

## Part 02

### Loop Statements

#### ----- BASIC -----

1. Write a program that displays the first **N** positive integers.

Example 1: How many number that you want to display? -8  
Accept positive number only!

Example 2: How many number that you want to display? 10  
The first 10 positive integer are:  
1, 2, 3, 4, 5, 6, 7, 8, 9, 10

2. Write a program that **displays all 2-digit positive** integers.

Example: All 2-digit positive integers are:  
10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,  
30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49,  
50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69,  
70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89,  
90, 91, 92, 93, 94, 95, 96, 97, 98, 99

3. Write a program that **displays all 3-digit negative** integers.

Example: All 3-digit negative integers are:  
-999, -998, -997, -996, -995, -994, -993, -992, -991, -990, -989, -988, -987, -986, -985, -984, -983, -982, -981, -980,  
-979, -978, -977, -976, -975, -974, -973, -972, -971, -970, -969, -968, -967, -966, -965, -964, -963, -962, -961, -960,  
-959, -958, -957, -956, -955, -954, -953, -952, -951, -950, -949, -948, -947, -946, -945, -944, -943, -942, -941, -940,  
-939, -938, -937, -936, -935, -934, -933, -932, -931, -930, -929, -928, -927, -926, -925, -924, -923, -922, -921, -920,  
-919, -918, -917, -916, -915, -914, -913, -912, -911, -910, -909, -908, -907, -906, -905, -904, -903, -902, -901, -900,  
-899, -898, -897, -896, -895, -894, -893, -892, -891, -890, -889, -888, -887, -886, -885, -884, -883, -882, -881, -880,  
-879, -878, -877, -876, -875, -874, -873, -872, -871, -870, -869, -868, -867, -866, -865, -864, -863, -862, -861, -860,  
-859, -858, -857, -856, -855, -854, -853, -852, -851, -850, -849, -848, -847, -846, -845, -844, -843, -842, -841, -840,  
-839, -838, -837, -836, -835, -834, -833, -832, -831, -830, -829, -828, -827, -826, -825, -824, -823, -822, -821, -820,  
-819, -818, -817, -816, -815, -814, -813, -812, -811, -810, -809, -808, -807, -806, -805, -804, -803, -802, -801, -800,  
-799, -798, -797, -796, -795, -794, -793, -792, -791, -790, -789, -788, -787, -786, -785, -784, -783, -782, -781, -780,  
-779, -778, -777, -776, -775, -774, -773, -772, -771, -770, -769, -768, -767, -766, -765, -764, -763, -762, -761, -760,  
-759, -758, -757, -756, -755, -754, -753, -752, -751, -750, -749, -748, -747, -746, -745, -744, -743, -742, -741, -740,  
-739, -738, -737, -736, -735, -734, -733, -732, -731, -730, -729, -728, -727, -726, -725, -724, -723, -722, -721, -720,  
-719, -718, -717, -716, -715, -714, -713, -712, -711, -710, -709, -708, -707, -706, -705, -704, -703, -702, -701, -700,  
-699, -698, -697, -696, -695, -694, -693, -692, -691, -690, -689, -688, -687, -686, -685, -684, -683, -682, -681, -680,  
-679, -678, -677, -676, -675, -674, -673, -672, -671, -670, -669, -668, -667, -666, -665, -664, -663, -662, -661, -660,  
-659, -658, -657, -656, -655, -654, -653, -652, -651, -650, -649, -648, -647, -646, -645, -644, -643, -642, -641, -640,  
-639, -638, -637, -636, -635, -634, -633, -632, -631, -630, -629, -628, -627, -626, -625, -624, -623, -622, -621, -620,  
