SIMPLIFIED C++

40 PROGRAMS

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ABOUT THE AUTHOR.

Noel Moses Mwadende is the passionate book and article writer based of different books and articles concern computer science in general, especially in cybersecurity and machine learning, currently Noel is employed as youtuber and book author at MoTech which is mini firm dealing with provision of information technology services.

INTRODUCTION.

For the first time I faced C++ to be honest it was one of the difficult programming language as I was newer to the programming language, I stayed sleepless the whole night thinking on how I can make it easy for me, I found one of my exercise where I wrote most frequently and important examples in each topic, studying those examples for about two weeks then everything was simple, I know still there might people face difficulties in learning C++, do not worry let us learn by examples today, the same methodology I used to master C++ in simplified way and it worked fine for me, now it is time for me to introduce this simplified way to master C++.

This book contains four chapter, in which there are 10 examples in each chapter which sum up to 40 C++programs in simplified way.

ACKNOWELDGEMENT.

Thanks to Prof Leonard James Mselle the author of "C++ programming in RAM diagrams under MTL-1" your efforts in teaching us C++ today seems to bear fruits as am able to teach others as you used to teach me.

Thanks to my former head of department Doctor Masoud Masoud, currently lecture at DIT, everyone knows your teaching style to be honest most of C++ programs were weak before you, I enjoyed your class sessions.

Thanks to my instructor Miss Martha Shaka, your efforts in tutorial session made easy way for me to capture different concepts of C++, most of time you tried to teach us in simple ways.

HOW TO READ THIS BOOK.

Methodology used for teaching in this book is example based teaching methodology, so it is better to follow the same way in learning as I used in teaching, for better understanding you should take one example or one program after another, trying to write each and every program yourself, this will help you in understanding, reading by looking pictures in figure may lead you to fall in a sleep, programming language is about practice, so after reading one program write it either in Dev C++,Borland or elsewhere.

WHY YOU SHOULD READ THIS BOOK.

What makes students understand a subject by either more examples provided by instructor or by more practice for the side of student, in my book I have provided more examples if you will take them seriously and do more practice, for sure you will understand.

All programs have two parts, part is program and second part is the output of the program, making errors in program will lead to errors in the output, here it comes the matter of why you should read this book, every program in my book is provided with two important parts of program, that is piece of code and output of code, studying these two parts of program will makes you understand more.

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CHAPTER ONE.

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1. Introduction of C++.

Welcome to simplified C++ 40 programs where will are going to learn by examples, start with program one as shown in the figure 1, this is just for warming up.

introduction.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6
7      cout<<"Introduction of simpified C++ "<<endl;
8      cout<<"Course Offered by MoTech "<<endl;
9      cout<<"Instructor Noel Moses Mwadende "<<endl;
10     return 0;
11
12     }
13
```

Fig. 1.

```
D:\VIRUS LAB\introduction.exe
Introduction of simpified C++
Course Offered by MoTech
Instructor Noel Moses Mwadende

--------------------------------
Process exited after 5.053 seconds with return value 0
Press any key to continue . . .
```

Fig. 2.

2. Hello world

This is the first program to do, almost in all programming language, this program prints the word Hello world to the screen.

helloWorld.cpp

```
1  #include <iostream>
2  using namespace std;
3
4   int main(){
5
6  // Hello world C++ program
7  cout<<"Hello World "<<endl;
8
9  return 0;
10
11 }
12
```

Fig. 3.

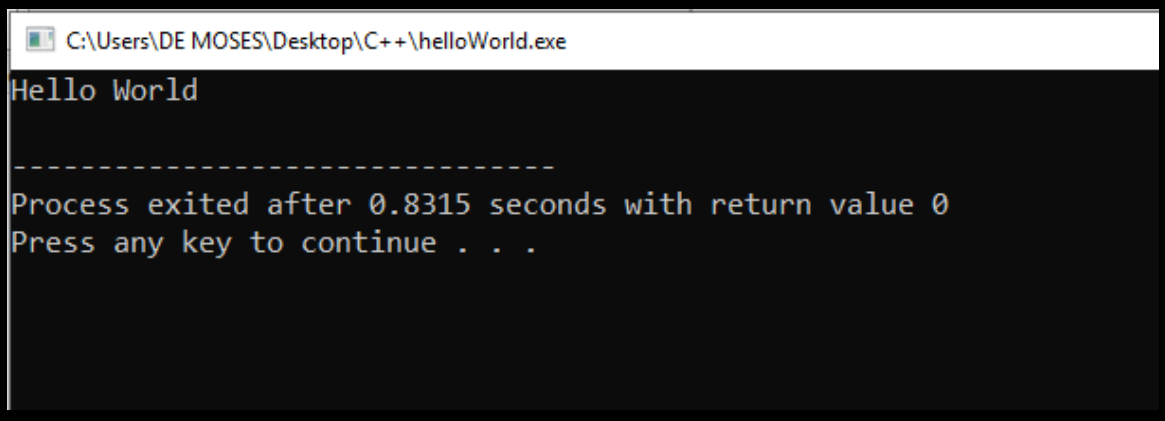

Fig. 4.

Figure 3 shows the source codes of hello world.cpp program, figure 4 shows the output of the program after program is compiled and run, make sure everything is right as it is shown on above two figures.

3. Variable declaration.

Variables are the storage for data values, they are like rooms for storing data. Before using any variable, you must declare it and that is what is called variable declaration.

declaration.cpp

```
1  #include <iostream>
2  using namespace std;
3
4
5  int main()
6  {
7      // C++ program shows how to declare variable
8
9      int x;
10     string name;
11     float salary;
12     cout<<"x, name and salary are the variables declared : ";
13
14     return 0;
15
16 }
17
```

Fig. 5.

In the figure 5, x, name and salary are the variables being declared, that is declaration of variables.

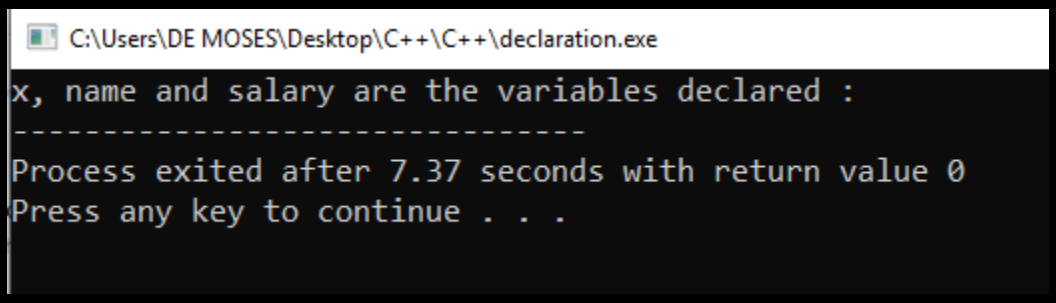

Fig. 6.

Figure number 6 print declared variables.

Note: The following rules must be considered during variable declaration.

➔Variable name can not be keyword such as else, break, case, for and other keywords in C++.

➔Variable name can not contain space between it. For example, string first name is wrong variable declaration, it should be string firstname that is without space or it should contain underscore string first_name.

➔It should start with letter or underscore.

➔It should not contain special characters like $, @, £, # and other special characters.

4. Variable initialization.

Variable initialization is the assignment of data value to the variable declared, though declaration and initialization of variable can be done at the same time, for example int x=4, this is declaration and initialization at the same time.

initialization.cpp

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

int main()
{
    // C++ program show how to initialize variable
    string company;
    float revenue;

    company="MoTech";
    revenue=2000.500;
    cout<<"Name of the Company "<<company<<",  Total Revenue "<<revenue;

    return 0;

}
```

Fig. 7.

In the figure 7, two variables company and revenue are Initialized.

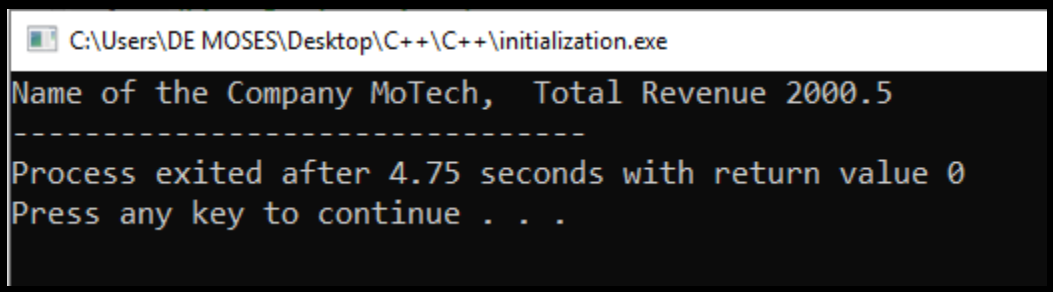

Fig. 8.

Figure 8 shows the output of variables on the screen.

5. How to comment.

Comments are the lines which are not visible to the compiler during compilation time and running time of a program, mostly they are used to provide more explanation about a certain line of code so as to provide more understanding.

