Bangladesh Army International University of Science & Technology

Department of Computer Science & Engineering (CSE)

Lab Report

Course Code : CSE-214

Course Title : Object Oriented Programming Sessional

Submission Date : 16-11-2023

Submitted To:

Mousumi Hasan,

Assistant Professor,

Dept. of CSE , BAIUST.

Submitted By:

Name : Md. Shafin Ahammad Hredoy

ID : 0822220105101009

Level-Term : 2-1

Section : A

Department : CSE

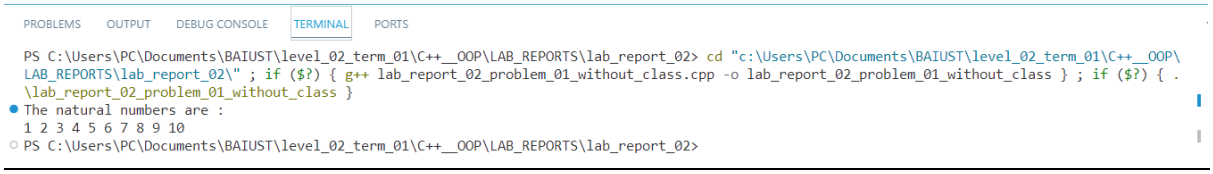
Problem_01_without_class

Code :

```cpp
#include <iostream>
using namespace std;
int main(){
    cout << "The natural numbers are : " << endl;
    for(int i=1; i<=10; i++){
        cout << i << " " ;
    }
    return 0;
}
```

Screenshot :

```cpp
#include <iostream>
using namespace std;
int main(){
    cout << "The natural numbers are : " << endl;
    for(int i=1; i<=10; i++){
        cout << i << " " ;
    }
    return 0;
}
```



Problem_01_with_class

Code :

```cpp
#include <iostream>
using namespace std;
class Natural_number{
    public:
        Natural_number(){
            cout << "The natural numbers are : " << endl;
            for(int i=1; i<=10; i++){
                cout << i << " " ;
            }
        }
};
int main(){
    Natural_number obj;
    return 0;
}
```

Screenshot :

```cpp
#include <iostream>
using namespace std;
class Natural_number{
    public:
        Natural_number(){
            cout << "The natural numbers are : " << endl;
            for(int i=1; i<=10; i++){
                cout << i << " " ;
            }
        }
};
int main(){
    Natural_number obj;
    return 0;
}
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02> cd "c:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02\" ; if ($?) { g++ lab_report_02_problem_01_with_class.cpp -o lab_report_02_problem_01_with_class } ; if ($?) { .\lab_report_02_problem_01_with_class }
The natural numbers are :
1 2 3 4 5 6 7 8 9 10
PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02>
```

Problem_02_without_class

Code :

```cpp
#include <iostream>
using namespace std;
int main(){
    int num, total = 0;
    cout << "Input a number of terms : " ;
    cin >> num;
    cout << "The number upto " << num << "th terms are : " << endl;
    for(int i=1; i<=num; i++){
        cout << i << " " ;
        total+= i;
    }
    cout << endl;
    cout << "The sum of the natural number is : " << total << endl;
    return 0;
}
```

Screenshot :

```cpp
#include <iostream>
using namespace std;
int main(){
    int num, total = 0;
    cout << "Input a number of terms : " ;
    cin >> num;
    cout << "The number upto " << num << "th terms are : " << endl;
    for(int i=1; i<=num; i++){
        cout << i << " " ;
        total+= i;
    }
    cout << endl;
    cout << "The sum of the natural number is : " << total << endl;
    return 0;
}
```

