Doubly Linked List

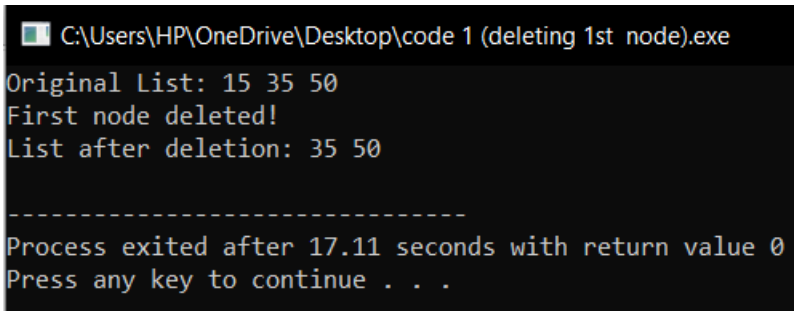
Question 1: Write a program to delete the first node in a doubly linked list.

```
#include <iostream>
using namespace std;
struct Node
{
   int val;
   Node* next;
   Node* prev;

   Node(int data)
{
      val = data;
      next = nullptr;
      prev = nullptr;
   }
};
void deleteFirstNode(Node*& head)
{
   if (head == nullptr)
{
      cout << "List is empty." << endl;
      return;
   }
   Node* temp = head;
   head = head->next;
```

```
    if (head != nullptr)
{
        head->prev = nullptr; //setting new head prev pointer to null
    }
    delete temp;
    cout << "First node deleted." << endl;
}
void printList(Node* head)
{
    Node* temp = head;
    while (temp != nullptr) {
        cout << temp->val << " ";
        temp = temp->next;
    }
    cout << endl;
}
int main()
{
    //making doubly linklist
    Node* head = new Node(15);
    Node* second = new Node(35);
    Node* third = new Node(50);

    head->next = second;
    second->prev = head;
    second->next = third;
    third->prev = second;
    cout << "Original List: ";
```

```
    printList(head);
    deleteFirstNode(head);
    cout << "List after deletion: ";
    printList(head);
    return 0;
}
```

Output:



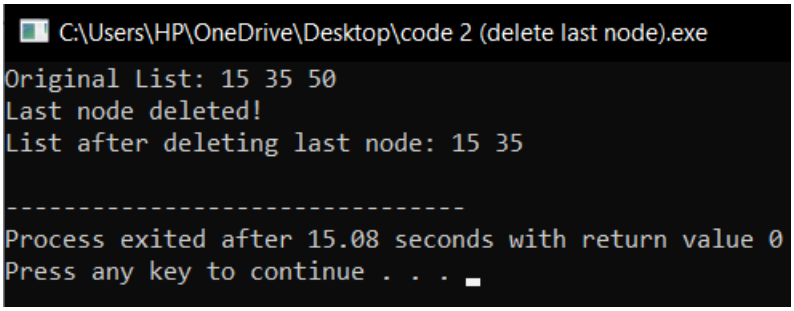
Question 2: How can you delete the last node in a doubly linked list? Write the code.

```
#include <iostream>
using namespace std;
struct Node {
    int val;
    Node* next;
    Node* prev;
    Node(int data) {
        val = data;
        next = nullptr;
        prev = nullptr;
    }
};
void deleteLastNode(Node*& head) {
    if (head == nullptr) {
```

```
        cout << "List is empty" << endl;
        return;
    }
    if (head->next == nullptr) {
        delete head;
        head = nullptr;
        cout << "Last node deleted! list is empty" << endl;
        return;
    }
    Node* temp = head;
    //traverse upto last node
    while (temp->next != nullptr) {
        temp = temp->next;
    }
    temp->prev->next = nullptr;
    delete temp;
    cout << "Last node deleted!" << endl;
}
void printList(Node* head) {
    Node* temp = head;
    while (temp != nullptr) {
        cout << temp->val << " ";
        temp = temp->next;
    }
    cout << endl;
}
int main() {
    Node* head = new Node(15);
```

```
    Node* second = new Node(35);
    Node* third = new Node(50);
    head->next = second;
    second->prev = head;
    second->next = third;
    third->prev = second;
    cout << "Original List: ";
    printList(head);
    deleteLastNode(head);
    cout << "List after deleting last node: ";
    printList(head);
    return 0;
}
```

Output:



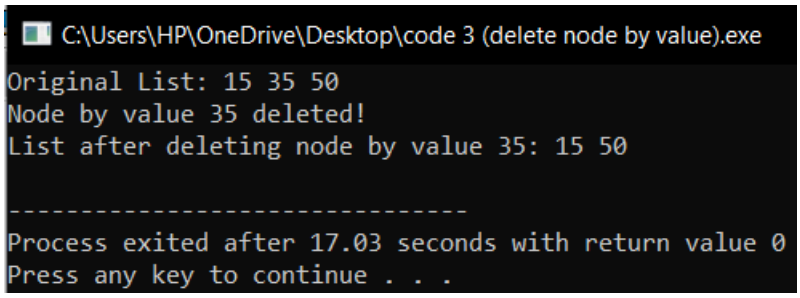
Question 3: Write code to delete a node by its value in a doubly linked list.

```
#include <iostream>
using namespace std;
struct Node
{
    int val;
    Node* next;
    Node* prev;
    Node(int data)
```

```
{
        val = data;
        next = nullptr;
        prev = nullptr;
    }
};
void deleteNodeByValue(Node*& head, int value)
 {
    if (head == nullptr)
 {
        cout << "List is empty " << endl;
        return;
    }
    Node* temp = head;
    while (temp != nullptr && temp->val != value)
 {
        temp = temp->next;
    }
    if (temp == nullptr)
 {
        cout << "Node by value " << value << " not found" << endl;
        return;
    }
    if (temp == head)
 {
        head = head->next;
        if (head != nullptr)
 {
```

```
            head->prev = nullptr;
        }
        delete temp;
        cout << "Node by value " << value << " deleted!" << endl;
        return;
    }
    if (temp->next != nullptr)
 {
        temp->next->prev = temp->prev;
    }
    if (temp->prev != nullptr)
 {
        temp->prev->next = temp->next;
    }

    delete temp;
    cout << "Node by value " << value << " deleted!" << endl;
}

//function to print doubly linklist
void printList(Node* head)
{
    Node* temp = head;
    while (temp != nullptr)
 {
        cout << temp->val << " ";
        temp = temp->next;
    }
```

```
    cout << endl;
}
int main()
 {
    //making doubly linklist
    Node* head = new Node(15);
    Node* second = new Node(35);
    Node* third = new Node(50);
    //linking
    head->next = second;
    second->prev = head;
    second->next = third;
    third->prev = second;
```




```
    cout << "Original List: ";
    printList(head);
    int valueToDelete = 35;
    deleteNodeByValue(head, valueToDelete);
    cout << "List after deleting node by value " << valueToDelete << ": ";
    printList(head);
    return 0;
}
```

Output:

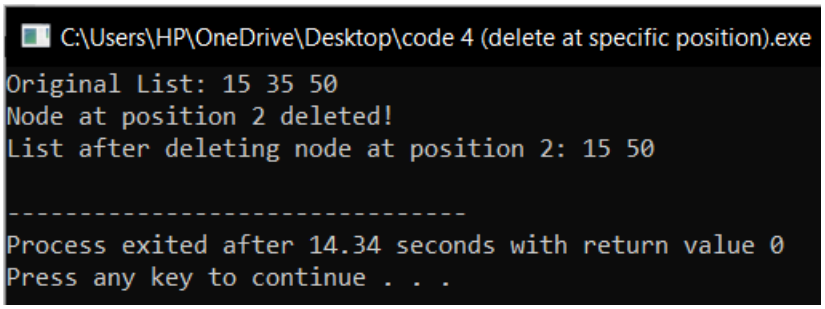
Question 4: How would you delete a node at a specific position in a doubly linked list? Show it in code.

```
#include <iostream>
using namespace std;
struct Node {
    int val;
    Node* next;
    Node* prev;
    Node(int data) {
        val = data;
        next = nullptr;
        prev = nullptr;
    }
};
void deleteAtPosition(Node*& head, int position) {
    if (head == nullptr) {
        cout << "List is empty" << endl;
        return;
    }
    if (position <= 0) {
        cout << "Invalid position" << endl;
        return;
    }
    Node* temp = head;
    if (position == 1) {
        head = head->next;
        if (head != nullptr) {
            head->prev = nullptr;
```

```
        }
        delete temp;
        cout << "Node at position 1 deleted." << endl;
        return;
    }
    int count = 1;
    while (temp != nullptr && count < position) {
        temp = temp->next;
        count++;
    }

    if (temp == nullptr) {
        cout << "Position out of bounds, no node deleted" << endl;
        return;
    }
    if (temp->next != nullptr) {
        temp->next->prev = temp->prev;
    }
    if (temp->prev != nullptr) {
        temp->prev->next = temp->next;
    }
    delete temp;
    cout << "Node at position " << position << " deleted!" << endl;
}
void printList(Node* head) {
    Node* temp = head;
    while (temp != nullptr) {
        cout << temp->val << " ";
```

```
        temp = temp->next;
    }
    cout << endl;
}
int main() {
    //making doubly linklist
    Node* head = new Node(15);
    Node* second = new Node(35);
    Node* third = new Node(50);

    head->next = second;
    second->prev = head;
    second->next = third;
    third->prev = second;
    cout << "Original List: ";
    printList(head);
    int positionToDelete = 2;
    deleteAtPosition(head, positionToDelete);
    cout << "List after deleting node at position " << positionToDelete << ": ";
    printList(head);
    return 0;
}
```

Output:



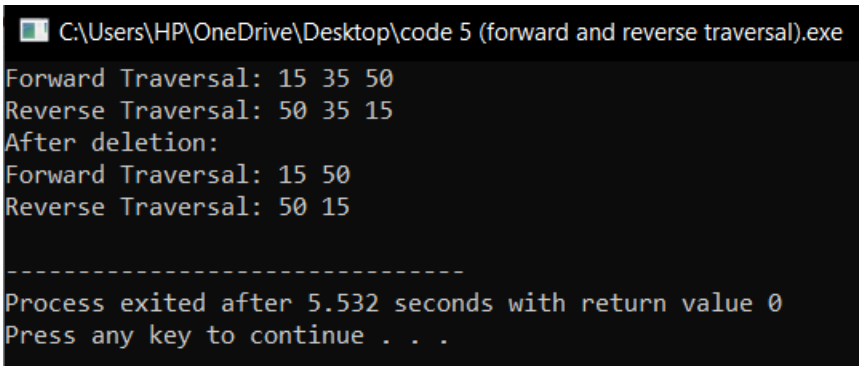
Question 5: After deleting a node, how will you write the forward and reverse traversal functions?

```
#include <iostream>
using namespace std;
struct Node
{
   int val;
   Node* next;
   Node* prev;
   Node(int data)
{
      val = data;
      next = nullptr;
      prev = nullptr;
   }
};
void forwardTraversal(Node* head)
{
   Node* temp = head;
   cout << "Forward Traversal: ";
   while (temp != nullptr)
{
      cout << temp->val << " ";
```

```
        temp = temp->next;
    }
    cout << endl;
}
void reverseTraversal(Node* head)
{
    if (head == nullptr)
{
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = head;
    while (temp->next != nullptr)
 {
        temp = temp->next;
    }
    cout << "Reverse Traversal: ";
    while (temp != nullptr)
 {
        cout << temp->val << " ";
        temp = temp->prev;
    }
    cout << endl;
}
void printList(Node* head)
{
    forwardTraversal(head);
    reverseTraversal(head);
```

```
}
int main()
{
   //making doubly linklist
   Node* head = new Node(15);
   Node* second = new Node(35);
   Node* third = new Node(50);
   head->next = second;
   second->prev = head;
   second->next = third;
   third->prev = second;
   printList(head);
   if (head->next != nullptr)
{
      Node* toDelete = head->next;
      head->next = toDelete->next;
      if (toDelete->next != nullptr)
{
         toDelete->next->prev = head;
      }
      delete toDelete;
   }
   cout << "After deletion:" << endl;
   printList(head);
   return 0;
}
```

Output:



Circular linked list

Question 1: Write a program to delete the first node in a circular linked list.

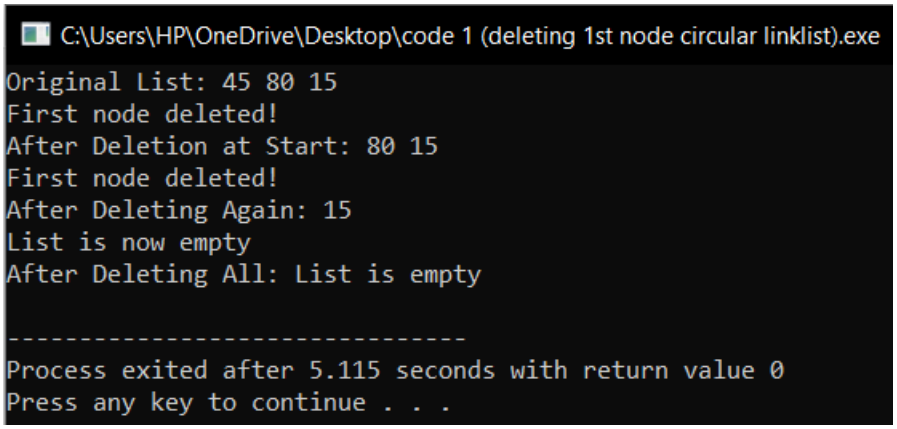
```
#include <iostream>
using namespace std;
struct Node {
    int data;
    Node* next;
};
void deleteStart(Node** head) {
    if (*head == NULL) {
```

```
        cout << "List is empty" << endl;
        return;
    }
    Node* temp = *head;
    if ((*head)->next == *head) {
        delete *head;
        *head = NULL;
        cout << "List is now empty" << endl;
        return;
    }
    Node* last = *head;
    while (last->next != *head) {
        last = last->next;
    }
    Node* newHead = (*head)->next;
    last->next = newHead;

    delete *head; //deleting old head
    *head = newHead;
    cout << "First node deleted!" << endl;
}
void insertEnd(Node** head, int data) {
    Node* newNode = new Node();
    newNode->data = data;
    newNode->next = NULL;
    if (*head == NULL) {
        newNode->next = newNode;
        *head = newNode;
```

```
    } else {
        Node* temp = *head;
        while (temp->next != *head) {
            temp = temp->next;
        }
        temp->next = newNode;
        newNode->next = *head;
    }
}
void display(Node* head) {
    if (head == NULL) {
        cout << "List is empty" << endl;
        return;
    }
    Node* temp = head;
    do {
        cout << temp->data << " ";
        temp = temp->next;
    } while (temp != head);
    cout << endl;
}
int main() {
    Node* head = NULL;
    insertEnd(&head, 45);
    insertEnd(&head, 80);
    insertEnd(&head, 15);
    cout << "Original List: ";
    display(head);
```

```
    deleteStart(&head);
    cout << "After Deletion at Start: ";
    display(head);
    deleteStart(&head);
    cout << "After Deleting Again: ";
    display(head);
    deleteStart(&head);
    cout << "After Deleting All: ";
    display(head);
    return 0;
}
```

