Short-term Hands-on Supplementary Course on C programming

Session 3:
Looping Statements

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Agenda

1. Revisit of flow of control
2. What are loops?
3. Entry and Exit controlled loops
4. Looping constructs of C
    a. for
    b. while
    c. do-while
5. Live Code Demo - Sum of n numbers
6. Interactive Solving - Factorial of a number
7. while Vs do-while
8. Nested loops
9. Live Code Demo - Pattern printing using number
10. Interactive Solving - step-up pattern printing
11. Interrupting Looping Flow
    a. break
    b. continue
    c. goto
12. Tutorial - Trapezium pattern

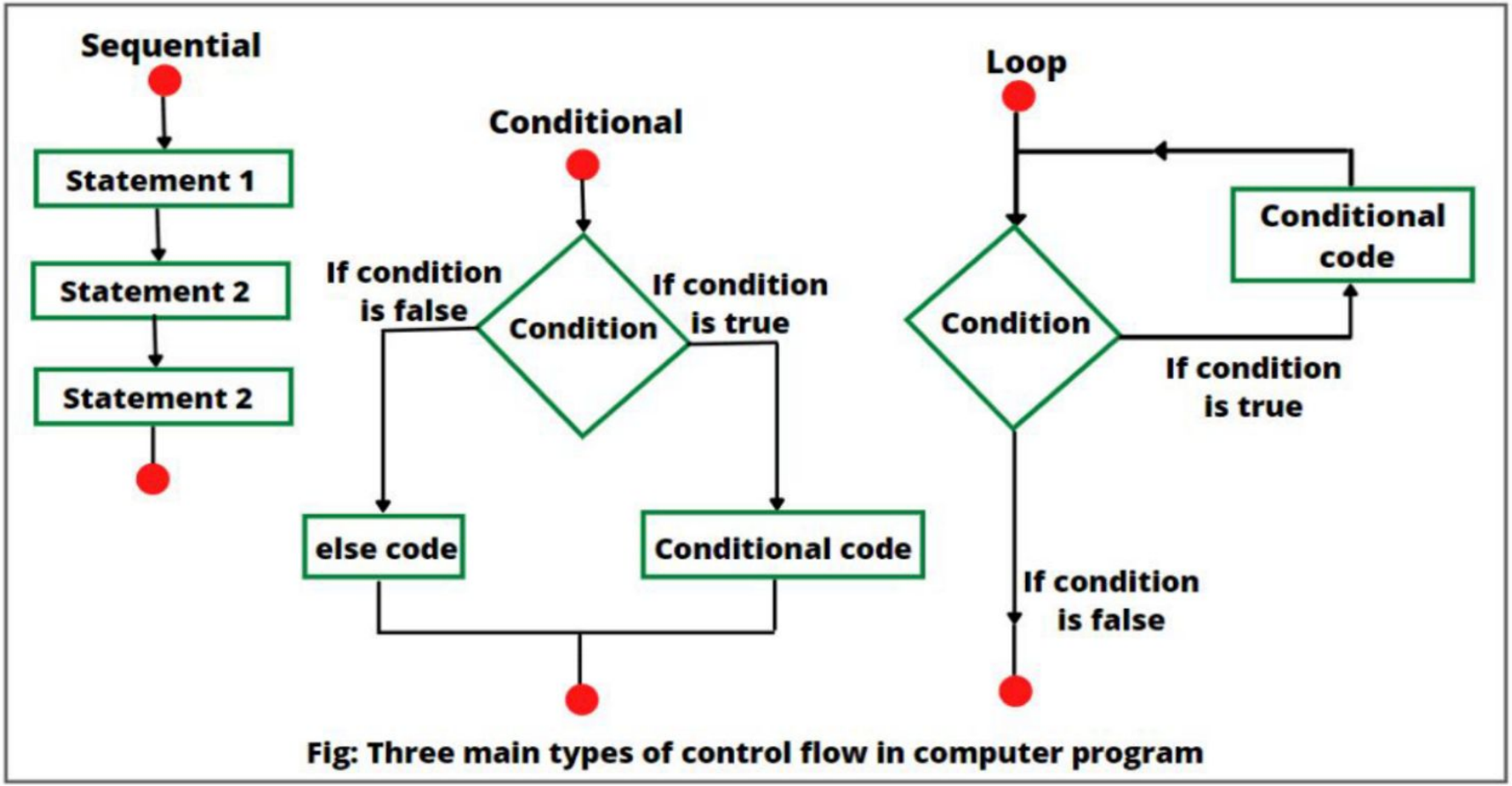
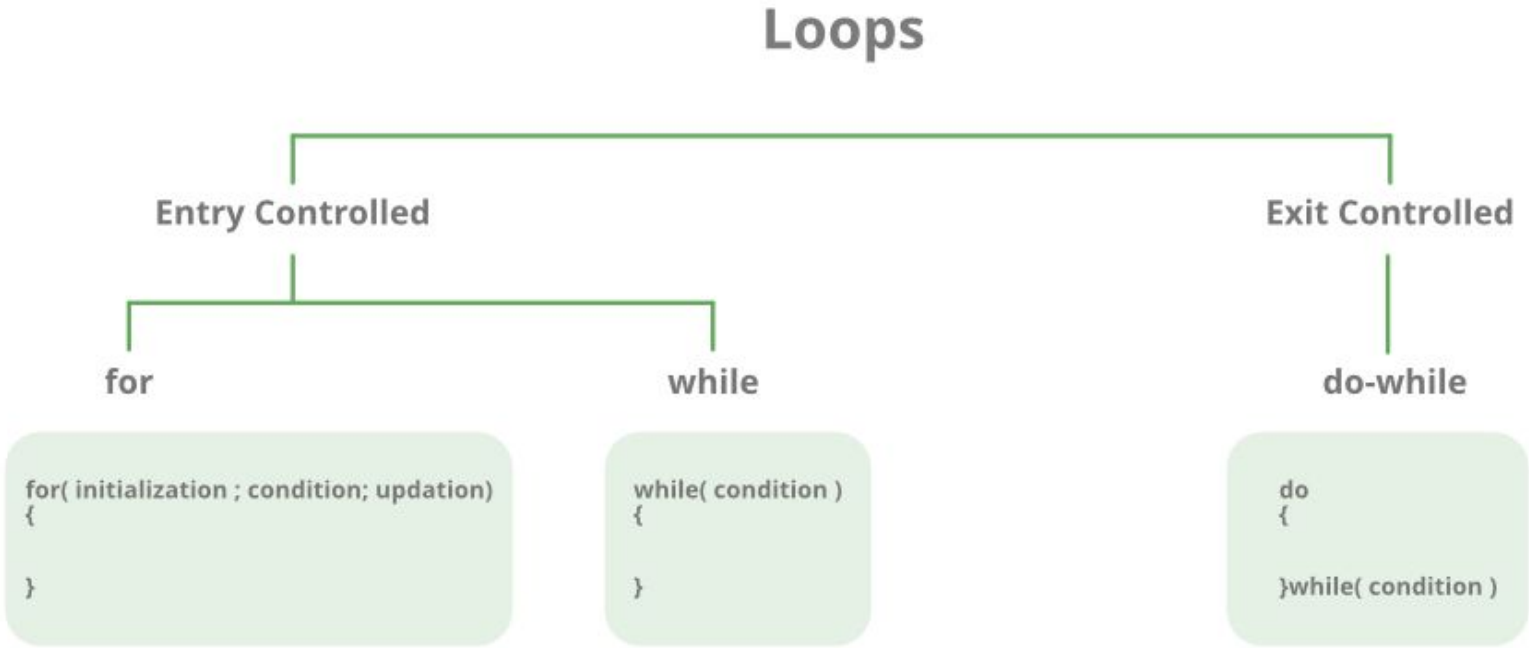
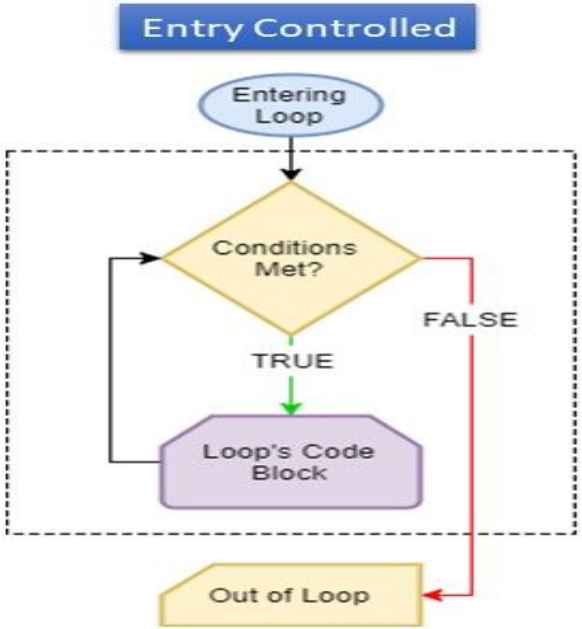


