

1. ARRAY SUM

AIM:

To create a sum of the array using the template function.

ALGORITHM:

- Define a function template to calculate the sum of array elements
- Initialize a variable sum to zero inside the function
- Use a loop to traverse each element of the array
- Add each array element to sum
- Return the final value of sum
- In main() declare an integer array and call the template function
- Display the sum of the integer array
- Declare a float array and call the same template function
- Display the sum of the float array
- Declare a double array and call the same template function
- Display the sum of the double array

PROGRAM:

```
/*
 * Program to calculate sum of array in template
 * Author : MUTHUGANESH S
 * Date : 3/2/2026
 * Filename: ArraySum.cpp
 * retval : void
 */

#include <iostream>
using namespace std;

// template function definition
template <typename T>

// Function to calculate sum of array elements
T ArraySum(T Array[], int Size) {
    T sum = 0;
    for (int i = 0; i < Size; i++) {
        sum += Array[i];
    }
}
```

```
        return sum;
    }

    int main(){

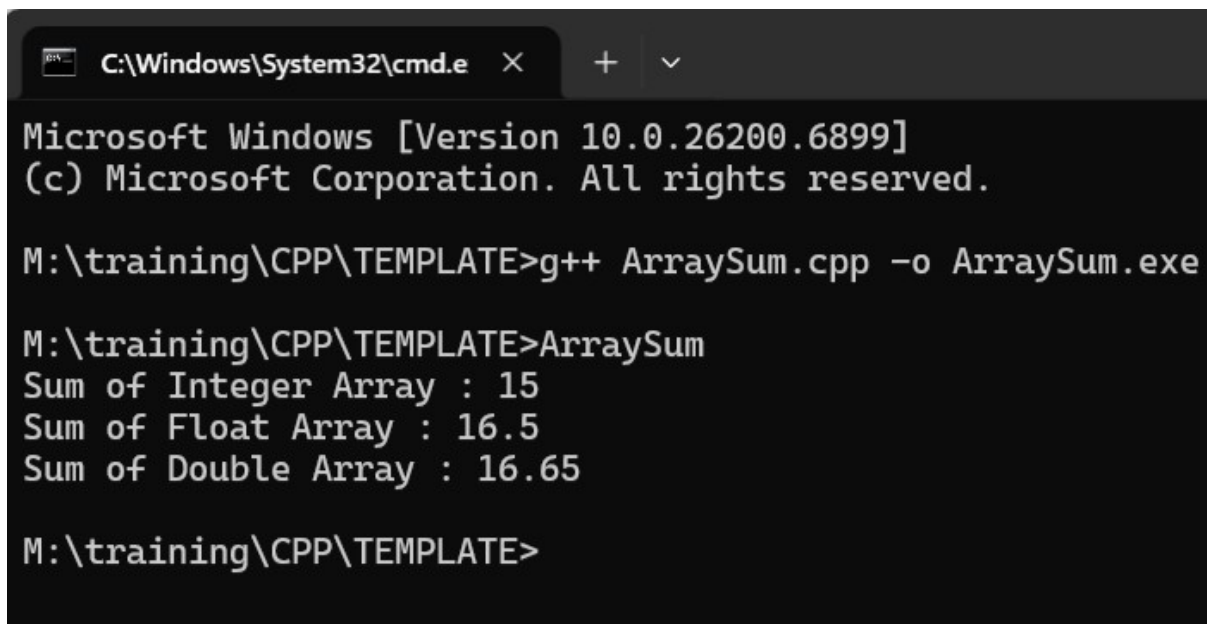
        //Integer array
        int IntArray[] = {1, 2, 3, 4, 5};
        cout<<"Sum of Integer Array : "<<ArraySum(IntArray, 5)<<endl;

        //Float array
        float FloatArray[] = {1.1, 2.2, 3.3, 4.4, 5.5};
        cout<<"Sum of Float Array : "<<ArraySum(FloatArray, 5)<<endl;

        //Double array
        double DoubleArray[] = {1.11, 2.22, 3.33, 4.44, 5.55};
        cout<<"Sum of Double Array : "<<ArraySum(DoubleArray, 5)<<endl;

        return 0;
    }
}
```

OUTPUT:



The screenshot shows a Windows command prompt window with the title bar "C:\Windows\System32\cmd.e". The window displays the following text:

```
Microsoft Windows [Version 10.0.26200.6899]
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M:\training\CPP\TEMPLATE>g++ ArraySum.cpp -o ArraySum.exe

M:\training\CPP\TEMPLATE>ArraySum
Sum of Integer Array : 15
Sum of Float Array : 16.5
Sum of Double Array : 16.65

M:\training\CPP\TEMPLATE>
```

2. SIMPLE CALCULATOR

AIM:

To create a class template for the simple calculator program.

