

***Department of Artificial Intelligence and Multimedia Gaming Fundamentals
of Programming***
(Fall-2025)

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Section: D

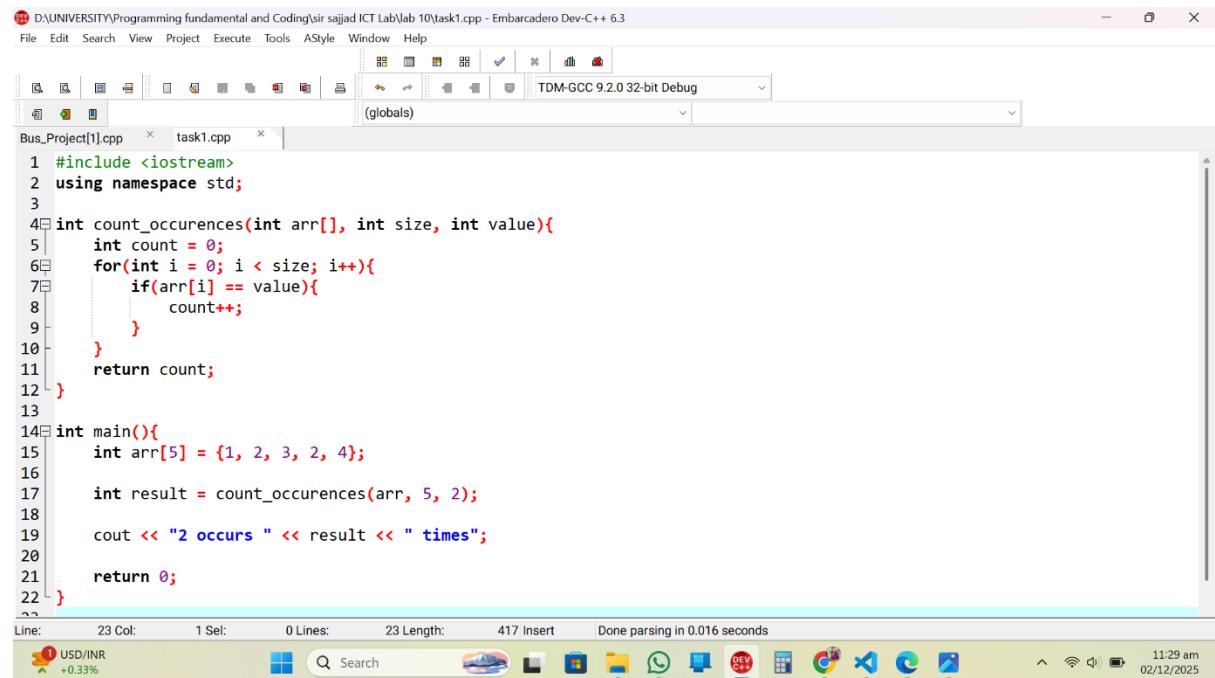
Sap Id: 5000001141

LAB No. 9

LECTURER: SAJJAD ALI RAJPER

Task 1:

Code:

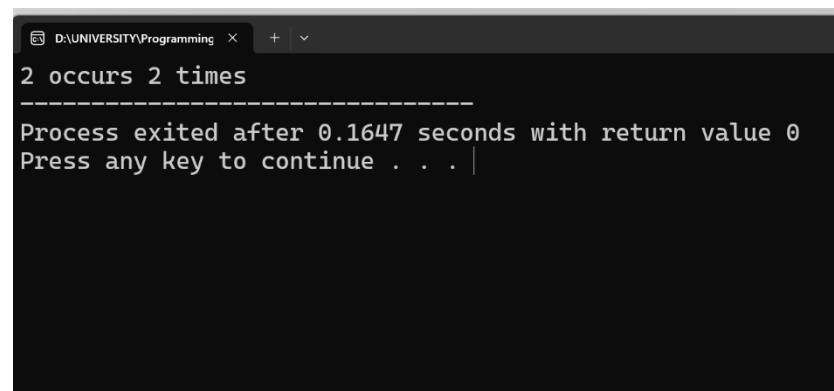


The screenshot shows the Dev-C++ IDE interface. The title bar reads "D:\UNIVERSITY\Programming fundamental and Coding\sir sajjad ICT Lab\Lab 10\task1.cpp - Embarcadero Dev-C++ 6.3". The menu bar includes File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, and Help. The toolbar has various icons for file operations. The main window displays two tabs: "Bus_Project[1].cpp" and "task1.cpp". The code editor contains the following C++ code:

```
1 #include <iostream>
2 using namespace std;
3
4 int count_occurrences(int arr[], int size, int value){
5     int count = 0;
6     for(int i = 0; i < size; i++){
7         if(arr[i] == value){
8             count++;
9         }
10    }
11    return count;
12 }
13
14 int main(){
15     int arr[5] = {1, 2, 3, 2, 4};
16
17     int result = count_occurrences(arr, 5, 2);
18
19     cout << "2 occurs " << result << " times";
20
21     return 0;
22 }
```

