1. **Generate all prime numbers using recursion**

**Code:**

#include <stdio.h>

#include <stdbool.h>

bool isPrime(int num, int i) {

if (i == 1) // Base case

return true;

if (num % i == 0)

return false;

return isPrime(num, i - 1); // Recursively check for divisibility

}

void generatePrimes(int n, int i) {

if (i > n)

return;

if (isPrime(i, i / 2)) // Check if i is prime

printf("%d ", i);

generatePrimes(n, i + 1); // Recursively generate primes up to n

}

int main() {

int n;

printf("Enter the value of n: ");

scanf("%d", &n);

printf("Prime numbers up to %d are: ", n);

generatePrimes(n, 2); // Start generating primes from 2

printf("\n");

return 0;

}

**Output:**

Enter the value of n: 10

Prime numbers up to 10 are: 2 3 5 7

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Process exited after 3.074 seconds with return value 0

Press any key to continue . . .

