Programming Laboratory-I

Assignment No-1

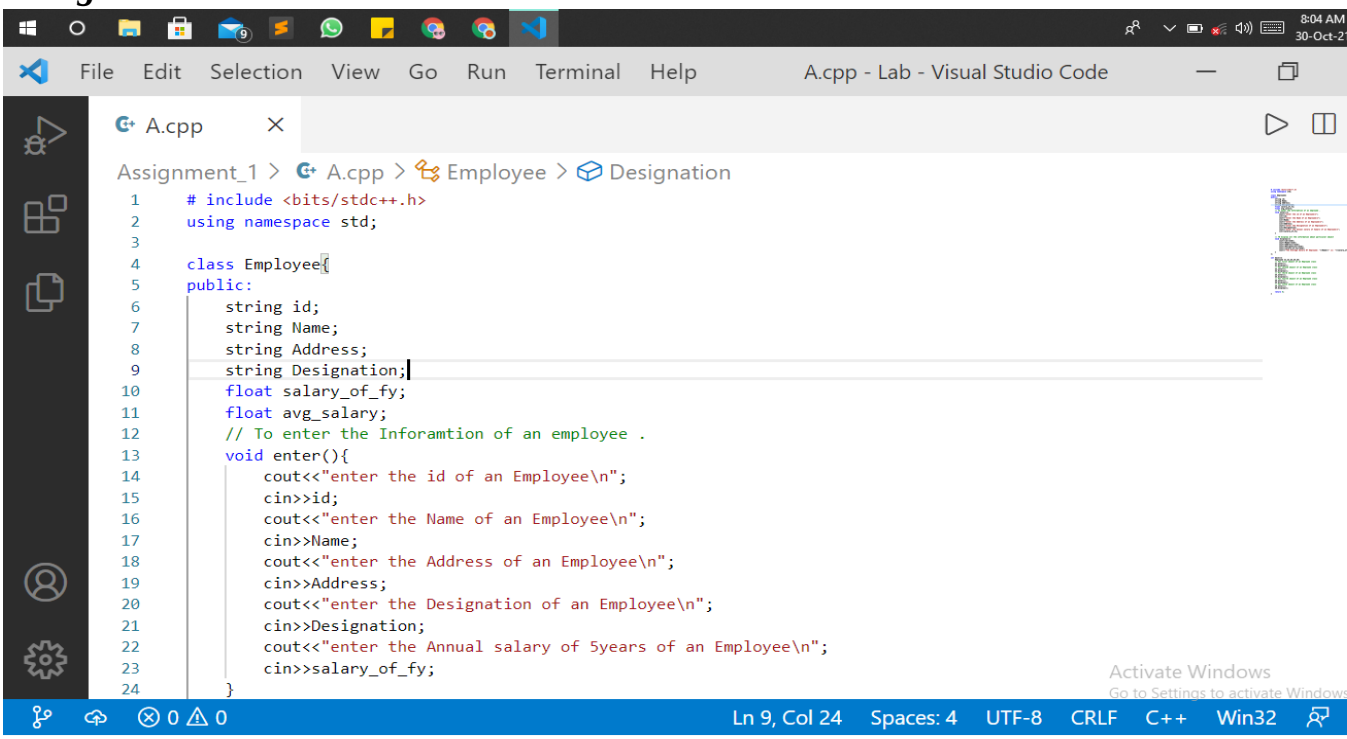
(Basics of object oriented programming)

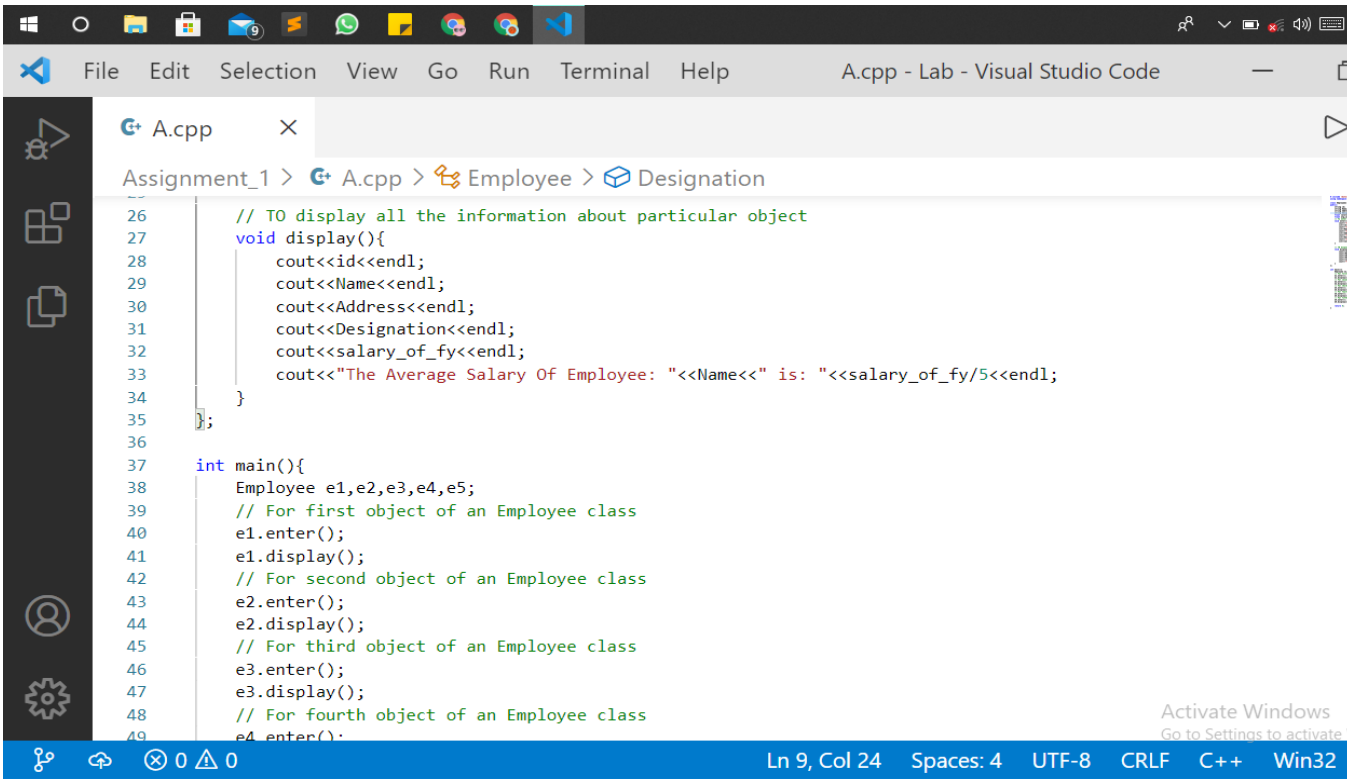
Name: Sanket Shivaji Jadhav.

Prn: 2020BTECS00005.

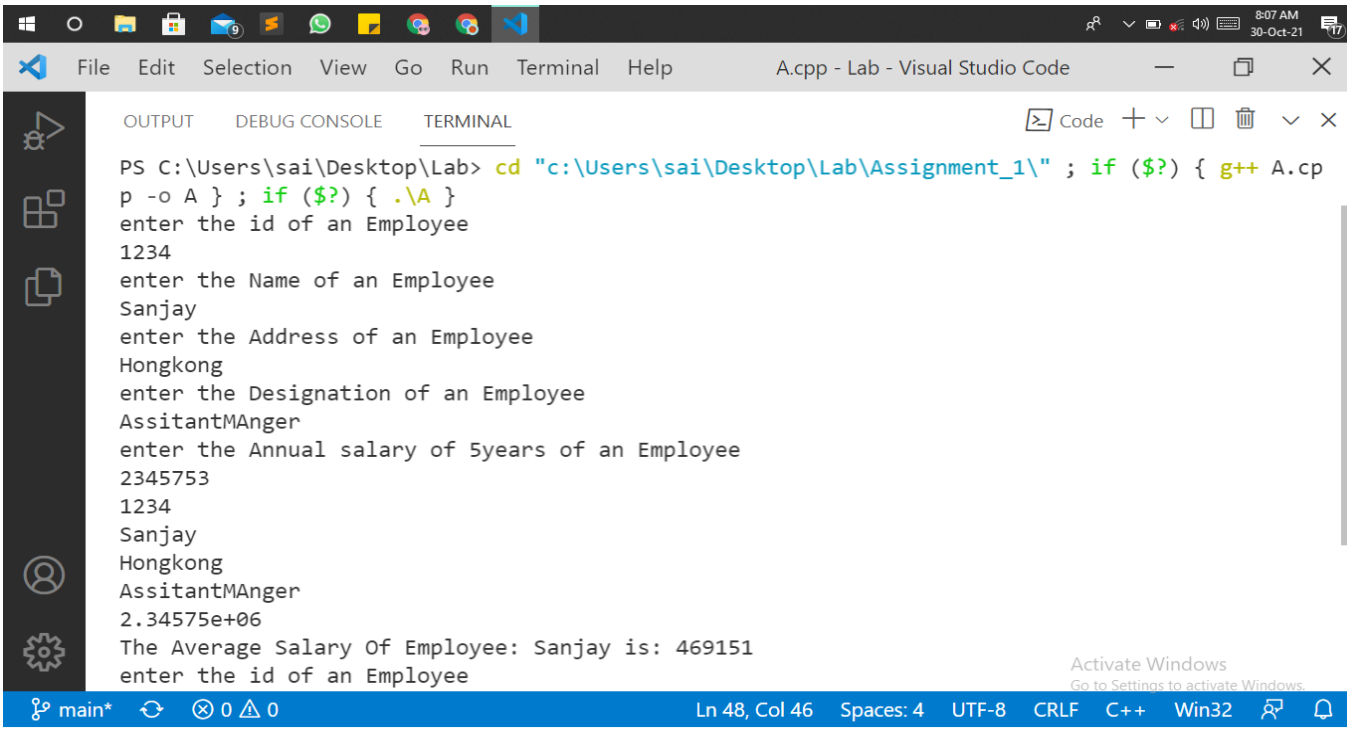
1. Create an Employee class to enter and display information of employee such as EmpID, Name, Address, Designation and Salary of last five years and calculate average salary (create five objects to enter and display data).

