ASSIGNMENT # 2

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FA23-BCS-251

SECTION: E

SUBMITTED TO

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Programming Fundamentals

Question # 1

```
# include <iostream>
Using namespace std;
    int main() {
int num , odd count=0, even count=0;
int prime count=0;
cout<< " Enter positive number"; cin>>num;
for (cin>> num; num>0 ; cin>>num ) {
  if (num <=1) { if (num == 0) {
        break ; }
cout << num<< " is not prime." <<endl;
     continue ; }
if (num % 2 ==0 ){ even count++;
 cout<< "num <<" is even." <<endl;}
else { odd count ++ ;
cout <<num << " is odd." <<endl ;}
bool isPrime = true;
for(int i = 2 ; i<=num/2 ; ++i) {
if (num % i ==0 ){ is Prime = false;
     break ; } }
if (is Prime){ prime count++ ;
cout<< num << " is prime." <<endl;}}
```

```
int num, num1, rem, sum = 0;
cout << "Enter a number"; cin>>num;
num1 = num;
while (num1 != 0){ rem= num1 %10 ;
  sum += rem*rem*rem;
  num1 /= 10; }
 if (sum== num) {
cout << num << " is armstrong number"<<endl;
} else {
cout << num << " is not armstrong number";
} return 0; }
```

Question # 4

```
# include <iostream>
using namespace std;
int main () {
  int num, sum = 0;
cout << "Enter a number"; cin>> num;
for (int i=1; i < num ; ++i++) {
  if (num % i ==0) { sum += i; }}
 if (sum == num){
 cout << "number is perfect number";}
else {
cout<< "number is not perfect";} return 0;}
```

Question # 5

```
#include <iostream>
using namespace std;
int main() {
double number, sum=0.0, average=0.0;
int count=0;
int max = int_min, min = int_max;
cout << "Enter positive number";
while (cin >> number) {
if (number > 0) { sum += number;
count++;
max=(number > max) ? number : max;
min = (number < min) ? number:min;}
else { break; } }
if (count > 0) {
average = sum / count;
cout << "Average" << average;
cout << "Maximum" << max << endl;
cout << "Minimum" << min << endl;
else {
cout << "No positive number entered";}
return 0; }
```

```
cout << " Total even number" << even count;
cout << " Total odd numbers" << odd count;
cout << "Total prime numbers" << prime coont;
  return 0; }
```