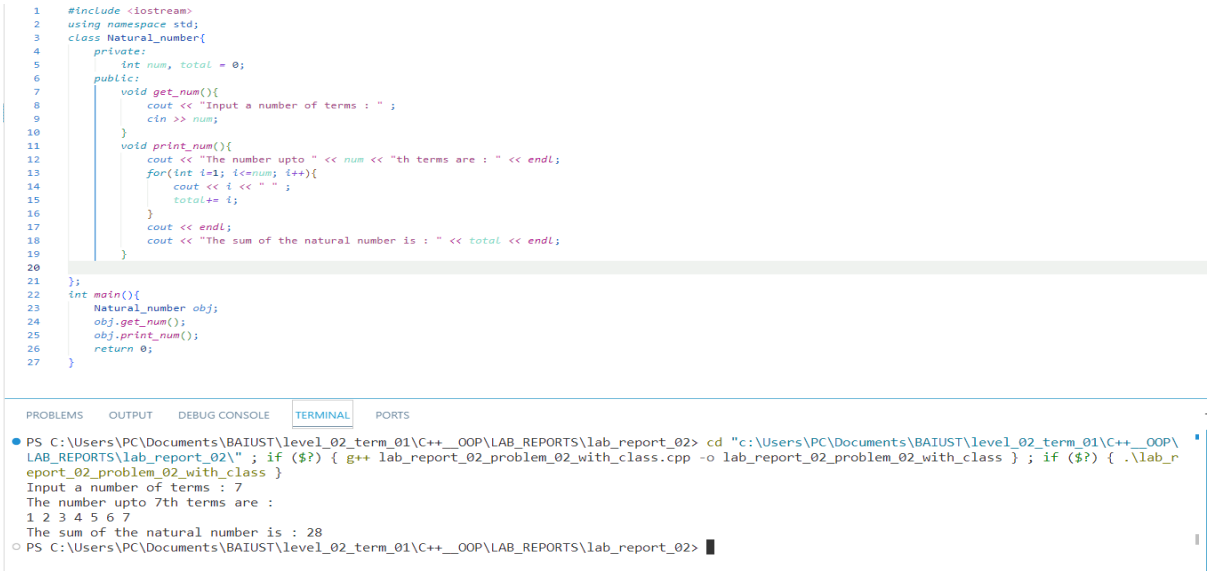
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02> cd "c:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02\" ; if ($?) { g++ lab_report_02_problem_02_without_class.cpp -o lab_report_02_problem_02_without_class } ; if ($?) { .\lab_report_02_problem_02_without_class }
Input a number of terms : 7
The number upto 7th terms are :
1 2 3 4 5 6 7
The sum of the natural number is : 28
PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02>
```

Problem_02_with_class

Code :

```cpp
#include <iostream>
using namespace std;
class Natural_number{
    private:
        int num, total = 0;
    public:
        void get_num(){
            cout << "Input a number of terms : " ;
            cin >> num;
        }
        void print_num(){
            cout << "The number upto " << num << "th terms are : " << endl;
            for(int i=1; i<=num; i++){
                cout << i << " " ;
                total+= i;
            }
            cout << endl;
            cout << "The sum of the natural number is : " << total << endl;
        }
};
int main(){
    Natural_number obj;
    obj.get_num();
    obj.print_num();
    return 0;
}
```

Screenshot :

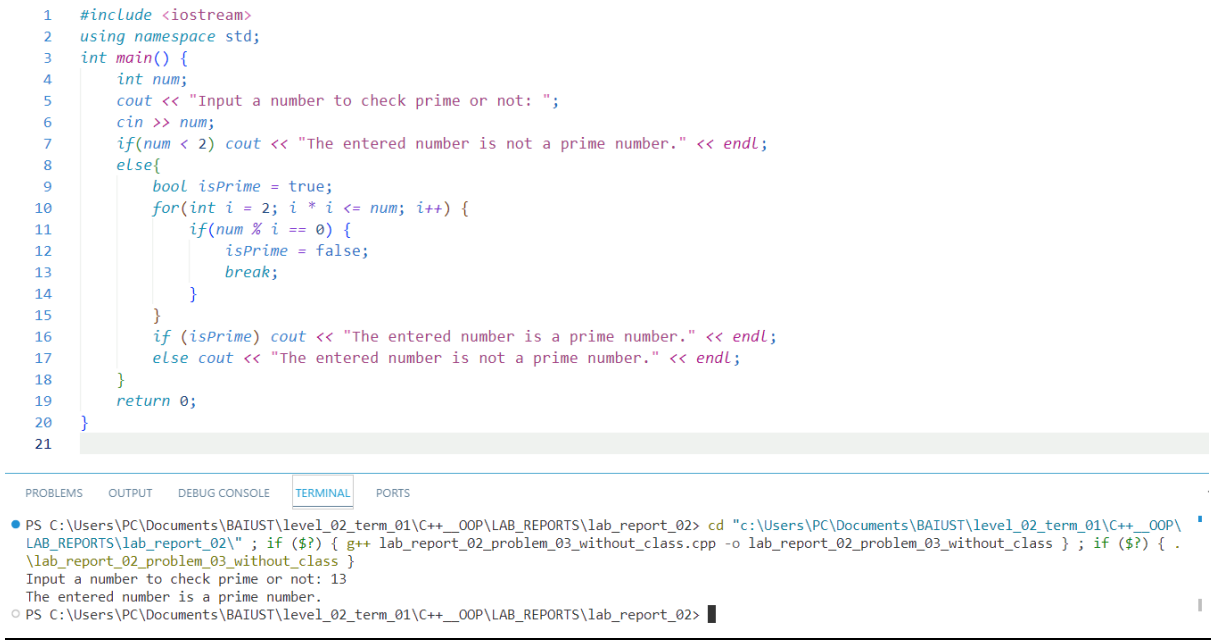


Problem_03_without_class

Code :