Program:



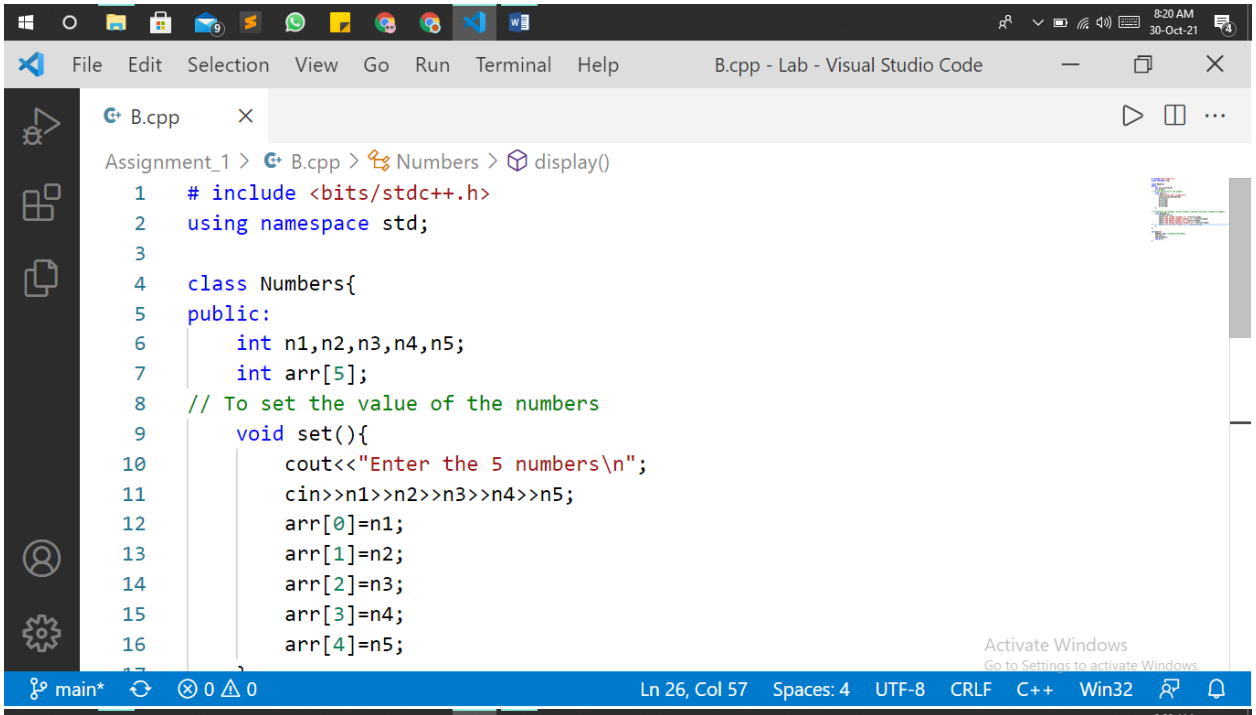

File Edit Selection View Go Run Terminal Help
A.cpp - Lab - Visual Studio Code
A.cpp
Assignment_1 > A.cpp > Employee > Designation
// TO display all the information about particular object
void display(){
cout<<id<<endl;
cout<<Name<<endl;
cout<<Address<<endl;
cout<<Designation<<endl;
cout<<salary_of_fy<<endl;
cout<<"The Average Salary Of Employee: "<<Name<<" is: "<<salary_of_fy/5<<endl;
}
};
int main(){
Employee e1,e2,e3,e4,e5;
// For first object of an Employee class
e1.enter();
e1.display();
// For second object of an Employee class
e2.enter();
e2.display();
// For third object of an Employee class
e3.enter();
e3.display();
// For fourth object of an Employee class
Activate Windows
Go to Settings to activate
Ln 9, Col 24 Spaces: 4 UTF-8 CRLF C++ Win32

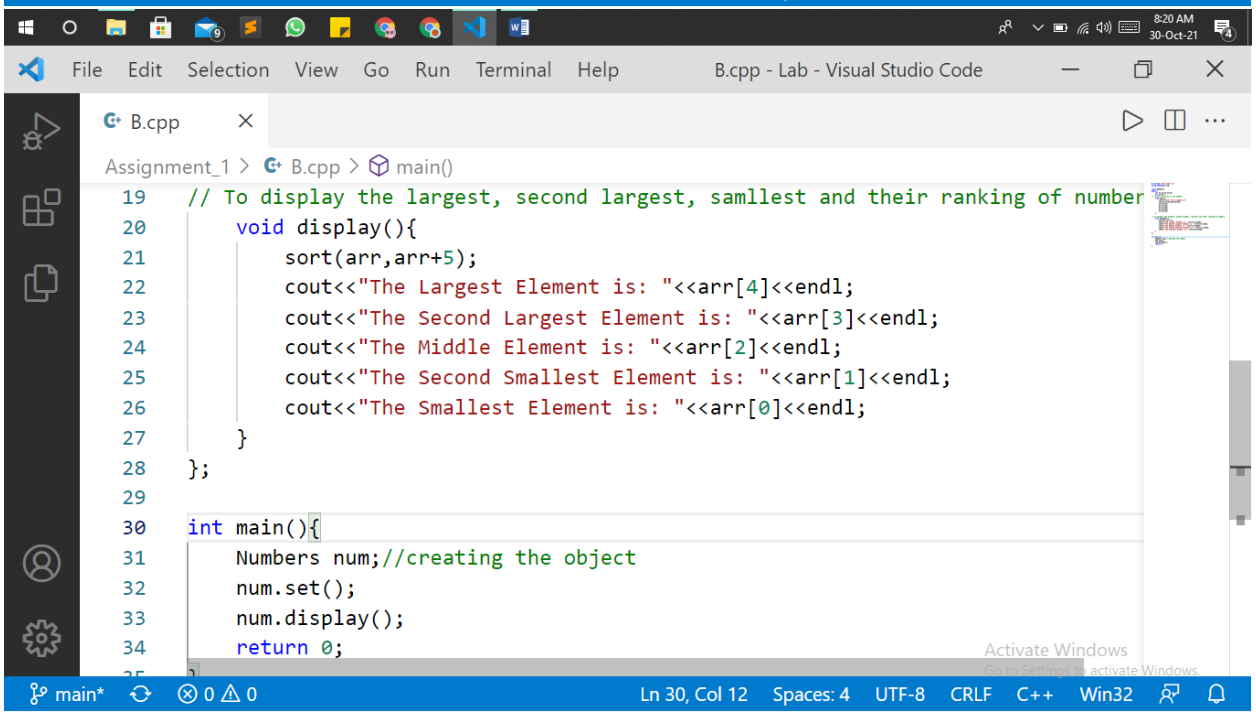
***Output:**


File Edit Selection View Go Run Terminal Help
A.cpp - Lab - Visual Studio Code
OUTPUT DEBUG CONSOLE TERMINAL
Code
PS C:\Users\sai\Desktop\Lab> cd "c:\Users\sai\Desktop\Lab\Assignment_1\" ; if ($?) { g++ A.cp
p -o A } ; if ($?) { .\A }
enter the id of an Employee
1234
enter the Name of an Employee
Sanjay
enter the Address of an Employee
Hongkong
enter the Designation of an Employee
AssitantMAnger
enter the Annual salary of 5years of an Employee
2345753
1234
Sanjay
Hongkong
AssitantMAnger
2.34575e+06
The Average Salary Of Employee: Sanjay is: 469151
enter the id of an Employee
Activate Windows
Go to Settings to activate Windows.
main* Ln 48, Col 46 Spaces: 4 UTF-8 CRLF C++ Win32

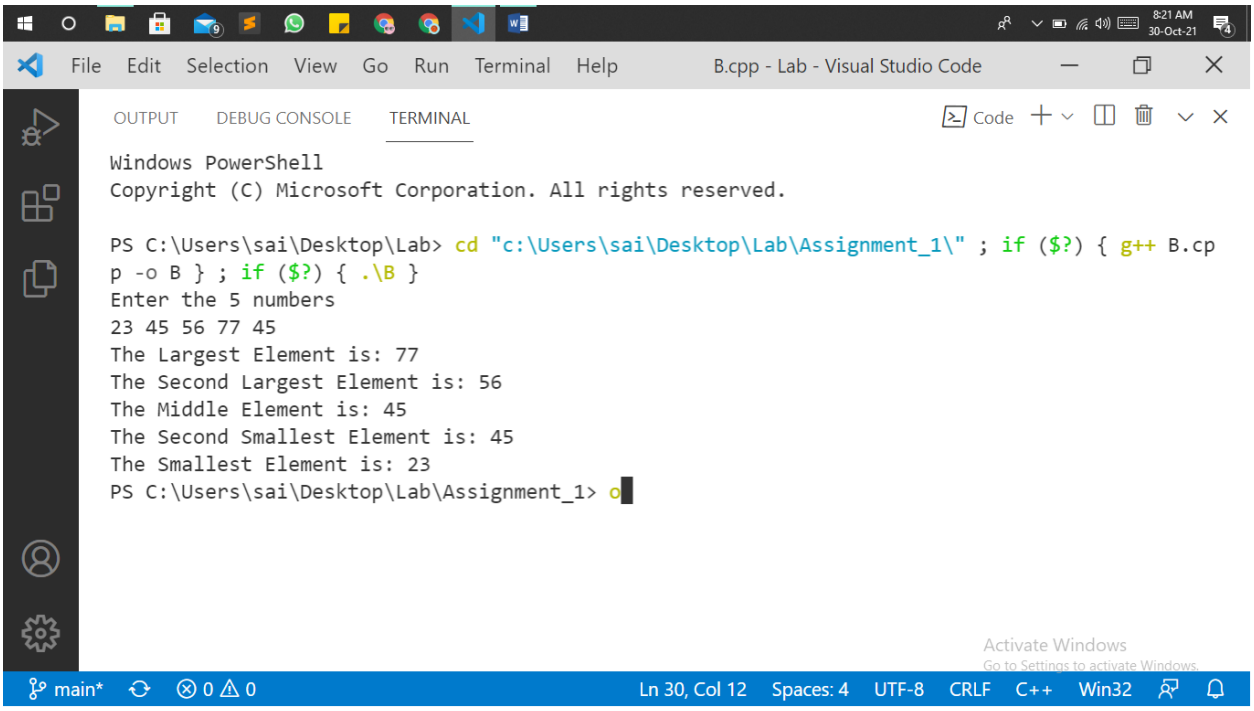
2. Write a program using class to accept 5 numbers from user and display largest, second largest and smallest, second smallest and middle number among five.

Program:





Output :

