Foundation University Islamabad

School of Science and Technology

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Subject: Programming Fundamentals LAB **Section:** B

Assignment – 01

Tasks:

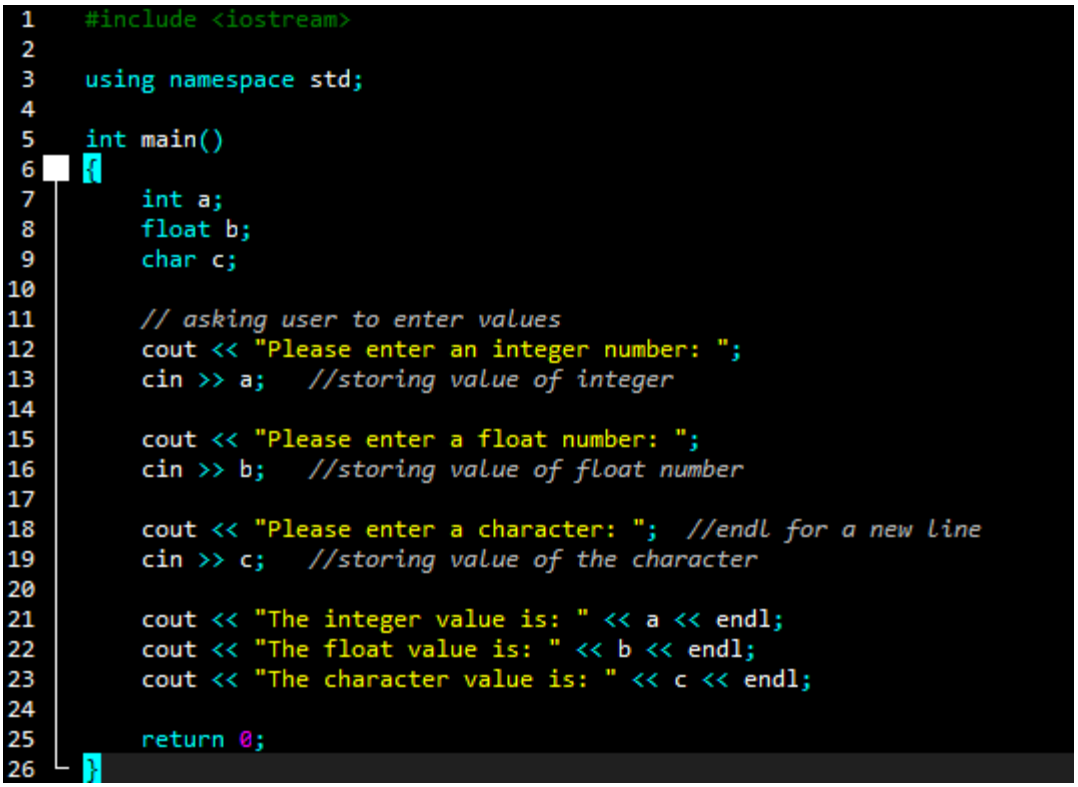
2.1: Write a C++ program, which declares integer 'a', float 'b', and character 'c'. Ask the user for an integer value and store it in 'a', for a float value and store it in 'b', and for a character value and store it in 'c'. At the end, print the values of these three variables on the screen. Your output should be as below. Indent your code and include comments for improving the readability of your code.

```
Enter Integer Value: 448
Enter Float Value: 32.65
Enter Character Value: A
***** You have entered the following values *****
The Integer Value is: 448
Float Value is: 32.65
Character Value is: A
```

Source code:

```
#include <iostream>

using namespace std;

int main()

{

    int a;
    float b;
    char c;
```