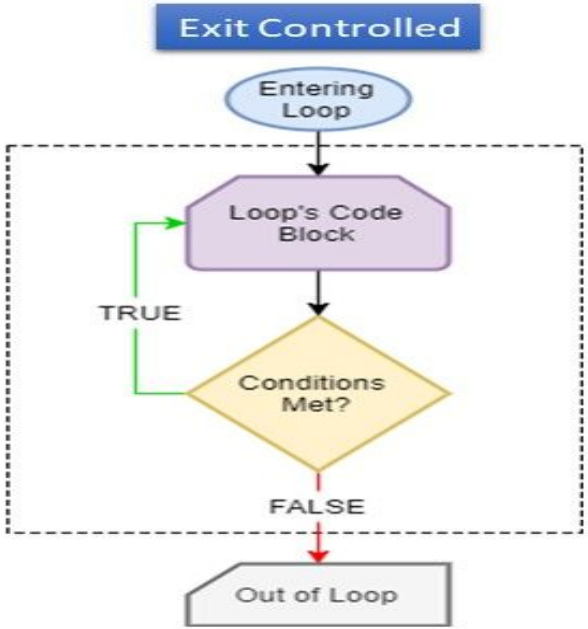
Fig: Three main types of control flow in computer program

Loops in C


Loops
Entry Controlled
Exit Controlled
for
while
do-while
for(initialization ; condition; updation)
{
}
while(condition)
{
}
do
{
}while(condition)

Entry and Exit controlled Loops



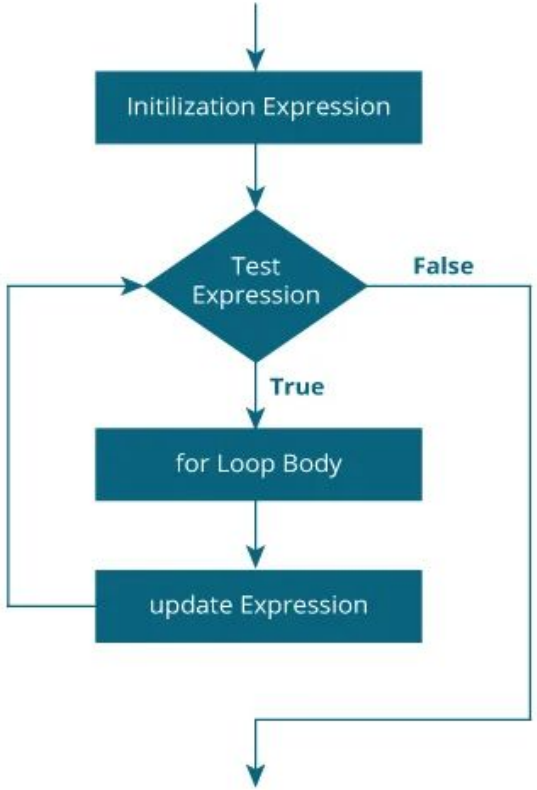


for loop syntax:

```
for ( initialization ; testExpression ; updateExpression )
{

     // loop body
     Statements;

}
```

