

DAY 3 WWC QUESTIONS

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Section – 620/B

Q1. write a c++ program check if the number is palandrome or not using function

Ans

```
#include <iostream>

using namespace std;

int isPalindrome(int number) {
    int on = number;
    int rn = 0;

    while (number > 0) {
        int digit = number % 10;
        rn = rn * 10 + digit;
        number /= 10;
    }

    return on == rn;
}

int main() {
    int n;
    cout << "Enter the value: ";
    cin >> n;

    if (isPalindrome(n)) {
```

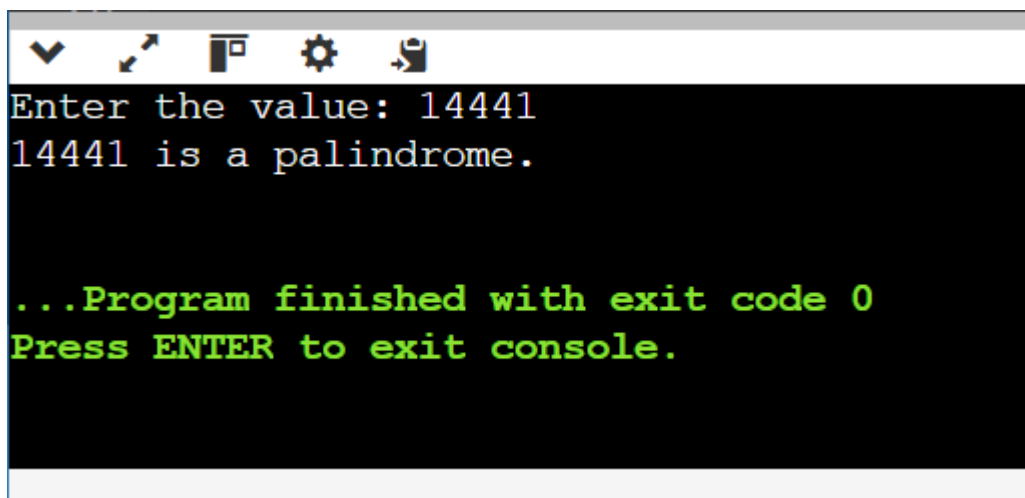
```

        cout << n << " is a palindrome." << endl;
    } else {
        cout << n << " is not a palindrome." << endl;
    }

    return 0;
}

```

Output



```

Enter the value: 14441
14441 is a palindrome.

...Program finished with exit code 0
Press ENTER to exit console.

```

Q2c++ program to create a simple calculator for the basic operation like addition subtraction multiply or divide

Ans

```
#include <iostream>
```

```
using namespace std;
```

```

void add(double a, double b) {
    cout << "Result: " << a + b << endl;
}

```

```

void subtract(double a, double b) {
    cout << "Result: " << a - b << endl;
}

```

```
}
```

```
void multiply(double a, double b) {  
    cout << "Result: " << a * b << endl;  
}
```

```
void divide(double a, double b) {  
    if (b != 0) {  
        cout << "Result: " << a / b << endl;  
    } else {  
        cout << "Error: Division by zero is not allowed." << endl;  
    }  
}
```

```
int main() {  
    double num1, num2;  
    char operation;  
  
    cout << "Enter first number: ";  
    cin >> num1;  
    cout << "Enter an operation (+, -, *, /): ";  
    cin >> operation;  
    cout << "Enter second number: ";  
    cin >> num2;  
  
    switch (operation) {  
        case '+':  
            add(num1, num2);  
            break;
```

