Programming Fundamentals

(ASSIGNMENT # 03)

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BS CS 5th SEMESTER INDUCTION

SECTION A

SUBMITTED TO

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Question #01:

Find the errors in the following codes. If no error, then write output.

1. #include<iostream>

```
using namespace std;
int main(){
   int l,j;
   for(l=1;l>7;l++)
      cout<<l;
   cout<<"End of Program";
   return 7;
}
```

Errors:

l should be i (case□sensitive).

Loop condition l>7 is wrong; it should be i<=7 (or similar) because currently the loop won't execute (1 > 7 is false).

return 7; – typically main returns 0 for successful execution.

(b)

```
#include <iostream>
using namespace std;
int main(){
   int num1=5, num2=10;
   if(num1<num2)
      cout << "num1 is smallest";
      num1=num2;
   else
      cout << "num2 is smallest";
   return 0;
}
```

Error: Misplaced statement num1=num2; – should be inside braces or use proper block.

(c)

```
#include<iostream>
    using namespace std;
   int main(){
   int a=0, b=1;
   a=b++;
   cout << a << b;
```

```
    b=++a;
    cout << a << b;
    return 0;
}
```

Output:

1222

(d)

```
 #include<iostream>
using namespace std;
int main(){
    cout<<"Enter values";
    int a,b,res;
    cin>>a>>b;
    a=20;b=10;
    a+b=res;
    cout<<"res = "<<res;
    return 0;
}
```

Error: a+b=res; should be res = a + b;

Question #02:

Define any two from the following.

Header File:

A header file is a file that contains function declarations and macro definitions to be shared between several source files in a C++ program.

Example: math_ utils.h, stdio.h,io. stream start with symbol #.

Source Code:

A source code is a text file that contains the implementation of functions and variables declared in a header file.

Example: math_utils.cpp, main.cpp

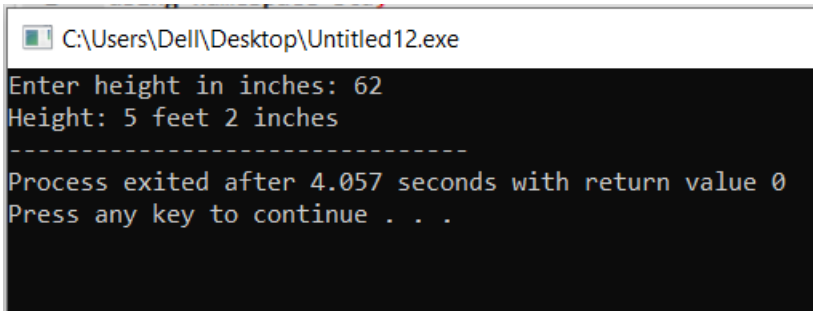
Comments :

Comments are statements in a C++ program that are ignored by the compiler. They are used to provide explanations and descriptions of the code, making it easier to understand and maintain.

Question #03:

Write a program that reads height in inches and displays the height in feet and inches.

```
#include<iostream>
using namespace std;
int main(){
    int heightInches, feet, inches;
    cout << "Enter height in inches: ";
    cin >> heightInches;
    feet = heightInches / 12;
    inches = heightInches % 12;
    cout << "Height: " << feet << " feet " << inches << " inches";
    return 0;
}
```



Question #04:

Write a program to check if the first number is a multiple of the second and if 7 is a multiple of 49.

```
#include<iostream>
using namespace std;
int main(){
    int num1, num2;
    cout << "Enter two numbers: ";
    cin >> num1 >> num2;
    if(num1 % num2 == 0)
        cout << num1 << " is a multiple of " << num2 << endl;
    else
        cout << num1 << " is NOT a multiple of " << num2 << endl;

    return 0;
}
```

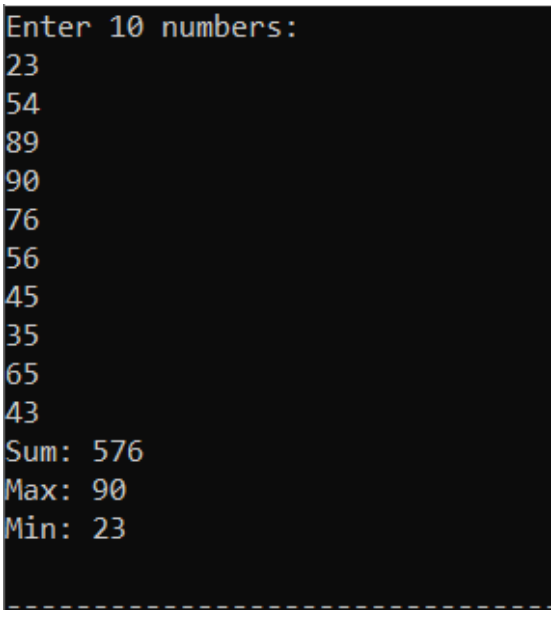
```
Enter two numbers: 21
7
21 is a multiple of 7

--------------------------------
Process exited after 11.68 seconds with return value 0
Press any key to continue . . .
```

Question #05:

Write a program to read 10 numbers and display sum, max, and min.

```
#include<iostream>
using namespace std;
int main(){
    int num, sum = 0, maxNum = INT_MIN, minNum = INT_MAX;
    cout << "Enter 10 numbers:\n";
    for(int i = 0; i < 10; i++){
        cin >> num;
        sum += num;
        if(num > maxNum) maxNum = num;
        if(num < minNum) minNum = num;
    }
    cout << "Sum: " << sum << endl;
    cout << "Max: " << maxNum << endl;
    cout << "Min: " << minNum << endl;
    return 0;
}
```



Sorting Array:

Sorting an array means arranging its elements in a specific order, either ascending (smallest to largest) or descending (largest to smallest).

Ascending Order: 1, 2, 3, 4, 5

Descending Order: 5, 4, 3, 2, 1

Question

Let's take an array of size 10, get numbers from the user, and then print them in ascending order using a function.

Solve:

```
#include <iostream>
using namespace std;
void printAscending(int arr[], int size) {
    for (int i = 0; i < size - 1; i++) {
        for (int j = 0; j < size - i - 1; j++) {
            if (arr[j] > arr[j + 1]) {

                int temp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = temp;
            }
        }
    }
```

```
    cout << "Numbers in ascending order: ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
}
int main() {
    const int size = 10;
    int numbers[size];
    cout << "Enter 10 numbers: ";
    for (int i = 0; i < size; i++) {
        cin >> numbers[i];
    }
    printAscending(numbers, size);
    return 0;
}
```

```
Enter 10 numbers: 12
90
80
64
78
44
34
40
22
34
Numbers in ascending order: 12 22 34 34 40 44 64 78 80 90
--------------------------------
Process exited after 24.5 seconds with return value 0
Press any key to continue . . .
```