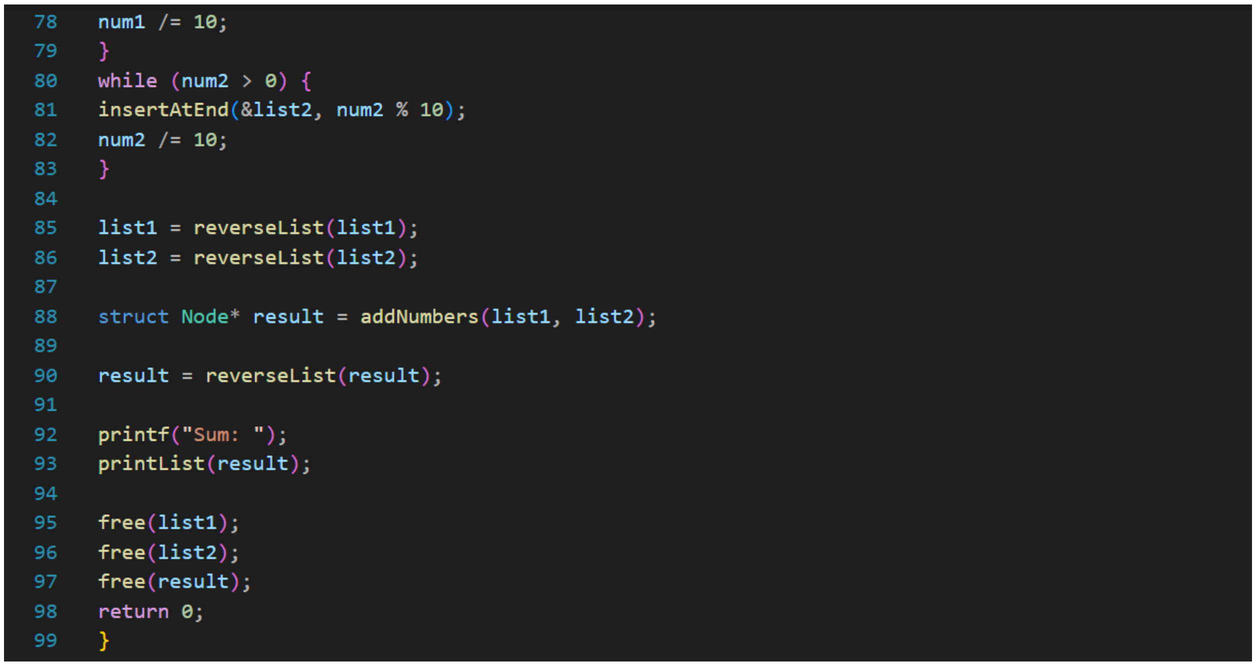
```c
#include <stdio.h>
#include <stdlib.h>

struct Node {
int data;
struct Node* next;
struct Node* prev;
};

void insertAtEnd(struct Node** head, int data) {
struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
newNode->data = data;
newNode->next = NULL;
newNode->prev = NULL;
if (*head == NULL) {
*head = newNode;
} else {
struct Node* current = *head;
while (current->next != NULL) {
current = current->next;
}
current->next = newNode;
newNode->prev = current;
}
}
```



```c

struct Node* addNumbers(struct Node* num1, struct Node* num2) {
struct Node* result = NULL;
int carry = 0;
while (num1 != NULL || num2 != NULL || carry != 0) {
int sum = carry;
if (num1 != NULL) {
sum += num1->data;
num1 = num1->next;
}
if (num2 != NULL) {
sum += num2->data;
num2 = num2->next;
}
carry = sum / 10;
sum %= 10;
insertAtEnd(&result, sum);
}
return result;
}

struct Node* reverseList(struct Node* head) {
struct Node* current = head;
struct Node* temp = NULL;
while (current != NULL) {
temp = current->prev;
```

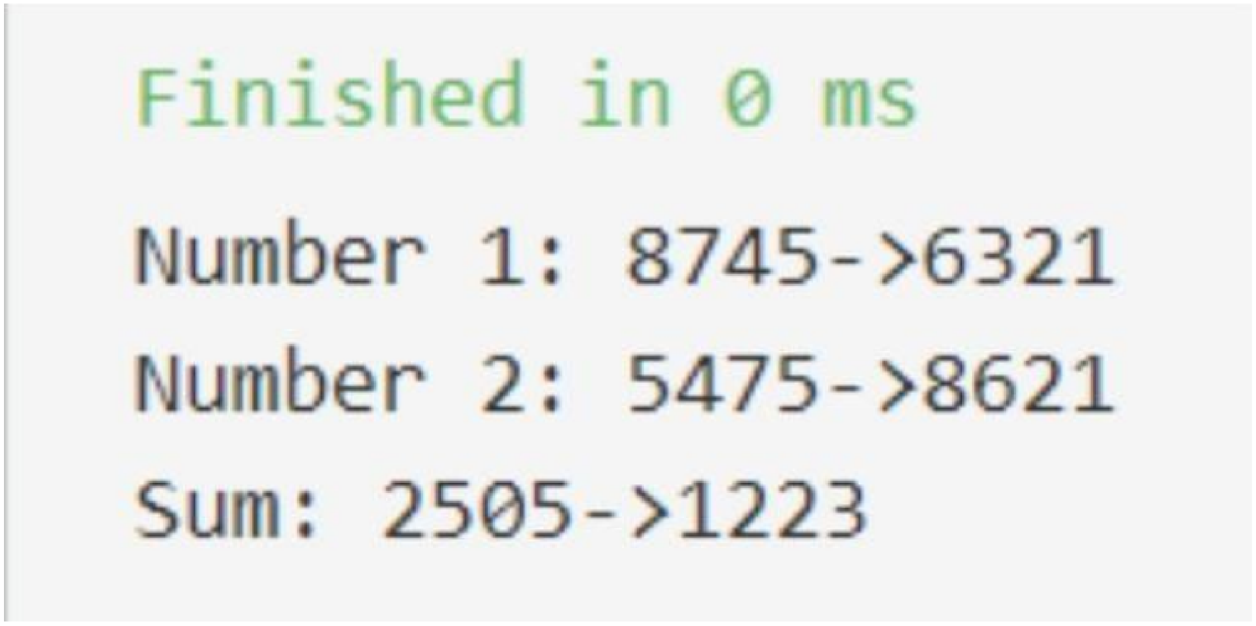


```c
current->prev = current->next;
current->next = temp;
current = current->prev;
}
if (temp != NULL) {
head = temp->prev;
}
return head;
}

void printList(struct Node* head) {
while (head != NULL) {
printf("%d ", head->data);
head = head->next;
}
printf("\n");
}
int main() {

unsigned long long int num1 = 12365478;
unsigned long long int num2 = 12685745;

struct Node* list1 = NULL;
struct Node* list2 = NULL;
while (num1 > 0) {
insertAtEnd(&list1, num1 % 10);
```



```c
num1 /= 10;
}
while (num2 > 0) {
insertAtEnd(&list2, num2 % 10);
num2 /= 10;
}

list1 = reverseList(list1);
list2 = reverseList(list2);

struct Node* result = addNumbers(list1, list2);

result = reverseList(result);

printf("Sum: ");
printList(result);

free(list1);
free(list2);
free(result);
return 0;
}
```

Output:



```
Finished in 0 ms
Number 1: 8745->6321
Number 2: 5475->8621
Sum: 2505->1223
```