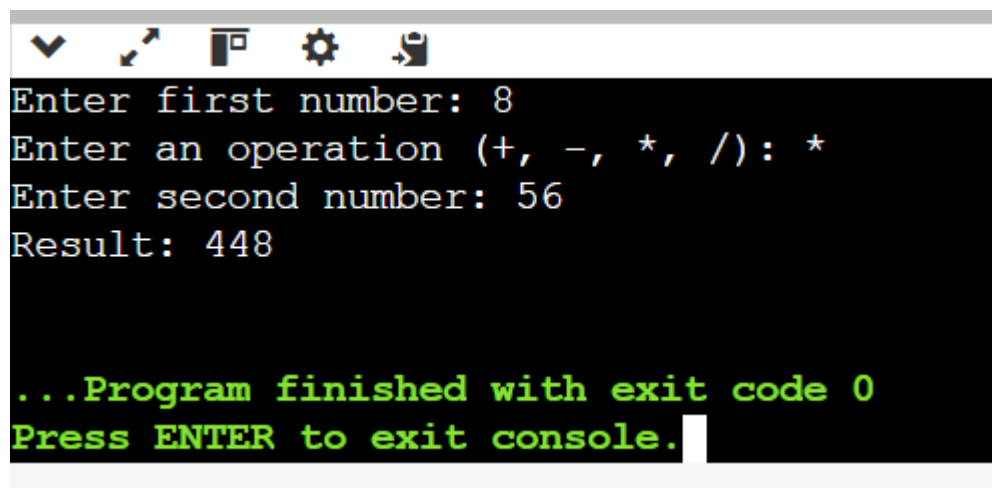
```

    case '-':
        subtract(num1, num2);
        break;
    case '*':
        multiply(num1, num2);
        break;
    case '/':
        divide(num1, num2);
        break;
    default:
        cout << "Invalid operation." << endl;
        break;
}

return 0;
}

```

Output



```

Enter first number: 8
Enter an operation (+, -, *, /): *
Enter second number: 56
Result: 448

...Program finished with exit code 0
Press ENTER to exit console.

```

Q3.fibonnica series

Ans

```
#include <iostream>
```

```
using namespace std;
```

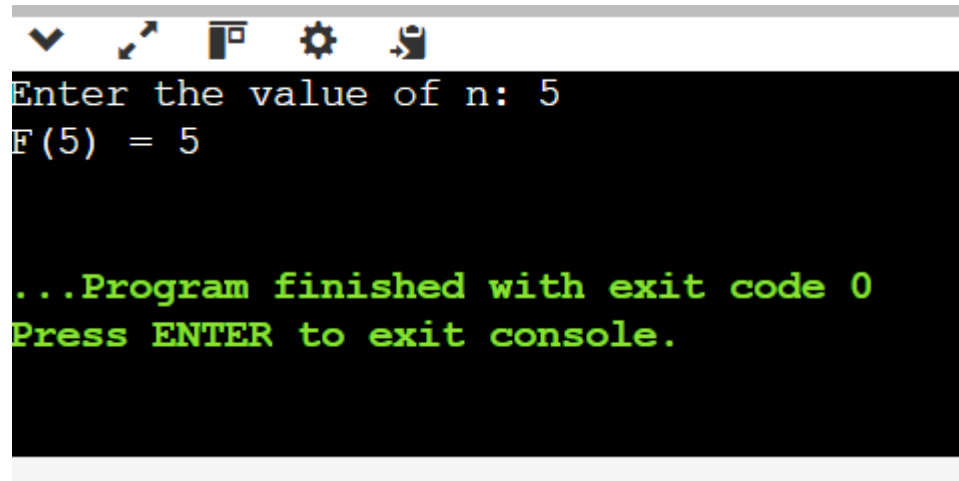
```

int fibonacci(int n) {
    if (n <= 1) {
        return n;
    }
    return fibonacci(n - 1) + fibonacci(n - 2);
}

int main() {
    int n;
    cout << "Enter the value of n: ";
    cin >> n;
    cout << "F(" << n << ") = " << fibonacci(n) << endl;
    return 0;
}

```

Output



```

Enter the value of n: 5
F(5) = 5

...Program finished with exit code 0
Press ENTER to exit console.

```

Q4. Given an array of integers, find sum of array elements using recursion.

