

Mukesh Patel School of Technology Management & Engineering / School of Technology Management & Engineering

B. Tech/MBA Tech	Workbook	Academic Year- 2023-24
Year:-First	Subject:- Programming for Problem Solving	Semester: - First

Experiment: 5

PART A

(PART A: TO BE REFERRED BY STUDENTS)

Aim: Programming using nested loops

Learning Outcomes: The learner would be able to

- 1. Understand the syntax of nested loop
- 2. Use nested to solve problems by writing programs

Theory:

Nested Loop (loop inside loop):

- A loop within another loop is known as nested loop.
- Combinations of any loops are possible.

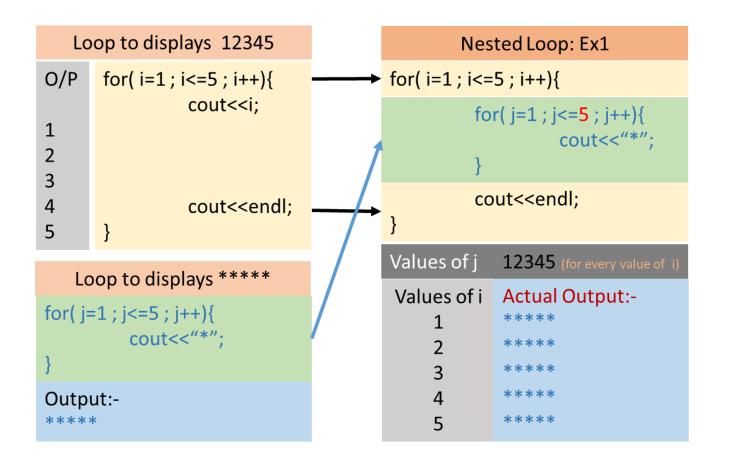
Syntax:-

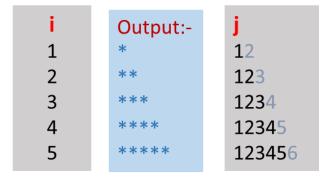
Nested For	Nested While	Nested Do While
for (initialization; condition; update)	while (condition)	do
{	{	{
for (initialization; condition; update)	while (condition)	do
{	{	{
// body of inner loop	// body of inner loop	// body of inner loop
}	}	}while (condition);
// body of outer loop	// body of outer loop	// body of outer loop
}	}	}while (condition);



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5

```
i Output:-
1 1 12
2 22 123
3 333 1234
4 4444 12345
5 55555 123456
```

```
Nested Loop: Ex5
char ch = 'A';
for( i=1; i<=5; i++){
         for( j=1; j<= i; j++){
                   cout<<ch;
         cout<<endl;
         ch++;
           Output:-
           Α
                        12
           BB
                        123
           CCC
                        1234
           DDDD
   4
                        12345
           EEEEE
   5
                        123456
```

SVKM's NMIMS

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Instructions: - All the students are informed to write all executed code in a workbook in the following sequence and format.

- 1. Problem Statement
- 2. Input and Output
- 3. Test Cases
- 4. Flowchart
- 5. Program (with color codes)
 - a) Red Directives
 - **b**) Blue Keywords, constants values
 - c) Green Comments, messages
 - **d)** Black {variables, functions, class, object} name, operators, punctuation
- 6. Trace Table (additional columns may require in some concepts)

Var-1	Var-2	 Var-n	Condition	Output



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Tasks:

Sr. No.	Problem Statement	I/O	Test Cases	Flow chart	Program- with color	Trace Table
1				,	codes	
1	Write a program to print following pattern using nested loop.	\checkmark		\checkmark	\checkmark	✓
	A					
	BC					
	DEF					
	GHIJ					
	KLMNO					
2	Write a program to print following pattern using nested loop.	√		✓	✓	√

	**					
	*					
3	Write a program to print following pattern using nested loop, read number of lines to be displayed from user.	√			√	
	*					
	**					

4	Write a program to print following pattern using nested loop.	√			√	
	\$					
	\$ \$					
	\$ \$ \$					
5	Write a program to print following pattern using nested loop.	√			√	



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	1					
	1 2					
	1 2 3					
	3 2 1					
	2 1					
	1					
6	Write a C++ program to print Armstrong numbers between N ₁ to N ₂ , where N ₂ >N ₁ .	✓	√		✓	
7	Write a C++ program to print prime numbers between N_1 to N_2 , where $N_2 > N_1$.	√	√	√	√	√
8	WAP to generate all combinations of 1, 2 & 3 using for loop.	√	√		√	
						1



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Q1.