The status bar at the bottom shows "Line: 23 Col: 23 Sel: 0 Lines: 23 Length: 417 Insert Done parsing in 0.016 seconds". The taskbar at the bottom right shows system icons and the date/time "11:29 am 02/12/2025".

Output:



The screenshot shows a terminal window with the following output:

```
2 occurs 2 times
-----
Process exited after 0.1647 seconds with return value 0
Press any key to continue . . . |
```

Task 2

Code:

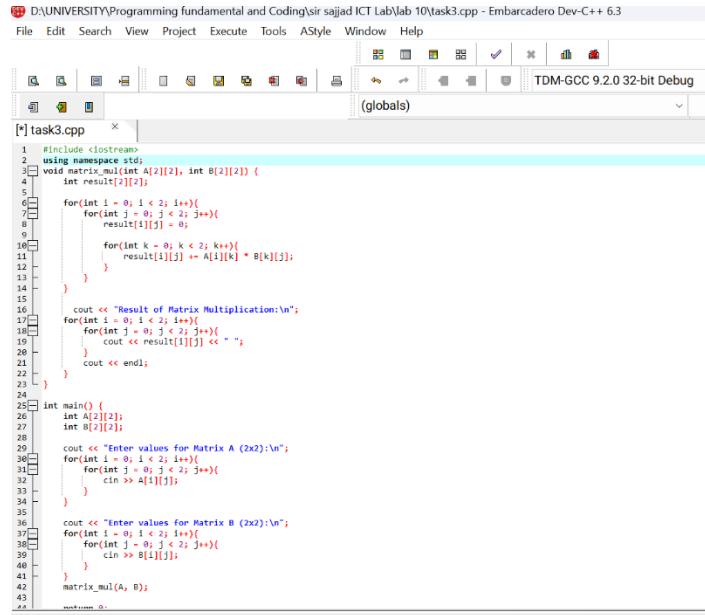
```
task2.cpp x
1 #include <iostream>
2 using namespace std;
3
4 string merge_text(string s1, string s2){
5     return s1 + s2; // join the two strings
6 }
7
8 int main(){
9     string a = "Hello ";
10    string b = "World!";
11
12    string result = merge_text(a, b);
13
14    cout << result; |
15
16    return 0;
17 }
18
```

Output:

```
D:\UNIVERSITY\Programming x + v
Hello World!
-----
Process exited after 0.3105 seconds with return value 0
Press any key to continue . . .
```

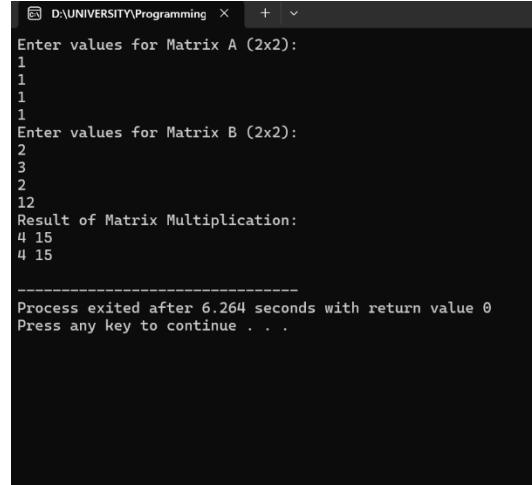
Task 3

Code:



```
1 #include <iostream>
2 using namespace std;
3 void matrix_mul(int A[2][2], int B[2][2]) {
4     int result[2][2];
5
6     for(int i = 0; i < 2; i++) {
7         for(int j = 0; j < 2; j++) {
8             result[i][j] = 0;
9
10            for(int k = 0; k < 2; k++) {
11                result[i][j] += A[i][k] * B[k][j];
12            }
13        }
14    }
15
16    cout << "Result of Matrix Multiplication:\n";
17    for(int i = 0; i < 2; i++) {
18        for(int j = 0; j < 2; j++) {
19            cout << result[i][j] << " ";
20        }
21        cout << endl;
22    }
23 }
24
25 int main() {
26     int A[2][2];
27     int B[2][2];
28
29     cout << "Enter values for Matrix A (2x2):\n";
30     for(int i = 0; i < 2; i++) {
31         for(int j = 0; j < 2; j++) {
32             cin >> A[i][j];
33         }
34     }
35
36     cout << "Enter values for Matrix B (2x2):\n";
37     for(int i = 0; i < 2; i++) {
38         for(int j = 0; j < 2; j++) {
39             cin >> B[i][j];
40         }
41     }
42     matrix_mul(A, B);
43 }
```