Ans

```

#include <iostream>

using namespace std;

```

```

int sumArray(int arr[], int n) {
    if (n <= 0) {
        return 0;
    }
    return arr[n-1] + sumArray(arr, n-1);
}

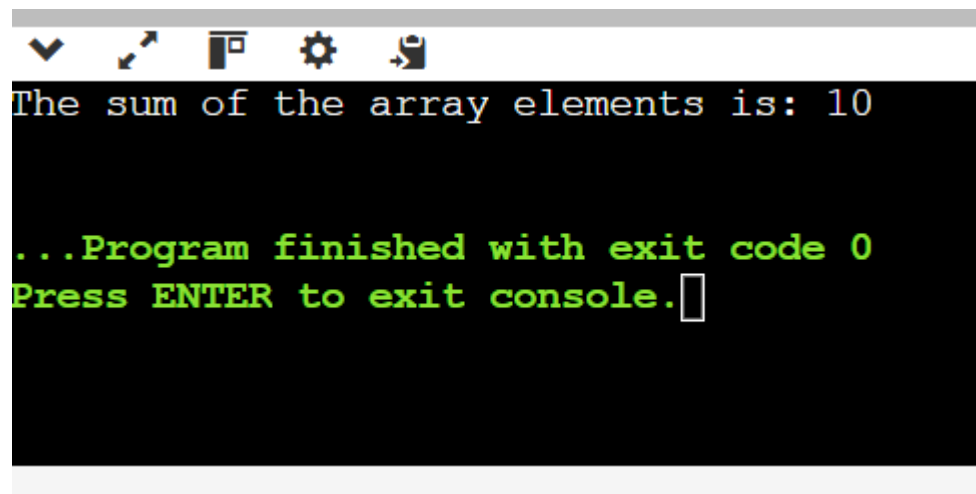
int main() {
    int arr[] = {1, 2, 3, 4};
    int n = sizeof(arr) / sizeof(arr[0]);

    cout << "The sum of the array elements is: " << sumArray(arr, n) << endl;

    return 0;
}

```

Output



```

The sum of the array elements is: 10

...Program finished with exit code 0
Press ENTER to exit console.

```

Q5.find the winner of the circular game

Ans

```

#include <iostream>

using namespace std;

```

```

int findWinner(int n, int k) {
    if (n == 1)
        return 0;
    else
        return (findWinner(n - 1, k) + k) % n;
}

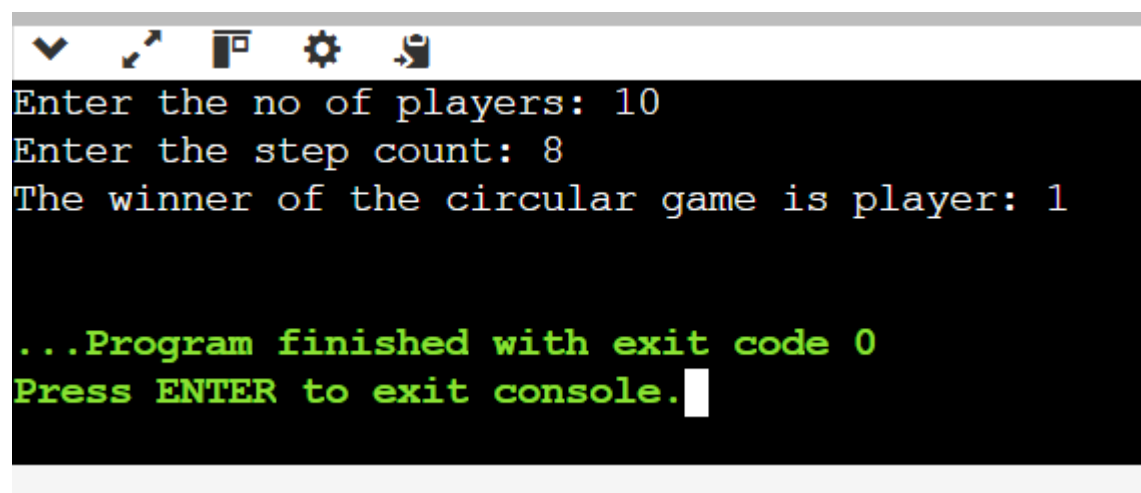
int main() {
    int n, k;
    cout << "Enter the no of players: ";
    cin >> n;
    cout << "Enter the step count: ";
    cin >> k;

    int winner = findWinner(n, k) + 1;
    cout << "The winner of the circular game is player: " << winner << endl;

    return 0;
}

```

Output



```

Enter the no of players: 10
Enter the step count: 8
The winner of the circular game is player: 1

...Program finished with exit code 0
Press ENTER to exit console.