```cpp
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Input a number to check prime or not: ";
    cin >> num;
    if(num < 2) cout << "The entered number is not a prime number." << endl;
    else{
        bool isPrime = true;
        for(int i = 2; i * i <= num; i++) {
            if(num % i == 0) {
                isPrime = false;
                break;
            }
        }
        if (isPrime) cout << "The entered number is a prime number." << endl;
        else cout << "The entered number is not a prime number." << endl;
    }
    return 0;
}
```

Screenshot :



```cpp
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Input a number to check prime or not: ";
    cin >> num;
    if(num < 2) cout << "The entered number is not a prime number." << endl;
    else{
        bool isPrime = true;
        for(int i = 2; i * i <= num; i++) {
            if(num % i == 0) {
                isPrime = false;
                break;
            }
        }
        if (isPrime) cout << "The entered number is a prime number." << endl;
        else cout << "The entered number is not a prime number." << endl;
    }
    return 0;
}
```

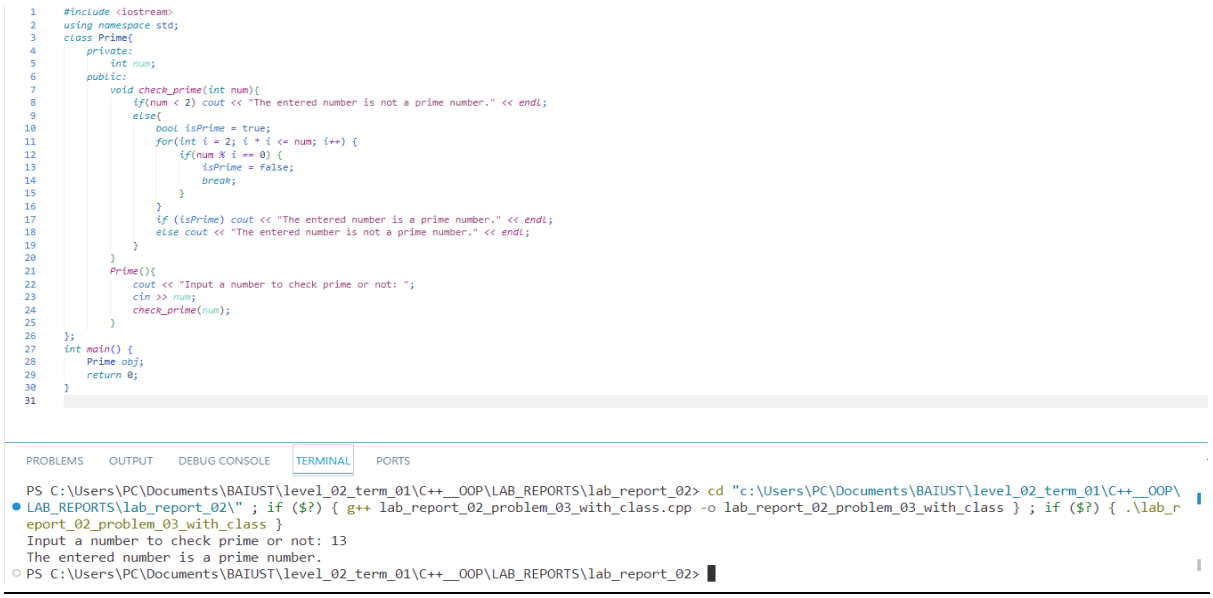
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02> cd "c:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02\" ; if ($?) { g++ lab_report_02_problem_03_without_class.cpp -o lab_report_02_problem_03_without_class } ; if ($?) { .\lab_report_02_problem_03_without_class }
Input a number to check prime or not: 13
The entered number is a prime number.
PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02>
```