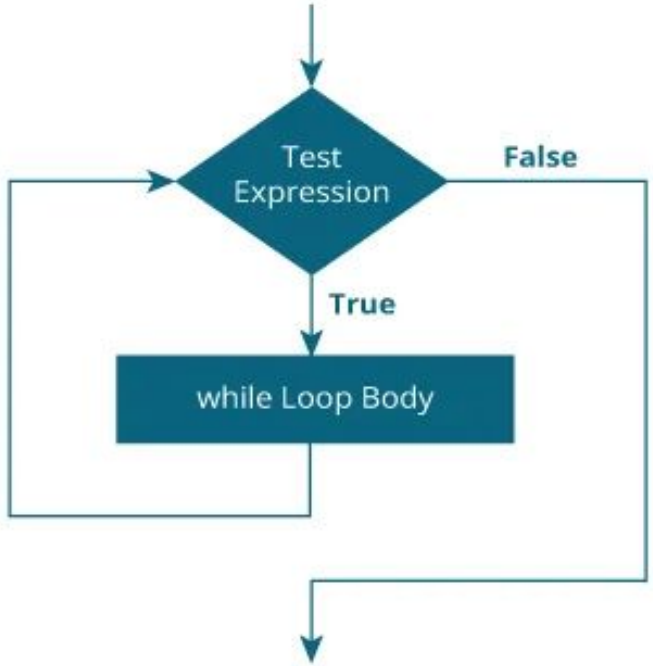


while loop syntax:

```
while( testExpression )
{

     // loop body
     Statements;

}
```

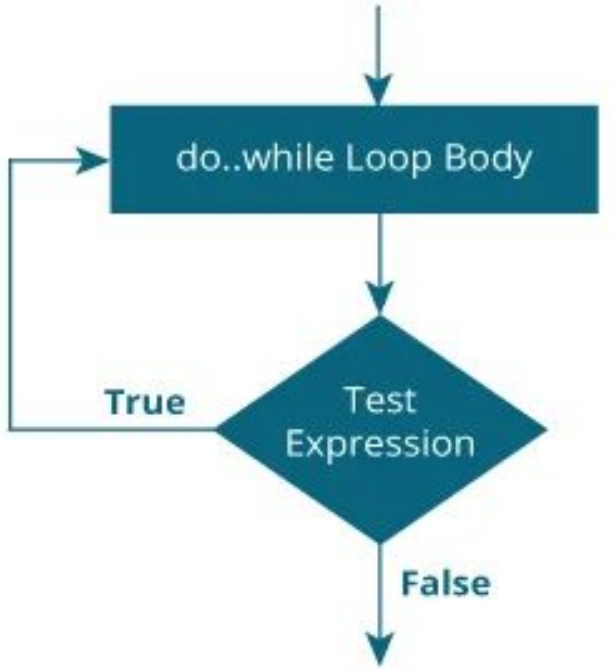


do-while loop syntax:

```
do{

    // loop body
    Statements;

}while( testExpression );
```

