

Assignment No #01

Roll No: (25014119-140)

Topic:

Course Title: Programming
Fundamental

Mid Paper & Array Sorting

Course Code: CS – 102

Name:

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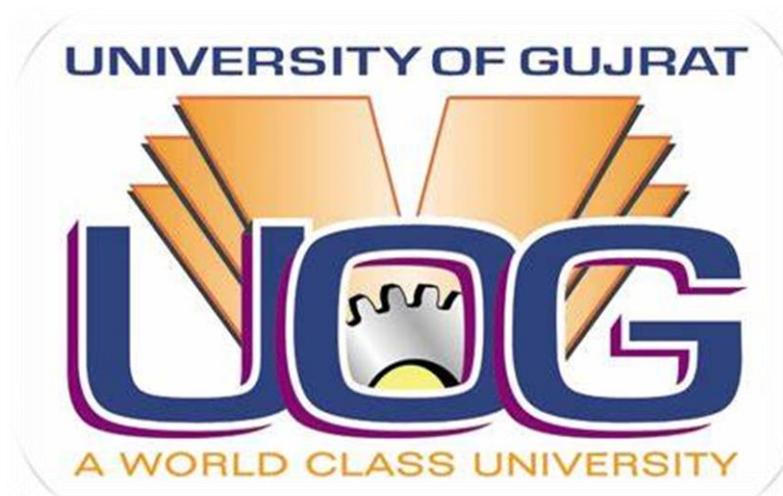
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Question no 1: Find the error in the following codes. If no error then write output.

a)

```
#include <iostream>
using namespace std;
int main()
{
    int i,j;
    for (i=1; i>7; i++)
        cout << i;
    cout << "End of program.";
    return 7;
}
```

Answer: The condition for the loop is wrong and it will not work:

```
for (i=1; i>7; i++)
```

because 'i' is smaller than '7', so the condition will become false and the loop will not run. Moreover, the quotation at the start of the *End of program* before in cout statement is wrong instead of ", " should be used. The return 7 is not a syntax error so it will not cause an error.

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;
}
```

Answer:

The code will not run because in *if-else* statement, *else* is not coming directly after *if*, that's why it will cause an error.

```
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

Answer:

This code is fine.

d)

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

Answer:

In the cout statement at the start, the quotations are wrongly placed, after taking input from the user, the variables are manually updated which is a logical error, not a syntax error. In the next line of code, the assignment of variable ‘res’ is also done wrongly, it is a syntax error. In the next cout statement, the quotations are again wrongly placed.

Question no. 2: Define any two from the following:

a. Header Files

b. Source Code

c. Comments

Answer:

- **Header Files:** Header Files are collection of standard library functions to perform different tasks. Each header file contains different types of predefined functions. Many header files can be included in one program. The header file must be included in the program before calling any of its functions in the program. The **include** preprocessor directive is used to include header files in programs. These files are provided by C++ compiler system.

For example;

```
include <iostream>
include <iomanip>
include <fstream>
include <cmath>
```

- **Comments:** Comments are the lines of program that are not executed. The compiler ignores comments and does not include them in the executable program. Comments can be added anywhere in program in two ways:

Single Line Comments: Comments on single line are added by using double slash “//”. Anything written on the right side of double slash is considered as comments and is ignored during execution.

Multi Line Comments: Multi line comments are inserted to the code by placing /* at the beginning of the comments. The */ is used to end multi line comments.

For Example;

```
// Practice makes a man expert.
/* These lines are for the purpose of
Writing comments */
```

Question no. 3: Write a program that read height in inches. And display the height in feet and inches.

Answer:

```
#include <iostream>

using namespace std;

int main()
{
    float height, feet;

    cout << "Enter height in inches: ";
    cin >> height;
    feet = height / 12.0;
    cout << "Height in feet is " << feet << endl;
    cout << "Height in inches is " << height << endl;

    return 0;
}
```

Output: Enter height in inches: 78 Height in feet is 6.5 Height in inches is 78

Question no. 4: Write a program that takes two numbers from user. Find if first number is multiple of second number or not. For example, if first number is 49 and second number is 7. Then it should print that 7 is multiple of 49.

Answer:

```
#include <iostream>

using namespace std;
```

```

int main()
{
    int num1, num2;

    cout << "Enter two numbers: \n" ;
    cin >> num1 >> num2;

    if (num1 % num2 == 0)

        cout << num1 << " is a multiple of " << num2;

    else

        cout << num1 << " is not a multiple of " << num2;

    return 0;
}

```

Question no. 5: Write a program that reads 10 numbers user and display their sum, maximum and minimum number.

Answer:

```

1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int minVal, maxVal, sum, num, i;
6
7     cout << "1) Enter a number: ";
8     cin >> num;
9     cout << endl;
10
11    sum = num;
12    maxVal = minVal = num;
13
14    for (i=1; i< 10; i++){
15        cout << i + 1 << ") Enter a number again: ";
16        cin >> num;
17        cout << endl;
18
19        sum = sum + num;
20        if(num > maxVal) maxVal = num;
21        if(num < minVal) minVal = num;
22    }
23
24    cout << "Sum = " << sum << " max value = " << maxVal << " min value " << minVal;
25
26    return 0;
27 }
28

```

Output:

Output:

Enter two numbers:

67

6

67 is not a multiple of 6

```
C:\Users\DELL\Documents\Ar + 
1) Enter a number: 57
2) Enter a number again: 76
3) Enter a number again: 78
4) Enter a number again: 5334
5) Enter a number again: 78
6) Enter a number again: 8
7) Enter a number again: 1
8) Enter a number again: 89
9) Enter a number again: 68
10) Enter a number again: 56
Sum = 5845 max value = 5334 min value 1
-----
Process exited after 13.4 seconds with return value 0
Press any key to continue . . . |
```

Sorting in Array:

Bubble Sort in Ascending order:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int arr[5], i, j, temp;
6     for (i = 0; i<5; i++){
7         cout << "Enter value: ";
8         cin >> arr[i];
9     }
10
11    cout << "The original values in array: \n";
12    for (i = 0; i<5; i++) cout << arr[i] << " ";
13
14    for (i=0; i<5; i++)
15        for (j=0; j<4; j++)
16            if(arr[j]>arr[j+1]){
17                temp = arr[j];
18                arr[j] = arr[j+1];
19                arr[j+1] = temp;
20            }
21            cout << "\n The sorted array:\n";
22            for (i=0; i<5; i++)
23                cout << arr[i] << " ";
24
25    return 0;
26 }
```

Output:

```
Enter value: 5
Enter value: 30
Enter value: 15
Enter value: 25
Enter value: 5
The original values in array:
5 30 15 25 5
The sorted array:
5 5 15 25 30
-----
Process exited after 15.11 seconds with return value
0
Press any key to continue . . . |
```

Bubble sorting in descending order:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int arr[5], i, j, temp;
6     for (i = 0; i<5; i++){
7         cout << "Enter value: ";
8         cin >> arr[i];
9     }
10
11    cout << "The original values in array: \n";
12    for (i = 0; i<5; i++) cout << arr[i] << " ";
13
14    for (i=0; i<5; i++)
15        for (j=0; j<4; j++)
16            if(arr[j]<arr[j+1]){
17                temp = arr[j];
18                arr[j] = arr[j+1];
19                arr[j+1] = temp;
20            }
21    cout << "\n The sorted array:\n";
22    for (i=0; i<5; i++)
23        cout << arr[i] << " ";
24
25    return 0;
26 }
```

Output:

```
Enter value: 10
Enter value: 30
Enter value: 15
Enter value: 25
Enter value: 5
The original values in array:
10 30 15 25 5
The sorted array:
30 25 15 10 5
-----
Process exited after 12.37 seconds with return
value 0
Press any key to continue . . . |
```