Types of comments.

➔Single line comment.

➔Multiple line comment.

comment.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      // C++ program to shows how to comment in C++
7      // This is the single line comment
8
9      /*  This is
10         Multiple line
11         Comment
12     */
13
14     cout<<"Single And Multiple line comment will not display ";
15
16     return 0;
17 }
```

Fig. 9.

In the figure 9, single line comment is done on line 6 and line 7, while multiple line comment is done from line 9 to line 12.

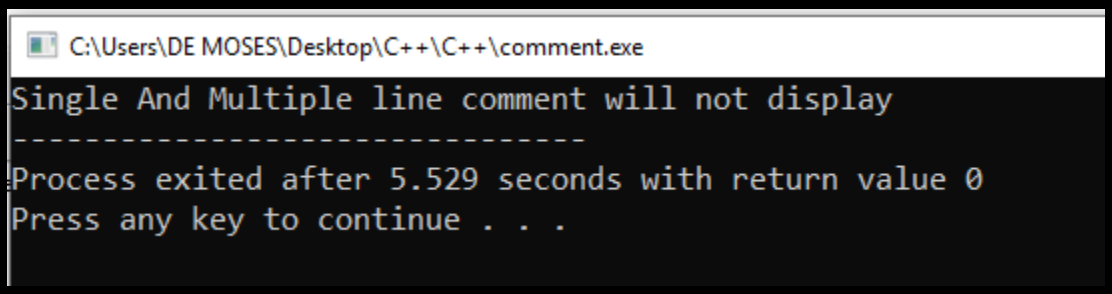

Fig. 10.

Single line and multiple line comment will not display if program is compiled and run as shown in the figure 10.

6. Print line.

As shown in the figure 11, line 8 and 9 will print in the same line but line 10 and line 11 will print in new line as output is shown in the figure 12.

printLine.cpp

```
1  #include <iostream>
2  using namespace std;
3
4
5  main()
6  {
7  // print line in C++
8  cout<<"Hello"; // This will print in the same line
9  cout<<"World"; // This will print in the same line
10 cout<<" "<<endl; // This will print in new line
11 cout<<"Hello World"<<endl; // This will print in new line
12
13     return 0;
14 }
15
```

Fig. 11.

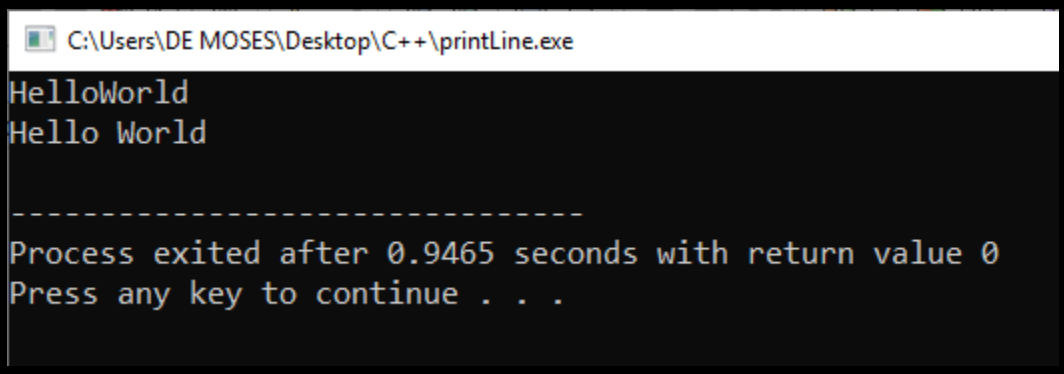

Fig. 12.

7. Addition of two numbers.

This is the simple C++ program that perform addition of two numbers which are integers.

addition.cpp

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

int main()
 {
    // C++ program for addition of two numbers

    int numberone,numbertwo,sum;
      numberone=15;
      numbertwo=5;

    sum= numberone + numbertwo;

    cout<<"Sum Of Two Numbers Is : "<<sum;
    return 0;
}
```

Fig. 13.

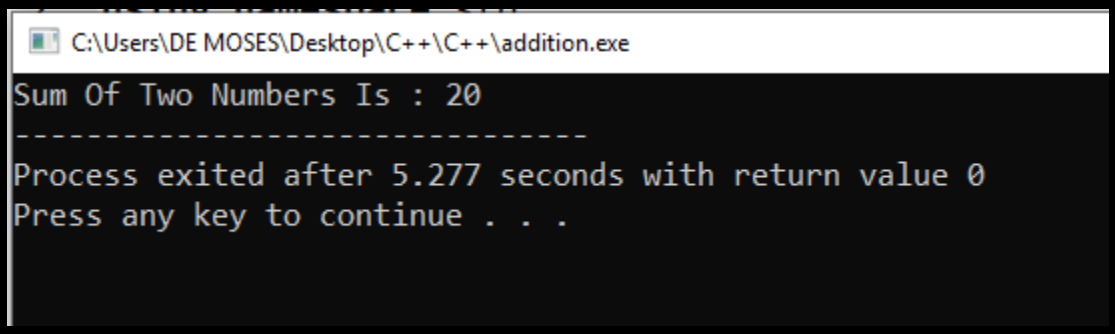

Fig. 14.

In figure 13 two variables numberone and numbertwo are declared and later on they are initialized to 15 and another 5 values, summation of these numbers is done and answer is stored in variable called sum.

20 is the answer after finding their sum, as shown in figure 14.

8. Accepting user input.

This program accepts and read user input entered by standard input device like keyboard.

userinput.cpp

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

int main()
{
    // C++ program to receive user input

    int age;
    string name;

    cout<<"Enter Your Name : ";
    cin>>name;
    cout<<"Enter Your Age : ";
    cin>>age;
    cout<<"Your Name Is "<<name<<" "<<"And Your Age Is "<<age;
    return 0;
    }

```

Fig. 15.

```
C:\Users\DE MOSES\Desktop\C++\C++\userinput.exe
Enter Your Name : MoTech
Enter Your Age : 2
Your Name Is MoTech And Your Age Is 2
--------------------------------
Process exited after 32.53 seconds with return value 0
Press any key to continue . . .
```

Fig. 16.

9. Concatenation.

This program shows how to interconnect series of words.

concatenation.cpp

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

int main()
{

    string firstname="De";
    string secondname="Moses";
    string birthdate="1990";

    string age="I was born " + birthdate;
    cout<<"My Name Is "<<firstname + secondname<<endl;
    cout<<age;
    return 0;
    }

```

Fig. 17.

In the figure 18, firstname and secondname are connected.

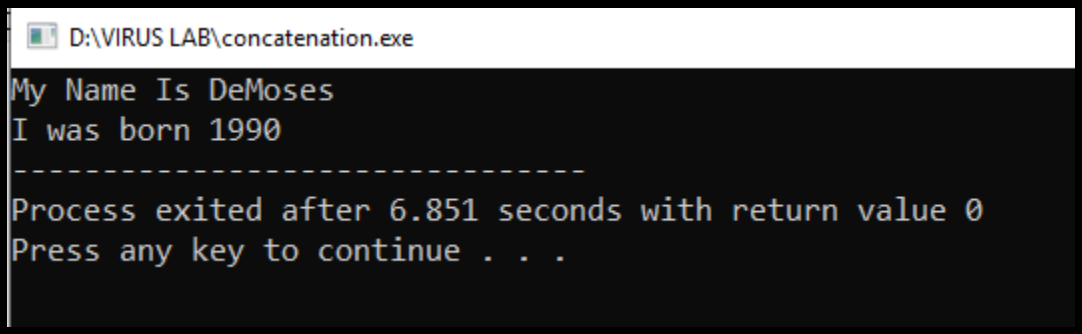

Fig. 18.

10. Product of two numbers.

product.cpp

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

int main()
{
    // C++ program to find product of two numbers

    int x,y,product;
    product=2*2;

    cout<<"Product of two numbers is  "<<product;
    return 0;
    }
```

Fig. 19.

```
D:\VIRUS LAB\product.exe
Product of two numbers is  4
--------------------------------
Process exited after 4.975 seconds with return value 0
Press any key to continue . . .
```

Fig. 20.

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CHAPTER TWO.

- ➔If condition.
- ➔For loop.
- ➔Nested loop.
- ➔While loop.
- ➔Do while.
- ➔Switch case.
- ➔Even number.
- ➔Odd number.
- ➔Leap year.
- ➔Random number generation.

11. If condition.

If condition is used to check a certain condition to be satisfied, the code below if condition will not be executed without a defined condition to be satisfied.

ifCondition.cpp

```
1  #include <iostream>
2  using namespace std;
3
4   int main(){
5
6  // If condition C++ program
7  int x=4;
8    if(x==4)
9      cout<<"This is logical true"<<endl;
10 cout<<"That is if condition "<<endl;
11
12 return 0;
13
14 }
15
```

Fig. 21.

In the figure 21 defined condition is logical true that is why lines of code below it executed.