```

Q6.write a code in cpp to remove linked list in beginning

```
#include <iostream>

using namespace std;

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

Node* createNode(int data) {
    Node* newNode = new Node();
    newNode->data = data;
    newNode->next = nullptr;
    return newNode;
}

void insertNode(Node*& head, int data) {
    Node* newNode = createNode(data);
    if (!head) {
        head = newNode;
        return;
    }
    Node* temp = head;
    while (temp->next) {
        temp = temp->next;
    }
    temp->next = newNode;
}

void removeHead(Node*& head) {
```



```

if (!head) {
    cout << "The list is already empty." << endl;
    return;
}
Node* temp = head;
head = head->next;
delete temp;
}

```

```

void displayList(Node* head) {
    Node* temp = head;
    while (temp) {
        cout << temp->data << " -> ";
        temp = temp->next;
    }
    cout << "NULL" << endl;
}

```

```

int main() {
    Node* head = nullptr;
    int n, data;

    cout << "Enter the number of nodes: ";
    cin >> n;
    for (int i = 0; i < n; ++i) {
        cout << "Enter data for node " << i + 1 << ": ";
        cin >> data;
        insertNode(head, data);
    }
}

```

```

cout << "Original linked list: ";
displayList(head);

removeHead(head);

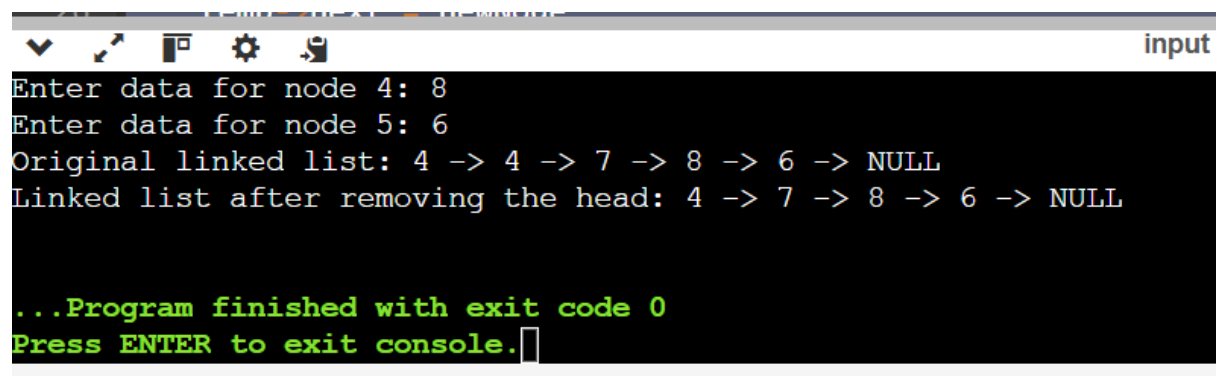
cout << "Linked list after removing the head: ";
displayList(head);

Node* current = head;
Node* next = nullptr;
while (current) {
    next = current->next;
    delete current;
    current = next;
}

return 0;
}

```

Output



```

input
Enter data for node 4: 8
Enter data for node 5: 6
Original linked list: 4 -> 4 -> 7 -> 8 -> 6 -> NULL
Linked list after removing the head: 4 -> 7 -> 8 -> 6 -> NULL

...Program finished with exit code 0
Press ENTER to exit console.