-619, -618, -617, -616, -615, -614, -613, -612, -611, -610, -609, -608, -607, -606, -605, -604, -603, -602, -601, -600,  
-599, -598, -597, -596, -595, -594, -593, -592, -591, -590, -589, -588, -587, -586, -585, -584, -583, -582, -581, -580,  
-579, -578, -577, -576, -575, -574, -573, -572, -571, -570, -569, -568, -567, -566, -565, -564, -563, -562, -561, -560,  
-559, -558, -557, -556, -555, -554, -553, -552, -551, -550, -549, -548, -547, -546, -545, -544, -543, -542, -541, -540,  
-539, -538, -537, -536, -535, -534, -533, -532, -531, -530, -529, -528, -527, -526, -525, -524, -523, -522, -521, -520,  
-519, -518, -517, -516, -515, -514, -513, -512, -511, -510, -509, -508, -507, -506, -505, -504, -503, -502, -501, -500,  
-499, -498, -497, -496, -495, -494, -493, -492, -491, -490, -489, -488, -487, -486, -485, -484, -483, -482, -481, -480,  
-479, -478, -477, -476, -475, -474, -473, -472, -471, -470, -469, -468, -467, -466, -465, -464, -463, -462, -461, -460,  
-459, -458, -457, -456, -455, -454, -453, -452, -451, -450, -449, -448, -447, -446, -445, -444, -443, -442, -441, -440,  
-439, -438, -437, -436, -435, -434, -433, -432, -431, -430, -429, -428, -427, -426, -425, -424, -423, -422, -421, -420,  
-419, -418, -417, -416, -415, -414, -413, -412, -411, -410, -409, -408, -407, -406, -405, -404, -403, -402, -401, -400,  
-399, -398, -397, -396, -395, -394, -393, -392, -391, -390, -389, -388, -387, -386, -385, -384, -383, -382, -381, -380,  
-379, -378, -377, -376, -375, -374, -373, -372, -371, -370, -369, -368, -367, -366, -365, -364, -363, -362, -361, -360,  
-359, -358, -357, -356, -355, -354, -353, -352, -351, -350, -349, -348, -347, -346, -345, -344, -343, -342, -341, -340,  
-339, -338, -337, -336, -335, -334, -333, -332, -331, -330, -329, -328, -327, -326, -325, -324, -323, -322, -321, -320,  
-319, -318, -317, -316, -315, -314, -313, -312, -311, -310, -309, -308, -307, -306, -305, -304, -303, -302, -301, -300,  
-299, -298, -297, -296, -295, -294, -293, -292, -291, -290, -289, -288, -287, -286, -285, -284, -283, -282, -281, -280,  
-279, -278, -277, -276, -275, -274, -273, -272, -271, -270, -269, -268, -267, -266, -265, -264, -263, -262, -261, -260,  
-259, -258, -257, -256, -255, -254, -253, -252, -251, -250, -249, -248, -247, -246, -245, -244, -243, -242, -241, -240,  
-239, -238, -237, -236, -235, -234, -233, -232, -231, -230, -229, -228, -227, -226, -225, -224, -223, -222, -221, -220,  
-219, -218, -217, -216, -215, -214, -213, -212, -211, -210, -209, -208, -207, -206, -205, -204, -203, -202, -201, -200,  
-199, -198, -197, -196, -195, -194, -193, -192, -191, -190, -189, -188, -187, -186, -185, -184, -183, -182, -181, -180,  
-179, -178, -177, -176, -175, -174, -173, -172, -171, -170, -169, -168, -167, -166, -165, -164, -163, -162, -161, -160,  
-159, -158, -157, -156, -155, -154, -153, -152, -151, -150, -149, -148, -147, -146, -145, -144, -143, -142, -141, -140,  
-139, -138, -137, -136, -135, -134, -133, -132, -131, -130, -129, -128, -127, -126, -125, -124, -123, -122, -121, -120,  
-119, -118, -117, -116, -115, -114, -113, -112, -111, -110, -109, -108, -107, -106, -105, -104, -103, -102, -101, -100