```
C:\Users\DE MOSES\Desktop\C++\ifCondition.exe
This is logical true
That is if condition

--------------------------------
Process exited after 1.426 seconds with return value 0
Press any key to continue . . .
```

Fig. 22.

12. For loop.

For loop is used to print all elements of array called my string as shown in the figure 23.

forLoop.cpp

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

int main()
{
    // C++ program to print elements of array using for loop
    string myarray[20]= {"Robotics","C++","Python","AI","ML"};
    cout<<"Elements Of myarray :"<<endl;
    for (int i=0; i<4; i++)
    {
        cout<<myarray[i]<<endl;
    }

    return 0;
}
```

Fig. 23.

Elements of mystring array are printed as shown in the figure 24.

```
C:\Users\DE MOSES\Desktop\C++\forLoop.exe
Elements Of myarray :
Robotics
C++
Python
AI

--------------------------------
Process exited after 0.9307 seconds with return value 0
Press any key to continue . . .
```

Fig. 24.

13. Nested loop.

In nested loop program to find greatest number among three numbers is used as an example, nested if else is used to find which is the greatest number.

nestedIfElse.cpp

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

int main()
{
    // C++ program to find greatest numbers
    int number1,number2,number3;
    cout<<"Program To Find Greatest number Among Three Numbers : "<<endl;
    cout<<"Enter three Numbers : ";
    cin>>number1>>number2>>number3;
    if ((number1>=number2) && (number1>=number3))
        cout<<"Number "<<number1<<" Is the greatest number "<<endl;
    else if ((number2>=number1) && (number2>=number3))
        cout<<"Number "<<number2<<" Is the greatest number "<<endl;
    else
        cout<<"Number "<<number3<<" Is the greatest number "<<endl;
    return 0;
}
```

Fig. 25.

```
C:\Users\DE MOSES\Desktop\C++\nestedIfElse.exe
Program To Find Greatest number Among Three Numbers :
Enter three Numbers : 4 5 7
Number 7 Is the greatest number

--------------------------------
Process exited after 8.076 seconds with return value 0
Press any key to continue . . .
```

Fig. 26.

In the figure 26 it is true that number 7 is the greatest number among 4 and 5, code of lines in the figure 25 were able to find greatest number.

14. While loop.

In while loop it check for a certain condition to be true, mostly used when we do not know how many times to loop a program.

whileLoop.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      // while loop program in C++
7       int a=0;
8      while(a<=3)
9      {
10       cout<<"This is while loop in C++"<<endl;
11       a++;
12     }
13
14     return 0;
15 }
16
```

Fig. 27.

In figure 28 program printed output four times on the screen after a condition enclosed by brackets was satisfied in the figure 27 line 8, it started from 0 to 3, that is why output is printed four times.

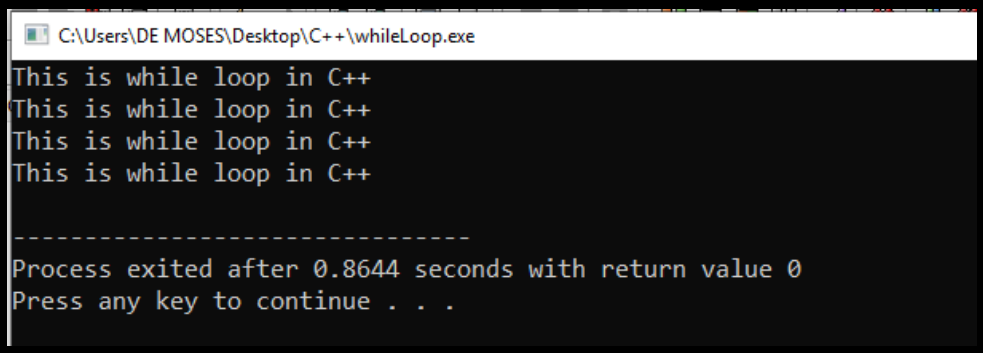


Fig. 28.

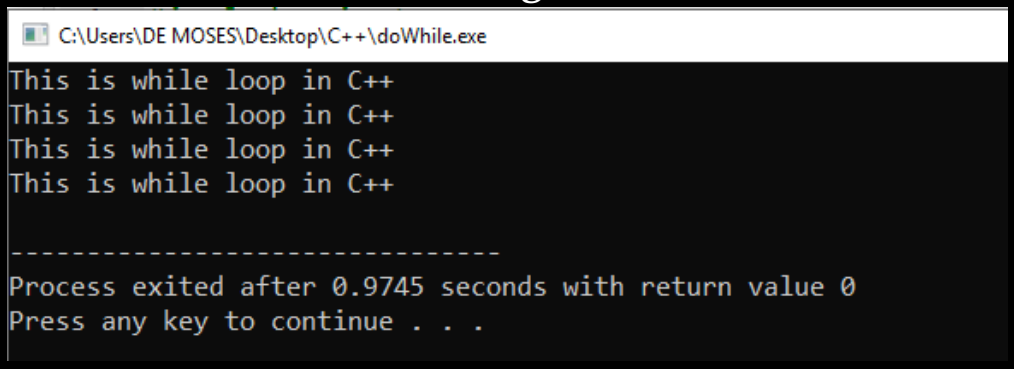
15. Do while.

In do while loop condition program condition is checked at the end of program as shown in the figure 29.

doWhile.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      // Do while loop program in C++
7        int a=0;
8       do {
9         cout<<"This is while loop in C++"<<endl;
10        a++;
11          }while(a<=3);
12
13
14     return 0;
15 }
16
```

Fig. 29.


C:\Users\DE MOSES\Desktop\C++\doWhile.exe
This is while loop in C++
This is while loop in C++
This is while loop in C++
This is while loop in C++

Process exited after 0.9745 seconds with return value 0
Press any key to continue . . .

Fig. 30.

16. Switch case.

In switch case, only selected block of code or case is going to be executed, this save time compared to nested if else which check one condition after another.

switchCase.cpp

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

int main(){
    // Switch case program in C++
       char selection;
      cout<<"Migos US hiphop group has three memebers "<<endl;
      cout<<"Select Q if you like Quavo, T for Takeoff or O for Offset "<<endl;
      cin>>selection;
      switch(selection){
        case 'Q':
            cout<<"Wow Quavo is slow motion rapper ";
            break;
        case 'T':
            cout<<"Wow Takeoff is wise rapper ";
            break;
        case 'O':
            cout<<"Wow Offset is cruel rapper ";
            break;
        default:
            cout<<"Wrong choice, select again ";
      }
    return 0;
}
```

Fig. 31.

```
C:\Users\DE MOSES\Desktop\C++\switchCase.exe
Migos US hiphop group has three memebers
Select Q if you like Quavo, T for Takeoff or O for Offset
Q
Wow Quavo is slow motion rapper
--------------------------------
Process exited after 7.215 seconds with return value 0
Press any key to continue . . .
```

Fig. 32.

17. Even number.

This program will allow user to enter any integer numbers and check if number is even or not.

evenNumber.cpp

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

int main()
{
    // C++ program to check if number is even

    int number;
    cout<<"Enter Any Number : ";
    cin>>number;

    if ( number%2==0)
       cout<<"Number "<<number<<" Is Even Number ";
     else
       cout<<"Number "<<number<<" Is Not Even ";

    return 0;
}

```

Fig. 29.

```
C:\Users\DE MOSES\Desktop\C++\C++\evenNumber.exe
Enter Any Number : 4
Number 4 Is Even Number
--------------------------------
Process exited after 3.494 seconds with return value 0
Press any key to continue . . .
```

Fig. 30.

Codes in the figure 29 was able to determine if number entered by user is even as shown in the figure 30.

18. Odd number.

oddNumber.cpp

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

int main()
{
    // C++ program to check if number is even or odd

    int number;
    cout<<"Enter Any Number : ";
    cin>>number;

    if ( number%2==0)
       cout<<"Number "<<number<<" Is Even Number ";
     else
       cout<<"Number "<<number<<" Is Odd ";

    return 0;
}

```

Fig. 31.

```
C:\Users\DE MOSES\Desktop\C++\oddNumber.exe
Enter Any Number : 5
Number 5 Is Odd
--------------------------------
Process exited after 4.097 seconds with return value 0
Press any key to continue . . .
```

Fig. 32.

If number is divided by two and it got remainder that is odd number, else it is even.

19. Leap year.

This program will check a year entered by user if it is leap year or not.

leapYear.cpp

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

int main()
{
    // C++ program to check if a given year is leap

    int year;
    cout<<"Enter Any four Digits Of The Year  : ";
    cin>>year;

    if ( year%4==0)
       cout<<"Number "<<year<<" Is Leap Year";
     else
       cout<<"Number "<<year<<" Is Not Leap ";
    return 0;
}
```

Fig. 33.

