

JAMIA HAMDARD

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

School of Engineering Sciences & Technology



MCA 107- Object Oriented Programming Lab

ASSIGNMENT FILE

SUBMITTED TO: Dr. Sahab Saquib Sohail Sir

SUBMITTED BY: Sukaina Inam Naqvi

Enrolment no: - JH23-PGP-02037

MCA- 1st Year | 1st Semester

INDEX

S.no.	Questions	Page no.
1	Write a program in c++ to perform arithmetic operations with three integer variables.	3
2	Without using third variable, swap the value of two variables.	5
3	Write a program in c++ to print Fibonacci series.	6
4	You are given a number, write a program in c++ to check whether the number is prime or not?	7
5	Write a program in c++ to print '*' (Asterisk) in triangle form.	8

Question1. Write a program in c++ to perform arithmetic operations with three integer variables.

Code:

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      cout<<"\t - Question 1 -\n";
6      cout<<" Program for Arithmetic Operations\n";
7      int n1,n2,n3,r;
8      // Taking three integers as input from user
9      cout<<"Enter three integers: "<<endl;
10     cout<<"Number 1 :";
11     cin>> n1;
12     cout<<"Number 2 :";
13     cin>> n2;
14     cout<<"Number 3 :";
15     cin>> n3;
16
17     int choice;
18     cout<<"1 For Addition"<<endl;
19     cout<<"2 For Substraction"<<endl;
20     cout<<"3 For Multiplication"<<endl;
21     cout<<"4 For Division"<<endl;
22     cout<<"Enter Choice : "<<endl;
23     cin>> choice;
24
25     switch (choice){
26     case 1:
27         cout<<"Result of Addition is: "<<n1+n2+n3;
28         break;
29     case 2:
30         cout<<"Result of Subtraction is: "<<n1-n2-n3;
31         break;
32     case 3:
33         cout<<"Result of Multiplication is: "<<n1*n2*n3;
34         break;
35     case 4:
36         if (n2!=0 && n3!=0){
37             r=n1/n2;
38             cout <<"Result of Division is: " <<r<<endl;
39         }
40         else {
41             cout<<"Division is not allowed!";
42             break;
43         }
44     default:
45         cout<<"Invalid Choice";
46     }
47     return 0;
48 }
```

Output:

Addition:

```
- Question 1 -  
Program for Arithmetic Operations  
Enter three integers:  
Number 1 :5  
Number 2 :10  
Number 3 :5  
1 For Addition  
2 For Substraction  
3 For Multiplication  
4 For Division  
Enter Choice :  
1  
Result of Addition is: 20  
-----
```

Subtraction:

```
- Question 1 -  
Program for Arithmetic Operations  
Enter three integers:  
Number 1 :15  
Number 2 :5  
Number 3 :2  
1 For Addition  
2 For Substraction  
3 For Multiplication  
4 For Division  
Enter Choice :  
2  
Result of Subtraction is: 8  
-----
```

Multiplication:

```
- Question 1 -  
Program for Arithmetic Operations  
Enter three integers:  
Number 1 :2  
Number 2 :3  
Number 3 :6  
1 For Addition  
2 For Substraction  
3 For Multiplication  
4 For Division  
Enter Choice :  
3  
Result of Multiplication is: 36  
-----
```

Division:

```
- Question 1 -  
Program for Arithmetic Operations  
Enter three integers:  
Number 1 :10  
Number 2 :5  
Number 3 :2  
1 For Addition  
2 For Substraction  
3 For Multiplication  
4 For Division  
Enter Choice :  
4  
Result of Division is: 2  
-----
```

Question 2. Without using third variable, swap the value of two variables.

Code:

```
#include<iostream>
using namespace std;
int main() {
    cout<<"\t Question 2\n";
    cout<<"Program to swap 2 number without third variable.\n";
    int a, b;
    // Input the values of a and b
    cout << "Enter the value of a: ";
    cin >> a;
    cout << "Enter the value of b: ";
    cin >> b;

    // Swap a and b without using a third variable
    a = a + b;
    b = a - b;
    a = a - b;

    // Output the swapped values
    cout << "After swapping, a = " << a << " and b = " << b << endl;

    return 0;
}
```

Output:

```
        Question 2
Program to swap 2 number without third variable.
Enter the value of a: 5
Enter the value of b: 10
After swapping, a = 10 and b = 5

-----
Process exited after 7.208 seconds with return value 0
Press any key to continue . . . |
```

Question 3. Write a program in c++ to print Fibonacci series.

Code:

```
#include <iostream>
using namespace std;
int main() {
    cout<<"\t Question 3\n";
    cout<<"Write a program in c++ to print Fibonacci series.\n";
    int n;

    // Input the number of terms you want in the Fibonacci series
    cout << "Enter the number of Fibonacci terms you want to generate: ";
    cin >> n;

    int first = 0, second = 1;

    cout << "Fibonacci Series up to " << n << " terms: ";

    // Print the first two terms of the Fibonacci series
    cout << first << " " << second << " ";

    for (int i = 2; i < n; i++) {
        int next = first + second;
        cout << next << " ";
        first = second;
        second = next;
    }

    cout << endl;

    return 0;
}
```

Output:

```
Question 3
Write a program in c++ to print Fibonacci series.
Enter the number of Fibonacci terms you want to generate: 10
Fibonacci Series up to 10 terms: 0 1 1 2 3 5 8 13 21 34
-----
```

Question 4. You are given a number, write a program in c++ to check whether the number is prime or not?

Code:

```
#include <iostream>
using namespace std;
bool isPrime(int n) {
    // Handle special cases
    if (n <= 1) {
        return false;
    }
    // Check for divisibility from 2 to the square root of n
    for (int i = 2; i * i <= n; i++) {
        if (n % i == 0) {
            return false; // n is divisible by i, so it's not prime
        }
    }
    return true; // If no divisors were found, n is prime
}

int main() {
    cout<<"\t Question 4\n";
    cout<<"Write a program in c++ to check whether the number is prime or not \n";
    int num;
    // Input a number from the user
    cout << "Enter a number: ";
    cin >> num;

    if (isPrime(num)) {
        cout << num << " is a prime number." << endl;
    } else {
        cout << num << " is not a prime number." << endl;
    }
    return 0;
}
```

Output:

```
Question 4
Write a program in c++ to check whether the number is prime or not
Enter a number: 5
5 is a prime number.
-----
```

```
Question 4
Write a program in c++ to check whether the number is prime or not
Enter a number: 8
8 is not a prime number.
-----
```

Question 5. Write a program in c++ to print '*' (Asterisk) in triangle form.

Code:

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

// Driver code
int main(){
    cout<<"\t Question 5 \n";
    cout<<"Write a program in c++ to print '*' (Asterisk) in triangle form.\n";
    int n;
    cout<<"Enter number of rows: ";
    cin>>n;

    // ith row has n-i leading spaces
    // and i elements
    for (int i = 1; i <= n; i++) {
        // n-i leading spaces
        for (int j = 0; j < n - i; j++)
            cout << " ";

        // i elements
        for (int j = 1; j <= i; j++)
            cout << "* ";
        cout << endl;
    }
    return 0;
}
```

Output:

```
Question 5
Write a program in c++ to print '*' (Asterisk) in triangle form.
Enter number of rows: 15

      *
     * *
    * * *
   * * * *
  * * * * *
 * * * * * *
* * * * * * *
 * * * * * * *
  * * * * * * *
   * * * * * * *
    * * * * * * *
     * * * * * * *
      * * * * * * *
       * * * * * * *
```