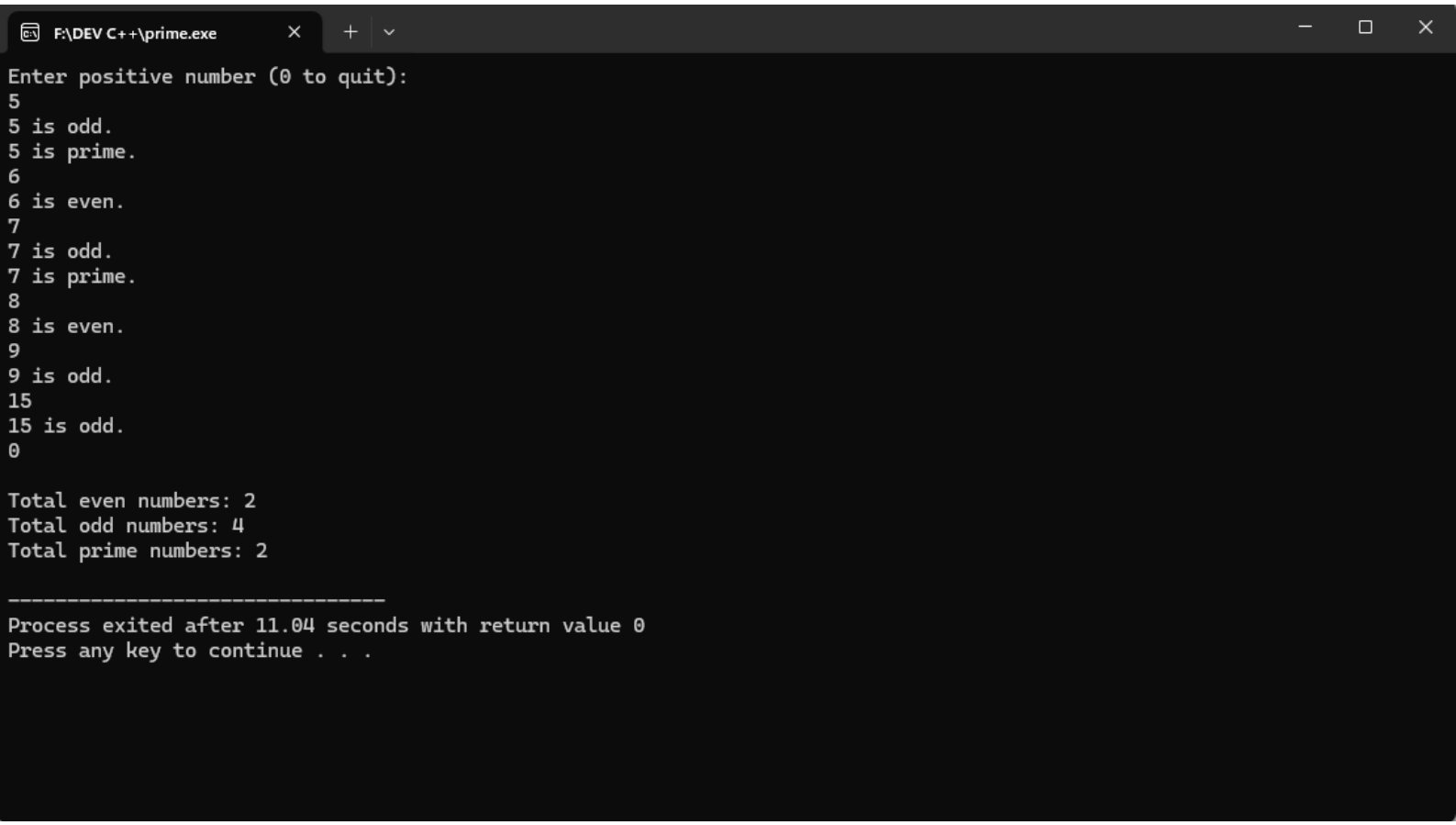
Question # 2

```
# Include <iostream>
  using namespace std;
  int main () {
int num, reverse = 0, remainder, originalNum;
cout << " Enter a number "; cin >> num;
originalNum = num ;
do { remainder = num % 10;
    reverse = reverse * 10 + ramainder;
    num /= 10; } while(num ≠ 0);
if (original Nom == reverse) {
 cout << originalNum << " is a palindrome";
else { cout " number is not palindrome";
 return 0; }
```