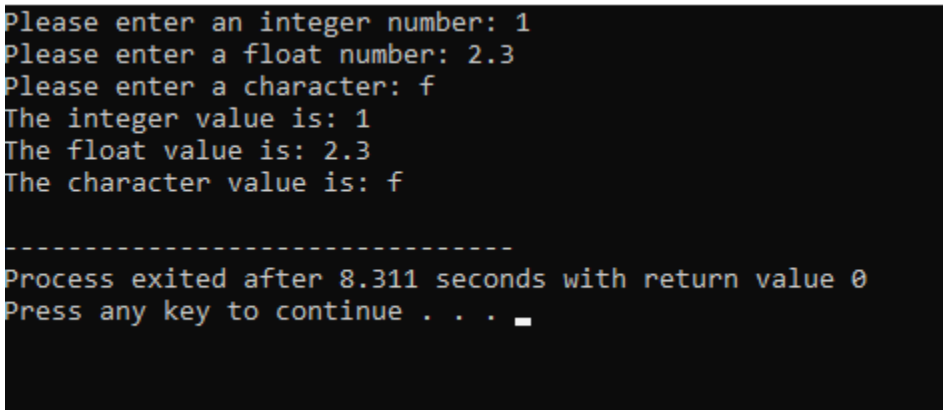
```
   // asking user to enter values

   cout << "Please enter an integer number: ";
   cin >> a;   //storing value of integer

   cout << "Please enter a float number: ";
   cin >> b;   //storing value of float number

   cout << "Please enter a character: ";  //endl for a new line
   cin >> c;   //storing value of the character

   cout << "The integer value is: " << a << endl;

   cout << "The float value is: " << b << endl;

   cout << "The character value is: " << c << endl;

return 0;

}
```



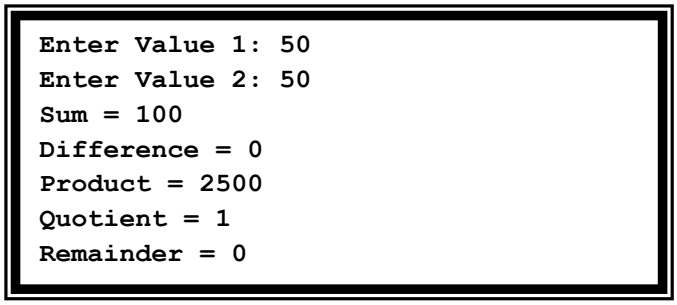
```cpp
#include <iostream>

using namespace std;

int main()
{
    int a;
    float b;
    char c;

    // asking user to enter values
    cout << "Please enter an integer number: ";
    cin >> a;   //storing value of integer

    cout << "Please enter a float number: ";
    cin >> b;   //storing value of float number

    cout << "Please enter a character: ";  //endl for a new line
    cin >> c;   //storing value of the character

    cout << "The integer value is: " << a << endl;
    cout << "The float value is: " << b << endl;
    cout << "The character value is: " << c << endl;

    return 0;
}
```

Output:

Please enter an integer number: 1
Please enter a float number: 2.3
Please enter a character: f
The integer value is: 1
The float value is: 2.3
The character value is: f



2.2: Write a C++ program that takes two int values from the user and computes their sum, difference, product, quotient (division), and the remainder (use mod i.e. %). At the end, print these results on the screen with a beep. Your output should be as below. Indent your code and include comments for improving the readability of your code.



Source Code:

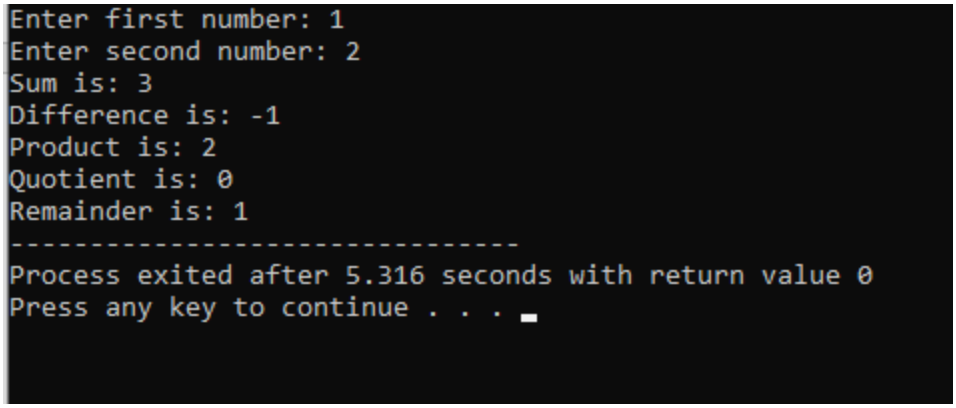
```
#include <iostream>

using namespace std;

int main()

{
```

```
 int x, y;
cout << "Enter first number: ";
cin >> x;  // storing the value of first number
cout << "Enter second number: ";
cin >> y;  // storing the value of second number

 int sum = x + y;       // declaring variables here with data types
 int diff = x - y;
 int mul = x * y;
 int div = x / y;
 int mod = x % y;

 cout << "Sum is: " << sum << "\a" << endl;       // \a makes beep sound
 cout << "Difference is: " << diff << "\a" << endl;
 cout << "Product is: " << mul << "\a" << endl;
 cout << "Quotient is: " << div << "\a" << endl;
 cout << "Remainder is: " << mod << "\a";

return 0;

}
```

```cpp
#include <iostream>

using namespace std;

int main()
{
    int x, y;
    cout << "Enter first number: ";
    cin >> x;   // storing the value of first number

    cout << "Enter second number: ";
    cin >> y;   // storing the value of second number

    int sum = x + y;
    int diff = x - y;
    int mul = x * y;
    int div = x / y;
    int mod = x % y;

    cout << "Sum is: " << sum << "\a" << endl;         // \a makes beep sound
    cout << "Difference is: " << diff << "\a" << endl;
    cout << "Product is: " << mul << "\a" << endl;
    cout << "Quotient is: " << div << "\a" << endl;
    cout << "Remainder is: " << mod << "\a";

    return 0;
}
```

Output:

Enter first number: 1
Enter second number: 2
Sum is: 3
Difference is: -1
Product is: 2
Quotient is: 0
Remainder is: 1



2.3: Write a C++ program that takes a temperature value in Celsius as input and converts it to Fahrenheit.

```
Enter Temperature in Celsius: 42
The temperature in Fahrenheit = 107.6
```

Hint: (0°C × 9/5) + 32 = 32°F

Source code:

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

int main()

{

   float c,f;
   cout << "Enter temperature in Celsius: ";
```

```
    cin >> c;   // storing value of temperature in Celsius
    f = (c * 9 / 5) + 32;   // using formula given
    cout << "Temperature in Fahrenheit is: " << f << endl;
    return 0;
}
```

```cpp
#include <iostream>

using namespace std;

int main()
{
    float c,f;
    cout << "Enter temperature in Celsius: ";
    cin >> c;   // storing value of temperature in celsius

    f = (c * 9 / 5) + 32;   // using formula given
    cout << "Temperature in Fahrenheit is: " << f << endl;

    return 0;
}
```

Output:

Enter temperature in Celsius: 55.8
Temperature in Fahrenheit is: 132.44

```
Enter temperature in Celsius: 55.8
Temperature in Fahrenheit is: 132.44

--------------------------------
Process exited after 4.542 seconds with return value 0
Press any key to continue . . .
```

2.4: Write a C++ program that takes two int values from the user calculates their sum and then increments it using the pre- Increment operator ++, and finally, prints the result to the standard output.

```
Enter Value 1: 7
Enter Value 2: 2
Sum = 9
After Increment = 10
```

Source code:

```
#include <iostream>

using namespace std;

int main()

{

   int a, b;
   cout << "Enter first number: ";
   cin >> a; // storing value

   cout << "Enter second number: ";
   cin >> b; // storing value

   int sum = a + b; // declaring sum as a variable

   ++sum;  // adds 1 to sum before use

   cout << "The final result is: " << sum << endl;

return 0;

}
```

```cpp
#include <iostream>

using namespace std;

int main()
{
    int a, b;


    cout << "Enter first number: ";
    cin >> a; // storing value

    cout << "Enter second number: ";
    cin >> b; // storing value

    int sum = a + b;

    ++sum;  // adds 1 to sum before use

    cout << "The final result is: " << sum << endl;

    return 0;
}
```

Output:

Enter first number: 6
Enter second number: 7
The final result is: 14

```
Enter first number: 6
Enter second number: 7
The final result is: 14

--------------------------------
Process exited after 9.49 seconds with return value 0
Press any key to continue . . .
```

2.5: Write a C++ program that takes two int values from the user calculates their sum and then decrements it using the pre-decrement operator --, and finally, prints the result to the standard output.

```
Enter Value 1: 7
Enter Value 2: 2
Sum = 9
After Decrement = 8
```

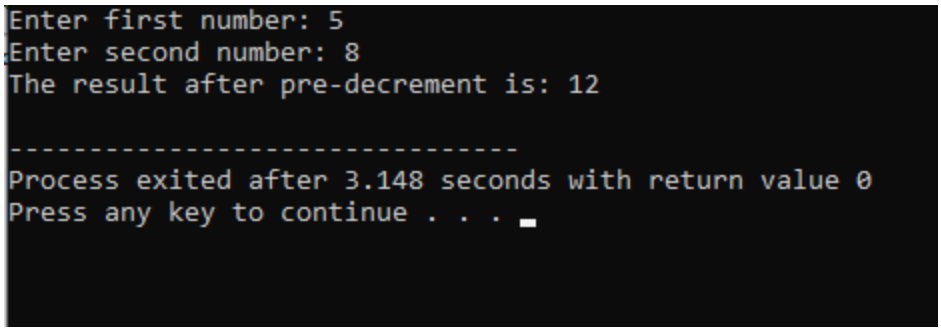
Source Code:

```
#include <iostream>

using namespace std;

int main()

{

   int x, y;

   cout << "Enter first number: ";
   cin >> x;
   cout << "Enter second number: ";
   cin >> y;

   int sum = x + y; //adding numbers
   --sum;   // minus 1 before using it

   cout << "The result after pre-decrement is: " << sum << endl;

   return 0;

}
```

```cpp
#include <iostream>

using namespace std;

int main()
{
    int x, y;

    cout << "Enter first number: ";
    cin >> x;

    cout << "Enter second number: ";
    cin >> y;

    int sum = x + y; //adding numbers

    --sum;   // minus 1 before using it

    cout << "The result after pre-decrement is: " << sum << endl;

    return 0;
}
```

Output:

Enter first number: 5
Enter second number: 8
The result after pre-decrement is: 12



2.6: Write a C++ program that collects two integer values from the user, calculates their remainder using the modulo operator (%), and then increments the remainder using the pre-increment operator (++). Display the final remainder on the console.

```
Enter Value 1: 25
Enter Value 2: 4
Remainder = 1
After Increment = 2
```

Source code:

```
#include <iostream>

using namespace std;

int main()

{

   int a, b;
   cout << "Enter first number: ";
   cin >> a;

   cout << "Enter second number: ";
   cin >> b;

   int r = a % b;
   ++r;  // add 1 before use

   cout << "Final remainder after increment is: " << r << endl;

   return 0;

}
```

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

int main()
{
    int a, b;

    cout << "Enter first number: ";
    cin >> a;

    cout << "Enter second number: ";
    cin >> b;

    int r = a % b;

    ++r;   // add 1 before use

    cout << "Final remainder after increment is: " << r << endl;

    return 0;
}
```

Output:

Enter first number: 7
Enter second number: 3
Final remainder after increment is: 2

```
Enter first number: 7
Enter second number: 3
Final remainder after increment is: 2

--------------------------------
Process exited after 5.979 seconds with return value 0
Press any key to continue . . .
```

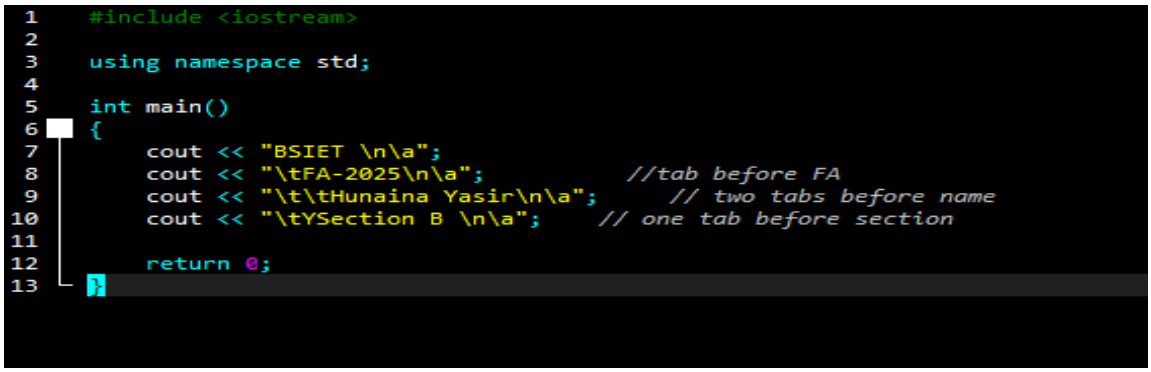
2.7: By using different escape sequences, write a C++ program, which displays the following output. After every line, your program must generate a beep. If you already do not know the escape sequence for generating a beep, find it out for yourself. Indent your code and include comments for improving the readability of your code.

```
BSIET
        FA-2023
              Your Name
        Your Section
```

Hint: cout<<"\tBCIET \n";

Source Code:

```
#include <iostream>

using namespace std;

int main()

{

   cout << "BSIET \n\a";
   cout << "\tFA-2025\n\a";        //tab before FA
   cout << "\t\tHunaina Yasir\n\a";    // two tabs before name
   cout << "\tSection B \n\a";   // one tab before section

   return 0;

}
```



Output:

```
BSIET
      FA-2025
            Hunaina Yasir
      Section B
```