

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

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Section: D

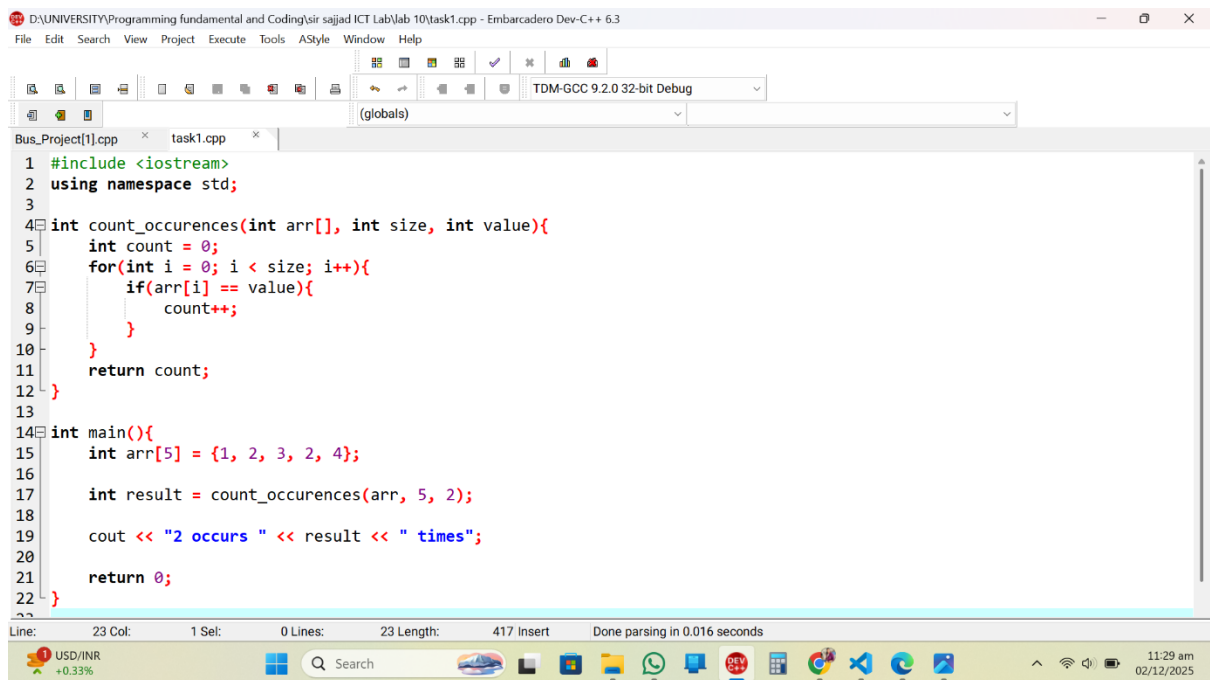
Sap Id: 5000001141

LAB No. 9

LECTURER: SAJJAD ALI RAJPER

Task 1:

Code:

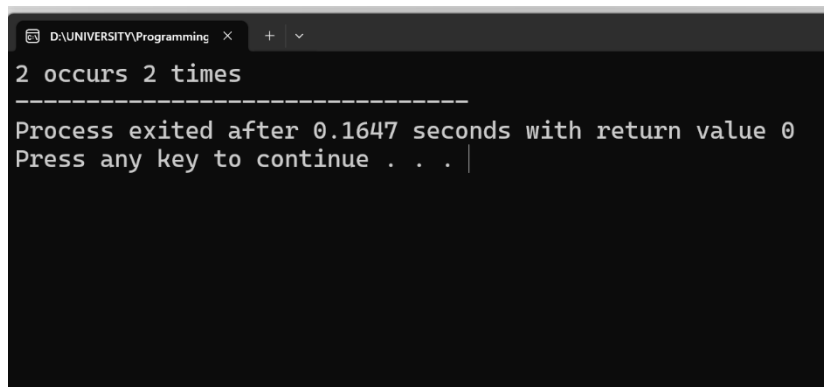


The screenshot shows a C++ IDE with the following code in task1.cpp:

```
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 IDE interface includes a menu bar (File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help), a toolbar, and a status bar at the bottom showing line and column information.

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:

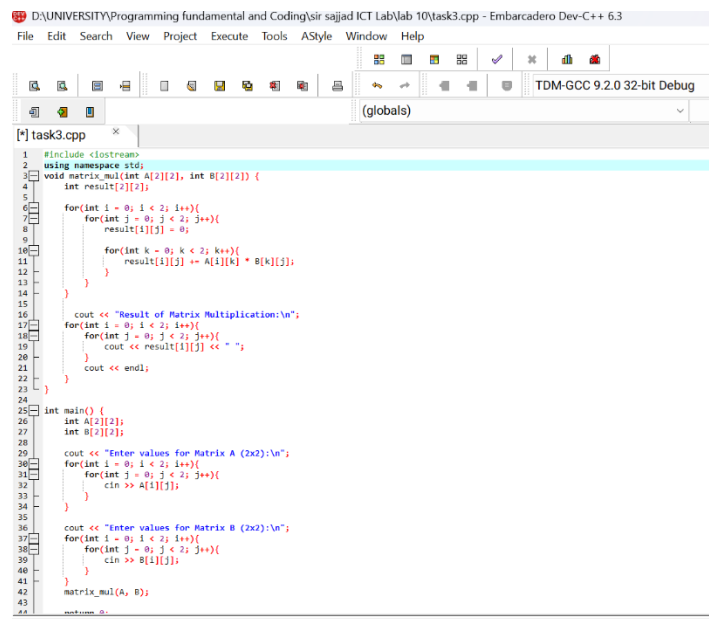
```
task2.cpp
1 #include <iostream>
2 using namespace std;
3
4 string merge_text(string s1, string s2){
5     return s1 + s2; // join the two strings
6 }
7
8 int main(){
9     string a = "Hello ";
10    string b = "World!";
11
12    string result = merge_text(a, b);
13
14    cout << result;
15
16   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