```

Q7. : Writer recursive function to compute the GCD of 2 numbers

Ans

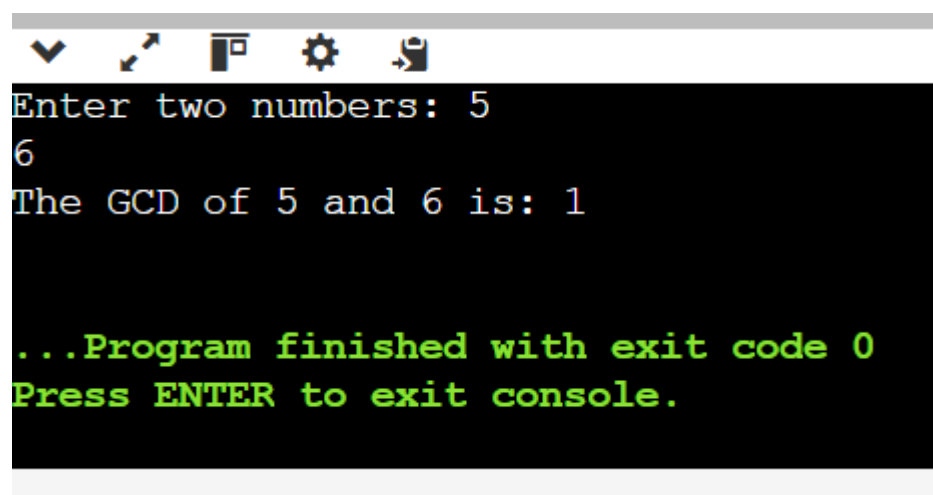
```
#include <iostream>
```

```
using namespace std;
```

```
int gcd(int a, int b) {  
    if (b == 0) {  
        return a;  
    }  
    return gcd(b, a % b);  
}
```

```
int main() {  
    int num1, num2;  
    cout << "Enter two numbers: ";  
    cin >> num1 >> num2;  
  
    cout << "The GCD of " << num1 << " and " << num2 << " is: " << gcd(num1, num2) << endl;  
  
    return 0;  
}
```

Output

A screenshot of a terminal window showing the output of a C++ program. The terminal has a black background with white text. At the top, there is a toolbar with icons for a dropdown menu, a cursor, a window, a gear, and a document. The output text is: "Enter two numbers: 5", "6", "The GCD of 5 and 6 is: 1", and at the bottom in green text: "...Program finished with exit code 0" and "Press ENTER to exit console.".

```
Enter two numbers: 5  
6  
The GCD of 5 and 6 is: 1  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Q8. sum of array element using recursion function

Ans

```

#include <iostream>

using namespace std;

int sumOfArray(int arr[], int size) {
    if (size == 0) {
        return 0;
    }
    return arr[size - 1] + sumOfArray(arr, size - 1);
}

int main() {
    int n;

    cout << "Enter the number of elements in the array: ";

    cin >> n;

    if (n <= 0) {
        cout << "Please enter a positive number of elements." << endl;
        return 1;
    }

    int arr[n];

    cout << "Enter " << n << " elements: ";