4. Write a program that displays the first  $N$  positive even numbers.

Example 1: How many positive even number that you want to display? 0  
Accept positive number only!

Example 2: How many positive even number that you want to display? 10  
The first 10 positive even numbers are:  
2, 4, 6, 8, 10, 12, 14, 16, 18, 20

5. Write a program that displays the first  $N$  positive odd numbers.

Example 1: How many positive odd number that you want to display? 0  
Accept positive number only!

Example 2: How many positive odd number that you want to display? 10  
The first 10 positive odd numbers are:  
1, 3, 5, 7, 9, 11, 13, 15, 17, 19

**Theory:** An Armstrong number is 3-digit integer that the sum of the cubes of its digits is equal to the number itself. For example, 371 is an Armstrong number since  $3^3 + 7^3 + 1^3 = 371$ .

6. (\*) Write a program that **displays all** Armstrong numbers.

Example: All Armstrong numbers are: 153, 370, 371, 407

#### ----- ACCUMULATE SUM -----

7. Write a program that calculates the sum  $S = 1 + 2 + 3 + \dots + N$  and presents the result as the example below.

Example 1: Please enter positive integer N: 0  
Accept positive number only!

Example 2: Please enter positive integer N: 1  
The sum is  $S = 1$

Example 3: Please enter positive integer N: 9  
The sum is  $S = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = 45$

8. Write a program that calculates the sum  $S = 1 - 2 + 3 - 4 + \dots + (-1)^{N+1} * N$  and presents the result as the example below.

Example 1: Please enter positive integer N: -7  
Accept positive number only!

Example 2: Please enter positive integer N: 1  
The sum is  $S = 1$

Example 4: Please enter positive integer N: 11  
The sum is  $S = 1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9 - 10 + 11 = 6$

9. Write a program that calculates the sum  $S = 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{N}$  and presents the result as the example below.

Example 1: Please enter positive integer N: 0  
Accept positive number only!

Example 2: Please enter positive integer N: 1  
The sum is  $S = 1$

Example 3: Please enter positive integer N: 6  
The sum is  $S = 1 + 1/2 + 1/3 + 1/4 + 1/5 + 1/6 = 2.450000$

10. Write a program that calculates the sum  $S = -1 + \frac{1}{2} - \frac{1}{3} + \frac{1}{4} + \dots + \frac{-1^N}{N}$  and presents the result as the example below.

Example 1: Please enter positive integer N: 0  
Accept positive number only!

Example 2: Please enter positive integer N: 1  
The sum is S = -1

Example 3: Please enter positive integer N: 7  
The sum is S = -1 + 1/2 - 1/3 + 1/4 - 1/5 + 1/6 - 1/7 = -0.759524

### ----- ACCUMULATE MULTIPLY -----

11. Write a program that calculates the factorial  $N! = 1 * 2 * 3 * \dots * N$  and presents the result as the example below.

Example 1: Please enter positive integer N: -7  
N must be greater than or equal 0!

Example 2: Please enter positive integer N: 0  
Result: 0! = 1

Example 3: Please enter positive integer N: 9  
Result: 9! = 1\*2\*3\*4\*5\*6\*7\*8\*9 = 362880

Example 4: Please enter positive integer N: 20  
Result: 20! = 1\*2\*3\*4\*5\*6\*7\*8\*9\*10\*11\*12\*13\*14\*15\*16\*17\*18\*19\*20  
= 2432902008176640000

12. Write a program that calculates the result of  $X^N$  and presents the result as the example below.

Example 1: Please enter the base X: 4  
Please enter the exponent N: -3  
The exponent N must be greater than or equal 0!

Example 2: Please enter the base X: 0  
Please enter the exponent N: 5  
Result: 0^5 = 0

Example 3: Please enter the base X: 7  
Please enter the exponent N: 0  
Result: 7^0 = 1

Example 4: Please enter the base X: 5  
Please enter the exponent N: 4  
Result: 5^4 = 625

Example 5: Please enter the base X: 10  
Please enter the exponent N: 18  
Result: 10^18 = 1000000000000000000

13. (\*) Write a program that calculates the result of X powers N and presents the result as Ex12.  
**Requirement:** N can be a negative number. Example: Result: 4^-2 = 0.062500

## ----- NUMERALS -----

14. Write a program that displays the all **divisors** of a positive integer **N**.

Example 1: Please enter positive integer N: -3  
Accept positive number only!

Example 2: Please enter positive integer N: 10  
All divisors of 10 are:  
1, 2, 5, 10

15. Write a program that calculates the sum of all **divisors** of a positive integer **N**.

Example 1: Please enter positive integer N: 0  
Accept positive number only!

Example 2: Please enter positive integer N: 10  
The sum of all divisors of 10 is  
 $S = 1 + 2 + 5 + 10 = 18$

16. Write a program that counts the number of **divisors** of a positive integer **N**.

Example 1: Please enter positive integer N: -6  
Accept positive number only!

