

Solve any one of the following Problems.

**Question 1**

A **Circular Prime** is a prime number that remains prime under cyclic shifts of its digits. When the leftmost digit is removed and replaced at the end of the remaining string of digits, the generated number is still prime. The process is repeated until the original number is reached again.

A number is said to be prime if it has only two factors 1 and itself.

**Example:** 131  
311  
113

Hence, 131 is a circular prime.

Accept a positive number N and check whether it is a circular prime or not. The new numbers formed after the shifting of the digits should also be displayed.

Test your program with the following data and some random data:

**Example 1**

**INPUT:** N = 197

**OUTPUT:** 197  
971  
719  
197 IS A CIRCULAR PRIME

**Example 2**

**INPUT:** N = 1193

**OUTPUT:** 1193  
1931  
9311  
3119  
1193 IS A CIRCULAR PRIME

**Example 3**

**INPUT:** N = 29

**OUTPUT:** 29  
92  
29 IS NOT A CIRCULAR PRIME

$m[i] = \dots$   
 $n = m[i]$   
 $n = m[i]$   
 $m[i] = m[i]$   
 $m[i] = m[i]$   
 $m[i] = m[i]$   
 $0 = m[i];$   
 $if (0 == n)$   
sup  
else  
Continue

### Question 2

Write a program to declare a square matrix  $A[][]$  of order  $(M \times M)$  where 'M' must be greater than 3 and less than 10. Allow the user to input positive integers into this matrix. Perform the following tasks on the matrix:

- Sort the non-boundary elements in ascending order using any standard sorting technique and rearrange them in the matrix.
- Calculate the sum of both the diagonals.
- Display the original matrix, rearranged matrix and only the diagonal elements of the rearranged matrix with their sum.

Test your program for the following data and some random data:

#### Example 1

INPUT:  $M = 4$

9	2	1	5
8	13	8	4
15	6	3	11
7	12	23	8

#### OUTPUT:

##### ORIGINAL MATRIX

9	2	1	5
8	13	8	4
15	6	3	11
7	12	23	8

##### REARRANGED MATRIX

9	2	1	5
8	3	6	4
15	8	13	11
7	12	23	8

##### DIAGONAL ELEMENTS

9			5
	3	6	
	8	13	
7			8

SUM OF THE DIAGONAL ELEMENTS = 59