```
C:\Users\DE MOSES\Desktop\C++\C++\leapYear.exe
Enter Any four Digits Of The Year  : 2020
Number 2020 Is Leap Year
--------------------------------
Process exited after 5.016 seconds with return value 0
Press any key to continue . . .
```

Fig. 34.

20. Random number generation.

This program will random generate numbers, this concept is very important because it can be used for game development by employing random selection and computer security for generate of security authentication code.

randomNumber.cpp

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


int main()
{
    // C++ program for random number generation

    int rand();

    for (int i=0; i<10; i++)
       {
        cout<<rand()<<endl;
       }

    return 0;
}
```

Fig. 35.

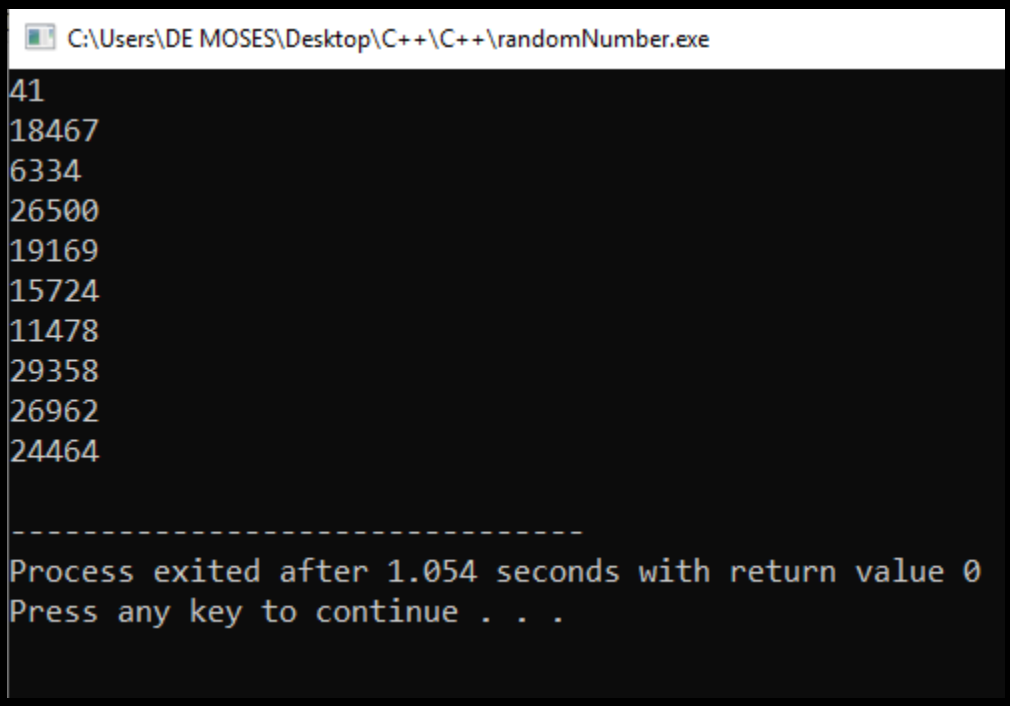


Fig. 36.

By using for loop program was able to produce 10 random number as shown in the figure 36.

Note: Do not forget to include cstdlib as shown in the second line of the figure 35.

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CHAPTER THREE.

- ➔**Find sum, average and product.**
- ➔**Area of rectangle.**
- ➔**Create array, assign values and display them.**
- ➔**Store numbers in array and display using loop.**
- ➔**Math function.**
- ➔**Create and call a function.**
- ➔**Function that return value.**
- ➔**Function with arguments.**
- ➔**Guessing game.**
- ➔**Area of triangle.**

21. Find sum, average and product.

Program in the figure 37 will accept three number from user as shown in the figure and use switch case to give user three options to check sum, product or average of numbers.

sumAverageProduct.cpp

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

int main(){
    // C++ program to find sum,average and product using switch case

        int n1,n2,n3,sum,average,product;
        cout<<"Enter Three Numbers For Different Math Operations "<<endl;
        cin>>n1>>n2>>n3;
       char selection;
      cout<<"Thank you, your input are saved, choose One Operation Below "<<endl;
      cout<<"Select S for Sum, A for Average or P for Product "<<endl;
      cin>>selection;
      switch(selection){
        case 'S':
            sum= n1 + n2 + n3;
            cout<<"Sum Of Three Entered Numbers is "<<sum;
            break;
        case 'A':
            average= (n1 + n2 + n3)/3;
            cout<<"Average Of Three Entered Numbers is "<<average;
            break;
        case 'P':
            product= n1 * n2 * n3;
            cout<<"Product Of Three Entered Numbers is "<<product;
            break;
        default:
            cout<<"Wrong choice, select again ";
      }
    return 0;
}

```

Fig. 37.

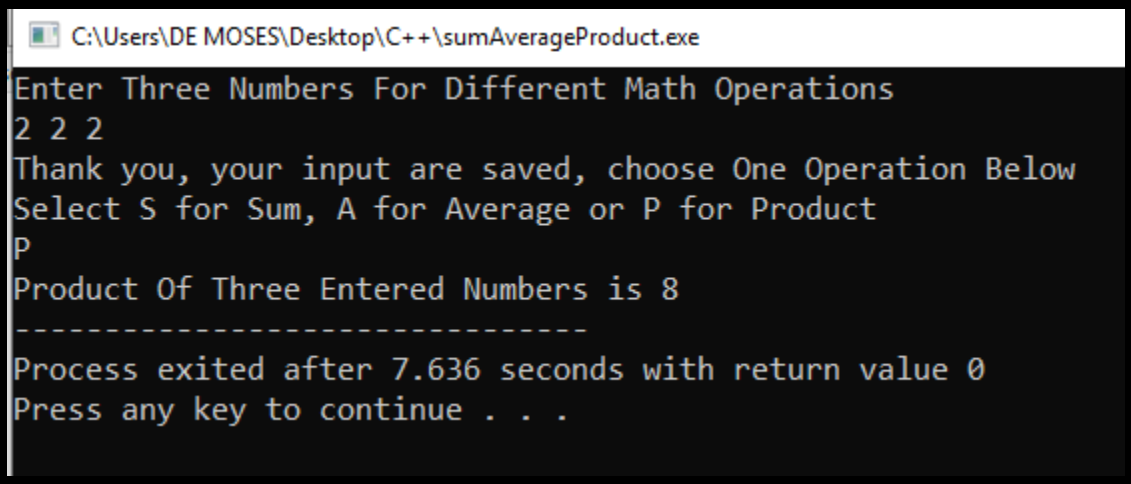


Fig. 38.

22. Area of rectangle.

This program will calculate area of triangle from user input width and length.

rectangle.cpp

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

int main(){
    // C++ program to calculate area of rectangle

        int width,length;
        double area;
        cout<<"C++ Program To Find Area Of Rectangle "<<endl;
        cout<<"Enter Width Of Rectangle "<<endl;
        cin>>width;
        cout<<"Enter Length Of Rectangle "<<endl;
        cin>>length;
        area=width*length;
        cout<<"Area Of Rectangle Is "<<area;
    return 0;
}
```

Fig. 39.

```
C:\Users\DE MOSES\Desktop\C++\rectangle.exe
C++ Program To Find Area Of Rectangle
Enter Width Of Rectangle
4
Enter Length Of Rectangle
5
Area Of Rectangle Is 20
--------------------------------
Process exited after 7.067 seconds with return value 0
Press any key to continue . . .
```

Fig. 40.

23. Create array, assign values and display them.

array.cpp

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

int main(){
    // C++ program to create array,assign values and display them

        // create array of size 5
        string clubs[5];
        // assign values to create array
        clubs[0]="Barcelona";
        clubs[1]="Bayern Munich";
        clubs[2]="PSG";
        clubs[3]="Liverpool";
        clubs[4]="Madrid";
        // print elements of array on screen
        cout<<"These are the elements of array clubs "<<endl;
        for(int a=0; a<=4; a++)
          {
            cout<<clubs[a]<<endl;
          }