Example 2: Please enter positive integer N: 10  
The number of divisors of 10 is 4

**Theory:**

# All divisors of a positive integer **N** that **smaller than N** is called **real divisors**.

# The **perfect number** is the positive integer whose **sum of all it's real divisors equals itself**.

For example, 6 is a perfect number.

Explanation:

\* All divisors of 6 are: 1, 2, 3, 6

\* All **real divisors** of 6 are: 1, 2, 3

\* 6 is a perfect number since  $1 + 2 + 3 = 6$

17. Write a program that allows user to enter a positive integer called **N** and then check if the entered number is a perfect number or not.

Example 1: Please enter positive integer N: 0  
Accept positive number only!

Example 2: Please enter positive integer N: 28  
28 is a perfect number

Example 3: Please enter positive integer N: 12  
12 is not a perfect number

18. Write a program that displays all perfect number that smaller than 1000.

Example: All perfect number that smaller than 1000 are:  
6, 28, 496

**Theory:**

# A number is called a **prime number** if it has only 2 divisors.

# A number is called a **prime number** if it is only divisible by 1 and itself.

For example, All divisors of 11 are 1 and 11, so 11 is a prime number.

All divisors of 15 are 1, 3, 5 and 15, so 9 is not a prime number.

19. Write a program that allows user to enter a positive integer called **N** and then check if the entered number is a prime number or not.

Example 1: Please enter positive integer N: -19  
Accept positive number only!

Example 2: Please enter positive integer N: 22  
22 is not a prime number

Example 3: Please enter positive integer N: 19  
19 is not a prime number

20. Write a program that displays all prime number that from **A** to **B**.

Example 1: Please enter the lower bound A: -40  
Please enter the upper bound B: 19  
The lower bound must be a positive integer!

Example 2: Please enter the lower bound A: 152  
Please enter the upper bound B: 98  
The lower bound must be smaller than or equal the upper bound!

Example 3: Please enter the lower bound A: 10  
Please enter the upper bound B: 20  
All prime numbers from 10 to 20 are:  
11, 13, 17, 19

-----ALGEBRA-----

**Theory:**

# The **greatest common divisor (GCD)** of two integers, which are not all zero, is the largest positive integer that divides each of the integers. For example, the GCD(20, 15) is 5.

# The **least common multiple (LCM)**, lowest common multiple, or smallest common multiple of two integers, is the smallest positive integer that is divisible by both of them.

For example, the LCM(20, 15) is 60.

**Calculates GCD subtraction algorithm** (both a and b must be different from 0)

While  $a \neq b$

$$GCD(a, b) = \begin{cases} GCD(a - b, b) & a > b \\ GCD(a, b - a) & a < b \end{cases}$$

**Calculates GCD division algorithm** (b must be different from 0)

While  $a \bmod b \neq 0$

$$GCD(a, b) = \begin{cases} GCD(b, a \bmod b) & a \bmod b \neq 0 \\ b & a \bmod b = 0 \end{cases}$$

**Calculates LCM**

$$LCM(a, b) = \frac{a * b}{GCD(a, b)}$$

21. Write a program that allows the user to enter 2 positive integers called **A** and **B**. This program will using **subtraction algorithm** to find the GCD and the LCM of 2 numbers **A** and **B**.

Example 1: Please enter the positive integer A: -32  
Please enter the positive integer B: 5  
A and B must be greater than or equal 0!

Example 2: Please enter the positive integer A: 9  
Please enter the positive integer B: 0  
The greatest common divisor of 9 and 0 is 9  
The least common multiple of 9 and 0 is 0

Example 3: Please enter the positive integer A: 0  
Please enter the positive integer B: 18  
The greatest common divisor of 0 and 18 is 18  
The least common multiple of 0 and 18 is 0

Example 4: Please enter the positive integer A: 25  
Please enter the positive integer B: 20  
The greatest common divisor of 25 and 20 is  
 **$(25, 20) = (5, 20) = (5, 15) = (5, 10) = (5, 5) = 5$**   
The least common multiple of 25 and 20 is 100

Example 5: Please enter the positive integer A: 8  
Please enter the positive integer B: 10  
The greatest common divisor of 8 and 10 is  
 **$(8, 10) = (8, 2) = (6, 2) = (4, 2) = (2, 2) = 2$**   
The least common multiple of 8 and 10 is 40

22. Write a program that allows the user to enter 2 positive integers called **A** and **B**. This program will using **division algorithm** to find the GCD and the LCM of 2 numbers **A** and **B**.