Output:



Question 2: How can you delete the last node in a circular linked list? Write the code.

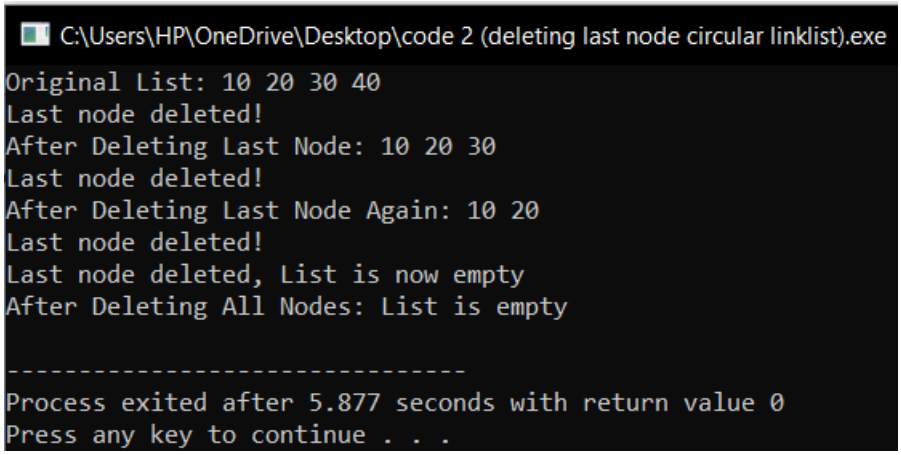
```
#include <iostream>
using namespace std;
struct Node {
    int data;
    Node* next;
};
void deleteLastNode(Node** head) {
```

```
    if (*head == NULL) {
        cout << "List is empty" << endl;
        return;
    }
    Node* temp = *head;
    if ((*head)->next == *head) {
        delete *head;
        *head = NULL;
        cout << "Last node deleted, List is now empty" << endl;
        return;
    }

    Node* prev = nullptr;
    while (temp->next != *head) {
        prev = temp;
        temp = temp->next;
    }
    prev->next = *head;
    delete temp;
    cout << "Last node deleted!" << endl;
}
void insertEnd(Node** head, int data) {
    Node* newNode = new Node();
    newNode->data = data;
    newNode->next = NULL;
    if (*head == NULL) {
        newNode->next = newNode;
        *head = newNode;
```

```
    } else {
        Node* temp = *head;
        while (temp->next != *head) {
            temp = temp->next;
        }
        temp->next = newNode; //linking last node to new node
        newNode->next = *head;
    }
}
void display(Node* head) {
    if (head == NULL) {
        cout << "List is empty" << endl;
        return;
    }
    Node* temp = head;
    do {
        cout << temp->data << " ";
        temp = temp->next;
    } while (temp != head);
    cout << endl;
}
int main() {
    Node* head = NULL;
    insertEnd(&head, 10);
    insertEnd(&head, 20);
    insertEnd(&head, 30);
    insertEnd(&head, 40);
    cout << "Original List: ";
```

```
    display(head);
    deleteLastNode(&head);
    cout << "After Deleting Last Node: ";
    display(head);
    deleteLastNode(&head);
    cout << "After Deleting Last Node Again: ";
    display(head);
    deleteLastNode(&head);
    deleteLastNode(&head);
    cout << "After Deleting All Nodes: ";
    display(head);

    return 0;
}
```

Output:



Question 3: Write a function to delete a node by its value in a circular linked list.

```
void deleteByValue(Node** head, int value)
{
```

```
    if (*head == NULL) {
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = *head;
    Node* prev = NULL;
    if ((*head)->data == value)
{
        if ((*head)->next == *head)
{
            delete *head;
            *head = NULL;
            cout << "Node byvalue " << value << " deleted, List is now empty." << endl;
            return;
        }
        Node* last = *head;
        while (last->next != *head)
{
            last = last->next;
        }
        Node* newHead = (*head)->next;
        last->next = newHead;
        delete *head;
        *head = newHead;
        cout << "Node with value " << value << " deleted!" << endl;
        return;
    }
    do
```

```
{
        prev = temp;
        temp = temp->next;
        if (temp->data == value)
{
            prev->next = temp->next;
            delete temp;
            cout << "Node by value " << value << " deleted!" << endl;
            return;
        }
    } while (temp != *head);
    cout << "Node with value " << value << " not found." << endl;
}
```