Problem_03_with_class

Code :

```cpp
#include <iostream>
using namespace std;
class Prime{
    private:
        int num;
    public:
        void check_prime(int num){
            if(num < 2) cout << "The entered number is not a prime number." << endl;
            else{
                bool isPrime = true;
                for(int i = 2; i * i <= num; i++) {
                    if(num % i == 0) { isPrime = false;  break; }
                }
                if (isPrime) cout << "The entered number is a prime number." << endl;
                else cout << "The entered number is not a prime number." << endl;
            }
        }
        Prime(){
            cout << "Input a number to check prime or not: ";
            cin >> num;
            check_prime(num);
        }
};
int main() {
    Prime obj;
    return 0;
}
```

Screenshot :

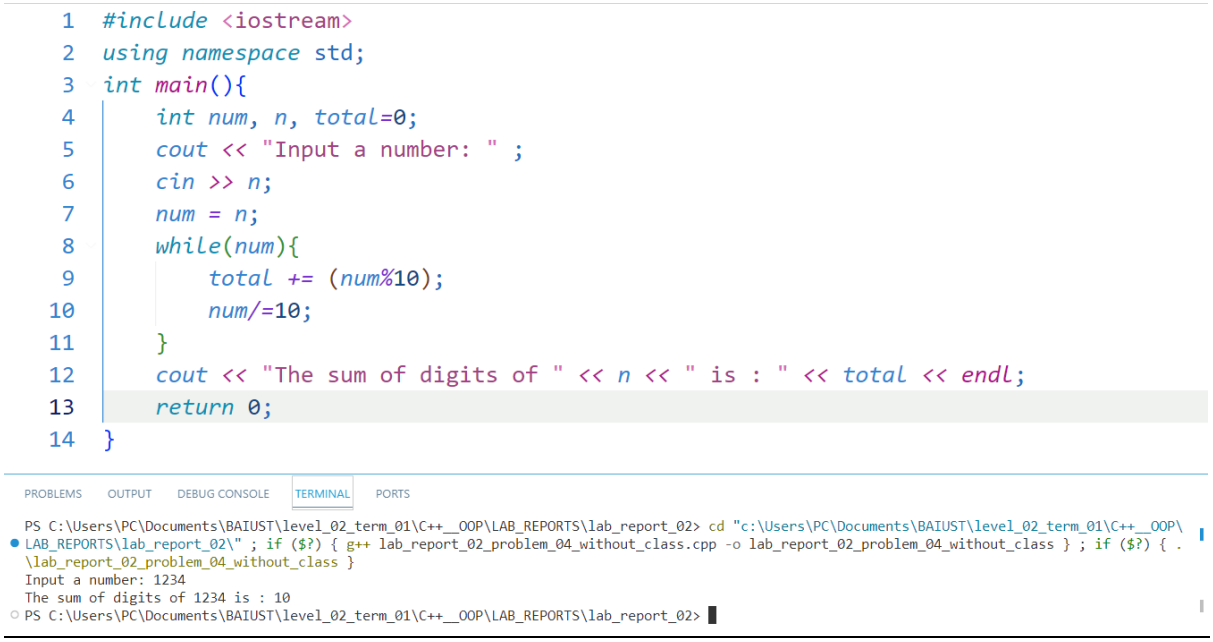


Problem_04_without_class

Code :

```cpp
#include <iostream>
using namespace std;
int main(){
    int num, n, total=0;
    cout << "Input a number: " ;
    cin >> n;
    num = n;
    while(num){
        total += (num%10);
        num/=10;
    }
    cout << "The sum of digits of " << n << " is : " << total << endl;
    return 0;
}
```

Screenshot :

