LAB 02 TASKS
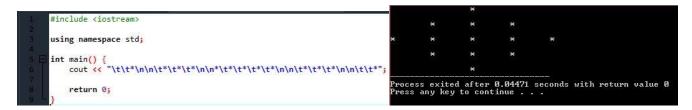
Question#01) Print Diamond using escape sequence "\n" and "\t"? In single cout statement?

Output should be like

```
                *

        *       *       *

    *       *       *       *       *

        *       *       *

                *
```

<div align="center">Source Code:</div> <div align="right">Ouput:</div>


```
1   #include <iostream>
2
3   using namespace std;
4
5   int main() {
6       cout << "\t\t*\n\n\t*\t*\t*\n\n*\t*\t*\t*\t*\n\n\t*\t*\t*\n\n\t\t*";
7
8       return 0;
9   }
```

```
                *
        *       *       *
*       *       *       *       *
        *       *       *
                *
_____
Process exited after 0.04471 seconds with return value 0
Press any key to continue . . .
```

Question #02) Print your Result Card using required escape sequences? Print all other information as it is but get input from user in obtained marks and calculate the percentage of entered marks?

Output:

<div align="center">Result Card</div>

Name: ABC   **Reg. #: CIIT/---------**

Session: Fall-16   **Semester: 2**

Subjects	Total Marks	Obtained Marks
Digital Logic Design	100	___user input___
Electronics-I	100	___user input___
English	100	___user input___

Percentage=   %

Source Code:

```cpp
#include <iostream>
using namespace std;
int main() {
    // Variables to store user input for obtained marks
    float digitalLogicMarks, electronicsMarks, englishMarks;

    // Getting user input for obtained marks
    cout << "Enter obtained marks for Digital Logic Design: ";
    cin >> digitalLogicMarks;
    cout << "Enter obtained marks for Electronics-I: ";
    cin >> electronicsMarks;
    cout << "Enter obtained marks for English: ";
    cin >> englishMarks;

    // Total marks
    const float totalMarksPerSubject = 100.0;
    const int totalSubjects = 3;
    float totalMarks = totalSubjects * totalMarksPerSubject;

    // Calculating obtained marks and percentage
    float obtainedMarks = digitalLogicMarks + electronicsMarks + englishMarks;
    float percentage = (obtainedMarks / totalMarks) * 100;

    // Printing the result card using escape sequences
    cout << "\n\t\t\tResult Card" << endl;
    cout << "Name: Student001 \t\t\t\t Reg. #: CIIT/3198971870" << endl;
    cout << "Session: Fall-24 \t\t\t Semester: 1" << endl;
    cout << "Subjects \t\t    Total Marks\t\tObtained Marks" << endl;
    cout << "Digital Logic Design \t\t" << totalMarksPerSubject << "\t\t\t" << digitalLogicMarks << endl;
    cout << "Electronics-I \t\t\t" << totalMarksPerSubject << "\t\t\t" << electronicsMarks << endl;
    cout << "English \t\t\t" << totalMarksPerSubject << "\t\t\t" << englishMarks << endl;

    // Displaying the percentage
    cout << "\nPercentage= " << percentage << " %" << endl;

    return 0;
}
```

Ouput:

```
Enter obtained marks for Digital Logic Design: 98
Enter obtained marks for Electronics-I: 97
Enter obtained marks for English: 98

                    Result Card
Name: Student                       Reg. #: CIIT/3198971870
Session: Fall-24                    Semester: 1
Subjects                  Total Marks         Obtained Marks
Digital Logic Design          100                 98
Electronics-I                 100                 97
English                       100                 98

Percentage= 97.6667 %

-----------------------------------
Process exited after 2.13 seconds with return value 0
Press any key to continue . . .
```

Question#03) Develop a C++ program that declare almost 6 types of identifiers and display their sizes in bytes on the screen.

Source Code:

```cpp
#include <iostream>

using namespace std;

int main() {
    // Different types of identifiers
    int integerVar;
    float floatVar;
    double doubleVar;
    char charVar;
    bool boolVar;
    long longVar;

    // Displaying sizes in bytes
    cout << "Size of int: " << sizeof(integerVar) << " bytes" << endl;
    cout << "Size of float: " << sizeof(floatVar) << " bytes" << endl;
    cout << "Size of double: " << sizeof(doubleVar) << " bytes" << endl;
    cout << "Size of char: " << sizeof(charVar) << " bytes" << endl;
    cout << "Size of bool: " << sizeof(boolVar) << " bytes" << endl;
    cout << "Size of long: " << sizeof(longVar) << " bytes" << endl;

    return 0;
}
```

Ouput:

```
Size of int: 4 bytes
Size of float: 4 bytes
Size of double: 8 bytes
Size of char: 1 bytes
Size of bool: 1 bytes
Size of long: 4 bytes

------------------------------------
Process exited after 0.01189 seconds with return value 0
Press any key to continue . . .
```

Question #04) Develop a C++ program that prints the table of 2 without using loop?

Source Code:

```cpp
#include <iostream>

using namespace std;

int main() {
    int num = 2;

    // Printing the table of 2 without using loop
    cout << num << " x 1 = " << num * 1 << endl;
    cout << num << " x 2 = " << num * 2 << endl;
    cout << num << " x 3 = " << num * 3 << endl;
    cout << num << " x 4 = " << num * 4 << endl;
    cout << num << " x 5 = " << num * 5 << endl;
    cout << num << " x 6 = " << num * 6 << endl;
    cout << num << " x 7 = " << num * 7 << endl;
    cout << num << " x 8 = " << num * 8 << endl;
    cout << num << " x 9 = " << num * 9 << endl;
    cout << num << " x 10 = " << num * 10 << endl;

    return 0;
}
```

Ouput:

```
2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20

------------------------------------
Process exited after 0.06103 seconds with return value 0
Press any key to continue . . .
```

Question #5) Write a program to swap the value of a and b
let a=10 and b = 20
your output should be
a = 20 and b = 10

Source Code:

```cpp
#include <iostream>

using namespace std;

int main() {
    int a = 10;
    int b = 20;

    // Swapping values
    swap(a,b);
    // Displaying the swapped values
    cout << "a = " << a << " and b = " << b << endl;

    return 0;
}
```

Ouput:

```
a = 20 and b = 10
------------------------------------
Process exited after 0.01537 seconds with return value 0
Press any key to continue . . .
```