Question 4: How will you delete a node at a specific position in a circular linked list? Write code for it.

```
#include <iostream>
using namespace std;
struct Node {
    int data;
    Node* next;
};
void insertEnd(Node** head, int data) {
    Node* newNode = new Node();
    newNode->data = data;
    newNode->next = NULL;
    if (*head == NULL) {
        newNode->next = newNode;
        *head = newNode;
```

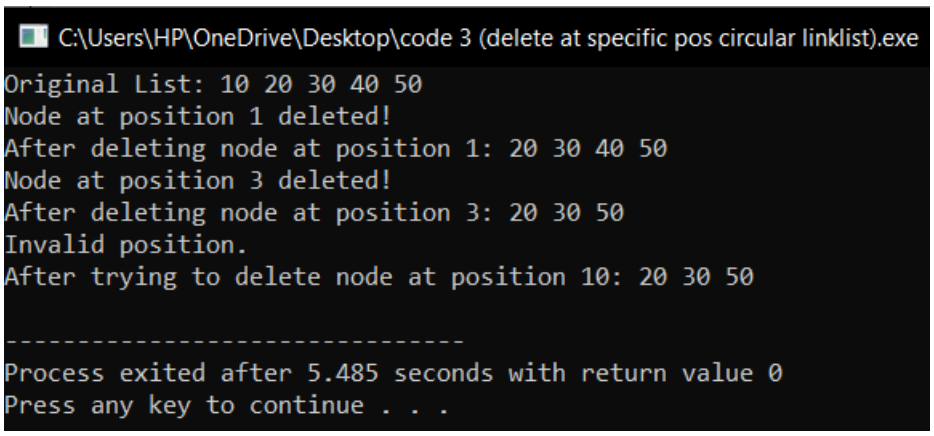
```
    } else {
        Node* temp = *head;
        while (temp->next != *head) {
            temp = temp->next;
        }
        temp->next = newNode;
        newNode->next = *head;
    }
}
void display(Node* head) {
    if (head == NULL) {
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = head;
    do {
        cout << temp->data << " ";
        temp = temp->next;
    } while (temp != head);
    cout << endl;
}
void deleteAtPosition(Node** head, int position) {
    if (*head == NULL) {
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = *head;
    if (position == 1)
```

```
{
    if ((*head)->next == *head)
{
        delete *head;
        *head = NULL;
        cout << "Node at position " << position << " deleted, List is now empty" << endl;
        return;
    }
    Node* last = *head;
    while (last->next != *head)
{
        last = last->next;
    }
    Node* newHead = (*head)->next;
    last->next = newHead;
    delete *head;
    *head = newHead;
    cout << "Node at position " << position << " deleted!" << endl;
    return;
  }
  Node* prev = NULL;
  for (int i = 1; i < position && temp->next != *head; i++)
 {
    prev = temp;
    temp = temp->next;
  }

  if (temp->next == *head && position != 1)
```

```
 {
        cout << "Invalid position." << endl;
        return;
    }
    prev->next = temp->next;
    delete temp;
    cout << "Node at position " << position << " deleted!" << endl;
}
int main()
{
    Node* head = NULL;
    insertEnd(&head, 10);
    insertEnd(&head, 20);
    insertEnd(&head, 30);
    insertEnd(&head, 40);
    insertEnd(&head, 50);
    cout << "Original List: ";
    display(head);
    deleteAtPosition(&head, 1);
    cout << "After deleting node at position 1: ";
    display(head);
    deleteAtPosition(&head, 3);
    cout << "After deleting node at position 3: ";
    display(head);
    deleteAtPosition(&head, 10);
    cout << "After trying to delete node at position 10: ";
    display(head);
```

```
    return 0;
}
```

Output:



Question 5: Write a program to show forward traversal after deleting a node in a circular linked list.

```
#include <iostream>
using namespace std;
struct Node {
    int val;
    Node* next;
    Node* prev;
    Node(int data) {
        val = data;
        next = nullptr;
        prev = nullptr;
    }
};
void forwardTraversal(Node* head) {
    if (head == nullptr) {
        cout << "List is empty" << endl;
```