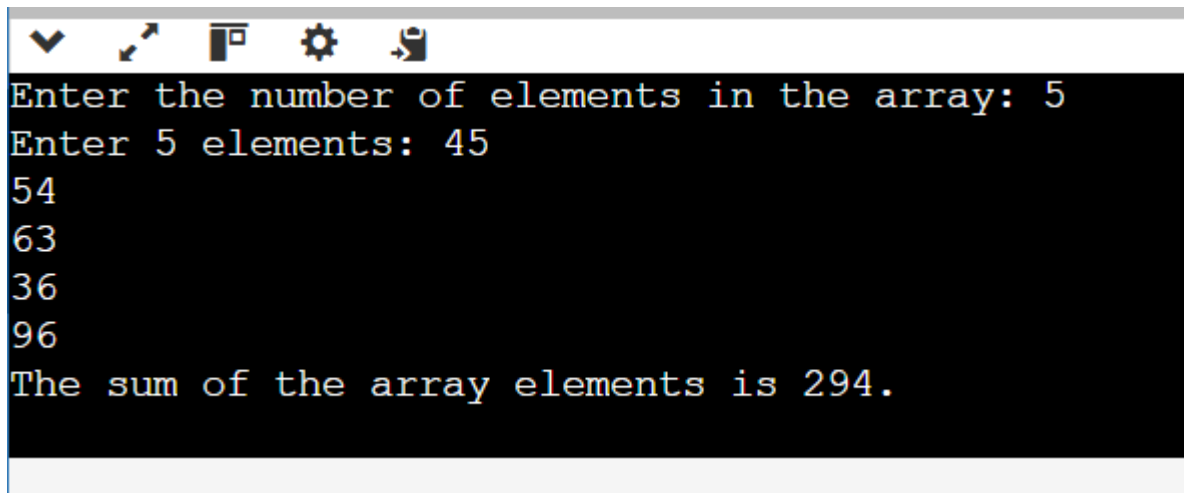
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    cout << "The sum of the array elements is " << sumOfArray(arr, n) << "." << endl;

    return 0;
}

```

Output



```
Enter the number of elements in the array: 5
Enter 5 elements: 45
54
63
36
96
The sum of the array elements is 294.
```

Q9. Give the head of the linked list reverse the nodes of list k at a time and return the modified time.

Ans

```
#include <iostream>

using namespace std;

struct Node {
    int data;
    Node* next;

    Node(int val) : data(val), next(nullptr) {}
};

void insertNode(Node*& head, int data) {
    Node* newNode = new Node(data);
    if (!head) {
        head = newNode;
        return;
    }
    Node* temp = head;
    while (temp->next) {
        temp = temp->next;
    }
}
```

```
temp->next = newNode;  
}
```

```
Node* reverseKGroup(Node* head, int k) {  
    if (!head || k == 1) {  
        return head;  
    }
```

```
    Node* dummy = new Node(0);  
    dummy->next = head;  
    Node *curr = dummy, *next = dummy, *prev = dummy;  
    int count = 0;  
    while (curr->next) {  
        curr = curr->next;  
        count++;  
    }
```

```
    while (count >= k) {  
        curr = prev->next;  
        next = curr->next;  
        for (int i = 1; i < k; ++i) {  
            curr->next = next->next;  
            next->next = prev->next;  
            prev->next = next;  
            next = curr->next;  
        }  
        prev = curr;  
        count -= k;  
    }
```

```

        return dummy->next;
    }

void displayList(Node* head) {
    while (head) {
        cout << head->data << " -> ";
        head = head->next;
    }
    cout << "NULL" << endl;
}

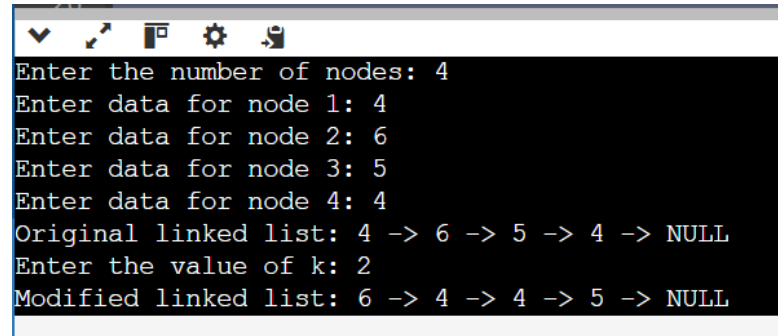
int main() {
    Node* head = nullptr;
    int n, data, k;
    cout << "Enter the number of nodes: ";
    cin >> n;
    for (int i = 0; i < n; ++i) {
        cout << "Enter data for node " << i + 1 << ": ";
        cin >> data;
        insertNode(head, data);
    }
    cout << "Original linked list: ";
    displayList(head);
    cout << "Enter the value of k: ";
    cin >> k;
    head = reverseKGroup(head, k);

    cout << "Modified linked list: ";
    displayList(head);
}

```

```
    return 0;
}
```

Output



```
Enter the number of nodes: 4
Enter data for node 1: 4
Enter data for node 2: 6
Enter data for node 3: 5
Enter data for node 4: 4
Original linked list: 4 -> 6 -> 5 -> 4 -> NULL
Enter the value of k: 2
Modified linked list: 6 -> 4 -> 4 -> 5 -> NULL
```

Q10. sum of natural number using recursion function

Ans