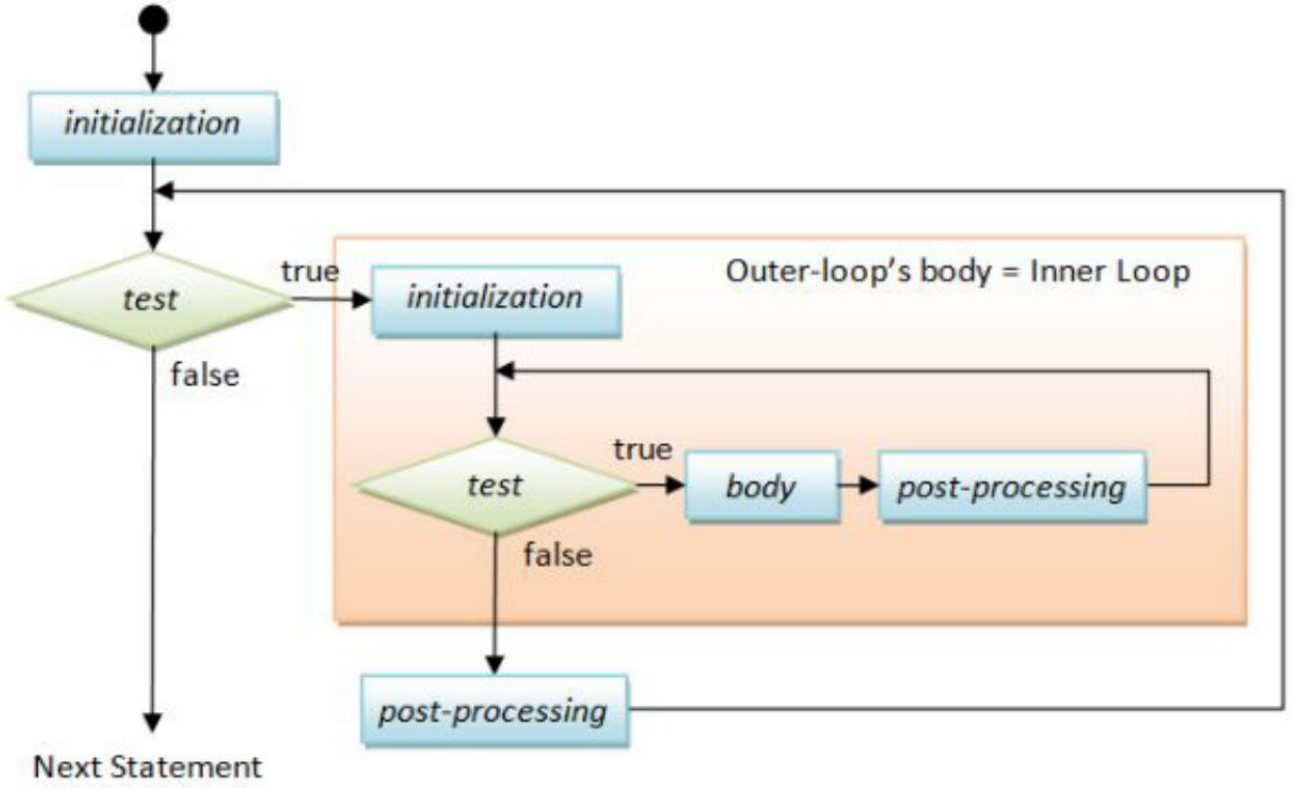


Live Code Demo

1. Find the sum of ‘n’ numbers using every looping constructs of C.

while Vs do-while

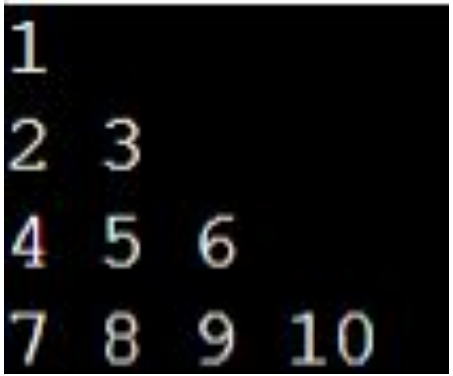
Nested Loops



Live Code Demo

Pattern Printing

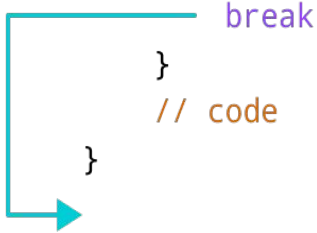
1. Write a C program to print the numbers as shown in the pattern.



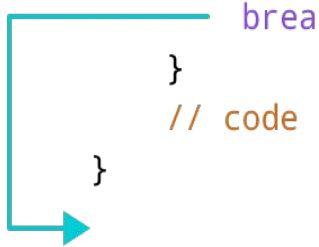
Interrupting loop flow

break

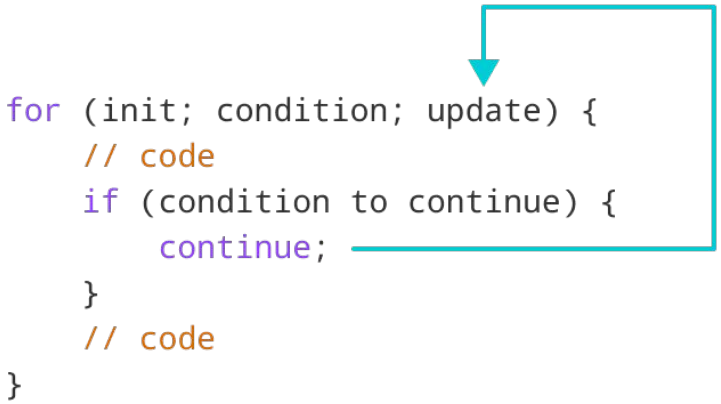
```
for (init; condition; update) {
    // code
    if (condition to break) {
        break;
    }
    // code
}
```

