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Department Of Computer Engineering
CO24057: Object Oriented Programming System
Lab Assignment # 01
Marks: 20 points

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Late Submission: Not allowed

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1. Write a program that computes the sum of the logarithms of all the primes from 2 to some number n , and print out the sum of the logs of the primes, the number n , and the ratio of these two quantities. Test this for different values of n .
2. Write a program that computes and prints the 1000th prime number.
3. Write a program for the prime factorization for the given number.
Input: 24, Output: $3 \times 2 \times 2 \times 2$
4. A given number is super prime number, if it is a prime number and all the numbers obtained by slicing its one or more right-most digits are also prime number. e.g. 7331 is a prime, 733 is a prime, 73 is a prime, 7 is a prime. Hence, 7331 is super prime number. Write a program that accepts a positive integer n , and it prints the smallest integer greater than n which is super prime.
5. A number is a circular prime if it is prime, and all its cyclic rotations are also prime. e.g. The number 1193 is a circular prime number because it is prime and all its cyclic rotations 1931, 9311, 3119 are prime. Write a program using function that takes an integer n as input and prints whether it is circular prime or not. Your program has to work for all values of n which can be stored in data type int.
6. Write a program to find the difference between the n^{th} prime number and $(n + k)^{\text{th}}$ prime number for a given pair of a positive integers n and k . For example, if the input value of $n=2$ and $k = 3$, then the output should be 8 because the 2nd prime number is 3 and 5th prime number is 11.
7. Write a program to verify that given number or its permutation is prime or not (repetition of number is allowed).
8. Write a program to count the number of prime numbers formed by removing digits from that number(s).
9. We know that prime numbers are positive integers that have exactly two distinct positive divisors. Similarly, we'll call a positive integer number T-prime if a number has exactly three distinct positive divisors. Write a program to find the given number is a T-prime number or not.
10. A primatic number refers to a number that is either a prime number or can be expressed as a power of prime number to itself i.e., $\text{prime}^{\text{prime}}$ e.g. 4, 27, etc. Given a number N , write a program to find the minimum number of primatic numbers which sum up to N . The number 6 can be represented as $2 + 2 + 2$, $3 + 3$, etc. The smallest one among these is $3 + 3$ consisting of 2 primatic numbers. The number 3 is itself primatic. Hence the answer is 1.