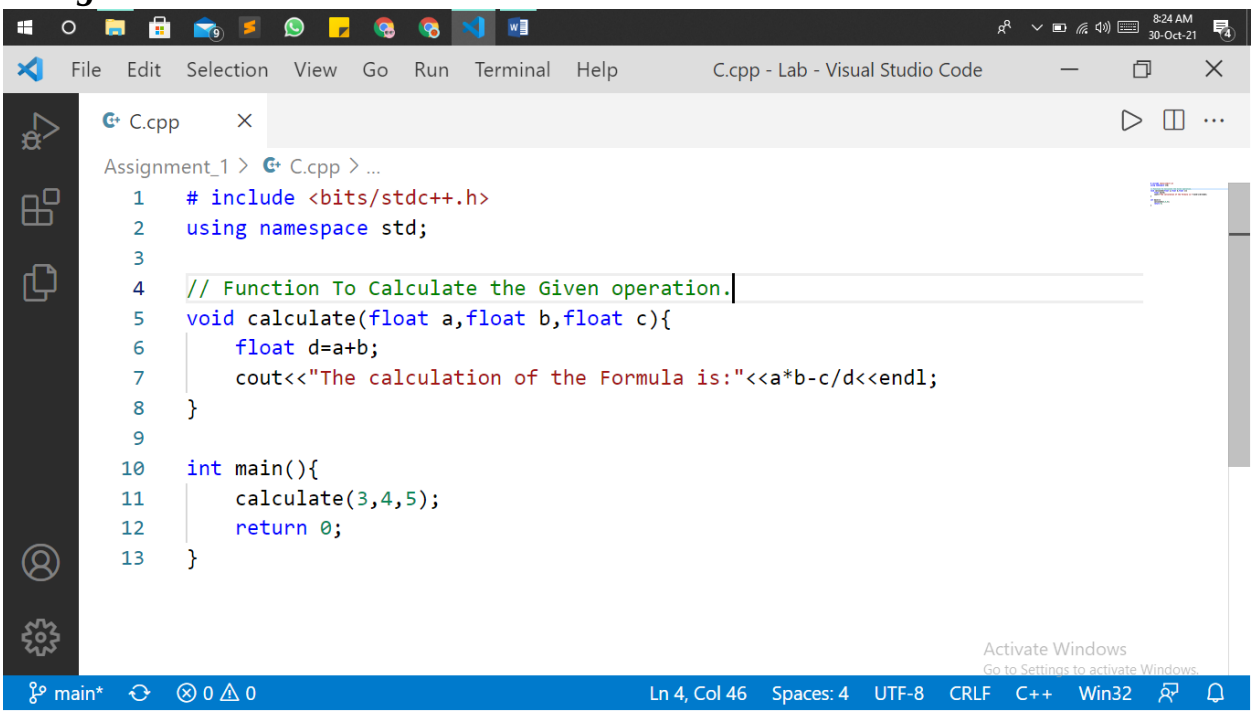


3Write a program to read 3 values of a, b and c and calculate value of X as

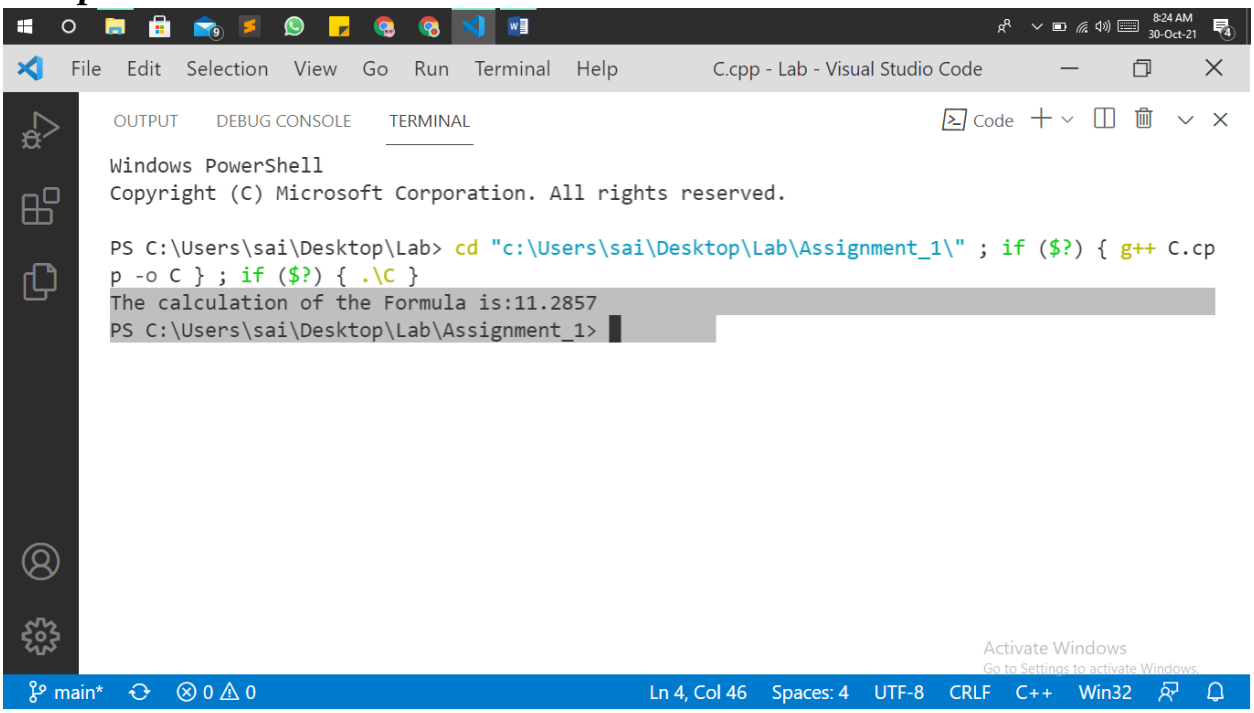
$$X = a*b - c/d$$

Where d=a+b

Program:

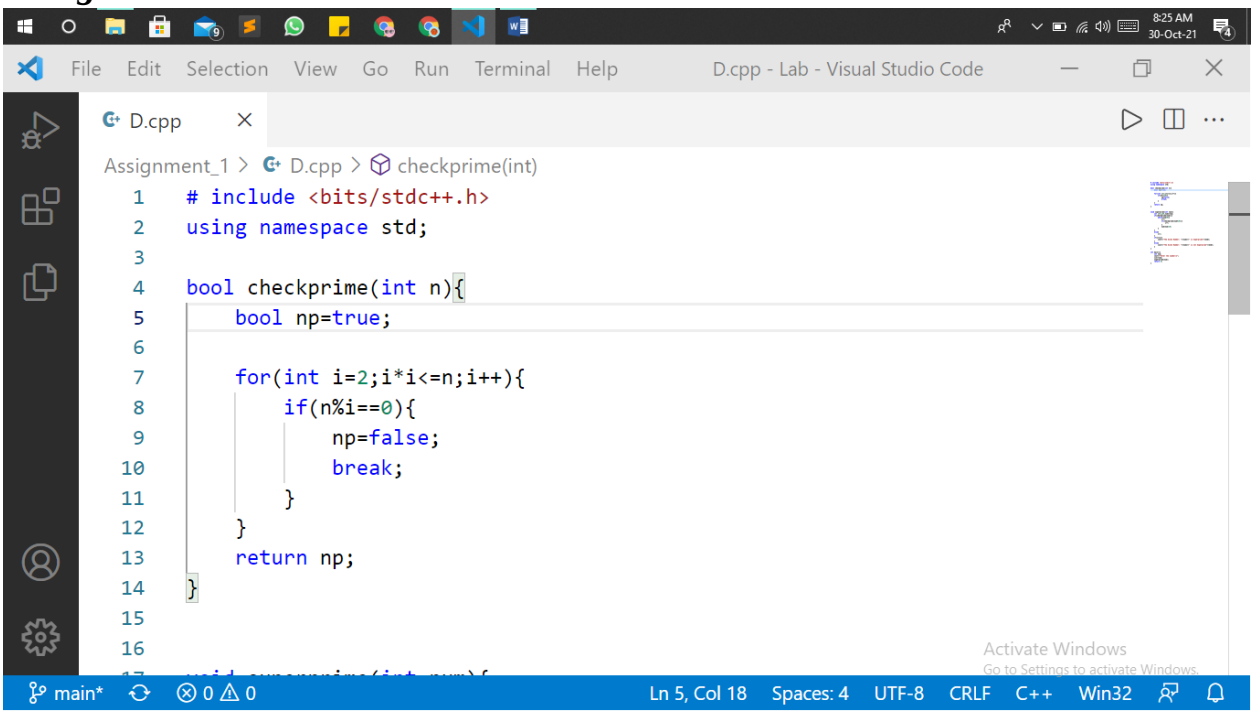


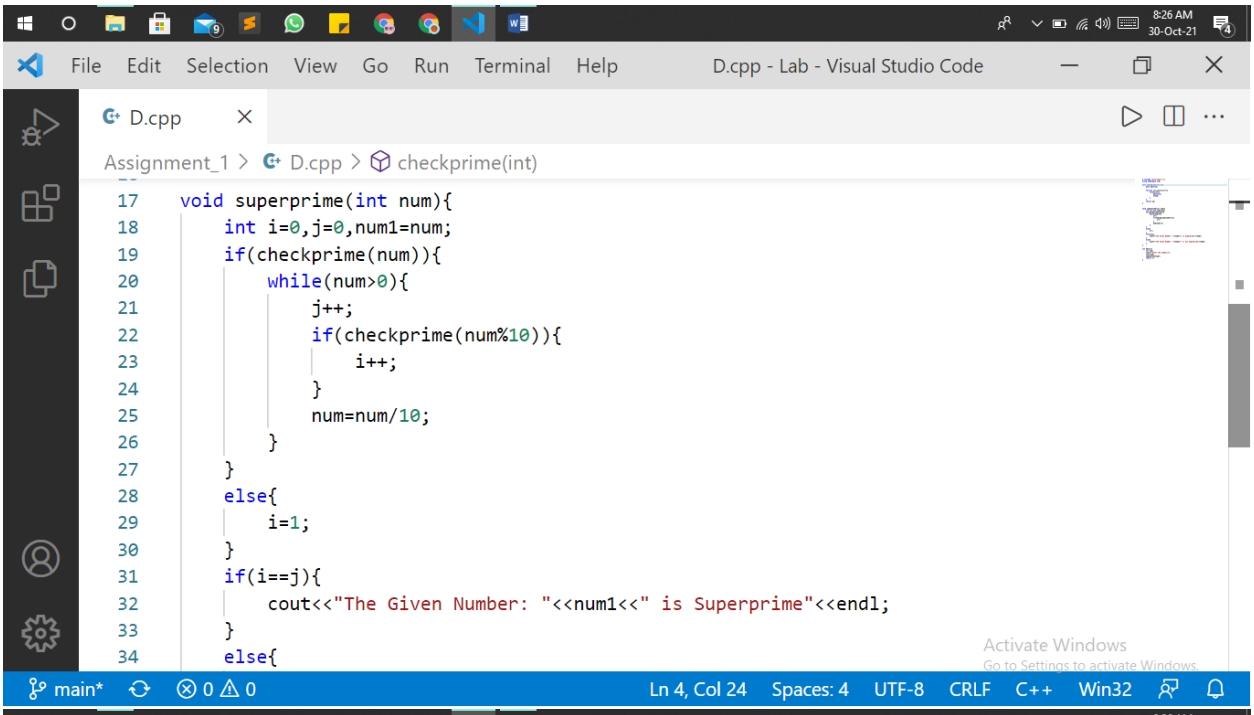
Output :

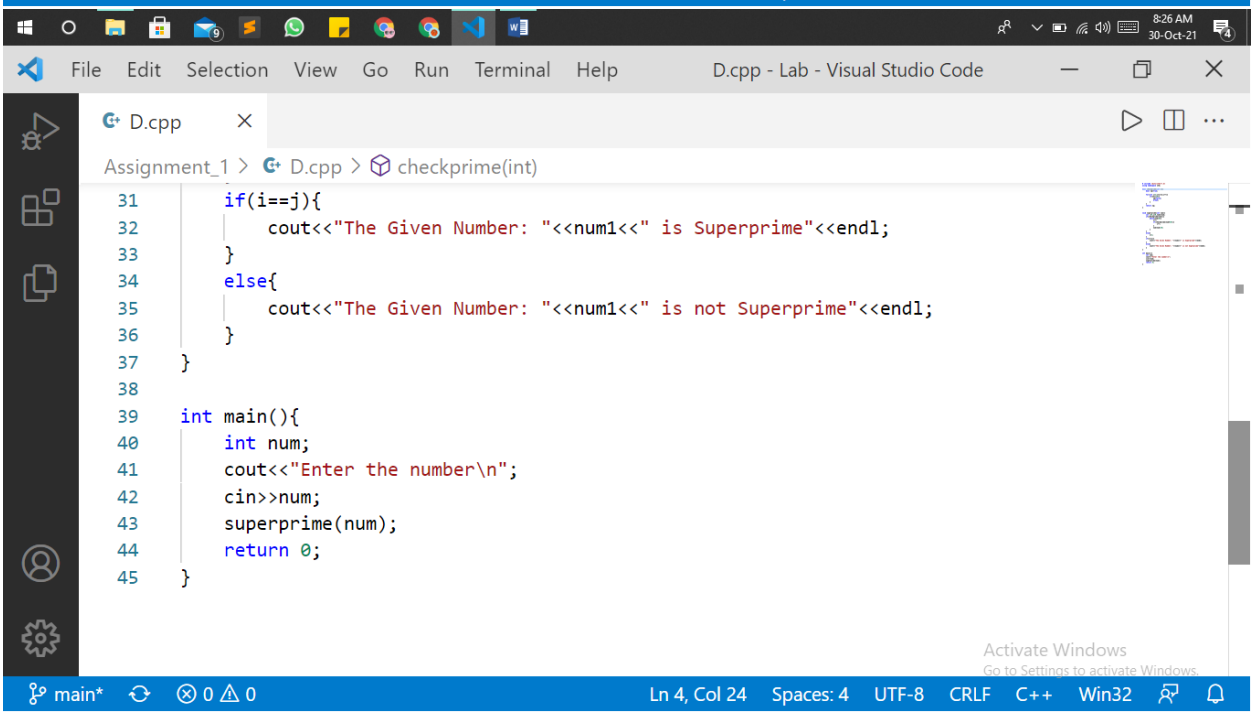


4. Write a C++ Program to Check given number is Super Prime number or not using function.(Super prime number is one whose all digits are prime and number is also prime)

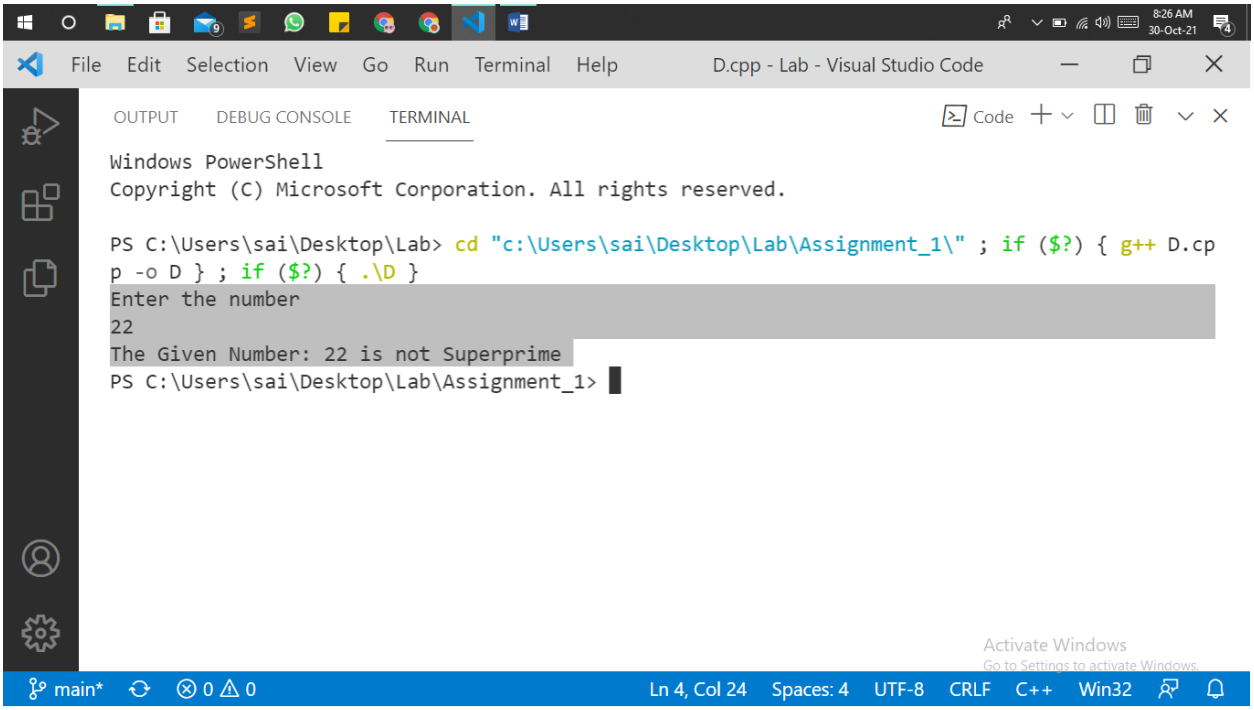
Program:




File Edit Selection View Go Run Terminal Help
D.cpp - Lab - Visual Studio Code
D.cpp
Assignment_1 > D.cpp > checkprime(int)
void superprime(int num){
int i=0,j=0,num1=num;
if(checkprime(num)){
while(num>0){
j++;
if(checkprime(num%10)){
i++;
}
num=num/10;
}
}
else{
i=1;
}
if(i==j){
cout<<"The Given Number: "<<num1<<" is Superprime"<<endl;
}
else{
Activate Windows
Go to Settings to activate Windows.
main*
0 0
Ln 4, Col 24
Spaces: 4
UTF-8
CRLF
C++
Win32


File Edit Selection View Go Run Terminal Help
D.cpp - Lab - Visual Studio Code
D.cpp
Assignment_1 > D.cpp > checkprime(int)
if(i==j){
cout<<"The Given Number: "<<num1<<" is Superprime"<<endl;
}
else{
cout<<"The Given Number: "<<num1<<" is not Superprime"<<endl;
}
}
int main(){
int num;
cout<<"Enter the number\n";
cin>>num;
superprime(num);
return 0;
}
Activate Windows
Go to Settings to activate Windows.
main*
0 0
Ln 4, Col 24
Spaces: 4
UTF-8
CRLF
C++
Win32

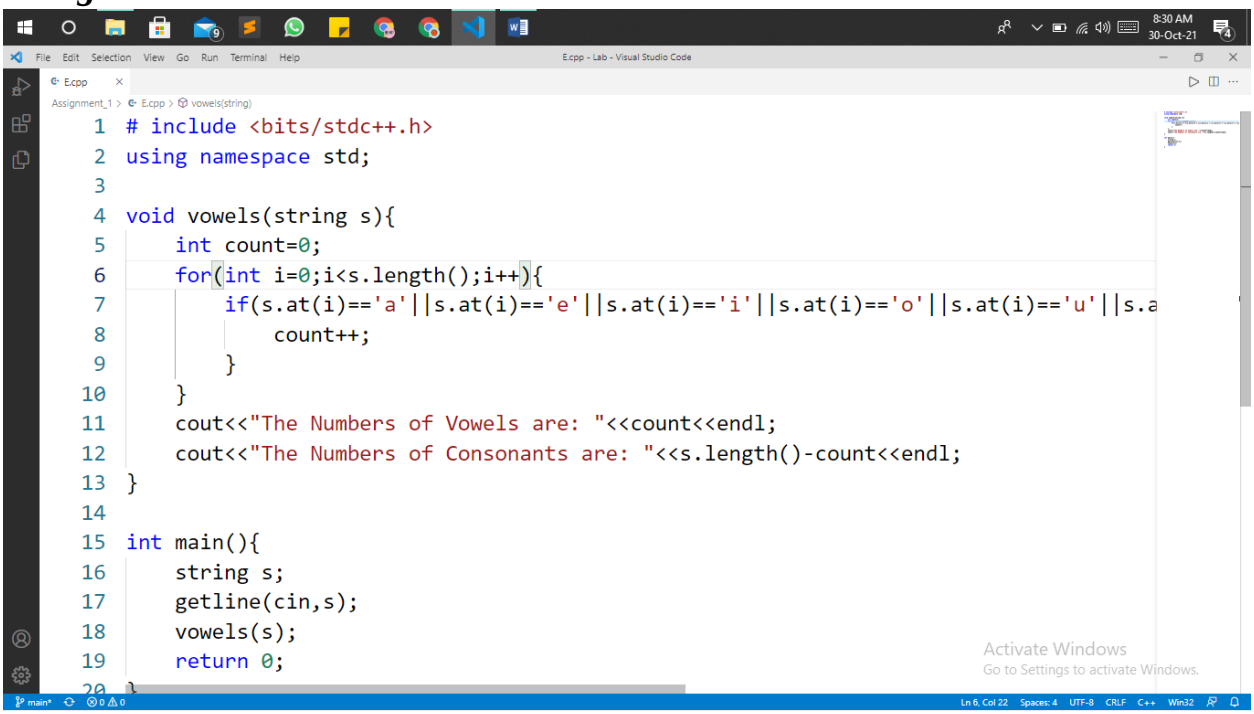
Output :



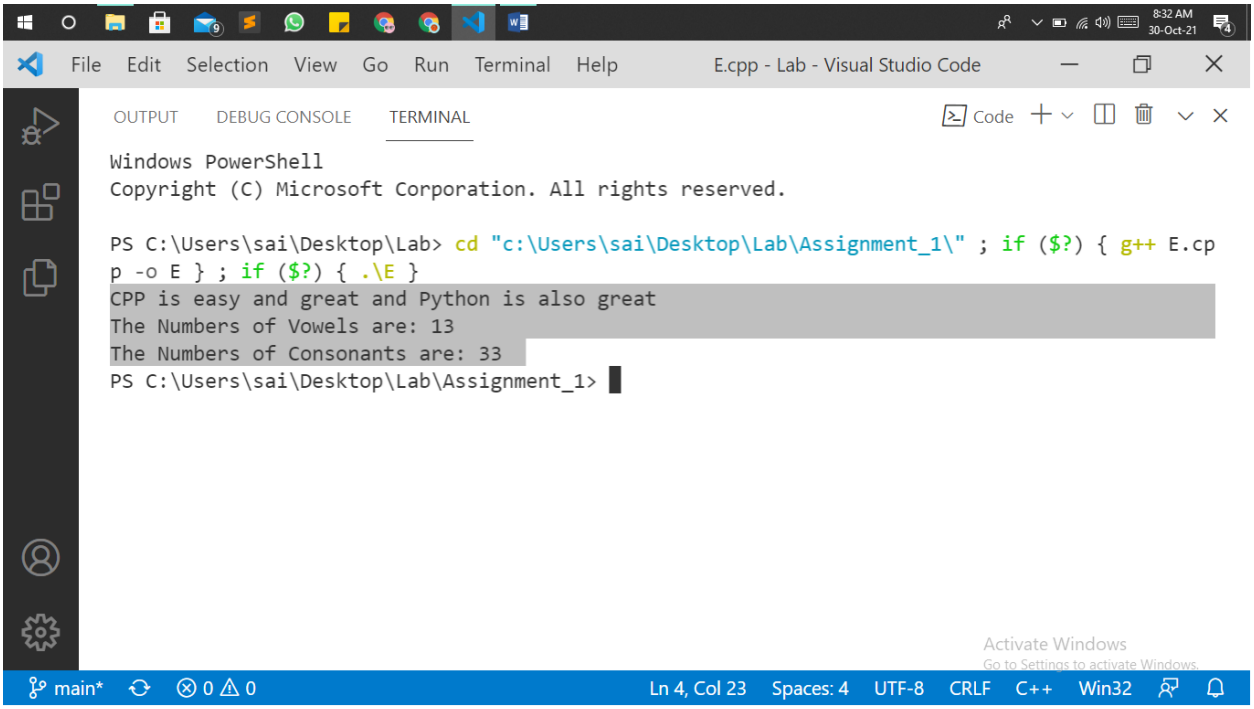
5. Write a C++ Program to Find Frequency (count) of vowels and consonants (character wise) in below String.

   "CPP is easy and great and Python is also great"

Program:

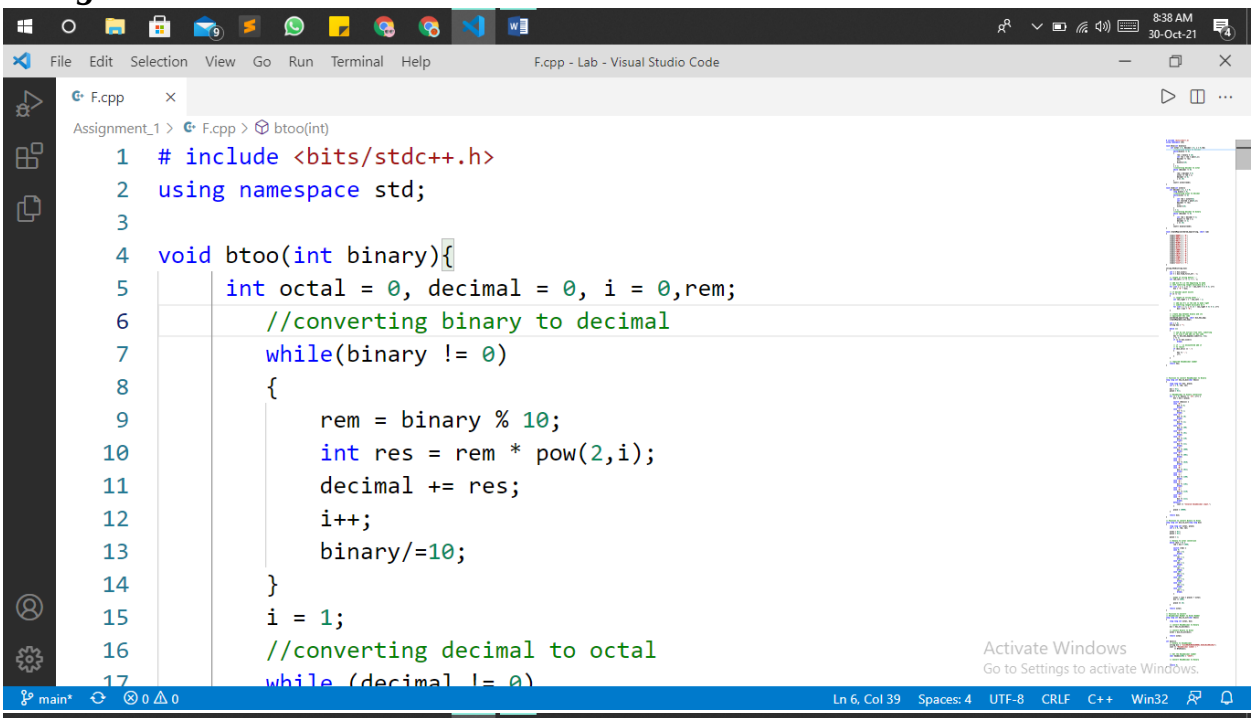


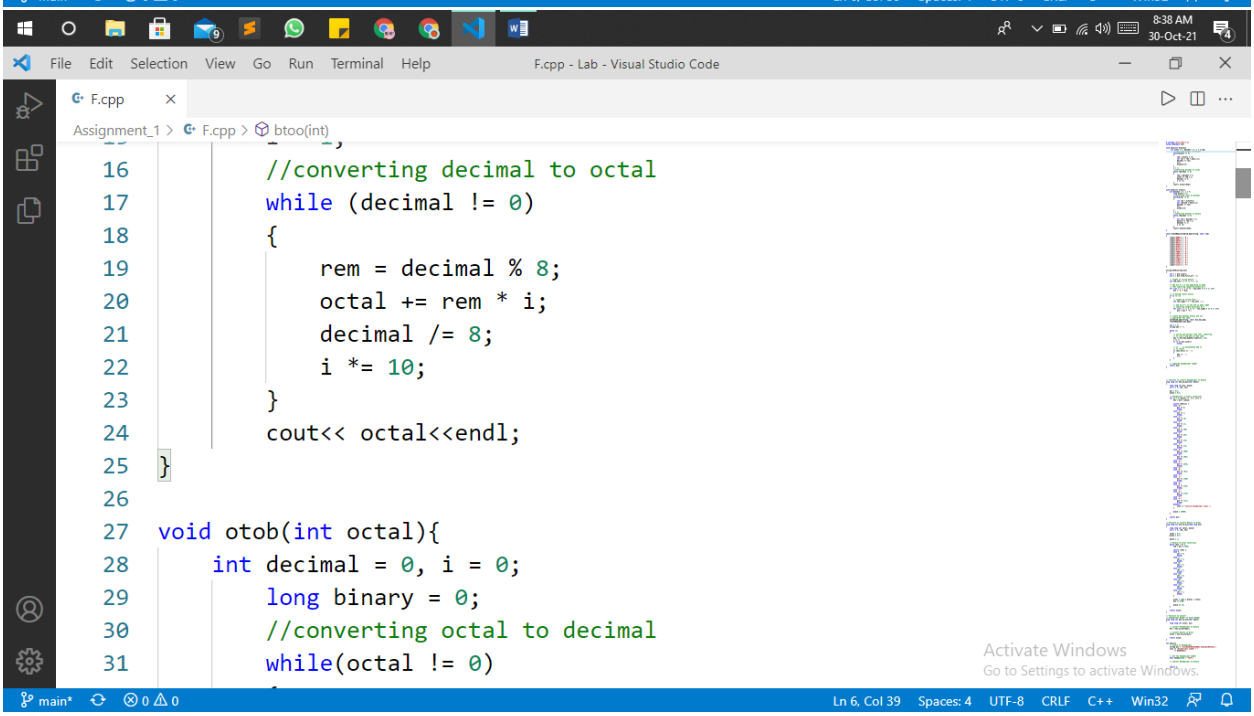
Output :

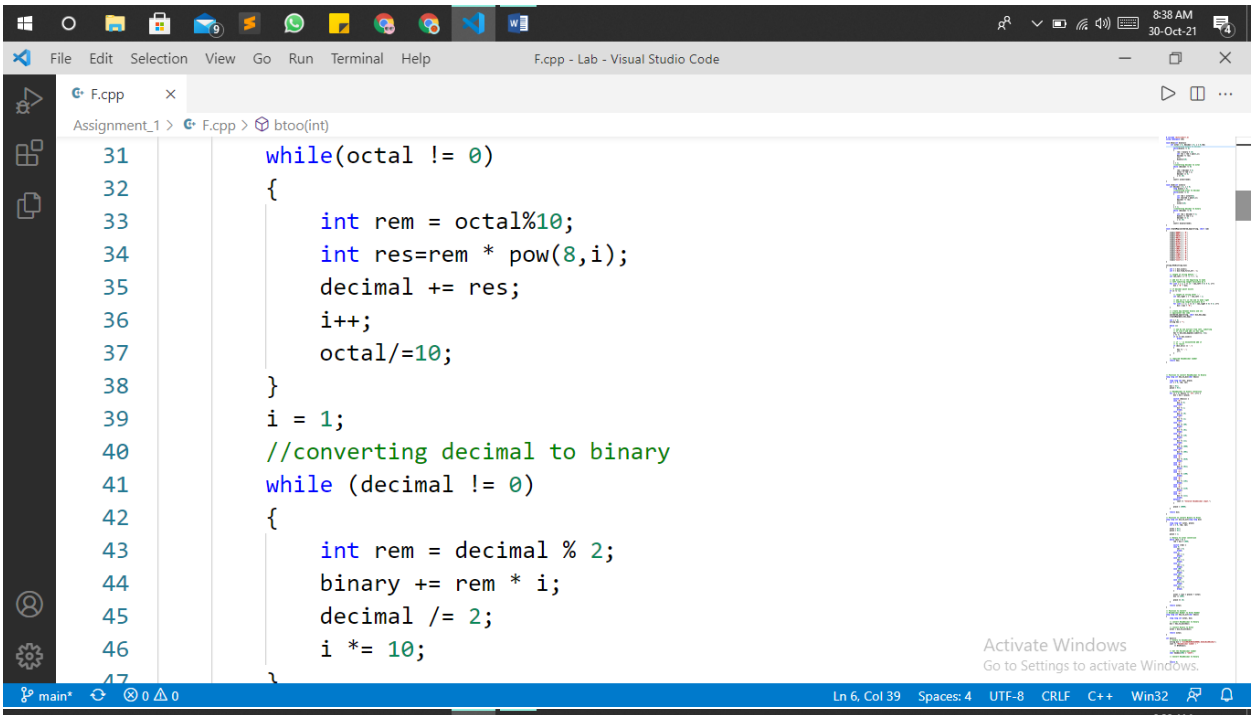


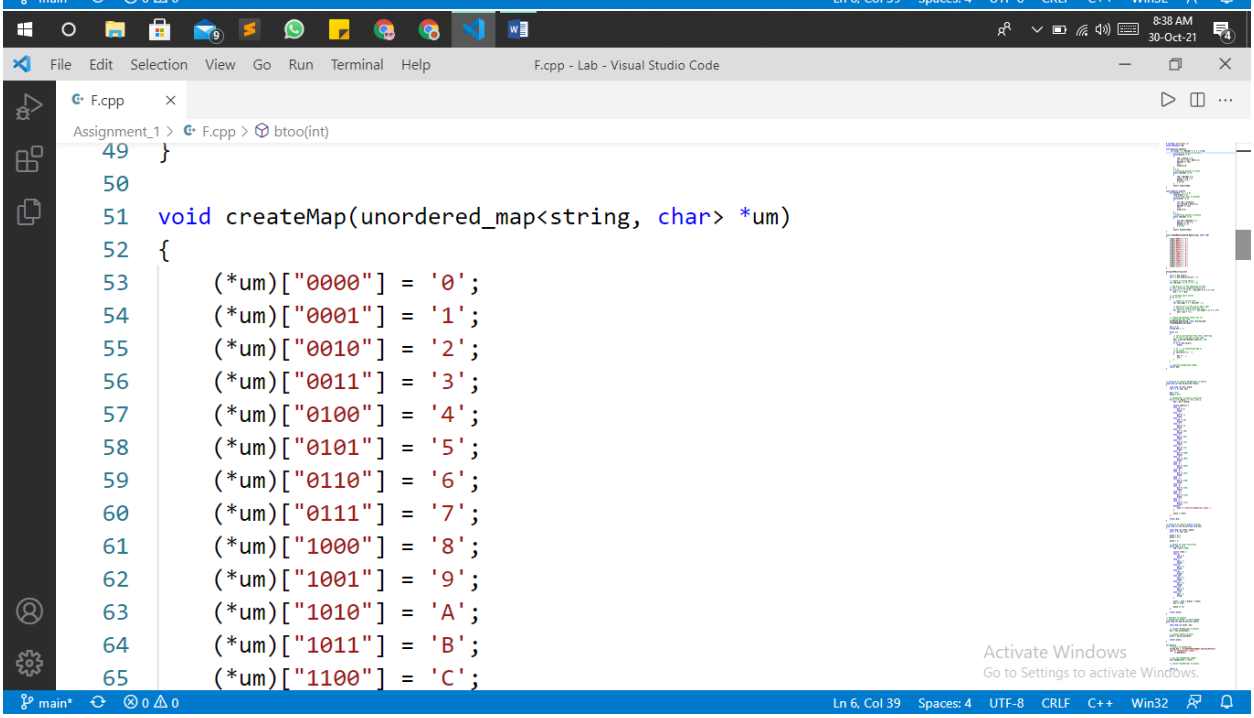
6. Write a Menu driven C++ Program to perform below operations (use saperate functions for every operation)
   a. Binary to Octal
   b. Octal to Binary
   c. Binary to Hexadecimal
   d. Hexadecimal to Binary
   e. Octal to Hexadecimal
   f. Hexadecimal to Octal

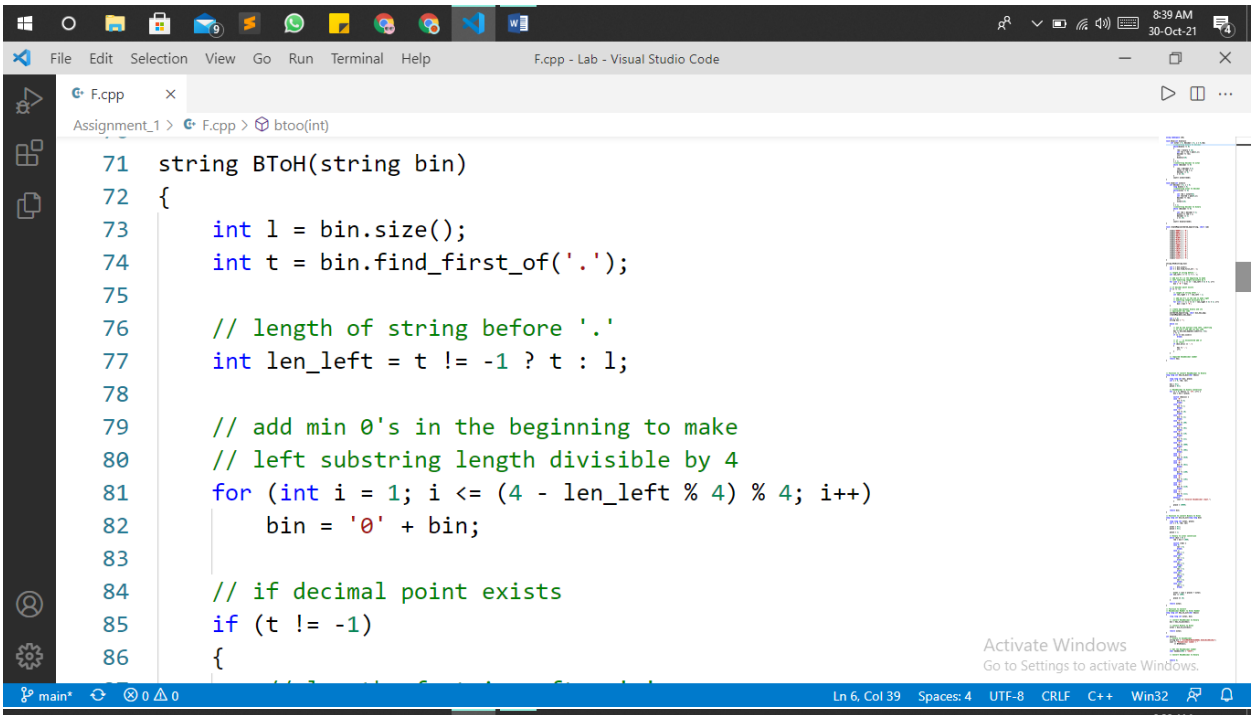
Program:

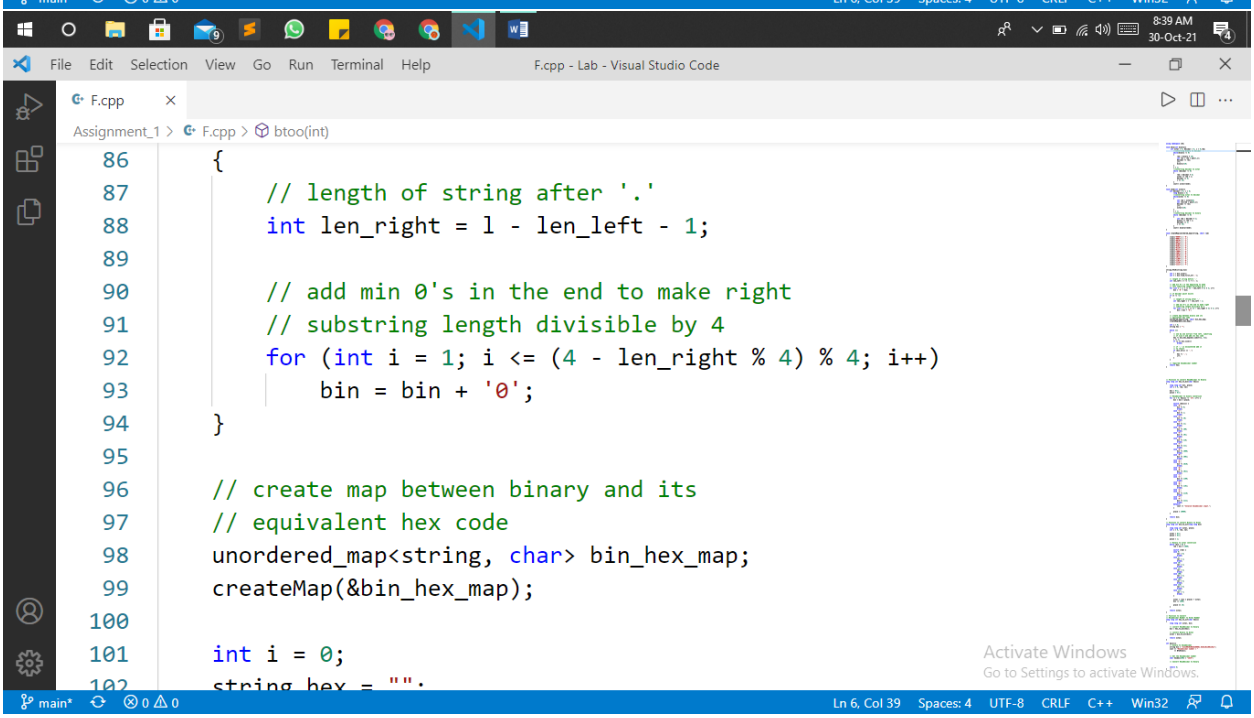

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
1 # include <bits/stdc++.h>
2 using namespace std;
3
4 void btoo(int binary){
5 int octal = 0, decimal = 0, i = 0,rem;
6 //converting binary to decimal
7 while(binary != 0)
8 {
9 rem = binary % 10;
10 int res = rem * pow(2,i);
11 decimal += res;
12 i++;
13 binary/=10;
14 }
15 i = 1;
16 //converting decimal to octal
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32

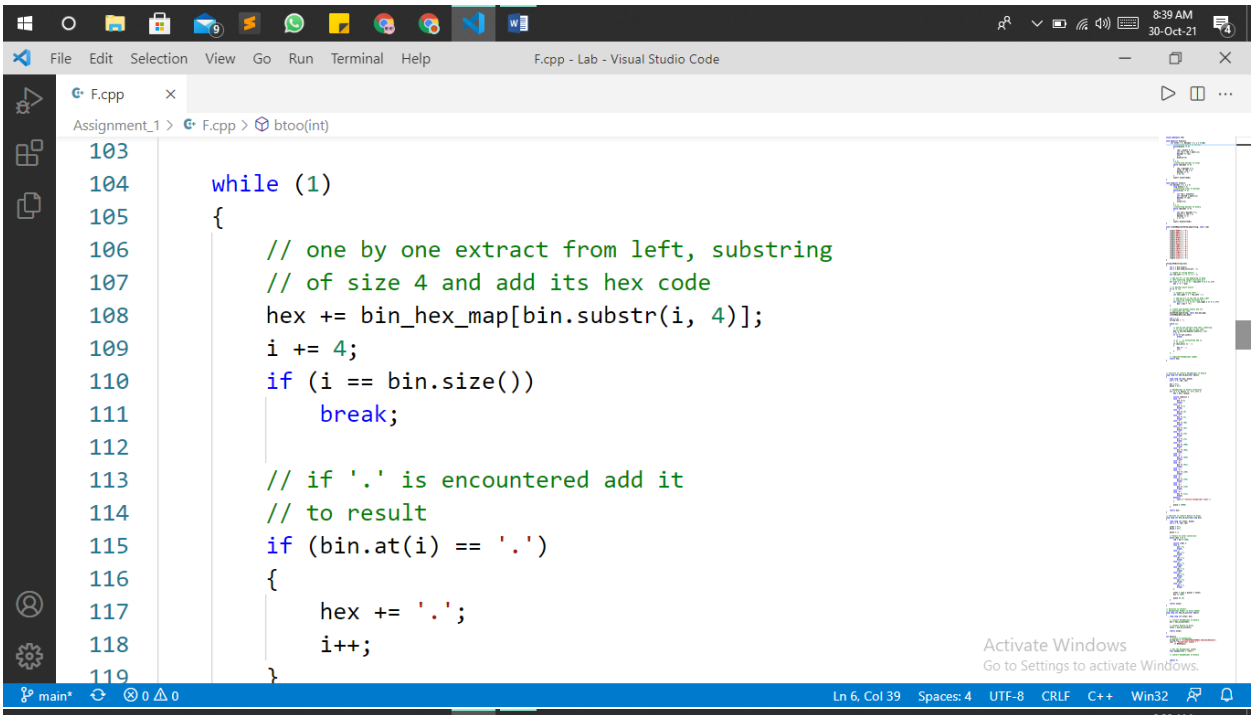

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
16 //converting decimal to octal
17 while (decimal != 0)
18 {
19 rem = decimal % 8;
20 octal += rem * i;
21 decimal /= 8;
22 i *= 10;
23 }
24 cout<< octal<<endl;
25 }
26
27 void otob(int octal){
28 int decimal = 0, i = 0;
29 long binary = 0;
30 //converting octal to decimal
31 while(octal != 0)
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32