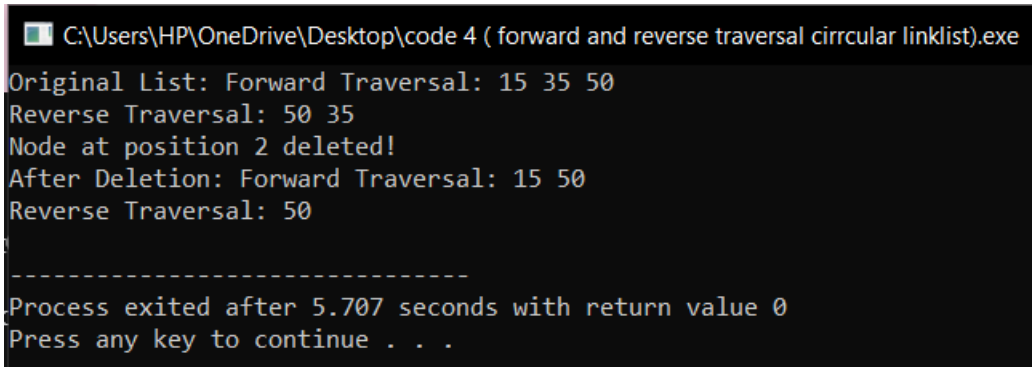
```
        return;
    }
    Node* temp = head;
    cout << "Forward Traversal: ";
    do {
        cout << temp->val << " ";
        temp = temp->next;
    } while (temp != head);
    cout << endl;
}
void reverseTraversal(Node* head) {
    if (head == nullptr) {
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = head;
    while (temp->next != head) {
        temp = temp->next;
    }
    cout << "Reverse Traversal: ";
    do {
        cout << temp->val << " ";
        temp = temp->prev;
    } while (temp != head);
    cout << endl;
}
void printList(Node* head) {
    forwardTraversal(head);
```

```
    reverseTraversal(head);
}
void deleteNode(Node*& head, int position) {
    if (head == nullptr) {
        cout << "List is empty." << endl;
        return;
    }
    Node* temp = head;
    //deleting head node
    if (position == 1) {
        if (head->next == head) {
            delete head;
            head = nullptr;
            cout << "Node at position " << position << " deleted, List is now empty." << endl;
            return;
        }
        Node* last = head;
        while (last->next != head) {
            last = last->next;
        }
        Node* newHead = head->next;
        last->next = newHead;
        newHead->prev = last;
        delete head;
        head = newHead;
        cout << "Node at position " << position << " deleted!" << endl;
        return;
    }
```

```
    for (int i = 1; temp != nullptr && i < position; i++) {
        temp = temp->next;
    }
    if (temp == nullptr || temp->next == head) {
        cout << "Invalid position." << endl;
        return;
    }
    temp->prev->next = temp->next;
    temp->next->prev = temp->prev;
    delete temp;
    cout << "Node at position " << position << " deleted!" << endl;
}
int main() {
    Node* head = new Node(15);
    Node* second = new Node(35);
    Node* third = new Node(50);
    head->next = second;
    second->prev = head;
    second->next = third;
    third->prev = second;
    third->next = head;
    head->prev = third;
    cout << "Original List: ";
    printList(head);
    deleteNode(head, 2);
    cout << "After Deletion: ";
    printList(head);
    return 0;
```

}

Output:



Binary Search Tree

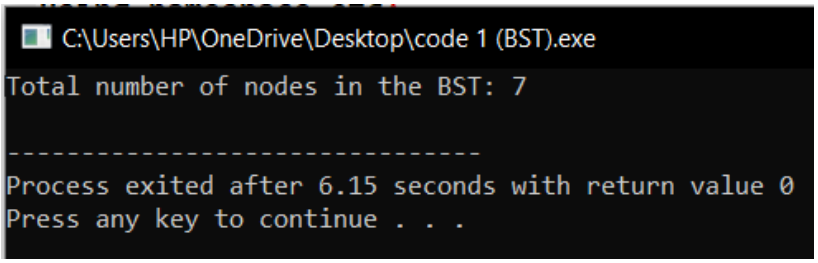
Question 1: Write a program to count all the nodes in a binary search tree.

```
#include <iostream>
using namespace std;
struct Node {
    int data;
    Node* left;
    Node* right;
    Node(int value) {
        data = value;
        left = right = nullptr;
    }
};
Node* insert(Node* root, int value) {
    if (root == nullptr) {
        return new Node(value);
```

```
    }
    if (value < root->data) {
        root->left = insert(root->left, value);
    } else {
        root->right = insert(root->right, value);
    }
    return root;
}
//function to count number of nodes in the BST
int countNodes(Node* root) {
    if (root == nullptr) {
        return 0;
    }
    return 1 + countNodes(root->left) + countNodes(root->right);
}
int main() {
    Node* root = nullptr;
    //inserting nodes in BST
    root = insert(root, 15);
    insert(root, 10);
    insert(root, 20);
    insert(root, 8);
    insert(root, 12);
    insert(root, 17);
    insert(root, 25);
    int totalNodes = countNodes(root);
    cout << "Total number of nodes in the BST: " << totalNodes << endl;
    return 0;
```

}

Output:

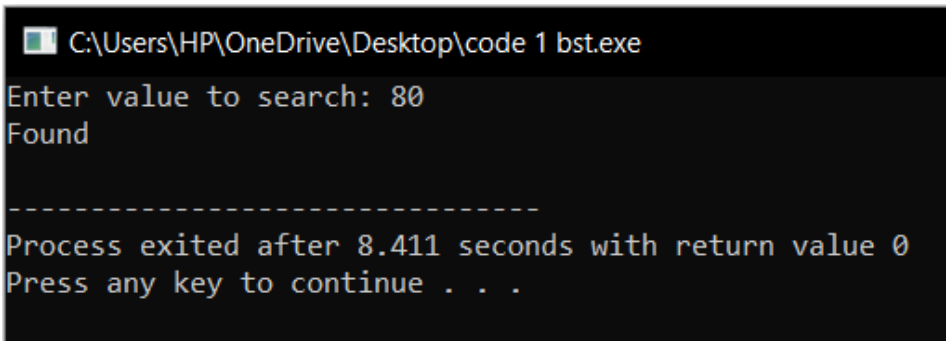


Question 2: How can you search for a specific value in a binary search tree? Write the code.

```
#include <iostream>
using namespace std;
struct parentNode
 {
int data;
parentNode* LC;
parentNode* RC;
parentNode(int val)
 {
data = val;
LC = NULL;
RC = NULL;
}
};
parentNode* search(parentNode* Root, int data)
 {
if (Root == NULL || Root->data == data)
return Root;
if (Root->data < data)
```

```
return search(Root->RC, data);
return search(Root->LC, data);
}
int main()
{
parentNode* Root = new parentNode(80);
Root->LC = new parentNode(20);
Root->RC = new parentNode(40);
Root->LC->LC = new parentNode(30);
Root->LC->RC = new parentNode(10);
Root->RC->LC = new parentNode(70);
Root->RC->RC = new parentNode(50);
int value;
cout << "Enter value to search: ";
cin >> value;
if (search(Root, value) != NULL)
cout << "Found" << endl;
else
cout << "Not Found" << endl;
return 0;
}
```

Output:



Question 3: Write code to traverse a binary search tree in in-order, pre-order, and postorder.

```
#include <iostream>
using namespace std;
struct parentNode {
int data;
parentNode* LC;
parentNode* RC; };
parentNode* createNode(int data) {
parentNode* n = new parentNode();
n->data = data;
n->LC = nullptr;
n->RC = nullptr;
return n;
}
void preOrder(parentNode* Root) {
if (Root != nullptr) {
cout << Root->data << " ";
preOrder(Root->LC);
preOrder(Root->RC);
}}
void postOrder(parentNode* Root)
{
if (Root != nullptr)
{
postOrder(Root->LC);
postOrder(Root->RC);
cout << Root->data << " ";
```

```
}
}
void inOrder(parentNode* Root)
{
if (Root != nullptr)
{
cout << Root->data << " ";
inOrder(Root->RC);
}}
int main() {
parentNode* n = createNode(1);
parentNode* n1 = createNode(2);
parentNode* n2 = createNode(3);
parentNode* n3 = createNode(4);
parentNode* n4 = createNode(5);
parentNode* n5 = createNode(6);
n->LC = n1;
n->RC = n2;
n1->LC = n3;
n1->RC = n4;
n2->RC = n5;
cout << "Inorder Traversal:" << endl;
inOrder(n);
cout << "\n";
cout << "Preorder Traversal:" << endl;
preOrder(n);
cout << "\n";
cout << "Postorder Traversal:" << endl;
```

```
postOrder(n);
cout << "\n";
delete n4;
delete n3;
delete n2;
delete n1;
delete n;
return 0;
}
```

Output:

```
Inorder Traversal:
4 2 5 1 3 6
Preorder Traversal:
1 2 4 5 3 6
Postorder Traversal:
4 5 2 6 3 1

--------------------------------
Process exited after 13.51 seconds with return value 0
Press any key to continue . . .
```

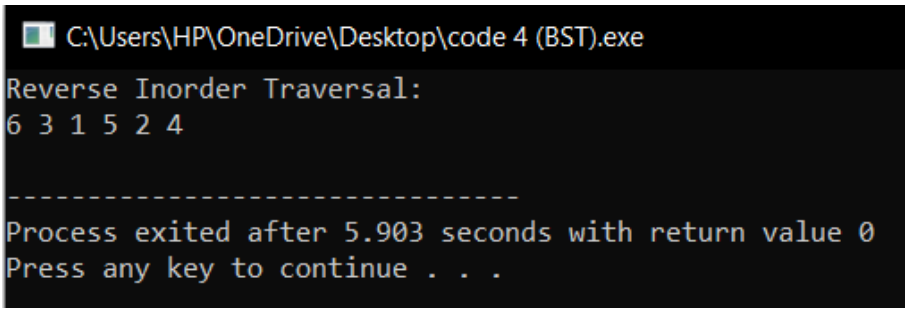
Question 4: How will you write reverse in-order traversal for a binary search tree? Show it in code.

```
#include <iostream>
using namespace std;

struct parentNode {
   int data;
   parentNode* LC;
   parentNode* RC;
};
parentNode* createNode(int data) {
```

```
    parentNode* n = new parentNode();
    n->data = data;
    n->LC = nullptr;
    n->RC = nullptr;
    return n;
}
void reverseInOrder(parentNode* Root) {
    if (Root != nullptr) {
        reverseInOrder(Root->RC);  // First, visit the right subtree
        cout << Root->data << " "; // Then, visit the current node
        reverseInOrder(Root->LC);  // Finally, visit the left subtree
    }
}
int main() {
    parentNode* n = createNode(1);
    parentNode* n1 = createNode(2);
    parentNode* n2 = createNode(3);
    parentNode* n3 = createNode(4);
    parentNode* n4 = createNode(5);
    parentNode* n5 = createNode(6);
    n->LC = n1;
    n->RC = n2;
    n1->LC = n3;
    n1->RC = n4;
    n2->RC = n5;
    cout << "Reverse Inorder Traversal:" << endl;
    reverseInOrder(n);
    cout << "\n";
```

```
    delete n4;
    delete n3;
    delete n2;
    delete n1;
    delete n;
    return 0;
}
```