Output:

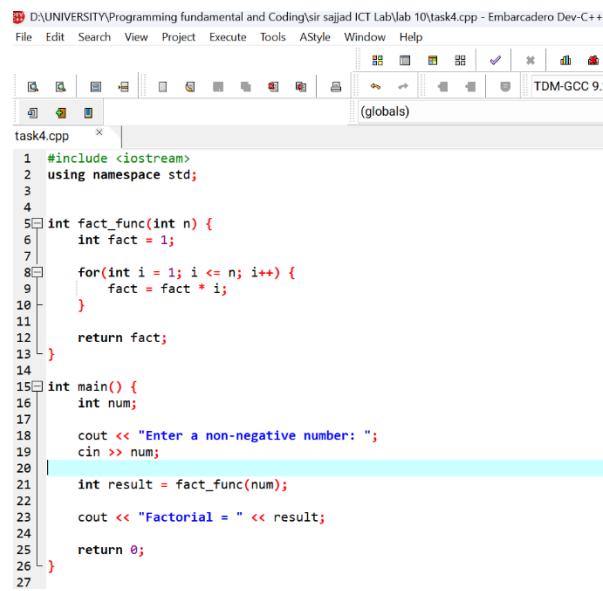


```
Enter values for Matrix A (2x2):
1
1
1
1
Enter values for Matrix B (2x2):
2
3
2
12
Result of Matrix Multiplication:
4 15
4 15

-----
Process exited after 6.264 seconds with return value 0
Press any key to continue . . .
```

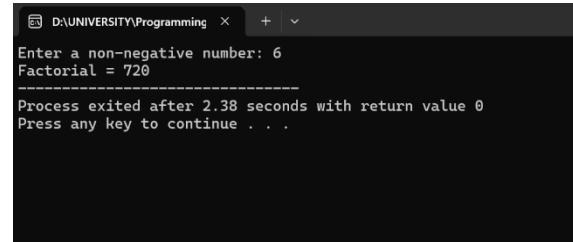
Task 4

Code:



D:\UNIVERSITY\Programming fundamental and Coding\sir sajjad ICT Lab\lab 10\task4.cpp - Embarcadero Dev-C++
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.1
(globals)
task4.cpp x |
1 #include <iostream>
2 using namespace std;
3
4
5 int fact_func(int n) {
6 int fact = 1;
7
8 for(int i = 1; i <= n; i++) {
9 fact = fact * i;
10 }
11
12 return fact;
13 }
14
15 int main() {
16 int num;
17
18 cout << "Enter a non-negative number: ";
19 cin >> num;
20
21 int result = fact_func(num);
22
23 cout << "Factorial = " << result;
24
25 return 0;
26 }

Output:



```
D:\UNIVERSITY\Programming x + v  
Enter a non-negative number: 6  
Factorial = 720  
-----  
Process exited after 2.38 seconds with return value 0  
Press any key to continue . . .
```

Task 5

Code:

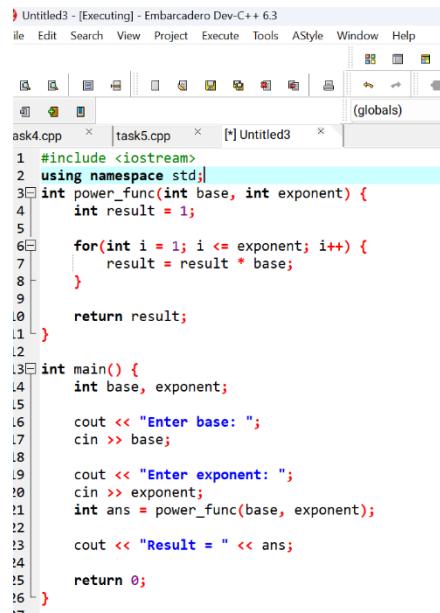
```
task4.cpp x task5.cpp x (globais)
1 #include <iostream>
2 using namespace std;
3 void swap_val(int &a, int &b) {
4     int temp = a;
5     a = b;
6     b = temp; }
7
8 int main() {
9     int x, y;
10    cout << "Enter value of x: ";
11    cin >> x;
12
13    cout << "Enter value of y: ";
14    cin >> y;
15
16    cout << "\nBefore swapping:\n";
17    cout << "x = " << x << ", y = " << y << endl;
18
19    swap_val(x, y);
20
21    cout << "\nAfter swapping:\n";
22    cout << "x = " << x << ", y = " << y << endl;
23
24    return 0;
25
26 }
```