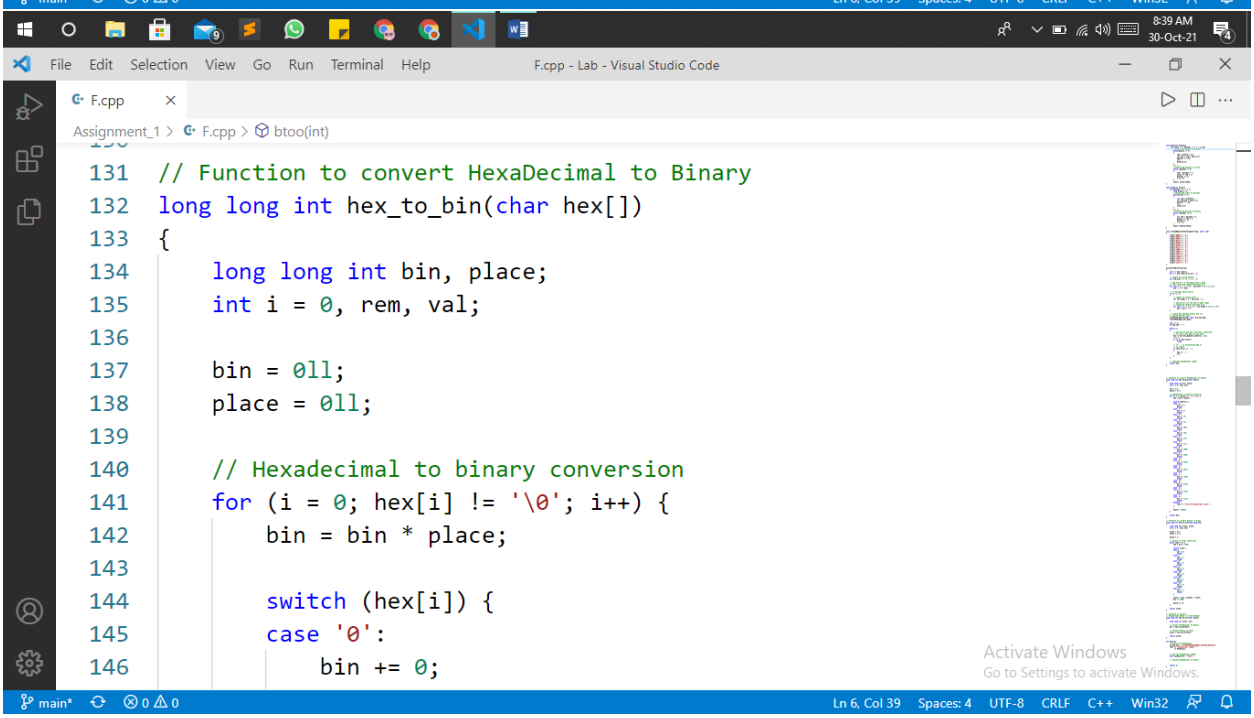

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
while(octal != 0)
{
int rem = octal%10;
int res=rem * pow(8,i);
decimal += res;
i++;
octal/=10;
}
i = 1;
//converting decimal to binary
while (decimal != 0)
{
int rem = decimal % 2;
binary += rem * i;
decimal /= 2;
i *= 10;
Activate Windows
Go to Settings to activate Windows.
main*
Ln 6, Col 39
Spaces: 4
UTF-8
CRLF
C++
Win32


File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
}
void createMap(unordered_map<string, char> *um)
{
(*um)["0000"] = '0';
(*um)["0001"] = '1';
(*um)["0010"] = '2';
(*um)["0011"] = '3';
(*um)["0100"] = '4';
(*um)["0101"] = '5';
(*um)["0110"] = '6';
(*um)["0111"] = '7';
(*um)["1000"] = '8';
(*um)["1001"] = '9';
(*um)["1010"] = 'A';
(*um)["1011"] = 'B';
(*um)["1100"] = 'C';
Activate Windows
Go to Settings to activate Windows.
main*
Ln 6, Col 39
Spaces: 4
UTF-8
CRLF
C++
Win32

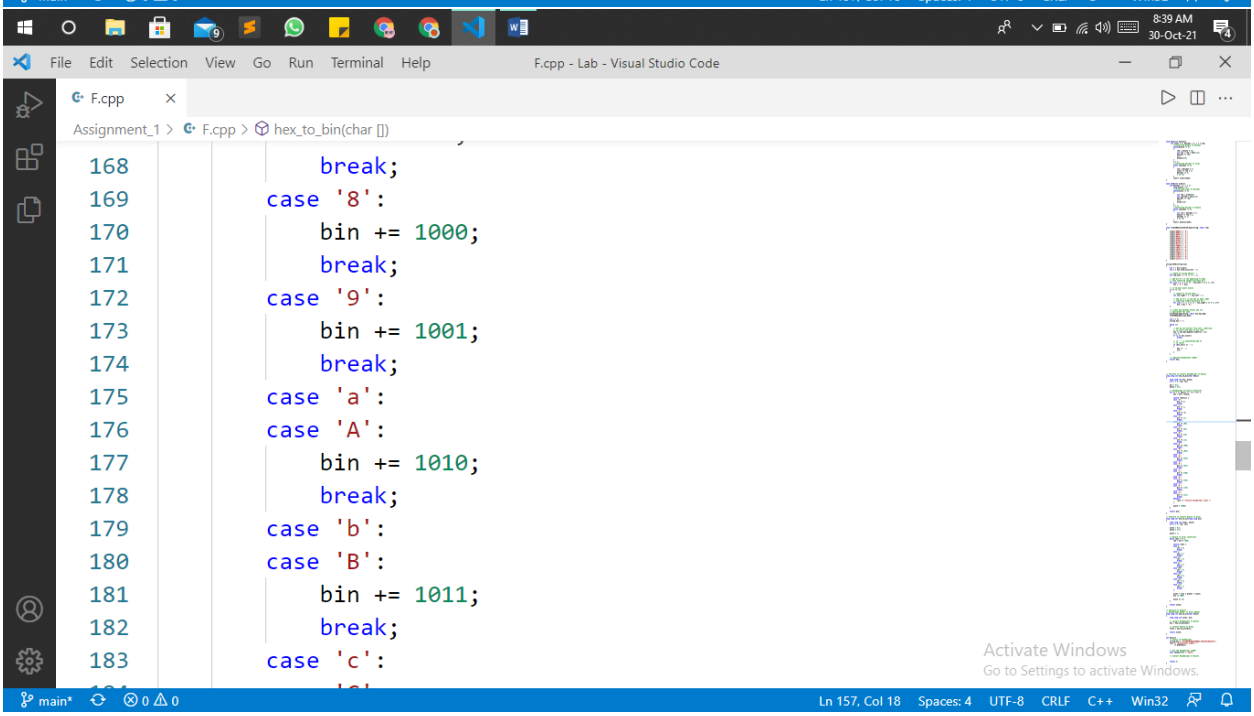

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
71 string BToH(string bin)
72 {
73 int l = bin.size();
74 int t = bin.find_first_of('.');
75
76 // length of string before '.'
77 int len_left = t != -1 ? t : l;
78
79 // add min 0's in the beginning to make
80 // left substring length divisible by 4
81 for (int i = 1; i <= (4 - len_left % 4) % 4; i++)
82 bin = '0' + bin;
83
84 // if decimal point exists
85 if (t != -1)
86 {
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21

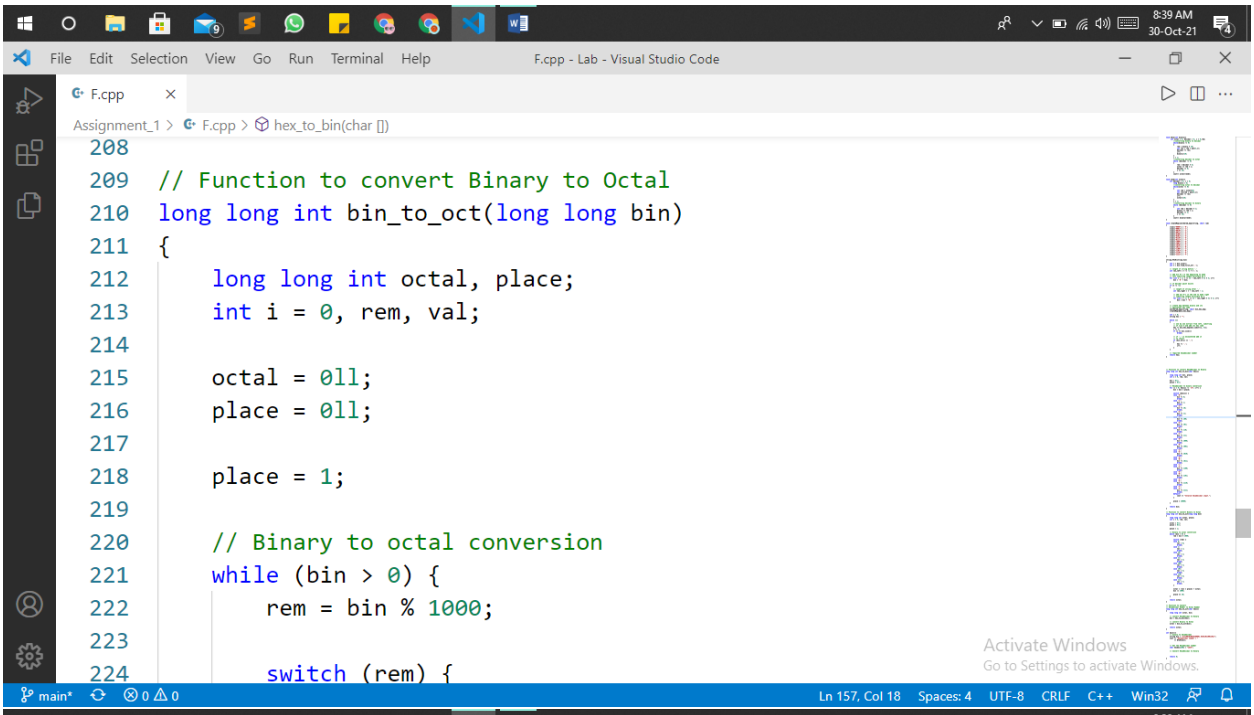

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
86 {
87 // length of string after '.'
88 int len_right = l - len_left - 1;
89
90 // add min 0's in the end to make right
91 // substring length divisible by 4
92 for (int i = 1; i <= (4 - len_right % 4) % 4; i++)
93 bin = bin + '0';
94 }
95
96 // create map between binary and its
97 // equivalent hex code
98 unordered_map<string, char> bin_hex_map;
99 createMap(&bin_hex_map);
100
101 int i = 0;
102 string hex = "";
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21

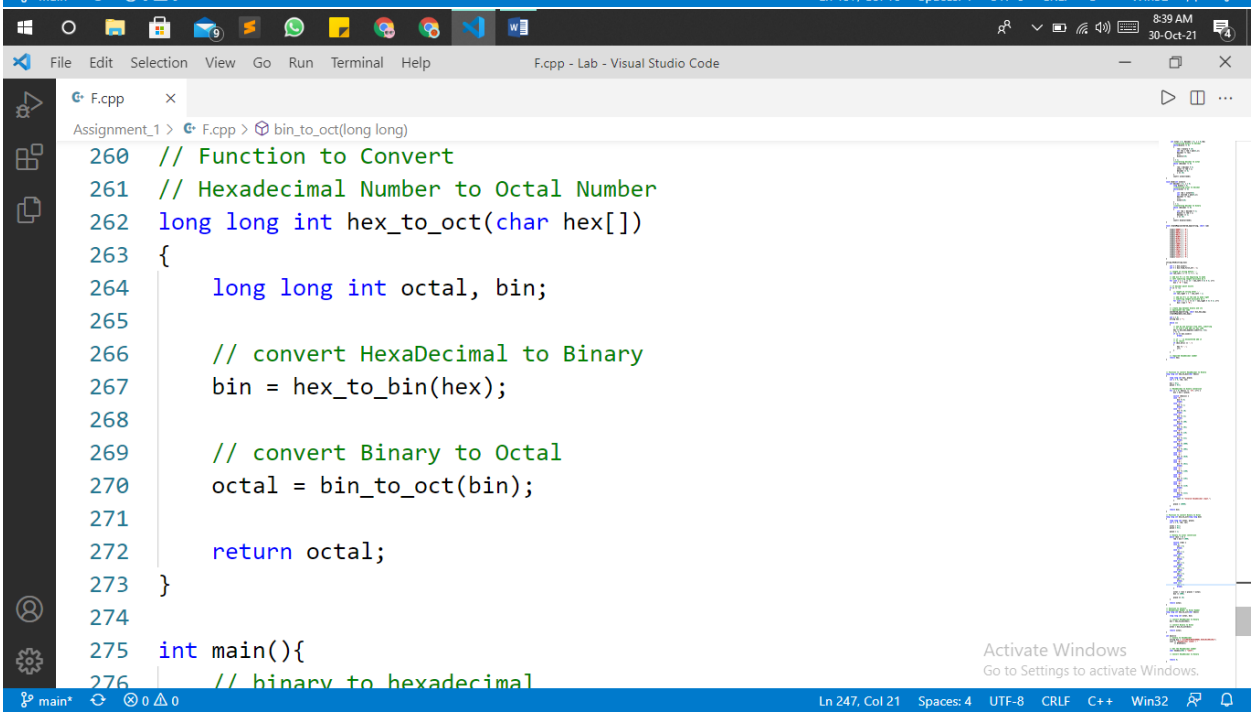

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
103
104 while (1)
105 {
106 // one by one extract from left, substring
107 // of size 4 and add its hex code
108 hex += bin_hex_map[bin.substr(i, 4)];
109 i += 4;
110 if (i == bin.size())
111 break;
112
113 // if '.' is encountered add it
114 // to result
115 if (bin.at(i) == '.')
116 {
117 hex += '.';
118 i++;
119 }
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21

