CS384 2024 Lab 3 - July Dec 2024

Q1) Write a program to check if a given number is a Rotational prime. A Rotational prime is a prime number that remains prime under all rotations of its digits.

Example 1: 1193

Rotations: 1193, 1931, 9311, 3119
All rotations are prime.
Result: 1193 is a Rotational prime.

Example 2: 197

Rotations: 197, 971, 719
All rotations are prime.
Result: 197 is a Rotational prime.

Example 3: 37

Rotations: 37, 73
Both rotations are prime.
Result: 37 is a Rotational prime.

Example 4: 23

Rotations: 23, 32
32 is not a prime number.
Result: 23 is not a Rotational prime.

Example 5: 31

Rotations: 31, 13
Both rotations are prime.
Result: 31 is a Rotational prime.

Example 6: 11

Rotations: 11, 11
Both rotations are prime.
Result: 11 is a Rotational prime.

Example 7: 79

Rotations: 79, 97
Both rotations are prime.
Result: 79 is a Rotational prime.

Example 8: 17

Rotations: 17, 71

Both rotations are prime.
Result: 17 is a Rotational prime.

Example 9: 101

Rotations: 101, 011 (11), 110
110 is not a prime number.
Result: 101 is not a Rotational prime.

Example 10: 73

Rotations: 73, 37
Both rotations are prime.
Result: 73 is a Rotational prime.

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Q2) Write a program that generates all permutations of a given string using loops (avoid using recursion or built-in functions).

Example Output:
For the string "ABC":

Permutations of 'ABC':
ABC
BAC
BCA
ACB
CAB
CBA
Example 1:
Input: "AB"
Output:
Copy code
AB
BA

Example 2:
Input: "123"
Output:
Copy code
123
213
231
132
312
321

Example 3:
Input: "XYZ"
Output:
Copy code

XYZ
YXZ
YZX
XZY
ZXY
ZYX