Question # 3

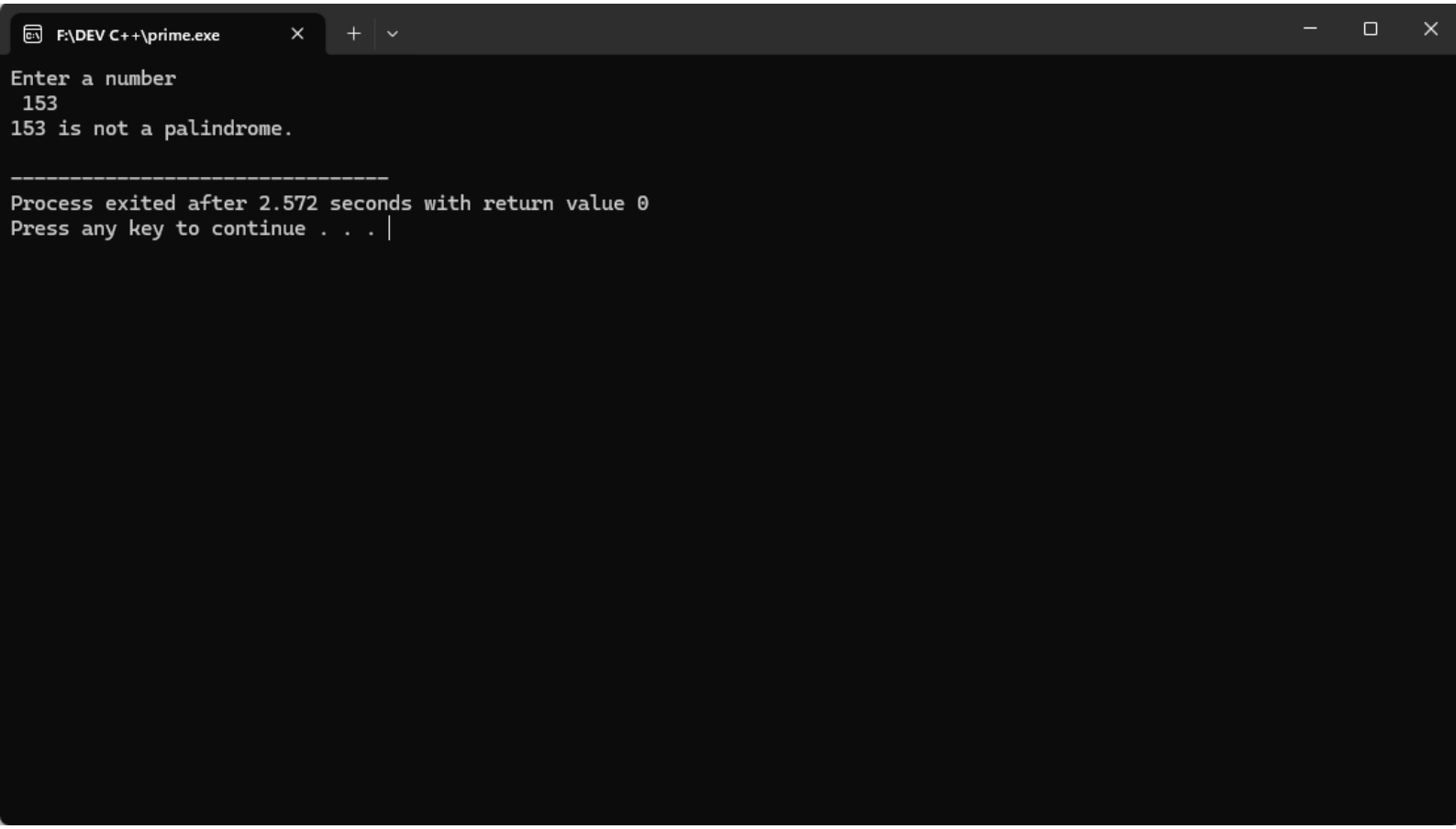
```
  # Include <iostream>
  using namespace std;
  int main () {
```

```cpp
//" Write a C++ program that could find whether the number entered through keyboard is odd or even and
//should also tell that whether its prime or not. The user enters a zero to show that he has no more values to
//. The program should display total number of odds, total number of evens and total number of prime entered.

#include <iostream>
using namespace std;
int main() {
  int num, oddCount = 0, evenCount = 0, primeCount = 0;
  cout << "Enter positive number (0 to quit):\n";
  for (cin >> num; num > 0; cin >> num) {
    if (num <= 1) {
      if (num == 0) {
        break;
      }
      cout << num << " is not prime." << endl;
      continue;
    }
    if (num % 2 == 0) {
      evenCount++;
      cout << num << " is even." << endl;
    } else {
      oddCount++;
      cout << num << " is odd." << endl;
    }
    bool isPrime = true;
    for (int i = 2; i <= num / 2; ++i) { // Check divisibility up to half of num
      if (num % i == 0) {
        isPrime = false;
        break;
      }
    }
    if (isPrime) {
      primeCount++;
      cout << num << " is prime." << endl;
    }
  }
  cout << "\nTotal even numbers: " << evenCount << endl;
  cout << "Total odd numbers: " << oddCount << endl;
  cout << "Total prime numbers: " << primeCount << endl;
return 0;
}
```