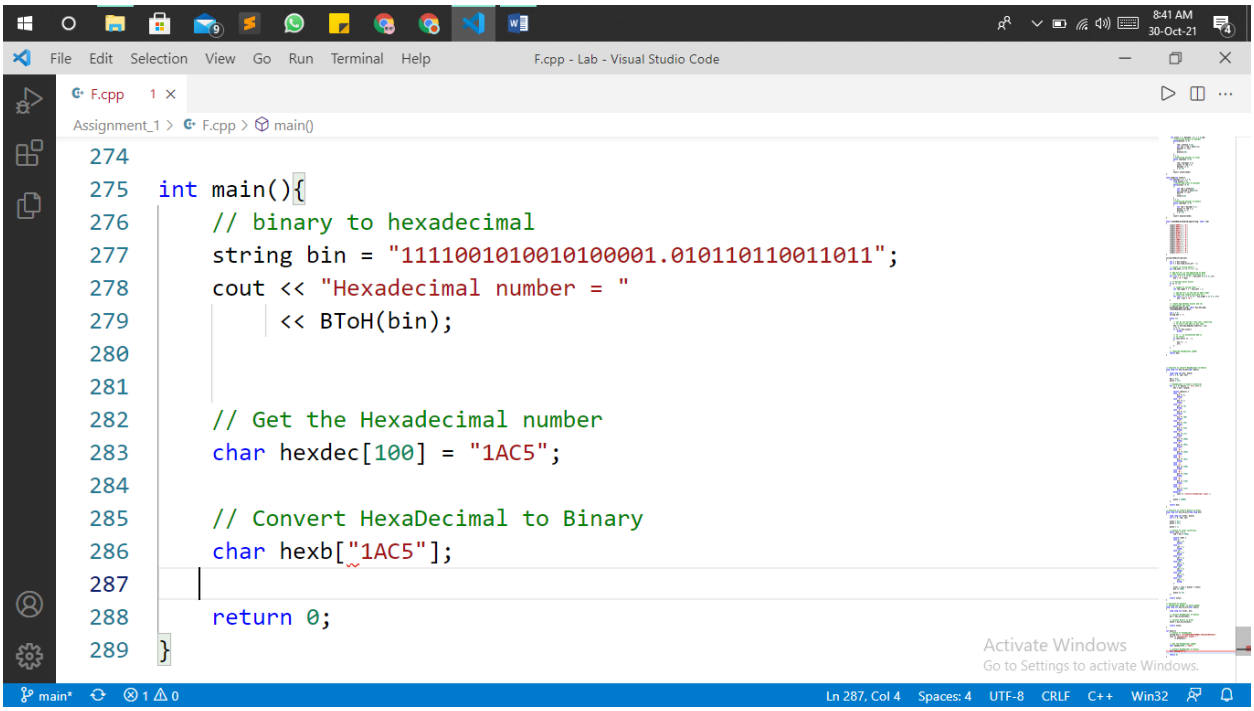

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > btoo(int)
131 // Function to convert HexaDecimal to Binary
132 long long int hex_to_bin(char hex[])
133 {
134 long long int bin, place;
135 int i = 0, rem, val;
136
137 bin = 0ll;
138 place = 0ll;
139
140 // Hexadecimal to binary conversion
141 for (i = 0; hex[i] != '\0'; i++) {
142 bin = bin * place;
143
144 switch (hex[i]) {
145 case '0':
146 bin += 0;
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 6, Col 39 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21


File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > hex_to_bin(char [])
151 case '2':
152 bin += 10;
153 break;
154 case '3':
155 bin += 11;
156 break;
157 case '4':
158 bin += 100;
159 break;
160 case '5':
161 bin += 101;
162 break;
163 case '6':
164 bin += 110;
165 break;
166 case '7':
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 157, Col 18 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21

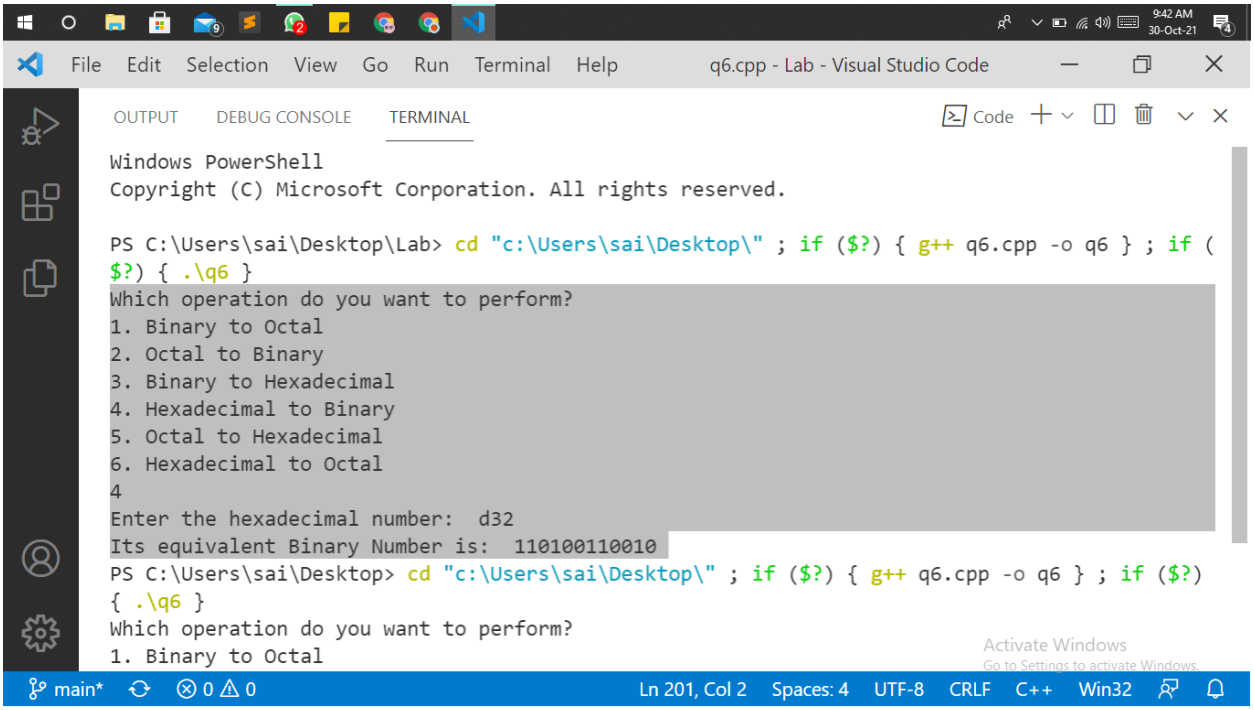

File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > hex_to_bin(char [])
168 break;
169 case '8':
170 bin += 1000;
171 break;
172 case '9':
173 bin += 1001;
174 break;
175 case 'a':
176 case 'A':
177 bin += 1010;
178 break;
179 case 'b':
180 case 'B':
181 bin += 1011;
182 break;
183 case 'c':
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 157, Col 18 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21


File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > hex_to_bin(char [])
208
209 // Function to convert Binary to Octal
210 long long int bin_to_oct(long long bin)
211 {
212 long long int octal, place;
213 int i = 0, rem, val;
214
215 octal = 0ll;
216 place = 0ll;
217
218 place = 1;
219
220 // Binary to octal conversion
221 while (bin > 0) {
222 rem = bin % 1000;
223
224 switch (rem) {
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 157, Col 18 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21


File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp
Assignment_1 > F.cpp > bin_to_oct(long long)
260 // Function to Convert
261 // Hexadecimal Number to Octal Number
262 long long int hex_to_oct(char hex[])
263 {
264 long long int octal, bin;
265
266 // convert HexaDecimal to Binary
267 bin = hex_to_bin(hex);
268
269 // convert Binary to Octal
270 octal = bin_to_oct(bin);
271
272 return octal;
273 }
274
275 int main(){
276 // binary to hexadecimal
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 247, Col 21 Spaces: 4 UTF-8 CRLF C++ Win32
8:39 AM
30-Oct-21


File Edit Selection View Go Run Terminal Help
F.cpp - Lab - Visual Studio Code
F.cpp 1
Assignment_1 > F.cpp > main()
274
275 int main(){
276 // binary to hexadecimal
277 string bin = "1111001010010100001.010110110011011";
278 cout << "Hexadecimal number = "
279 << BToH(bin);
280
281
282 // Get the Hexadecimal number
283 char hexdec[100] = "1AC5";
284
285 // Convert HexaDecimal to Binary
286 char hexb["1AC5"];
287
288 return 0;
289 }
Activate Windows
Go to Settings to activate Windows.
main* 1 0
Ln 287, Col 4 Spaces: 4 UTF-8 CRLF C++ Win32

***Output :**


File Edit Selection View Go Run Terminal Help
q6.cpp - Lab - Visual Studio Code
OUTPUT DEBUG CONSOLE TERMINAL
Code
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
PS C:\Users\sai\Desktop\Lab> cd "c:\Users\sai\Desktop\" ; if ($?) { g++ q6.cpp -o q6 } ; if ($?) { .\q6 }
Which operation do you want to perform?
1. Binary to Octal
2. Octal to Binary
3. Binary to Hexadecimal
4. Hexadecimal to Binary
5. Octal to Hexadecimal
6. Hexadecimal to Octal
4
Enter the hexadecimal number: d32
Its equivalent Binary Number is: 110100110010
PS C:\Users\sai\Desktop> cd "c:\Users\sai\Desktop\" ; if ($?) { g++ q6.cpp -o q6 } ; if ($?) { .\q6 }
Which operation do you want to perform?
1. Binary to Octal
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 201, Col 2 Spaces: 4 UTF-8 CRLF C++ Win32