    return 0;
}
```

Fig. 41.

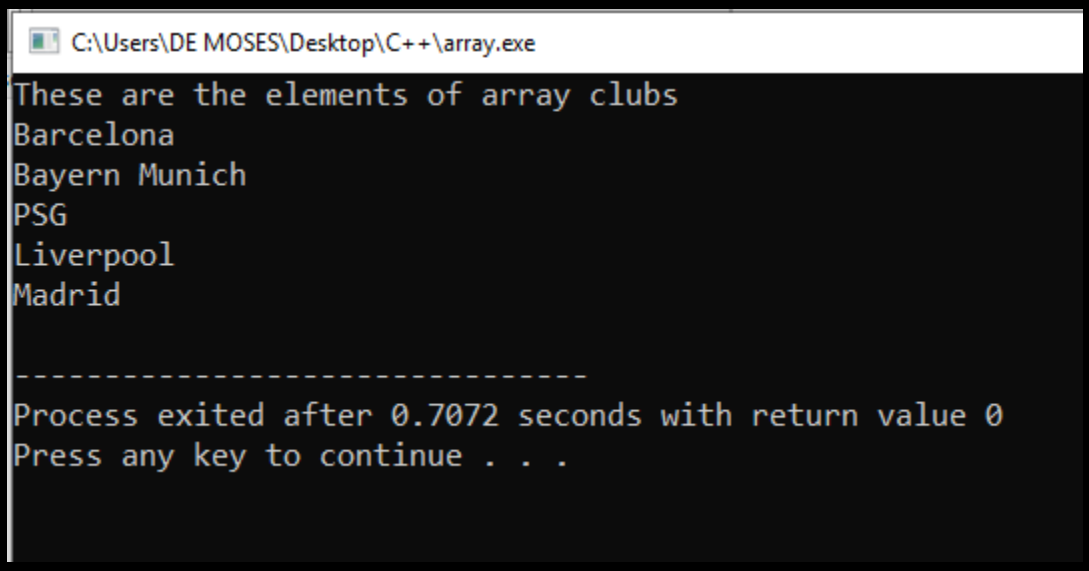


Fig. 42.

Program In the figure 41, array of type string was created with size of 5, five European clubs were assigned in the array called clubs, later on for loop were used to print out elements of array as shown in the figure 42.

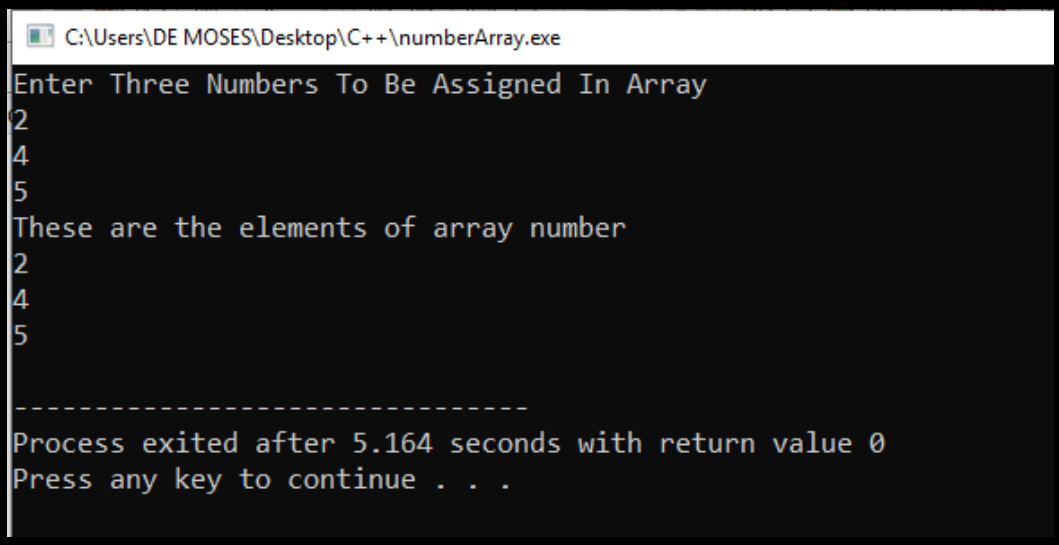
24. Store number in array and display using loop.

Program in the figure 43 involved creation of array called number which allowed user to input values by using keyboard and later on for loop were used to retrieve elements stored in the array.

numberArray.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  int main(){
5      // C++ program to store number in array and display them
6
7          // create array of size 3
8          int number[3];
9          // assign values to created array by using loop
10          cout<<"Enter Three Numbers To Be Assigned In Array "<<endl;
11         for(int a=1; a<=3; a++)
12           {
13              cin>>number[a];
14           }
15
16         // print elements of array on screen
17         cout<<"These are the elements of array number "<<endl;
18         for(int b=1; b<=3; b++)
19           {
20              cout<<number[b]<<endl;
21           }
22
23     return 0;
24 }
```

Fig. 43.


C:\Users\DE MOSES\Desktop\C++\numberArray.exe
Enter Three Numbers To Be Assigned In Array
2
4
5
These are the elements of array number
2
4
5

Process exited after 5.164 seconds with return value 0
Press any key to continue . . .

Fig. 44.

25. Math function.

Program in the figure 45 accept input from user which is the integer number and find the square root as shown in the figure 46.

math.cpp

```
1  #include <iostream>
2  #include <cmath>
3  using namespace std;
4
5  int main(){
6      // C++ program to find Square root of Numbers
7          double root;
8          int x;
9          cout<<"This Program Find Square Root Of numbers "<<endl;
10         cout<<"Enter Integer Number To Get Square Root "<<endl;
11         cin>>x;
12         root =sqrt(x);
13
14         // print elements of array on screen
15         cout<<"The Square Root Of "<<x<<" Is "<<root<<endl;
16
17     return 0;
18 }
```

Fig. 45.

```
C:\Users\DE MOSES\Desktop\C++\math.exe
This Program Find Square Root Of numbers
Enter Integer Number To Get Square Root
25
The Square Root Of 25 Is 5

--------------------------------
Process exited after 10.49 seconds with return value 0
Press any key to continue . . .
```

Fig. 46.

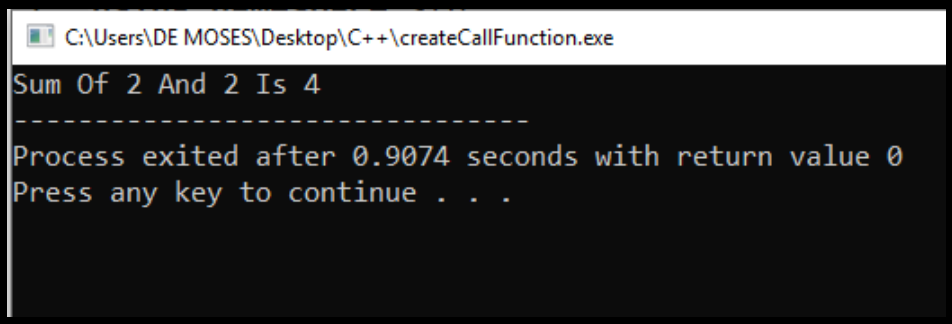
26. Create and call a function.

In the figure 47 function called addition which perform addition operation of two numbers is created and called in the main function as shown in the line 15 of the figure 47, called function was able to perform addition of two numbers x and y as shown in the figure 48 where sum of these numbers is 4.

createCallFunction.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  void addition()
5  {
6      int x,y,sum;
7      x=2;
8      y=2;
9      sum= x + y;
10     cout<<"Sum Of "<<x<<" And "<<y<<" Is "<<sum;
11 }
12
13 int main(){
14     // Create and call a function in C++
15         addition();
16
17     return 0;
18 }
19
```

Fig. 47.


C:\Users\DE MOSES\Desktop\C++\createCallFunction.exe
Sum Of 2 And 2 Is 4

Process exited after 0.9074 seconds with return value 0
Press any key to continue . . .

Fig. 48.

27. Function that return value.

In the figure 49 function called addition which perform addition operation of two numbers is created and called in the main function but this function return value which is different to that shown in the figure 47 which did not return value.

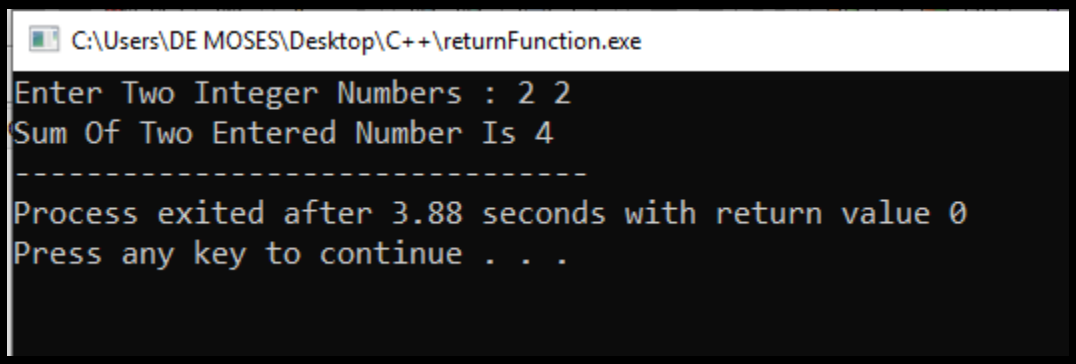
returnFunction.cpp

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

int addition(int x, int y)
{
    return x + y;
}

int main(){
    // C++ function that return value
        int sum;
        int a,b;
        cout<<"Enter Two Integer Numbers : ";
        cin>>a>>b;
        sum=addition(a,b);
        cout<<"Sum Of Two Entered Number Is "<<sum;
    return 0;
}
```

Fig. 49.


C:\Users\DE MOSES\Desktop\C++\returnFunction.exe
Enter Two Integer Numbers : 2 2
Sum Of Two Entered Number Is 4

Process exited after 3.88 seconds with return value 0
Press any key to continue . . .