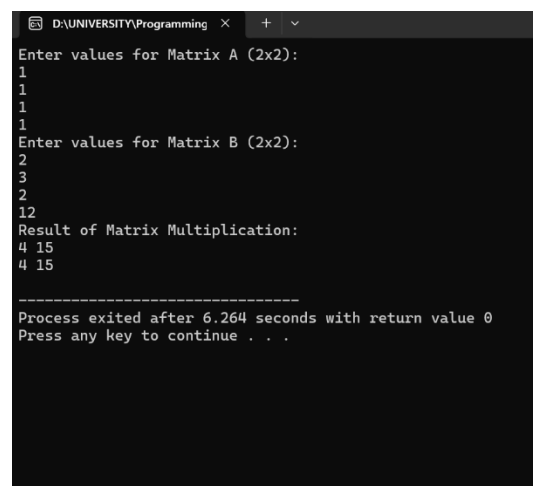
Task 3

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:

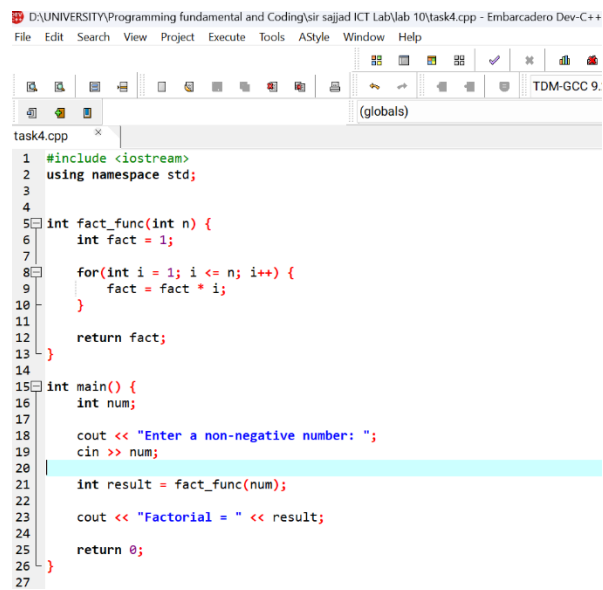


```
D:\UNIVERSITY\Programming >
Enter values for Matrix A (2x2):
1
1
1
1
Enter values for Matrix B (2x2):
2
3
2
12
Result of Matrix Multiplication:
4 15
4 15

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

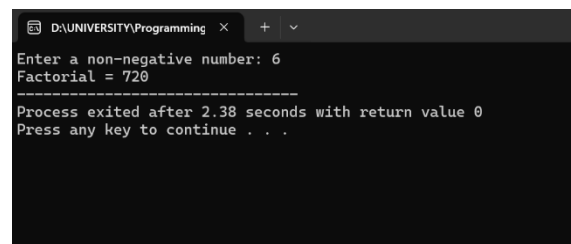
Task 4

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.
(globals)
task4.cpp
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 }
27
```

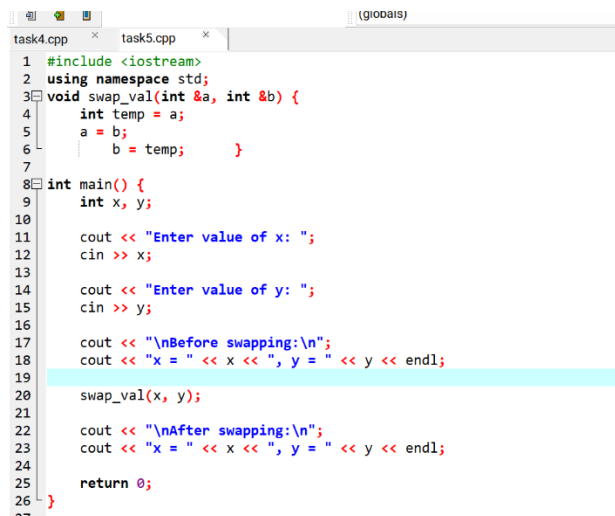
Output:



```
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 . . .
```