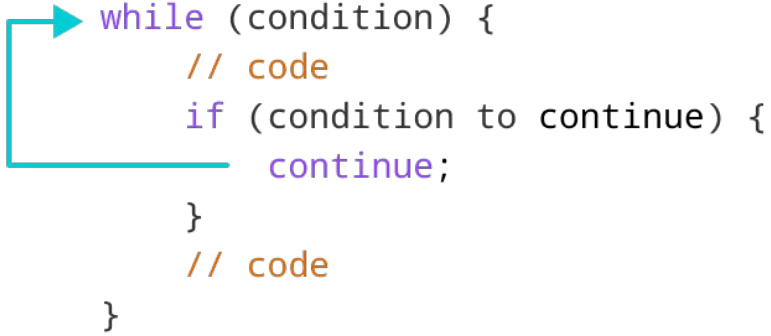


```
while (condition) {
    // code
    if (condition to break) {
        break;
    }
    // code
}
```

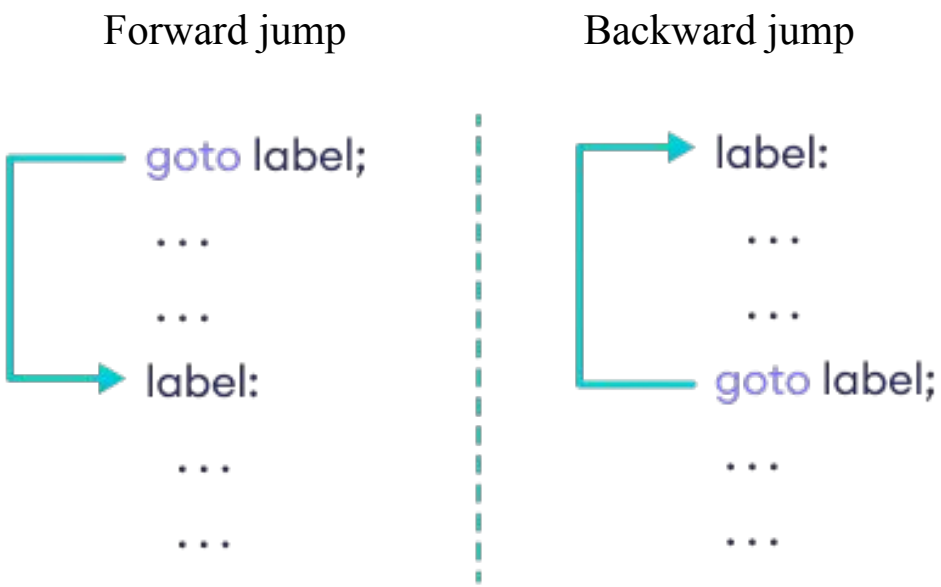


continue


for (init; condition; update) {
// code
if (condition to continue) {
continue;
}
// code
}


while (condition) {
// code
if (condition to continue) {
continue;
}
// code
}

goto - label


Forward jump
Backward jump
goto label;
label:
label:
goto label;

Tutorial

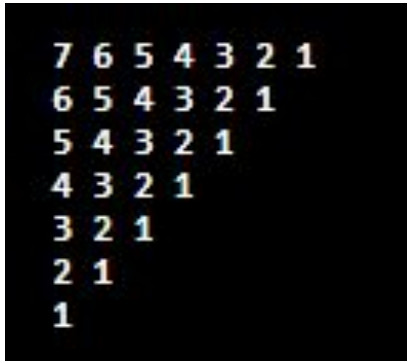
1. Develop a C program to find factorial of a number.

```
Enter number: 5
Factorial of 5 is 120 .
```

2. Write a C program to print the below shown pattern.

```
A
A B
A B C
A B C D
A B C D E
A B C D E F
```

Thy these




```
Input  : 4
Output :
1*2*3*4*17*18*19*20
  5*6*7*14*15*16
    8*9*12*13
      10*11


Input : 2
Output :
1*2*5*6
  3*4
```

Any Questions?

Thank You for attending!

Contact us regarding any questions through email

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