Fig. 50.

28. Function with arguments.

In the figure 51 function called addition which perform addition operation of two numbers is created and called in the main function.

argumentsFunction.cpp

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

void addition(int x, int y)
{
    int sum;
    sum=x + y;
    cout<<"Sum Of Two Entered Number Is "<<sum;
}

int main(){
    // C++ function with arguments
        int sum;
        int a,b;
        cout<<"Enter Two Integer Numbers : ";
        cin>>a>>b;
        addition(a,b);
    return 0;
}
```

Fig. 51.

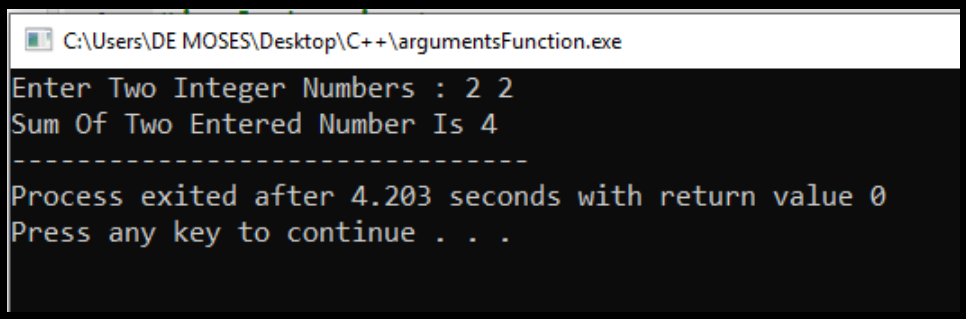


Fig. 52.

29. Guessing game.

By using cstdlib library and rand function it was possible to make simple guessing game as shown in the figure 53, though I missed it as shown in the figure 54.

game.cpp

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


int main()
{
    // C++ simple guessing game
    int number;
    cout<<"This Is Simple Guessing Game "<<endl;
    cout<<"Guess Which Number I Got On My Hands :";
    cin>>number;
        int rand();
    if(rand()==number)
       cout<<"You Are So Genius ";
    else
       cout<<"I Guess You Are Wrong My Number Is "<<rand()<<endl;
       cout<<"Your Number Is "<<number;
    return 0;
}
```

Fig. 53.

```
C:\Users\DE MOSES\Desktop\C++\game.exe
This Is Simple Guessing Game
Guess Which Number I Got On My Hands :6
I Guess You Are Wrong My Number Is 18467
Your Number Is 6
--------------------------------
Process exited after 6.744 seconds with return value 0
Press any key to continue . . .
```

Fig. 54.

30. Area of Triangle.

triangle.cpp

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

 int main(){

// Area of triangle C++ program
int base=4;
int height=4;
double area;
area=base*height*(0.5);
cout<<"Area Of A Triangle Is "<<area<<endl;

return 0;

}

```

Fig. 55.

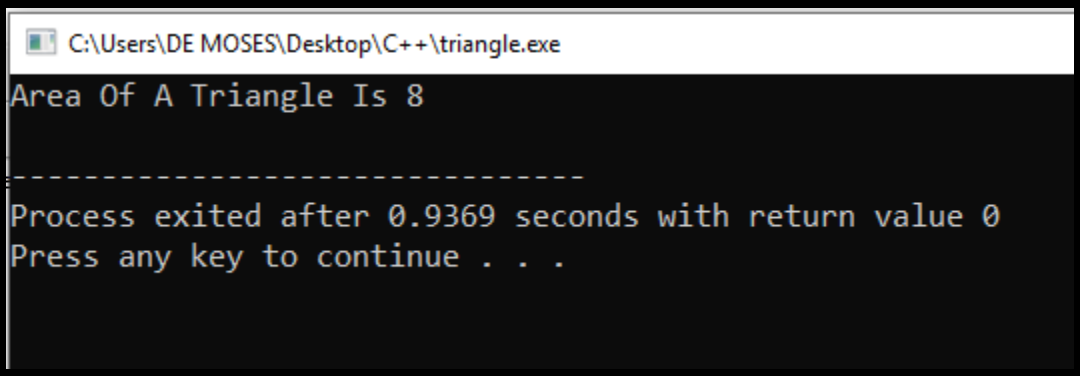


Fig. 56.

In the figure 55 area of triangle is calculated where base and height are 4., answer is shown in the figure 56.

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CHAPTER FOUR.

- ➔Create file.
- ➔Write to a file.
- ➔Read from a file.
- ➔Pointers.
- ➔Addition program and write to a file.
- ➔Menu driven program.
- ➔Multiplication table.
- ➔Area of circle.
- ➔Perimeter of radius.
- ➔Even number between a range.

31. Create a file.

In figure 57 shows how to create a file, in the figure 58 file called MoTech.txt is created, and in the figure 59 is the how file looks like.

createFile.cpp

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


int main()
{
    // C++ create a file
    char filename[30];

    cout<<"Enter Name Of File To Create : ";
    cin>>filename;
    ofstream createfile(filename);
    cout<<"Congrats File Called "<<filename<<" Is Created ";
    return 0;
}
```

Fig. 57.

```
C:\Users\DE MOSES\Desktop\C++\createFile.exe
Enter Name Of File To Create : MoTech.txt
Congrats File Called MoTech.txt Is Created
--------------------------------
Process exited after 12.04 seconds with return value 0
Press any key to continue . . .
```

Fig. 58.

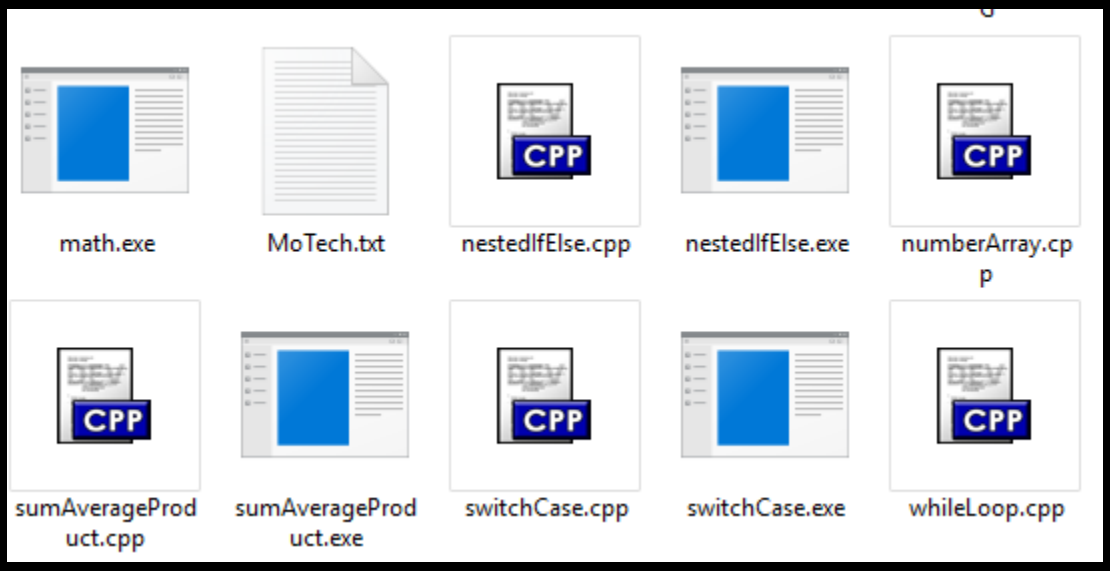

math.exe
MoTech.txt
nestedIfElse.cpp
nestedIfElse.exe
numberArray.cpp
sumAverageProduct.cpp
sumAverageProduct.exe
switchCase.cpp
switchCase.exe
whileLoop.cpp

Fig. 59.

32. Write to a file.

Program figure 60 shows program which prompt user to enter name of file and write to a file, in the figure 61 file called MoTech.txt was entered and Hey was written to a file as shown in the figure 61 and 62.

writeFile.cpp

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

int main()
{
    // C++ program to write in a file
    char filename[30];
    char data[70];
    cout<<"Enter Name Of File To Write Inside It : ";
    cin>>filename;
    cout<<"Enter Data To Be Written In "<<filename<<endl;
    ofstream writefile;
    writefile.open(filename);
    cin>>data;
    writefile<<data;
    writefile.close();
    cout<<"Congrats File Called "<<filename<<" Is Written ";
    return 0;
}

```

Fig. 60.