Output:



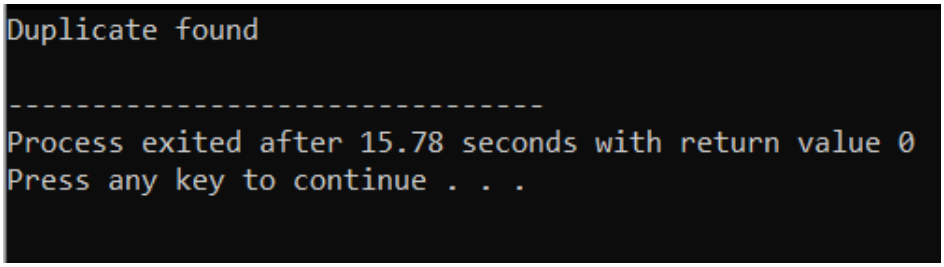
Question 5: Write a program to check if there are duplicate values in a binary search tree.

```
#include <iostream>
using namespace std;
struct parentNode {
int data;
parentNode* LC;
parentNode* RC;
parentNode(int val) {
data = val;
LC = nullptr;
RC = nullptr;
}
};
```

```
void duplicate(parentNode* Root, int val) {
if (Root == nullptr) {
cout << "Duplicate not found" << endl;
return;
}
if (Root->data == val) {
cout << "Duplicate found" << endl;
return;
}
if (val < Root->data) {
duplicate(Root->LC, val);
}
else {
duplicate(Root->RC, val);
}
}
int main() {
parentNode* Root = new parentNode(50);
Root->LC = new parentNode(30);
Root->RC = new parentNode(70);
Root->LC->LC = new parentNode(20);
Root->LC->RC = new parentNode(40);
Root->RC->LC = new parentNode(60);
Root->RC->RC = new parentNode(80);
int val = 40;
duplicate(Root, val);
return 0;
```

}

Output:



Question 6: How can you delete a node from a binary search tree? Write code for deleting a leaf, a node with one child, and a node with two children.

```
#include <iostream>
using namespace std;
struct Node {
    int value;
    Node* left;
    Node* right;
    Node(int key) {
        value = key;
        left = right = nullptr;
    }
};

Node* findMin(Node* node) {
    Node* current = node;
    while (current && current->left != nullptr) {
        current = current->left;
    }
    return current;
}
Node* deleteNode(Node* root, int key) {
```

```
if (root == nullptr) {
    return root;
}
if (key < root->value) {
    root->left = deleteNode(root->left, key);
}
else if (key > root->value) {
    root->right = deleteNode(root->right, key);
}
else {
    if (root->left == nullptr && root->right == nullptr) {
        delete root;
        return nullptr;
    }

    else if (root->left == nullptr) {
        Node* temp = root->right;
        delete root;
        return temp;
    }
    else if (root->right == nullptr) {
        Node* temp = root->left;
        delete root;
        return temp;
    }
    else {
        Node* temp = findMin(root->right);
        root->value = temp->value;
```

```
            root->right = deleteNode(root->right, temp->value);
        }
    }
    return root;
}
void inorder(Node* root) {
    if (root != nullptr) {
        inorder(root->left);
        cout << root->value << " ";
        inorder(root->right);
    }
}
int main() {
    Node* root = new Node(50);
    root->left = new Node(30);
    root->right = new Node(70);
    root->left->left = new Node(20);
    root->left->right = new Node(40);
    root->right->left = new Node(60);
    root->right->right = new Node(80);
    cout << "Inorder traversal of the original BST: "<<endl;
    inorder(root);
    cout << endl;
    int key = 50;
    root = deleteNode(root, key)
    cout << "\nInorder traversal after deleting node " << key <<endl;
    inorder(root);
    cout << endl;
```

```
    return 0;
}
```

Output: