ASSIGNMENT : 1
Object Oriented Programming in C++

C++ programs and its respective o/ps

Submitted by,

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Submitted on : 28/02/2025
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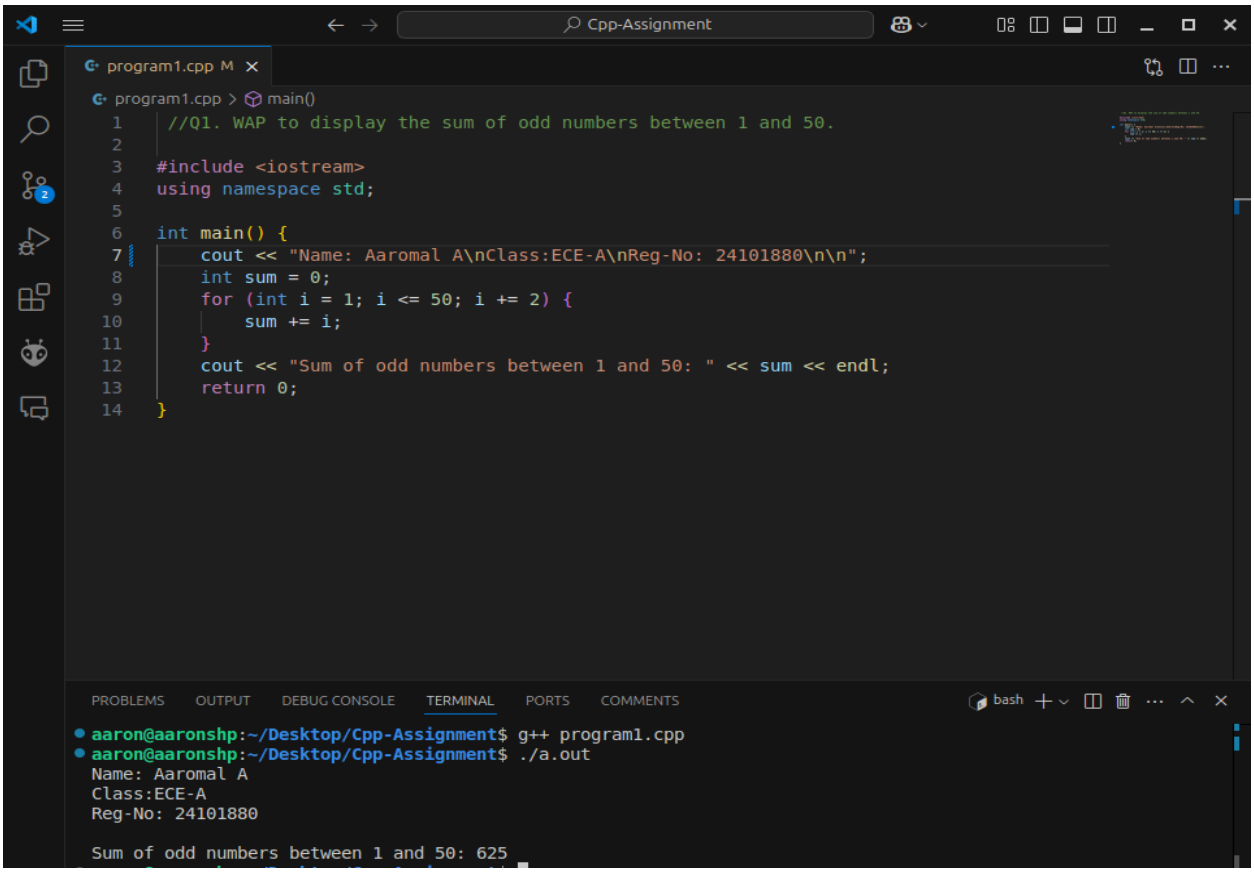
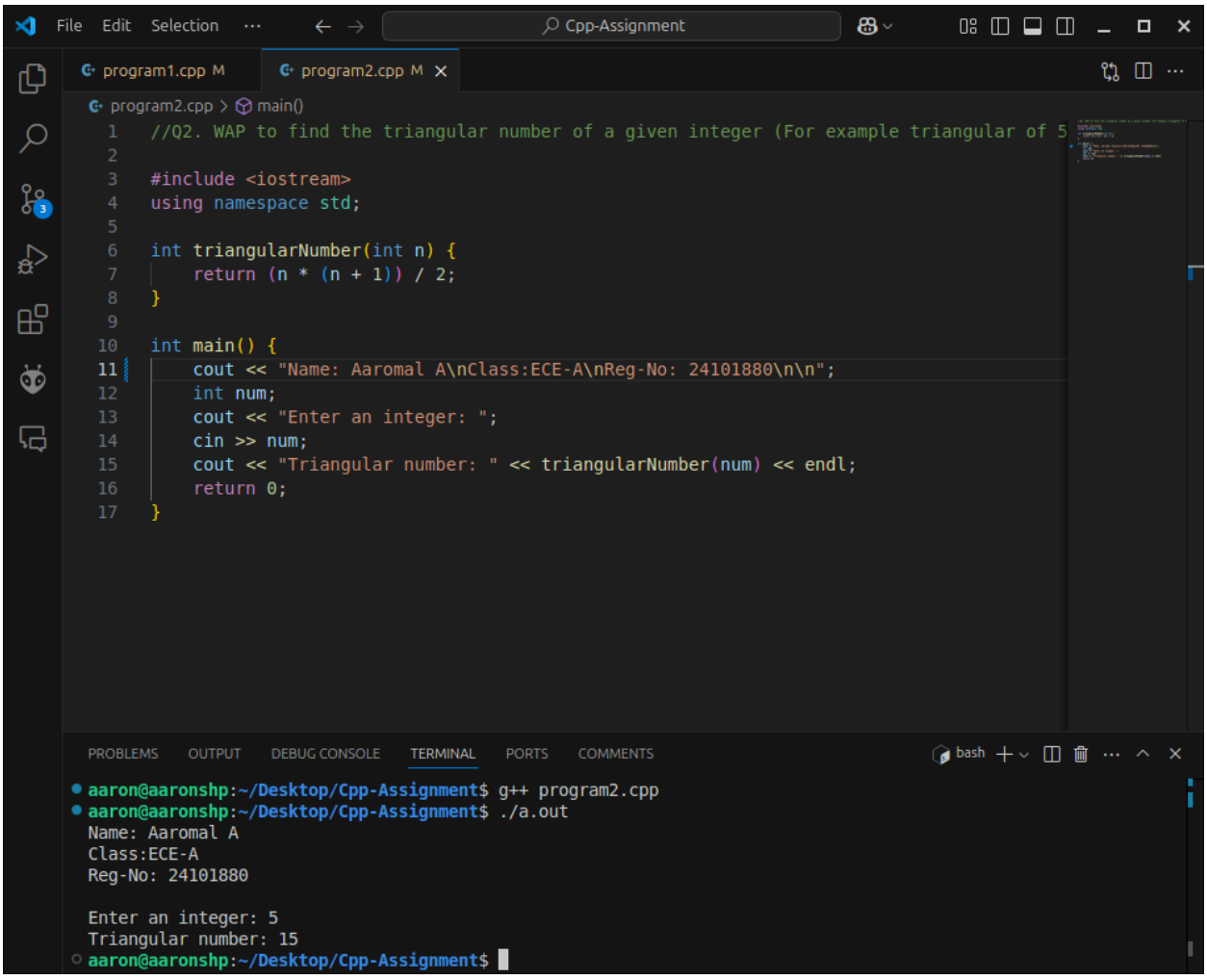
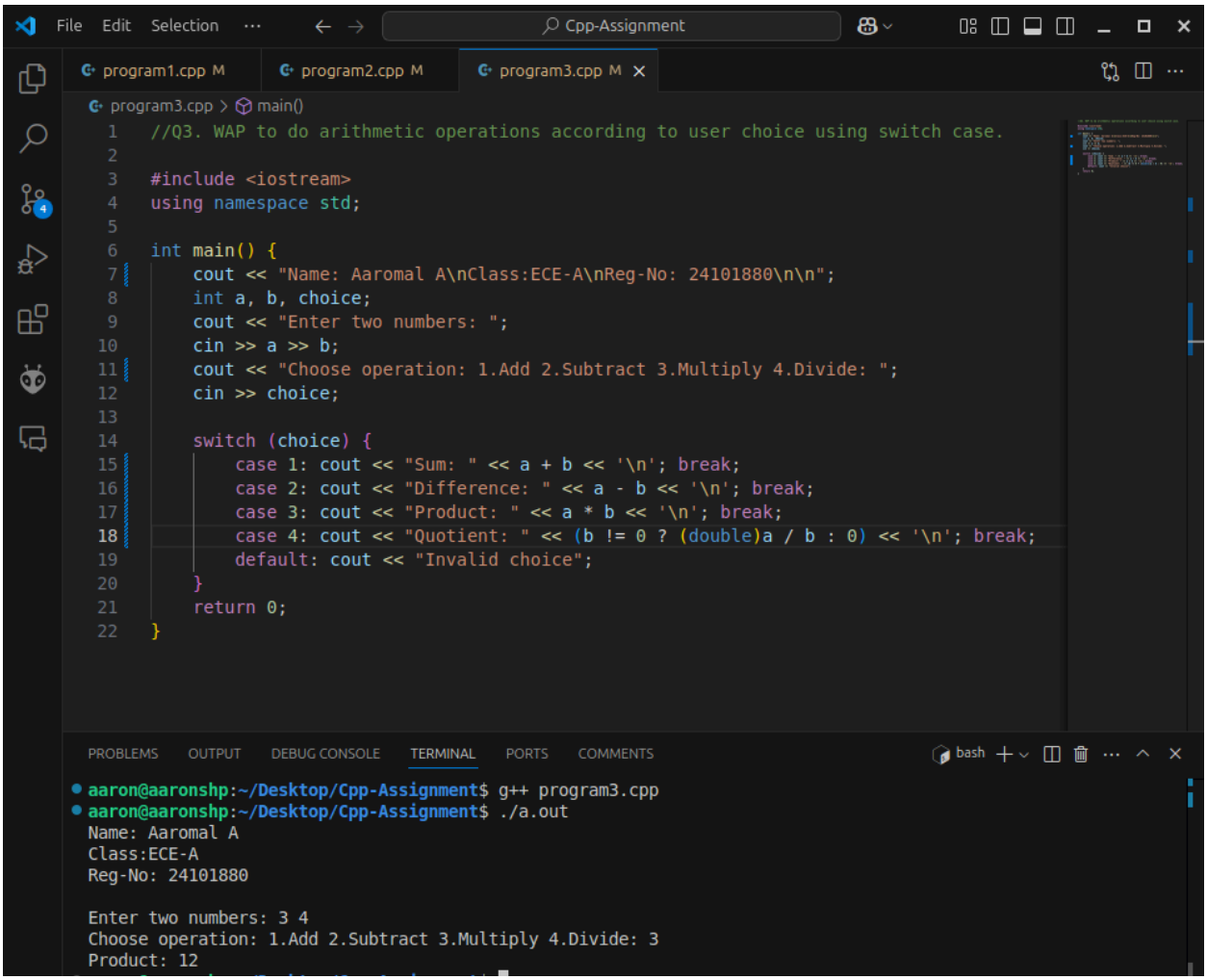
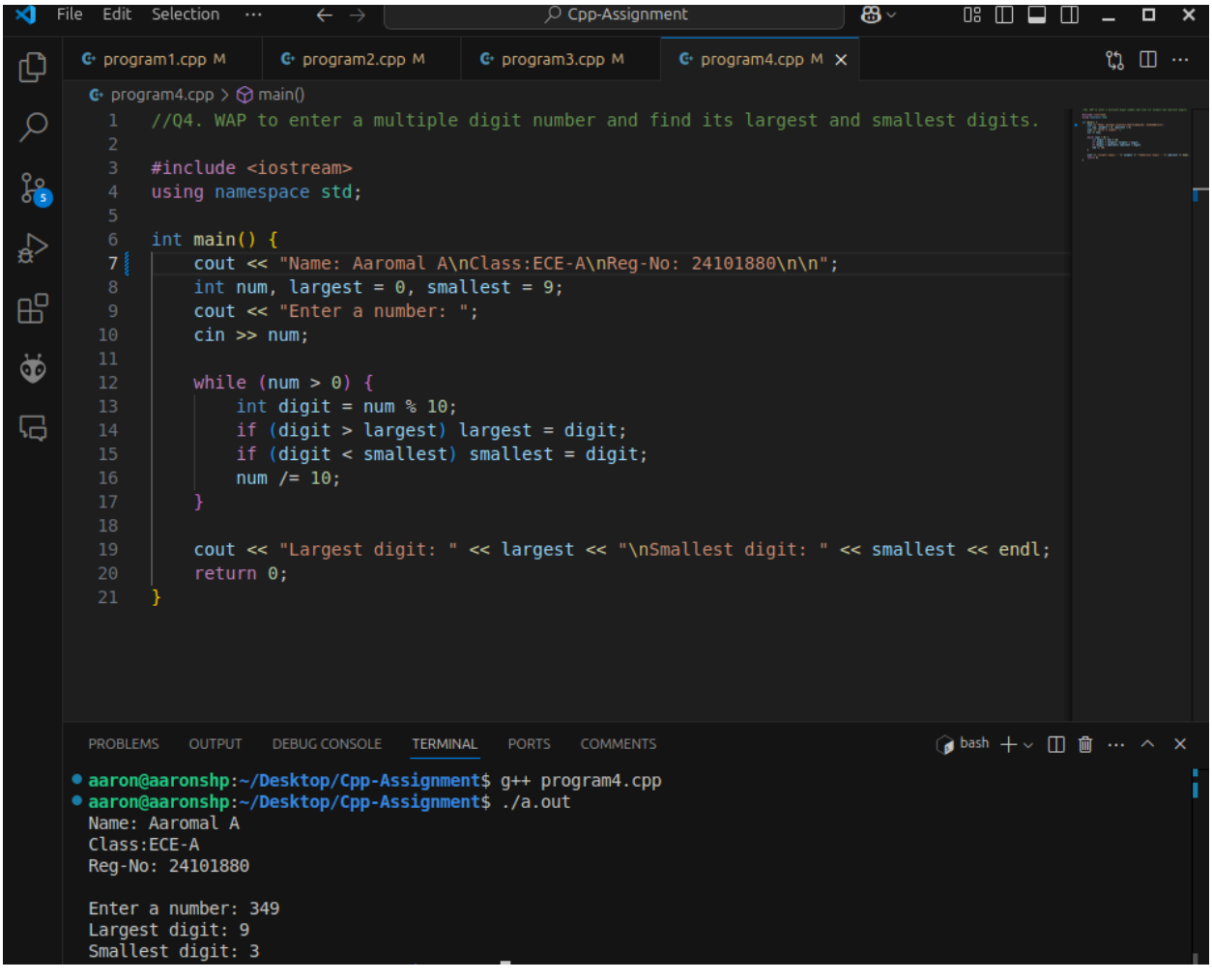

Cpp-Assignment
program1.cpp M
program1.cpp > main()
//Q1. WAP to display the sum of odd numbers between 1 and 50.
#include <iostream>
using namespace std;
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int sum = 0;
for (int i = 1; i <= 50; i += 2) {
sum += i;
}
cout << "Sum of odd numbers between 1 and 50: " << sum << endl;
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program1.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Sum of odd numbers between 1 and 50: 625


File Edit Selection
Cpp-Assignment
program1.cpp M
program2.cpp M
program2.cpp > main()
//Q2. WAP to find the triangular number of a given integer (For example triangular of 5
#include <iostream>
using namespace std;
int triangularNumber(int n) {
return (n * (n + 1)) / 2;
}
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int num;
cout << "Enter an integer: ";
cin >> num;
cout << "Triangular number: " << triangularNumber(num) << endl;
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program2.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Enter an integer: 5
Triangular number: 15
aaron@aaronshp:~/Desktop/Cpp-Assignment$


File Edit Selection
Cpp-Assignment
program1.cpp M
program2.cpp M
program3.cpp M
program3.cpp > main()
//Q3. WAP to do arithmetic operations according to user choice using switch case.
#include <iostream>
using namespace std;
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int a, b, choice;
cout << "Enter two numbers: ";
cin >> a >> b;
cout << "Choose operation: 1.Add 2.Subtract 3.Multiply 4.Divide: ";
cin >> choice;
switch (choice) {
case 1: cout << "Sum: " << a + b << '\n'; break;
case 2: cout << "Difference: " << a - b << '\n'; break;
case 3: cout << "Product: " << a * b << '\n'; break;
case 4: cout << "Quotient: " << (b != 0 ? (double)a / b : 0) << '\n'; break;
default: cout << "Invalid choice";
}
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program3.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Enter two numbers: 3 4
Choose operation: 1.Add 2.Subtract 3.Multiply 4.Divide: 3
Product: 12


File Edit Selection
Cpp-Assignment
program1.cpp M
program2.cpp M
program3.cpp M
program4.cpp M
program4.cpp > main()
//Q4. WAP to enter a multiple digit number and find its largest and smallest digits.
#include <iostream>
using namespace std;
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int num, largest = 0, smallest = 9;
cout << "Enter a number: ";
cin >> num;
while (num > 0) {
int digit = num % 10;
if (digit > largest) largest = digit;
if (digit < smallest) smallest = digit;
num /= 10;
}
cout << "Largest digit: " << largest << "\nSmallest digit: " << smallest << endl;
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program4.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Enter a number: 349
Largest digit: 9
Smallest digit: 3

p5.cpp > Area

```cpp
/*Q5. WAP to find the area of square, rectangle, triangle and surface area of sphere
using function overloading.*/

#include <iostream>
using namespace std;

class Area {
public:
    double calculate(double side) { return side * side; }
    double calculate(double length, double breadth) { return length * breadth; }
    double calculate(double base, double height, int) { return 0.5 * base * height; }
    double calculateSphere(double radius) { return 4 * 3.1416 * radius * radius; }
};

int main() {
    cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
    Area obj;
    cout << "Square area: " << obj.calculate(6) << "\n";
    cout << "Rectangle area: " << obj.calculate(6, 9) << "\n";
    cout << "Triangle area: " << obj.calculate(6, 9, 0) << "\n";
    cout << "Sphere surface area: " << obj.calculateSphere(5) << "\n";
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

bash

```
aaron@aaronshp:~/Desktop/Cpp-Assignment/src$ g++ p5.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment/src$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880

Square area: 36
Rectangle area: 54
Triangle area: 27
Sphere surface area: 314.16
```

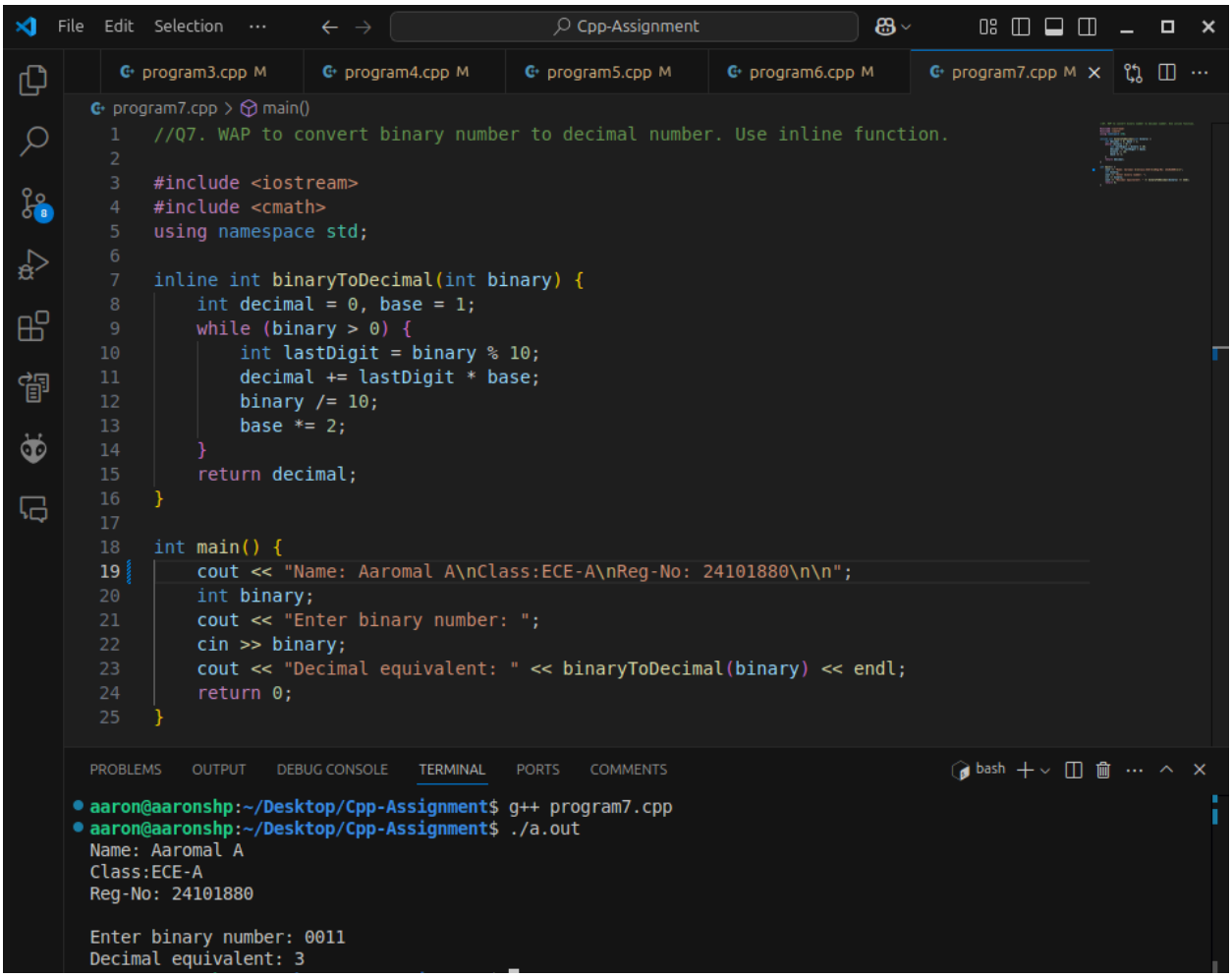
p6.cpp > ...

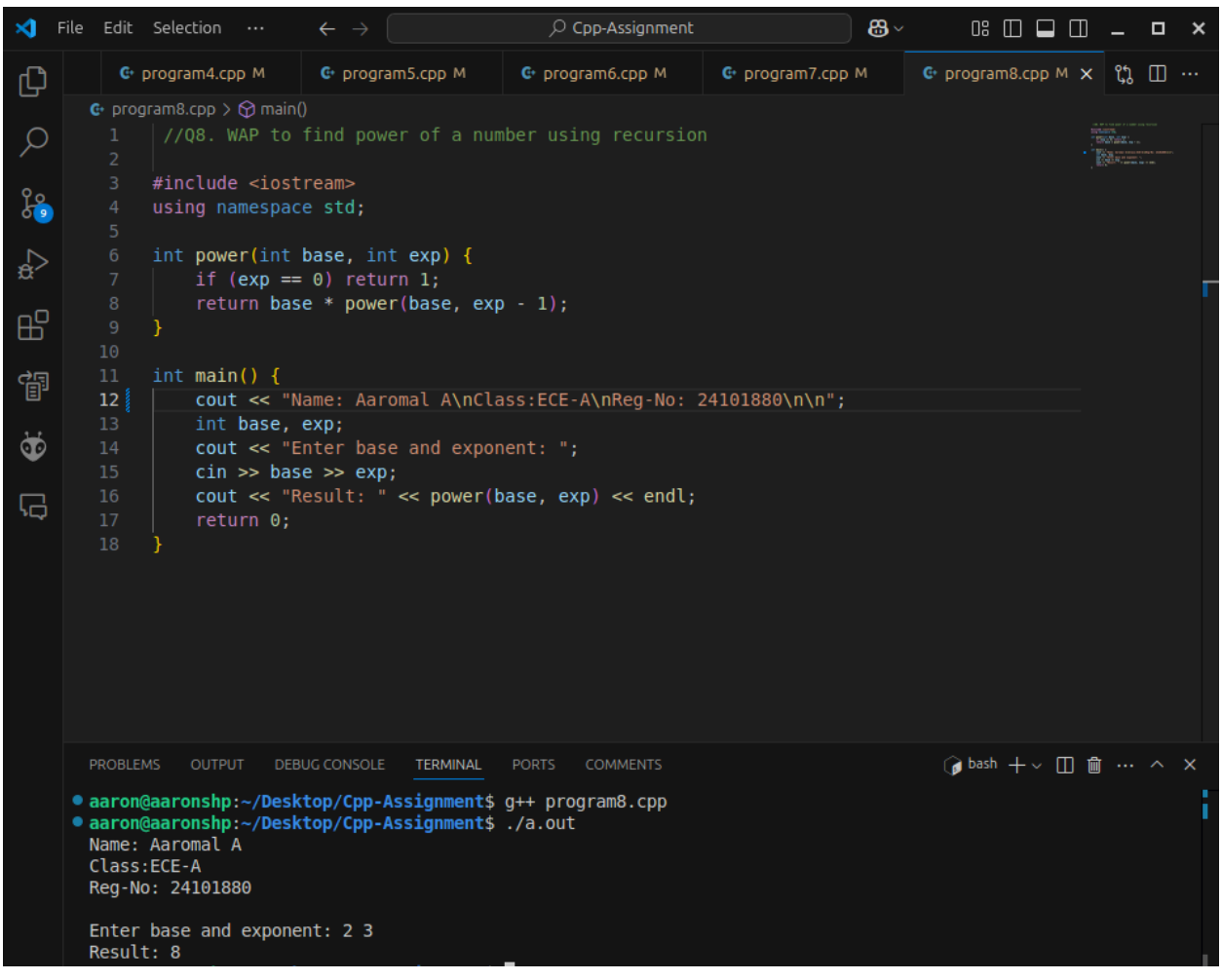
```cpp
/* Q6. WAP to convert an integer number to an ASCII character and float to ASCII
string using function overloading. */

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

class Converter {
public:
    char toASCII(int num) { return static_cast<char>(num); }

    string toASCII(float num) {
        ostringstream ss;
        ss << num;
        return ss.str();
    }
};

int main() {
    cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
    Converter obj;
    cout << "ASCII character: " << obj.toASCII(65) << "\n";
    cout << "ASCII string: " << obj.toASCII(45.67f) << "\n";
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

bash

```
aaron@aaronshp:~/Desktop/Cpp-Assignment/src$ g++ p6.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment/src$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880

ASCII character: A
ASCII string: 45.67
```


File Edit Selection
Cpp-Assignment
program3.cpp M
program4.cpp M
program5.cpp M
program6.cpp M
program7.cpp M
program7.cpp > main()
//Q7. WAP to convert binary number to decimal number. Use inline function.
#include <iostream>
#include <cmath>
using namespace std;
inline int binaryToDecimal(int binary) {
int decimal = 0, base = 1;
while (binary > 0) {
int lastDigit = binary % 10;
decimal += lastDigit * base;
binary /= 10;
base *= 2;
}
return decimal;
}
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int binary;
cout << "Enter binary number: ";
cin >> binary;
cout << "Decimal equivalent: " << binaryToDecimal(binary) << endl;
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program7.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Enter binary number: 0011
Decimal equivalent: 3


File Edit Selection
Cpp-Assignment
program4.cpp M
program5.cpp M
program6.cpp M
program7.cpp M
program8.cpp M
program8.cpp > main()
//Q8. WAP to find power of a number using recursion
#include <iostream>
using namespace std;
int power(int base, int exp) {
if (exp == 0) return 1;
return base * power(base, exp - 1);
}
int main() {
cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
int base, exp;
cout << "Enter base and exponent: ";
cin >> base >> exp;
cout << "Result: " << power(base, exp) << endl;
return 0;
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
bash
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program8.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880
Enter base and exponent: 2 3
Result: 8

program9.cpp > main()

```cpp
//Q9. WAP to display lower and uppercase characters from a to z.

#include <iostream>
using namespace std;

int main() {
    cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
    cout << "Lowercase: ";
    for (char c = 'a'; c <= 'z'; c++) cout << c << " ";
    cout << "\nUppercase: ";
    for (char c = 'A'; c <= 'Z'; c++) cout << c << " ";
    cout << endl;
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

bash

```
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program9.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880

Lowercase: a b c d e f g h i j k l m n o p q r s t u v w x y z
Uppercase: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

program10.cpp > main()

```cpp
/*
Q10.  WAP to generate the output:
C
C+
C++
C++e
C++ea
C++eas
C++easy
*/

#include <iostream>
using namespace std;

int main() {
    cout << "Name: Aaromal A\nClass:ECE-A\nReg-No: 24101880\n\n";
    string str = "C++easy";
    for (int i = 1; i <= str.length(); i++) {
        cout << str.substr(0, i) << endl;
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

bash

```
aaron@aaronshp:~/Desktop/Cpp-Assignment$ g++ program10.cpp
aaron@aaronshp:~/Desktop/Cpp-Assignment$ ./a.out
Name: Aaromal A
Class:ECE-A
Reg-No: 24101880

C
C+
C++
C++e
C++ea
C++eas
C++easy
```