Example 1: Please enter the positive integer A: -32  
Please enter the positive integer B: 5  
A and B must be greater than or equal 0!

Example 2: Please enter the positive integer A: 9  
Please enter the positive integer B: 0  
The greatest common divisor of 9 and 0 is 9  
The least common multiple of 9 and 0 is 0

Example 3: Please enter the positive integer A: 25  
Please enter the positive integer B: 20  
The greatest common divisor of 25 and 20 is  
 **$(25, 20) = (20, 5) = 5$**   
The least common multiple of 25 and 20 is 100

Example 4: Please enter the positive integer A: 8  
Please enter the positive integer B: 10  
The greatest common divisor of 8 and 10 is  
 **$(8, 10) = (10, 8) = (8, 2) = 2$**   
The least common multiple of 8 and 10 is 40

23. Write a program that allows the user to enter a positive integer called **N** that smaller than  $18 \cdot 10^{18}$ . This program will calculate the sum of all digits of **N**.

Example 1: Please enter the positive integer N: -11  
N must greater than or equal 0!

Example 2: Please enter the positive integer N: 65453278  
The sum of all digits of 65453278 is  
 $S = 8 + 7 + 2 + 3 + 5 + 4 + 5 + 6 = 40$

24. Write a program that allows the user to enter a positive integer called  $N$  ( $N \leq 18 \cdot 10^{18}$ ). This program will calculate and display the reverse value of  $N$ .

Example 1: Please enter the positive integer N: -7  
N must greater than or equal 0!

Example 2: Please enter the positive integer N: 9853247  
The reverse number of 9853247 is 7423589

Example 3: Please enter the positive integer N: 4560000  
The reverse number of 4560000 is 654

25. Write a program to display all 2-digit numbers that the sum of digits of that number equal to number  $N$ .

Example 1: Please enter the positive integer N: 6  
All 2-digit numbers that the sum of digits of that number equal to 6 are:  
15, 24, 33, 42, 51, 60

Example 2: Please enter the positive integer N: 0  
Don't have any 2-digit number that the sum of digits of that number equal to 0

Example 3: Please enter the positive integer N: 19  
Don't have any 2-digit number that the sum of digits of that number equal to 19

### ----- DO...WHILE LOOP -----

26. Write a program that displays the multiplication table of  $N$ .

Example 1: Please enter the positive integer N: -7  
N must be greater than 0!

Example 2: Please enter the positive integer N: 5  
The multiplication table of 5 is:

1	x	5	=	5
2	x	5	=	10
3	x	5	=	15
4	x	5	=	20
5	x	5	=	25
6	x	5	=	30
7	x	5	=	35
8	x	5	=	40
9	x	5	=	45
10	x	5	=	50

27. Write a program that displays the 8 multiplication tables from 2 to 9.

28. Write a program that allows the user to enter a positive integer **N** and then display the multiplication table of **N**. The program will show a message asking if the user wants to continue or not. If user said yes, the program will be continued, otherwise the program will be stopped.

Example: Please enter the positive integer N: -7  
**N must be greater than 0!**  
 Please enter the positive integer N: 5  
 The multiplication table of 5 is:

1	x	5	=	5
2	x	5	=	10
3	x	5	=	15
4	x	5	=	20
5	x	5	=	25
6	x	5	=	30
7	x	5	=	35
8	x	5	=	40
9	x	5	=	45
10	x	5	=	50

Do you want to continue (y/n)? a  
**You must enter 'y' or 'Y' or 'n' or 'N'!**  
 Do you want to continue (y/n)? y  
 Please enter the positive integer N: 9  
 The multiplication table of 9 is:

1	x	9	=	9
2	x	9	=	18
3	x	9	=	27
4	x	9	=	36
5	x	9	=	45
6	x	9	=	54
7	x	9	=	63
8	x	9	=	72
9	x	9	=	81
10	x	9	=	90

