23 . Binomial coefficient

#include <stdio.h>

int binomialCoefficient(int n, int k) {

if (k == 0 || k == n) {

return 1;

}

// Create a dynamic programming table to store binomial coefficients

int dp[n + 1][n + 1];

// Initialize base cases (C(n, 0) and C(n, n))

for (int i = 0; i <= n; i++) {

dp[i][0] = 1;

dp[i][i] = 1;

}

// Fill the rest of the table using the recurrence relation

for (int i = 1; i <= n; i++) {

for (int j = 1; j < i; j++) {

dp[i][j] = dp[i - 1][j] + dp[i - 1][j - 1];

}

}

// Return the desired binomial coefficient C(n, k) from the table

return dp[n][k];

}

int main() {

int n = 5, k = 2;

int result = binomialCoefficient(n, k);

printf("Binomial coefficient C(%d, %d) = %d\n", n, k, result);

return 0;

} 