```
C:\Users\DE MOSES\Desktop\C++\writeFile.exe
Enter Name Of File To Write Inside It : MoTech.txt
Enter Data To Be Written In MoTech.txt
Hey
Congrats File Called MoTech.txt Is Written
--------------------------------
Process exited after 31.34 seconds with return value 0
Press any key to continue . . .
```

Fig. 61.

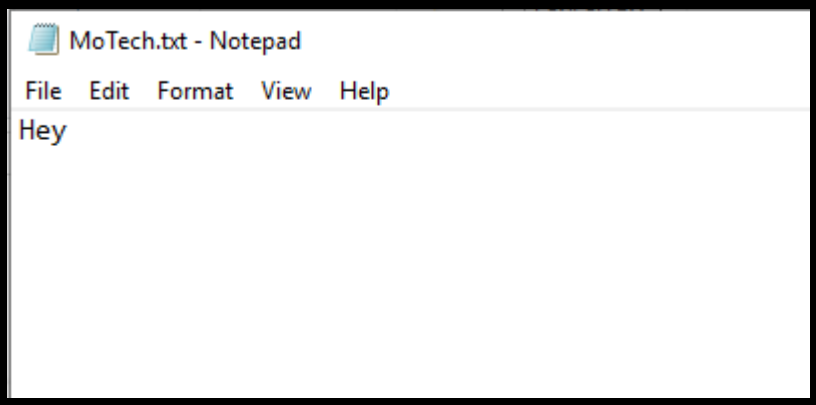


Fig. 62.

33. Read from a file.

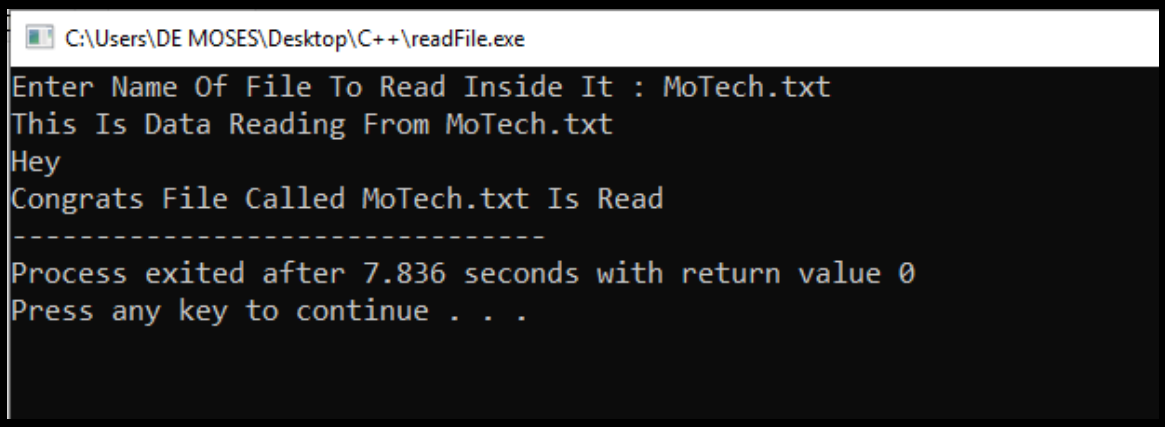
readFile.cpp

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

int main()
{
    // C++ program to read from a file
    char filename[30];
    char data[70];
    cout<<"Enter Name Of File To Read Inside It : ";
    cin>>filename;
    cout<<"This Is Data Reading From "<<filename<<endl;
    ifstream readfile;
    readfile.open(filename);
    readfile>>data;
    cout<<data<<endl;
    readfile.close();
    cout<<"Congrats File Called "<<filename<<" Is Read ";
    return 0;
}

```

Fig. 63.


C:\Users\DE MOSES\Desktop\C++\readFile.exe
Enter Name Of File To Read Inside It : MoTech.txt
This Is Data Reading From MoTech.txt
Hey
Congrats File Called MoTech.txt Is Read

Process exited after 7.836 seconds with return value 0
Press any key to continue . . .

Fig. 64.

34. Pointers.

myPointer.cpp

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

int main(){
    // pointer program in C++
    // declaring pointer of type int called mypointer
    int *mypointer, x;
      x=2;
     // assigning of value to a pointer
      mypointer= &x;
      cout<<*mypointer<<endl;
      cout<<x<<endl;

    return 0;
}
```

Fig. 65.

Pointer called mypointer is created and variable x, mypointer is the pointer which pointer to the address of variable x as shown in the figure 65.

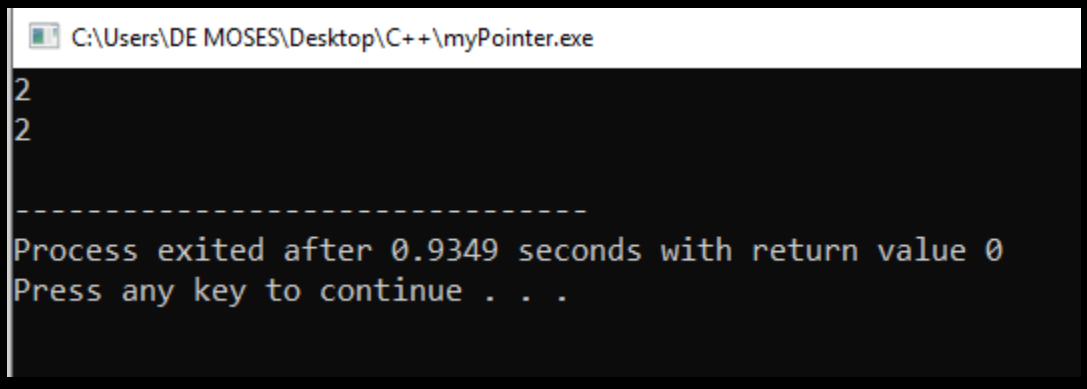


Fig. 66.

Program If you print *mypointer and x will output the same value because mypointer point to the address of variable x.

35. Addition program and write to a file.

programWriteFile.cpp

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

int main()
{
    // Addition program and write to a file
    int n1,n2,sum;
    cout<<"Enter Two Numbers For Addition : ";
    cin>>n1>>n2;
    sum=n1 + n2;

    char filename[30];
    cout<<"Enter Name Of File To Write Your Answer : ";
    cin>>filename;
    cout<<sum<<" Is Written In "<<filename<<" As Answer"<<endl;
    ofstream writefile;
    writefile.open(filename);
    writefile<<sum;
    writefile.close();
    cout<<"Congrats Your Answer Is Writenn To A File Called "<<filename<<endl;
    return 0;
}
```

Fig. 67.

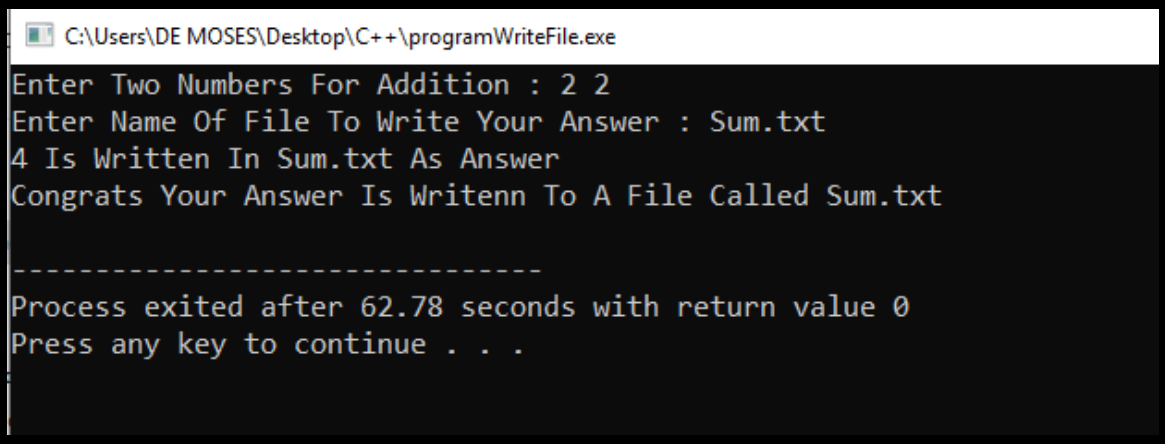


Fig. 68.

In the figure 67 addition of two number is performed and answer is written to a file as shown in the figure 68.