F:\DEV C++\prime.exe
Enter positive number (0 to quit):
5
5 is odd.
5 is prime.
6
6 is even.
7
7 is odd.
7 is prime.
8
8 is even.
9
9 is odd.
15
15 is odd.
0
Total even numbers: 2
Total odd numbers: 4
Total prime numbers: 2

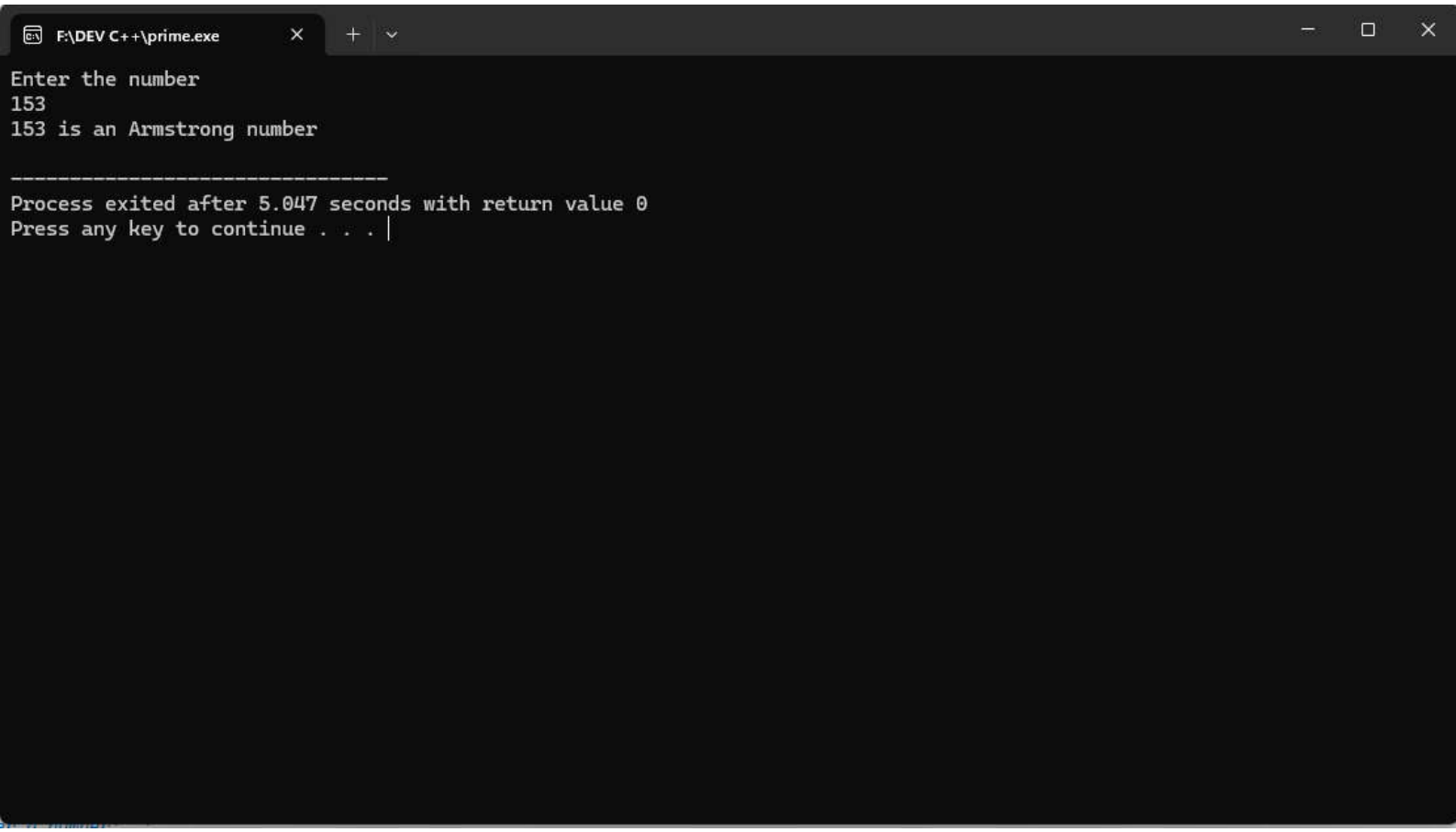
Process exited after 11.04 seconds with return value 0
Press any key to continue . . .

```cpp
//////  Write a C++ Program to Check Whether a Number is Palindrome or Not. Using do while loop
#include <iostream>
using namespace std;
int main() {
  int num, reverse = 0, remainder, originalNum;

  cout << "Enter a number\n ";
  cin >> num;
  // Store the original number for comparison later
  originalNum = num;
  // Reverse the number using a do-while loop
  do {
    remainder = num % 10; // Extract the last digit
    reverse = reverse * 10 + remainder; // Append the digit to the reversed number
    num /= 10; // Remove the last digit from the original number
  } while (num != 0);

  // Check if the original number and reversed number are equal
  if (originalNum == reverse) {
    cout << originalNum << " is a palindrome." << endl;
  } else {
    cout << originalNum << " is not a palindrome." << endl;
  }

  return 0;
}
```