Output:

```
D:\UNIVERSITY\Programming x + v
Enter value of x: 3
Enter value of y: 4
Before swapping:
x = 3, y = 4
After swapping:
x = 4, y = 3
-----
Process exited after 4.26 seconds with return value 0
Press any key to continue . . .
```

Task 6

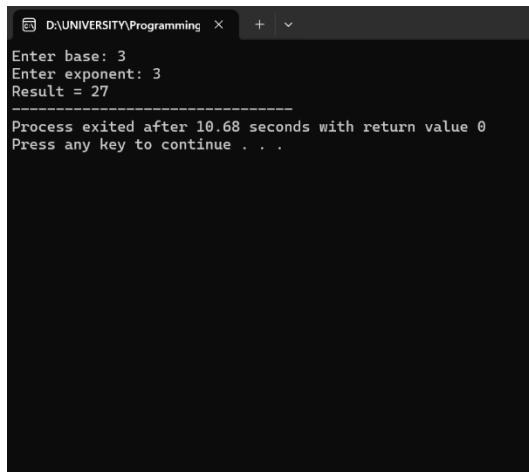
Code:



The screenshot shows the Embarcadero Dev-C++ 6.3 IDE interface. The menu bar includes File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, and Help. The toolbar has various icons for file operations like Open, Save, and Build. The main window displays three tabs: ask4.cpp, task5.cpp, and Untitled3. Untitled3 is the active tab, containing the following C++ code:

```
#include <iostream>
using namespace std;
int power_func(int base, int exponent) {
    int result = 1;
    for(int i = 1; i <= exponent; i++) {
        result = result * base;
    }
    return result;
}
int main() {
    int base, exponent;
    cout << "Enter base: ";
    cin >> base;
    cout << "Enter exponent: ";
    cin >> exponent;
    int ans = power_func(base, exponent);
    cout << "Result = " << ans;
    return 0;
}
```

Output:



The screenshot shows a terminal window with the following output:

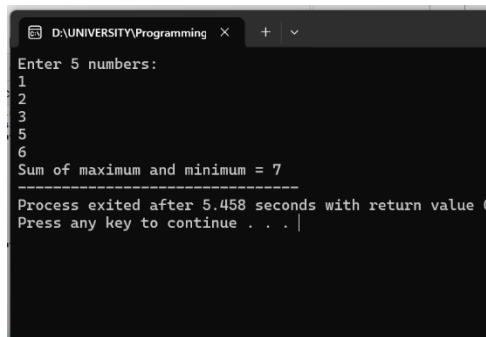
```
D:\UNIVERSITY\Programming > + ~
Enter base: 3
Enter exponent: 3
Result = 27
-----
Process exited after 10.68 seconds with return value 0
Press any key to continue . . .
```

Task 7

Code:

```
1 #include <iostream>
2 using namespace std;
3
4 int max_array(int arr[], int size) {
5     int maxVal = arr[0];
6     for(int i = 1; i < size; i++) {
7         if(arr[i] > maxVal) {
8             maxVal = arr[i];
9         }
10    }
11    return maxVal;
12}
13 int min_array(int arr[], int size) {
14    int minVal = arr[0];
15    for(int i = 1; i < size; i++) {
16        if(arr[i] < minVal) {
17            minVal = arr[i];
18        }
19    }
20    return minVal;
21}
22 int sum_max_min(int arr[], int size) {
23    int maxVal = max_array(arr, size);
24    int minVal = min_array(arr, size);
25    return maxVal + minVal;
26}
27
28 int main() {
29    int arr[5];
30
31    cout << "Enter 5 numbers:\n";
32    for(int i = 0; i < 5; i++) {
33        cin >> arr[i];
34    }
35
36    int result = sum_max_min(arr, 5);
37
38    cout << "Sum of maximum and minimum = " << result;
39
40    return 0;
41}
```

Output:



```
D:\UNIVERSITY\Programming > Enter 5 numbers:
1
2
3
5
6
Sum of maximum and minimum = 7
-----
Process exited after 5.458 seconds with return value 0
Press any key to continue . . . |
```