```
#include <iostream>

using namespace std;

int sumOfNaturalNumbers(int n) {
    if (n == 0) {
        return 0;
    }
    return n + sumOfNaturalNumbers(n - 1);
}

int main() {
    int number;

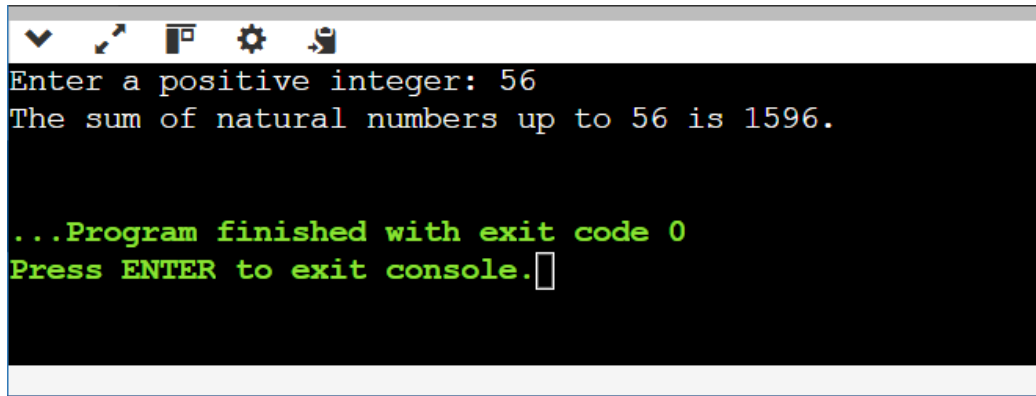
    cout << "Enter a positive integer: ";
    cin >> number;

    if (number < 0) {
        cout << "Please enter a positive integer." << endl;
    } else {
        cout << "The sum of natural numbers up to " << number << " is " <<
        sumOfNaturalNumbers(number) << "." << endl;
    }
}
```



```
return 0;  
}
```

Output

A screenshot of a console window with a dark background. The window has a title bar with standard icons. The text inside the console is as follows:
Enter a positive integer: 56
The sum of natural numbers up to 56 is 1596.

...Program finished with exit code 0
Press ENTER to exit console.
The cursor is at the end of the last line.

Q11. Function method to find the no is prime

Ans

```
#include <iostream>  
  
using namespace std;  
  
bool isPrime(int num) {  
    if (num <= 1) return false;  
    if (num <= 3) return true;  
    if (num % 2 == 0 || num % 3 == 0) return false;  
    for (int i = 5; i * i <= num; i += 6) {  
        if (num % i == 0 || num % (i + 2) == 0)  
            return false;  
    }  
    return true;  
}  
  