36. Menu driven program.

drivenMenu.cpp

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

int main(){
    // Switch case program in C++
       char selection;
       int n1,n2,add,sub,pro;
       double div;
      cout<<"This Is Simple Calculator "<<endl;
      cout<<"Enter Two Integer Number : "<<endl;
      cin>>n1>>n2;
      cout<<"Select A for Addition, S For Subtraction "<<endl;
      cout<<"P For Product, D For Division "<<endl;
      cin>>selection;
      switch(selection){
        case 'A':
            add=n1 + n2;
            cout<<"Addition Of Two Entered Number Is "<<add;
            break;
        case 'S':
             sub=n1 - n2;
             cout<<"Subtraction Of Two Entered Number Is "<<sub;
            break;
        case 'P':
            pro=n1*n2;
             cout<<"Product Of Two Entered Number Is "<<pro;
            break;
        case 'D':
            div=(n1 + n2)/2;
             cout<<"Division Of Two Entered Number Is "<<div;
        default:
            cout<<"Wrong choice, select again ";
      }
    return 0;
}

```

Fig. 69.

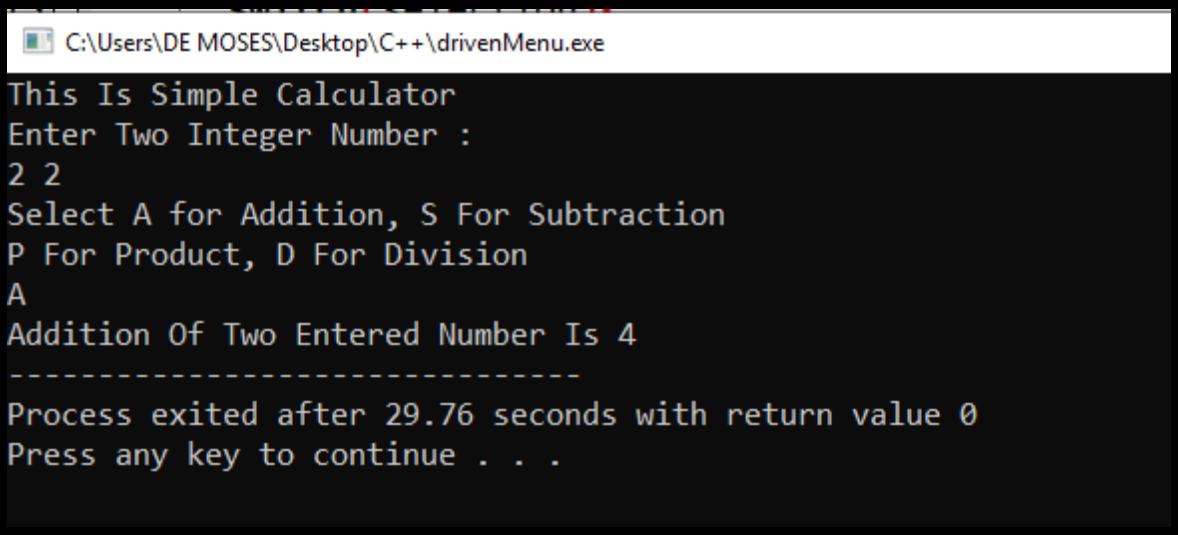


Fig. 70.

Figure 69 is the simple driven menu calculator which offer different options to the user.

37. Multiplication table.

table.cpp

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

int main(){
    // Multiplication table program in C++
    int tablenumber,row;
    cout<<"This Is Multiplication Table : "<<endl;
    cout<<"Enter Number Of Table You Want To Print : "<<endl;
    cin>>tablenumber;
    cout<<"Enter Number Of Rows In A Table : "<<endl;
    cin>>row;
    cout<<"This Is Multiplication table Of "<<tablenumber<<endl;
    for(int i=1; i<=row; i++)
    {
        cout<<tablenumber<<" x "<<i<<"="<<tablenumber*i<<endl;
    }

    return 0;
}

```

Fig. 71.

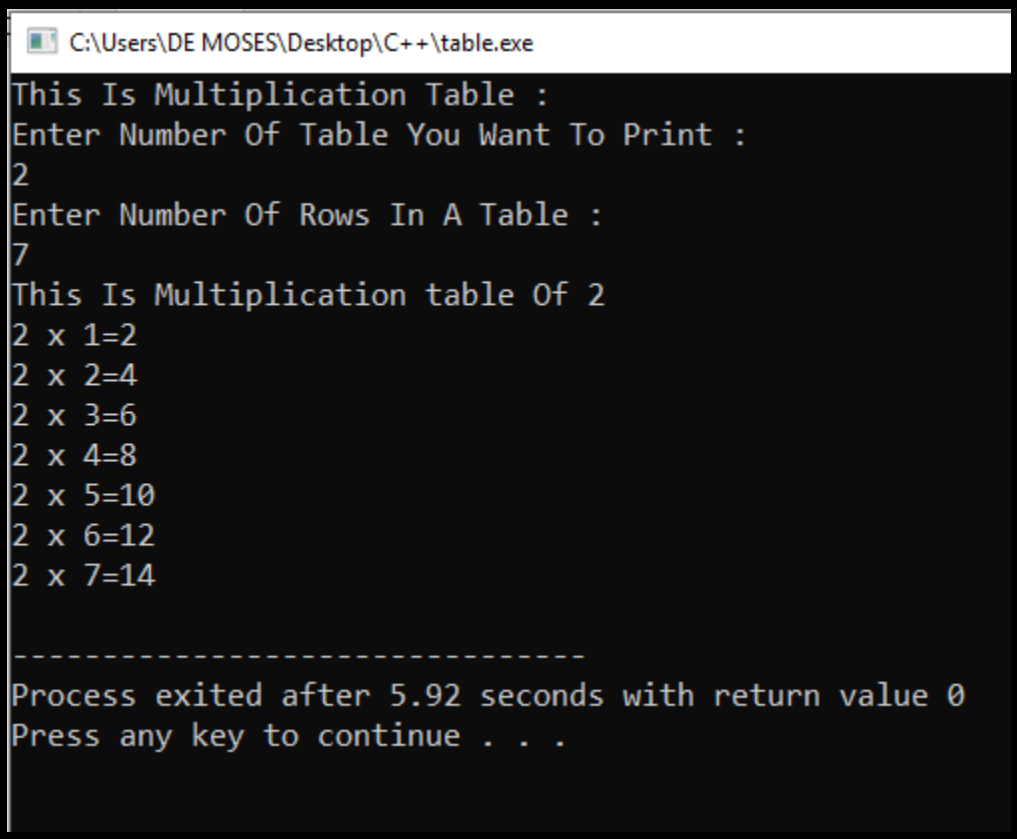


Fig. 72.

In the figure 71 user is asked to print multiplication table he/she want and number of rows, table of 2 with 7 rows is chosen and printed as show in the figure 72.

38. Perimeter of rectangle.

perimeterRectangle.cpp

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

 int main(){

// Perimeter of rectangle C++ program
int width=4;
int length=4;
double perimeter;
perimeter=(width + length)*2;
cout<<"Perimeter Of A rectangle Is "<<perimeter<<endl;

return 0;
}

```

Fig. 73.

```
C:\Users\DE MOSES\Desktop\C++\perimeterRectangle.exe
Perimeter Of A rectangle Is 16

--------------------------------
Process exited after 0.9608 seconds with return value 0
Press any key to continue . . .
```

Fig. 74.

In the figure 73 and 74 is the program to find perimeter of rectangle.

39. Area of circle.

radius.cpp

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

 int main(){

// Area Of Radius C++ program
int r=4;
double pi=3.14;
double area;
area=pi*r*r;
cout<<"Area Of A Circle Is "<<area<<endl;

return 0;
}
```

Fig. 75.

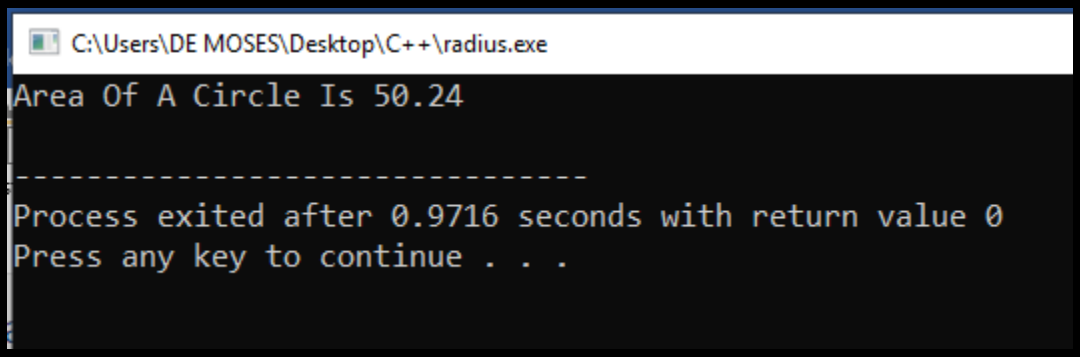


Fig. 75.

In the figure 75 program find the radius of the circle.

76. Even number between a range.

evenRange.cpp

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

int main()
{
    cout<<"Even Number Between 0 upto 10 :"<<endl;
for(int i=2;i <10; i+=2)
cout<<i<<endl;

return 0;
}
```

Fig. 77.

```
C:\Users\DE MOSES\Desktop\C++\evenRange.exe
Even Number Between 0 upto 10 :
2
4
6
8

--------------------------------
Process exited after 0.9568 seconds with return value 0
Press any key to continue . . .
```

Fig. 78.

In the figure 77 program find all even number between 0 to 10.

CONCLUSION.

Thank you for following this session until the end, this book will have video tutorials uploaded at MoTech YouTube channel soon so it is better if you subscribe at MoTech YouTube channel so that if videos will be uploaded you get a notification.

Source codes of all programs in this book will be uploaded at MoTechStore which is github account owned by MoTech, it will be better if you follow MoTech GitHub account so that when 40 files containing programs in this book get uploaded at github it become easy for you to know and get them.

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