ASSIGNMENT # 5

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Programming Fundamentals

Theory Paragraph

Variables and functions are very imp in C++ because they help store data and divide a program into smaller, manageable parts. Functions make code reusable and easy to understand. Actual parameters are the values passed from the main function while formal parameters are the variables that recieve those values in a function. Local variables are declared inside a function and can only be used within that function, whereas global variables are declared outside all functions and can be accessed throughout the program. Inline functions reduce execution time by replacing the function call with the function code, which improves program efficiency. Together, these concepts help in better program organization, readability and performance.

P.T.O

Code Examples

1. Formal and Actual Parameters :-

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

void add(int x, int y) { // x and y are formal parameters
    cout << "Sum = " << x+y << endl;
}
int main () {

    add (5, 3); // 5 and 3 are actual parameters.
    return 0;
}
```

---

2. Local Variable :-

```
void show () {
    int x = 10;          // x is local variable.
    cout << " local variable x = " << x << endl;
}
int main () {
    show ();
    return 0;
}
```

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3. Global Variable :-

```
# include <iostream>
using namespace std;
int g = 20 ;    // global variable.

void display () {
    cout << "Global variable g" = " << g <<endl;
}

int main () {
    cout << "Global va
    display () ;
    return 0;
}
```

---

4. Inline Function :-

```
# include <iostream>
using namespace std;
inline int square (int n) {
    return n * n ;
}
int main () {
    cout << "Square = " << square(4) <<endl;
    return 0;
}
```

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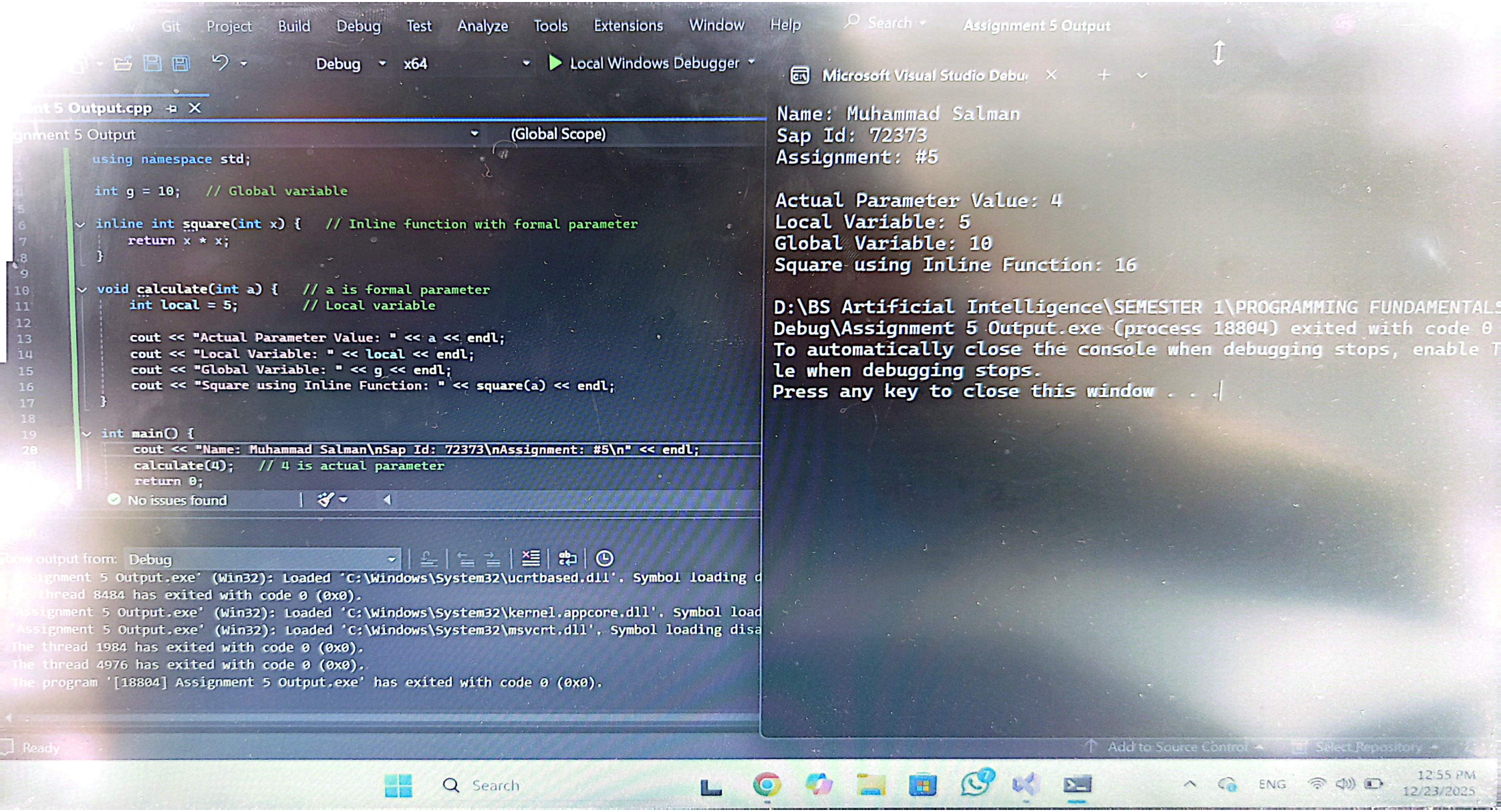
Example Code for both:-

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

int g = 10;  // Global Variable.

inline int square(int x){ // Inline Function and
    return x * x;          x is formal Parameter.
}

void calculate (int a){ // a is formal Parameter.
    int local = 5;  // local variable.
    cout<<"Actual Parameter Value : "<< a << endl;
    cout<<"Local Variable :"<< local << endl;
    cout<<"Global Variable:"<< g << endl;
    cout<<" Square Using inline Function :"<< square(a)<<
}

int main () {
    cout <<"Muhammad Salman\n Sap : 72373 \n Assignment 5 \n";

    calculate ( 4); // 4 is actual parameter.
    return 0;
}
```

OUTPUT :-

```
Muhammad Salman
Sap : 72373
Assignment 5
Actual Parameter Value : 4
Local Variable : 5
Global variable : 10
Square Using inline Function : 16
```


Git Project Build Debug Test Analyze Tools Extensions Window Help
Search
Assignment 5 Output
Debug x64 Local Windows Debugger
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t 5 Output.cpp
gnment 5 Output
(Global Scope)
using namespace std;
int g = 10; // Global variable
inline int square(int x) { // Inline function with formal parameter
return x * x;
}
void calculate(int a) { // a is formal parameter
int local = 5; // Local variable
cout << "Actual Parameter Value: " << a << endl;
cout << "Local Variable: " << local << endl;
cout << "Global Variable: " << g << endl;
cout << "Square using Inline Function: " << square(a) << endl;
}
int main() {
cout << "Name: Muhammad Salman\nSap Id: 72373\nAssignment: #5\n" << endl;
calculate(4); // 4 is actual parameter
return 0;
No issues found
how output from: Debug
ssignment 5 Output.exe' (Win32): Loaded 'C:\Windows\System32\ucrtbased.dll'. Symbol loading d
thread 8484 has exited with code 0 (0x0).
Assignment 5 Output.exe' (Win32): Loaded 'C:\Windows\System32\kernel.appcore.dll'. Symbol load
'Assignment 5 Output.exe' (Win32): Loaded 'C:\Windows\System32\msvcrt.dll'. Symbol loading disa
The thread 1984 has exited with code 0 (0x0).
The thread 4976 has exited with code 0 (0x0).
The program '[18804] Assignment 5 Output.exe' has exited with code 0 (0x0).
Name: Muhammad Salman
Sap Id: 72373
Assignment: #5
Actual Parameter Value: 4
Local Variable: 5
Global Variable: 10
Square using Inline Function: 16
D:\BS Artificial Intelligence\SEMESTER 1\PROGRAMMING FUNDAMENTALS
Debug\Assignment 5 Output.exe (process 18804) exited with code 0
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .
Ready
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Search
ENG
12:55 PM
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