ALGORITHM:

- Define a class template with functions for add, subtract, multiply, and divide
- In main(), create calculator objects for int, float, and double
- Initialize values for each data type
- Perform all arithmetic operations using integer values and display results
- Perform all arithmetic operations using float values and display results
- Perform all arithmetic operations using double values and display results

PROGRAM:

```
/*
 * Program to create a simple calculator using templates
 * Author   : MUTHUGANESH S
 * Date      : 3/2/2026
 * Filename: SimpleCalculator.cpp
 * retval    : void
 */

#include <iostream>
using namespace std;

// Template class definition
template <class T>

// Simple Calculator class
class Calculator {
public:
    T Add(T a, T b) {
        return a + b;
    }

    T Subtract(T a, T b) {
        return a - b;
    }

    T Multiply(T a, T b) {
        return a * b;
    }

    T Divide(T a, T b) {
        return a / b;
    }
};
```

```

    }
};

int main() {

    Calculator<int> calcInt; // Integer Calculator object
    Calculator<float> calcFloat; // Float Calculator object
    Calculator<double> calcDouble; // Double Calculator object

    int a = 10, b = 5;
    float c = 10.5, d = 5.5;
    double e = 10.55, f = 5.55;

    cout << "Integer Addition: " << calcInt.Add(a, b) << endl;
    cout << "Integer Subtraction: " << calcInt.Subtract(a, b) << endl;
    cout << "Integer Multiplication: " << calcInt.Multiply(a, b) << endl;
    cout << "Integer Division: " << calcInt.Divide(a, b) << endl;

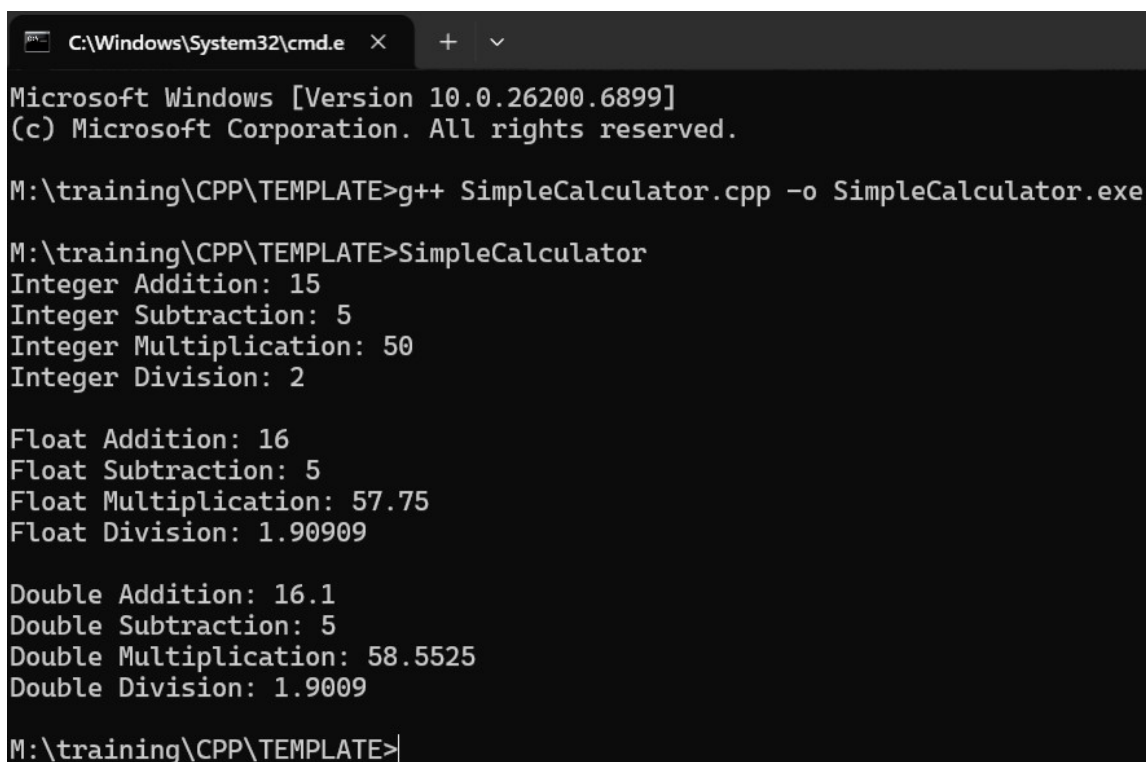
    cout << "\nFloat Addition: " << calcFloat.Add(c, d) << endl;
    cout << "Float Subtraction: " << calcFloat.Subtract(c, d) << endl;
    cout << "Float Multiplication: " << calcFloat.Multiply(c, d) << endl;
    cout << "Float Division: " << calcFloat.Divide(c, d) << endl;

    cout << "\nDouble Addition: " << calcDouble.Add(e, f) << endl;
    cout << "Double Subtraction: " << calcDouble.Subtract(e, f) << endl;
    cout << "Double Multiplication: " << calcDouble.Multiply(e, f) << endl;
    cout << "Double Division: " << calcDouble.Divide(e, f) << endl;

    return 0;
}

```

OUTPUT:



```

C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.26200.6899]
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M:\training\CPP\TEMPLATE>g++ SimpleCalculator.cpp -o SimpleCalculator.exe

M:\training\CPP\TEMPLATE>SimpleCalculator
Integer Addition: 15
Integer Subtraction: 5
Integer Multiplication: 50
Integer Division: 2

Float Addition: 16
Float Subtraction: 5
Float Multiplication: 57.75
Float Division: 1.90909

Double Addition: 16.1
Double Subtraction: 5
Double Multiplication: 58.5525
Double Division: 1.9009

M:\training\CPP\TEMPLATE>

```