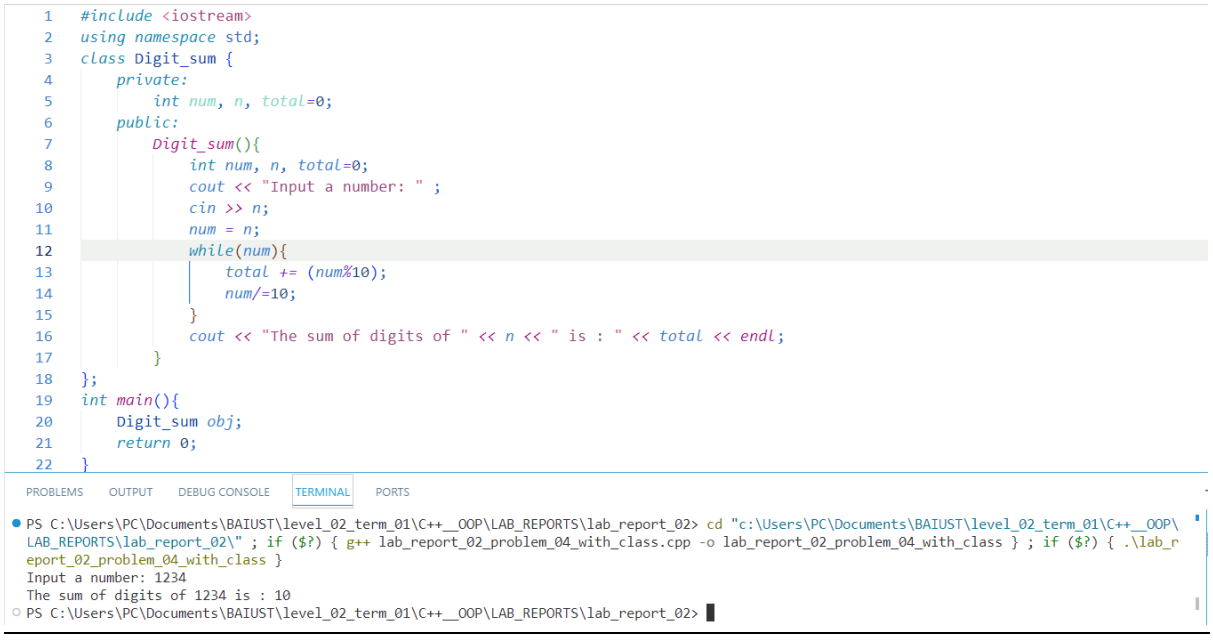


Problem_04_with_class

Code :

```cpp
#include <iostream>
using namespace std;
class Digit_sum {
    private:
        int num, n, total=0;
    public:
        Digit_sum(){
            int num, n, total=0;
            cout << "Input a number: " ;
            cin >> n;
            num = n;
            while(num){
                total += (num%10);
                num/=10;
            }
            cout << "The sum of digits of " << n << " is : " << total << endl;
        }
};
int main(){
    Digit_sum obj;
    return 0;
}
```

Screenshot :



Problem_05_without_class

Code :

```
#include <iostream>
using namespace std;
int main(){
    int num, sum = 0;
    cout << "Input the value for nth term: ";
    cin >> num;
    for(int i=1; i<=num; i++){
        sum += (i*i);
    }
    cout << "The sum of the above series is: " <<
sum << endl;
    return 0;
}
```

Screenshot :

```
1  #include <iostream>
2  using namespace std;
3  int main(){
4      int num, sum = 0;
5      cout << "Input the value for nth term: ";
6      cin >> num;
7      for(int i=1; i<=num; i++){
8          sum += (i*i);
9      }
10     cout << "The sum of the above series is: " << sum << endl;
11     return 0;
12 }
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02> cd "c:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\
LAB_REPORTS\lab_report_02\" ; if ($?) { g++ lab_report_02_problem_05_without_class.cpp -o lab_report_02_problem_05_without_class } ; if ($?) { .
\lab_report_02_problem_05_without_class }
Input the value for nth term: 5
The sum of the above series is: 55
PS C:\Users\PC\Documents\BAIUST\level_02_term_01\C++__OOP\LAB_REPORTS\lab_report_02>
```

Problem_05_with_class

Code :

```cpp
#include <iostream>
using namespace std;
class Series_sum{
    private:
        int num, sum = 0;
    public:
        Series_sum(){
            cout << "Input the value for nth term: ";
            cin >> num;
            for(int i=1; i<=num; i++){
                sum += (i*i);
            }
            cout << "The sum of the above series is: " << sum << endl;
        }
};
int main(){
    Series_sum obj;
    return 0;
}
```

Screenshot :