F:\DEV C++\prime.exe
Enter a number
153
153 is not a palindrome.

Process exited after 2.572 seconds with return value 0
Press any key to continue . . .

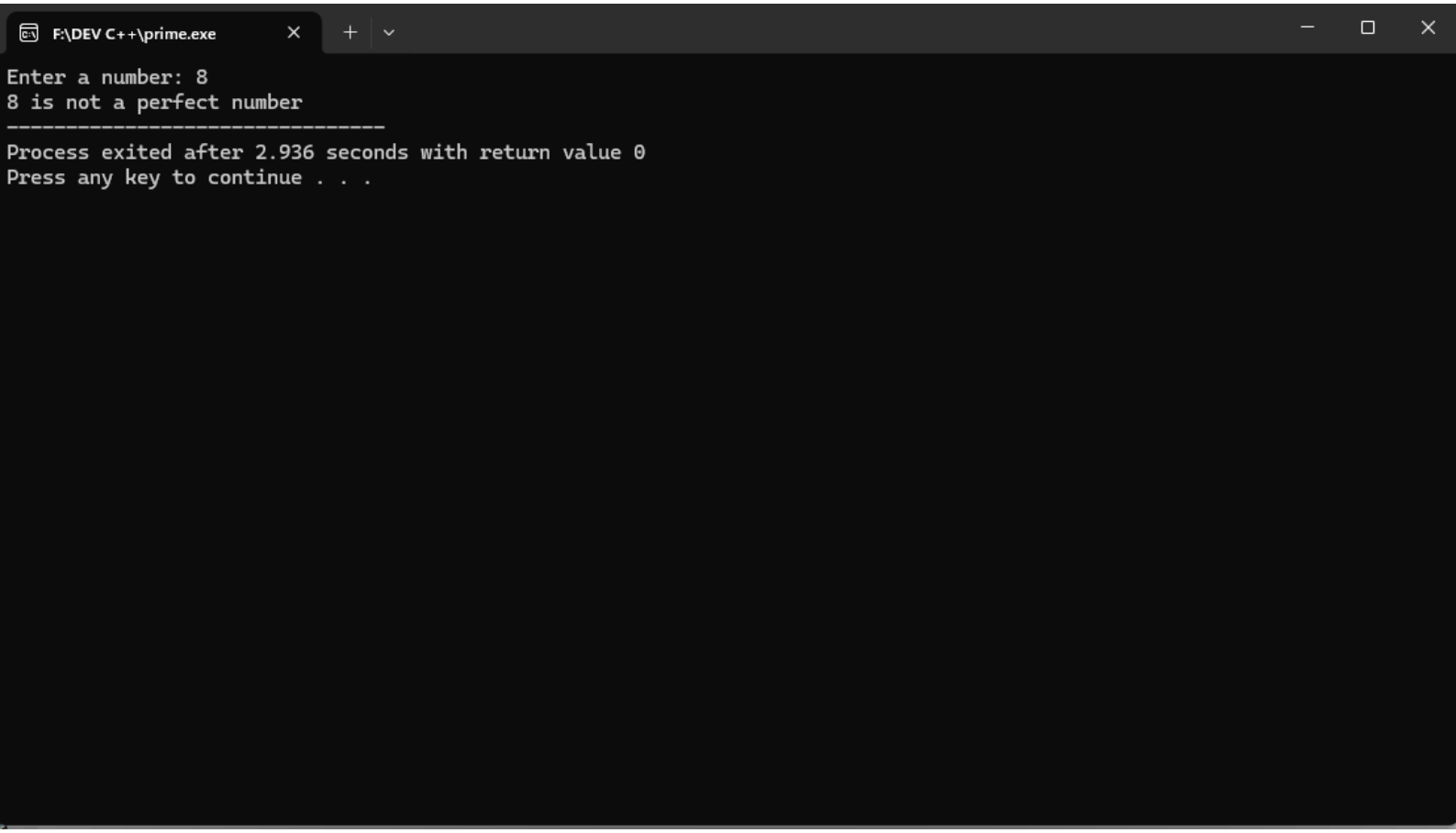
```cpp
//Write a C++ Program to Display Armstrong Number Between Two Intervals.
#include<iostream>
using namespace std;

int main() {
   int num, num1, rem, sum = 0;

   cout << "Enter the number\n";
   cin >> num;
   num1 = num;

   while (num1 != 0) {
      rem = num1 % 10;
      sum += rem * rem * rem;
      num1 /= 10;
   }

   if (sum == num) {
      cout << num << " is an Armstrong number"<<endl;
   } else {
      cout << num << " is not an Armstrong number"<<endl;
   }
   while(num=0){
      break;
   }

   return 0;
}
```