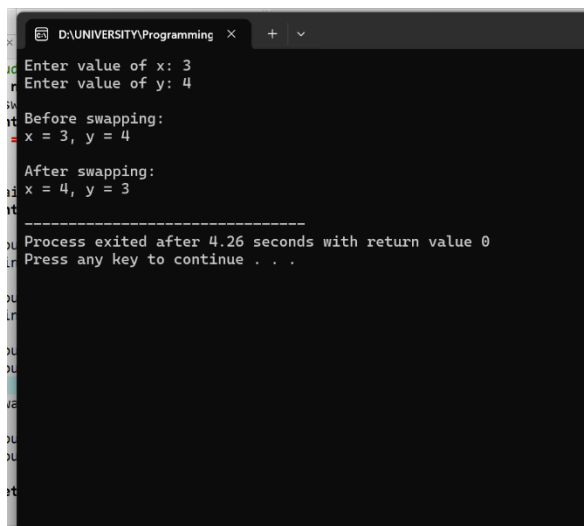
Task 5

Code:



```
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
11     cout << "Enter value of x: ";
12     cin >> x;
13
14     cout << "Enter value of y: ";
15     cin >> y;
16
17     cout << "\nBefore swapping:\n";
18     cout << "x = " << x << ", y = " << y << endl;
19     swap_val(x, y);
20
21     cout << "\nAfter swapping:\n";
22     cout << "x = " << x << ", y = " << y << endl;
23
24     return 0;
25 }
```

Output:



```
D:\UNIVERSITY\Programming x + v
Enter value of x: 3
Enter value of y: 4

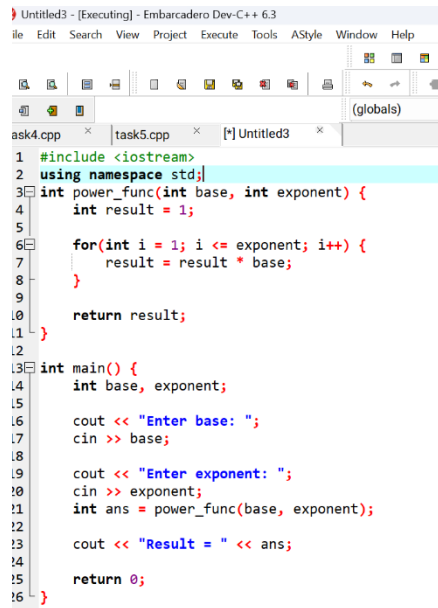
Before swapping:
x = 3, y = 4

After swapping:
x = 4, y = 3

-----
Process exited after 4.26 seconds with return value 0
Press any key to continue . . .
```

Task 6

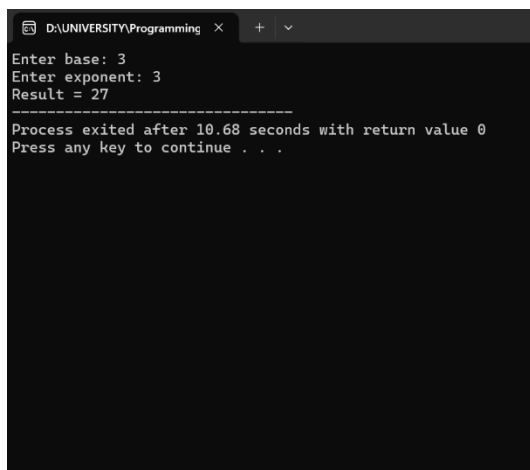
Code:



The screenshot shows an IDE window titled 'Untitled3 - [Executing] - Embarcadero Dev-C++ 6.3'. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int power_func(int base, int exponent) {
4     int result = 1;
5
6     for(int i = 1; i <= exponent; i++) {
7         result = result * base;
8     }
9
10    return result;
11 }
12
13 int main() {
14     int base, exponent;
15
16     cout << "Enter base: ";
17     cin >> base;
18
19     cout << "Enter exponent: ";
20     cin >> exponent;
21     int ans = power_func(base, exponent);
22
23     cout << "Result = " << ans;
24
25     return 0;
26 }
```

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:

```
task4.cpp x task5.cpp x task6.cpp x [*] Untitled4 x
1 #include <iostream>
2 using namespace std;
3 int max_array(int arr[], int size) {
4     int maxVal = arr[0];
5     for(int i = 1; i < size; i++) {
6         if(arr[i] > maxVal) {
7             maxVal = arr[i];
8         }
9     }
10    return maxVal;
11 }
12 int min_array(int arr[], int size) {
13     int minVal = arr[0];
14     for(int i = 1; i < size; i++) {
15         if(arr[i] < minVal) {
16             minVal = arr[i];
17         }
18     }
19    return minVal;
20 }
21 int sum_max_min(int arr[], int size) {
22     int maxVal = max_array(arr, size);
23     int minVal = min_array(arr, size);
24     return maxVal + minVal;
25 }
26
27 int main() {
28     int arr[5];
29
30     cout << "Enter 5 numbers:\n";
31     for(int i = 0; i < 5; i++) {
32         cin >> arr[i];
33     }
34
35     int result = sum_max_min(arr, 5);
36     cout << "Sum of maximum and minimum = " << result;
37
38     return 0;
39 }
```

Output:

```
D:\UNIVERSITY\Programming x + v
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 . . .
```