Do you want to continue (y/n)? n  
**Thank for using our software!**  
**Goodbye and see you again.**

### ----- NESTED LOOPS -----

29. Write a program that displays the number-triangle with **N** lines and is formatted as below.

Example 1: Please enter the positive integer N: 0  
**N must be greater than 0!**

Example 2: Please enter the positive integer N: 5  
 The number-triangle that has 5 lines is:

```

1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```



30. Write a program that displays the number-triangle with **N** lines and is formatted as below.

Example 1: Please enter the positive integer N: 0  
N must be greater than 0!

Example 2: Please enter the positive integer N: 5  
The number-triangle that has 5 lines is:  
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5

31. Write a program that displays the number-triangle with **N** lines and is formatted as below.

Example 1: Please enter the positive integer N: 0  
N must be greater than 0!

Example 2: Please enter the positive integer N: 4  
The number-triangle that has 4 lines is:  
1  
2 1  
3 2 1  
4 3 2 1

32. Write a program that displays the star-triangle with **N** lines and is formatted as below.

Example 1: Please enter the positive integer N: -8  
N must be greater than 0!

Example 2: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:  
\*  
\* \*  
\* \* \*  
\* \* \* \*

33. Write a program that displays the star-triangle with **N** lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:  
\* \* \* \*  
\* \* \*  
\* \*  
\*

34. Write a program that displays the star-triangle with **N** lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:  
\*  
\* \*  
\* \* \*  
\* \* \* \*

35. Write a program that displays the star-triangle with **N** lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:  
\* \* \* \*  
\* \* \*  
\* \*  
\*

36. Write a program that displays the star-triangle with  $N$  lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:

```

      *
    * * *
  * * * * *
* * * * * * *
```

37. Write a program that displays the star-triangle with  $N$  lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-triangle that has 4 lines is:

```

* * * * * * *
  * * * * *
    * * *
      *
```

38. Write a program that displays the star-rhombus with  $2N-1$  lines and is formatted as below.

Example: Please enter the positive integer N: 4  
The star-rhombus that has 7 lines is:

```

      *
    * * *
  * * * * *
* * * * * * *
  * * * * *
    * * *
      *
```

39. Write a program that allows the user to enter 2 positive integers  $W$  and  $H$ , then display the rectangle in the format as below.

a. Example: Please enter the width W: 6  
Please enter the height H: 4  
The rectangle which size is 6x4:

```

* * * * * *
*           *
*           *
* * * * * *
```

b. Example: Please enter the width W: 6  
Please enter the height H: 4  
The filled rectangle which size is 6x4:

```

* * * * * *
* * * * * *
* * * * * *
* * * * * *
```

40. Write a program that allows the user to enter 2 positive integers  $W$  and  $H$ , then display the parallelogram in the format as below.

a. Example: Please enter the width W: 6  
Please enter the height H: 5  
The parallelogram which size is 6x5:

```

      * * * * * *
    *           *
  *           *
*           *
*           *
* * * * * *
```

```

b. Example:      Please enter the width W: 6
                   Please enter the height H: 5
                   The filled parallelogram which size is 6x5:
                        * * * * *
                      * * * * *
                    * * * * *
                  * * * * *
                * * * * *
              * * * * *
            * * * * *
          * * * * *
        * * * * *
      * * * * *
    * * * * *
  * * * * *
* * * * *

```

41. Write a program that allows the user to enter a positive integer **N**, then display the square in the format as below.

Example 1: Please enter a positive integer N: -5  
N must be greater than 0!  
Please enter a positive integer N: 0  
N must be greater than 0!  
Please enter a positive integer N: 4  
The square which size is 4:

Example 2: Please enter a positive integer N: 2  
The square which size is 2:

A square with four asterisks at the corners. The asterisks are positioned at the top-left, top-right, bottom-left, and bottom-right corners of the square.

Example 3: Please enter a positive integer N: 1  
The square which size is 1:

\*

Example 4: Please enter a positive integer N: 8  
The square which size is 8:

A circular arrangement of 24 asterisks (\*) forming a ring. The asterisks are positioned at regular intervals around the circle, with one at the top and one at the bottom.