int main() {  
    int number;  
    cout << "Enter a number: ";  
    cin >> number;  
    if (isPrime(number)) {  
        cout << number << " is a prime number." << endl;
```

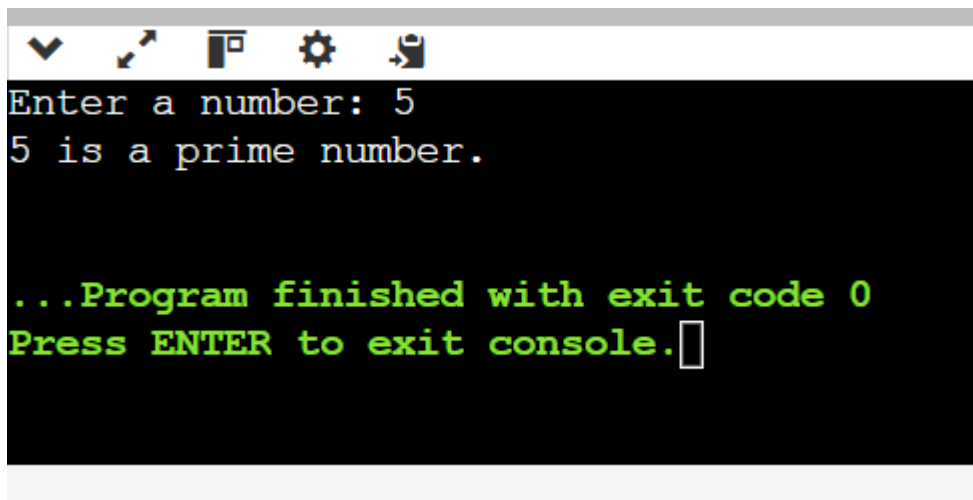
```

    } else {
        cout << number << " is not a prime number." << endl;
    }

    return 0;
}

```

Output



```

Enter a number: 5
5 is a prime number.

...Program finished with exit code 0
Press ENTER to exit console.

```

Q12. Swap two numbers

Ans

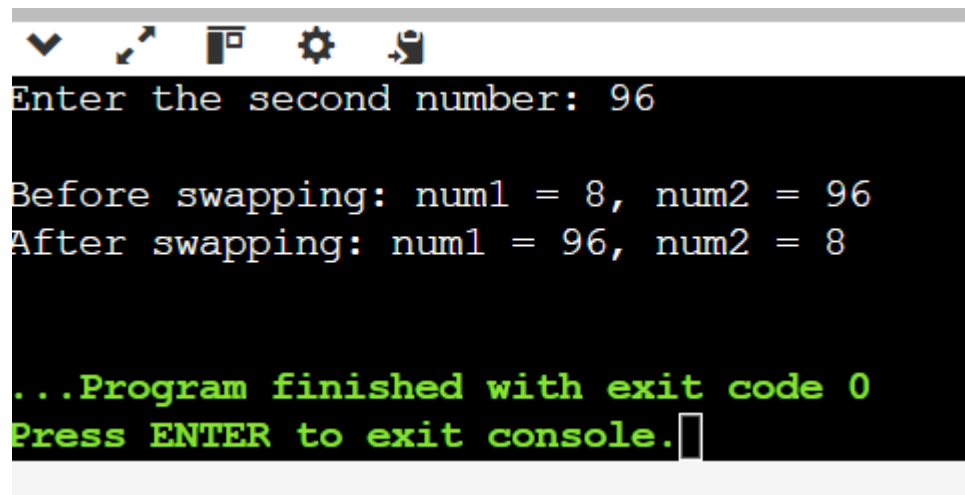
```

#include <iostream>
using namespace std;
void swapNumbers(int &a, int &b) {
    int temp = a;
    a = b;
    b = temp;
}
int main() {
    int num1, num2;
    cout << "Enter the first number: ";
    cin >> num1;
    cout << "Enter the second number: ";

```

```
cin >> num2;  
cout << "\nBefore swapping: num1 = " << num1 << ", num2 = " << num2 << endl;  
swapNumbers(num1, num2);  
cout << "After swapping: num1 = " << num1 << ", num2 = " << num2 << endl;  
return 0;  
}
```

Output

A screenshot of a console window with a dark background and light-colored text. The window has a title bar with standard icons (checkmark, cursor, window, gear, and a document with an arrow). The output text is as follows:
Enter the second number: 96

Before swapping: num1 = 8, num2 = 96
After swapping: num1 = 96, num2 = 8

...Program finished with exit code 0
Press ENTER to exit console.
A white cursor is visible at the end of the last line.

```
Enter the second number: 96  
  
Before swapping: num1 = 8, num2 = 96  
After swapping: num1 = 96, num2 = 8  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```