F:\DEV C++\prime.exe
Enter the number
153
153 is an Armstrong number

Process exited after 5.047 seconds with return value 0
Press any key to continue . . .

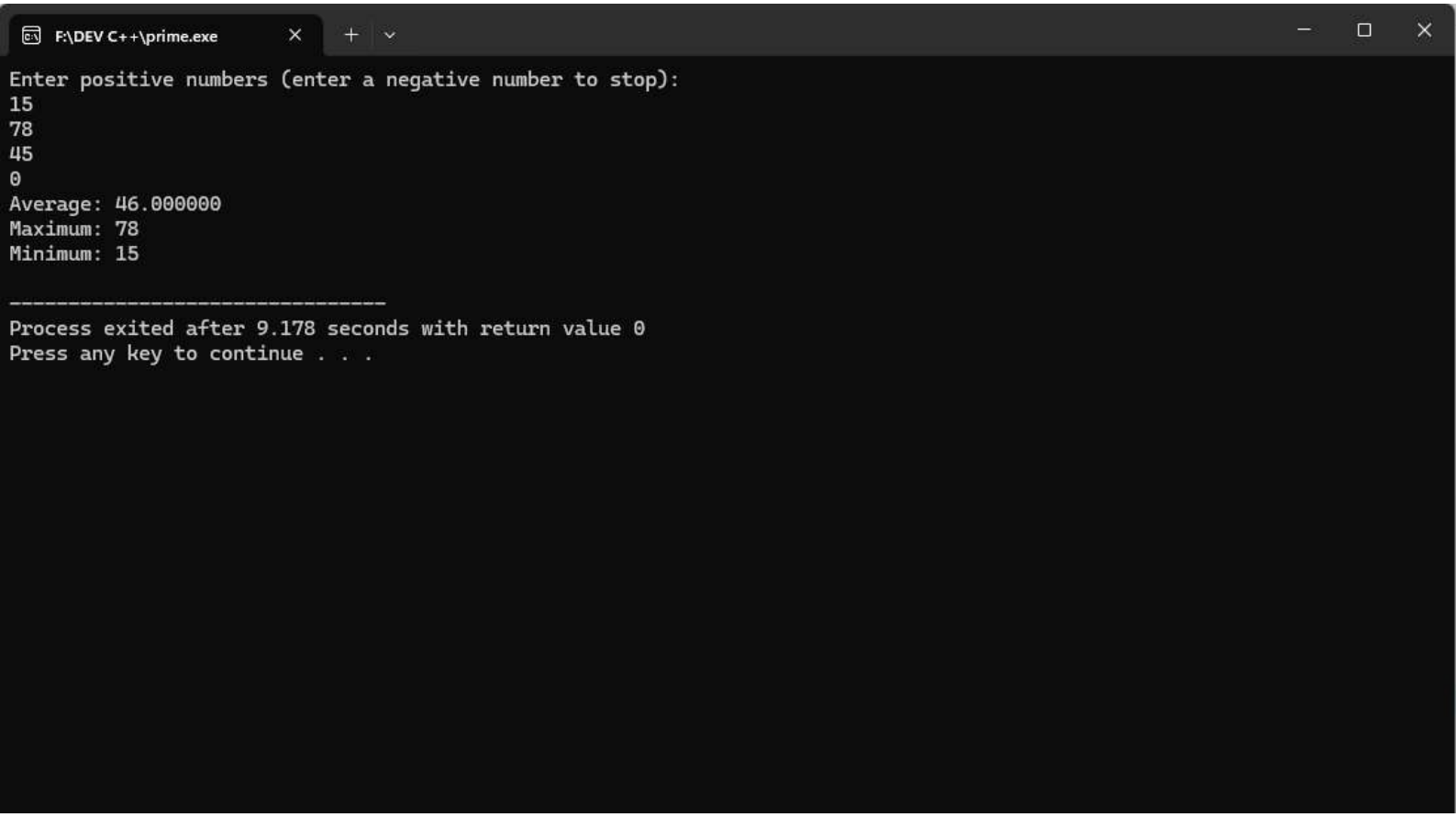
```cpp
//
//"Write a program that inputs a number and check whether it is a Perfect number or not??.
//A Perfect is a number that is numerically equals to the sum of its divisors.

#include<iostream>
using namespace std;
int main() {
    int num, sum = 0;

    cout << "Enter a number: ";
    cin >> num;

    for(int i = 1; i < num; i++) {
        if(num % i == 0) {
            sum += i;
        }
    }

    if(sum == num) {
        cout << num << " is a perfect number";
    } else {
        cout << num << " is not a perfect number";
    }
    return 0;
}
```

```cpp
//
////
```


F:\DEV C++\prime.exe
Enter a number: 8
8 is not a perfect number

Process exited after 2.936 seconds with return value 0
Press any key to continue . . .

```cpp
//
//" Write a program that inputs numbers until the user enters a negative number
//.the program calculate the average, maximum and minimum of all positive numbers.

#include <iostream>
using namespace std;
int main() {
    double number, sum = 0.0, average = 0.0;
    int count = 0;
    int max = INT_MIN, min = INT_MAX;  // Initialize with system's min/max for flexibility

    cout << "Enter positive numbers (enter a negative number to stop):\n";
    // Loop until the user enters a negative number
    while (cin >> number) {
        if (number > 0) {
            sum += number;
            count++;

            // Update max and min values efficiently
            max = (number > max) ? number : max;
            min = (number < min) ? number : min;
        } else {
            break;  // Exit the loop on negative input
        }
    }
    // Calculate average only if there are positive numbers entered
    if (count > 0) {
        average = sum / count;
        cout << "Average: " << fixed << setprecision(2) << average << endl;
        cout << "Maximum: " << max << endl;
        cout << "Minimum: " << min << endl;
    } else {
        cout << "No positive numbers entered." << endl;
    }

    return 0;
}
```


F:\DEV C++\prime.exe
Enter positive numbers (enter a negative number to stop):
15
78
45
0
Average: 46.000000
Maximum: 78
Minimum: 15

Process exited after 9.178 seconds with return value 0
Press any key to continue . . .