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factorial\_debug.cpp

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```
// file: factorial.cpp
//
// Program to try out a recursive implementation of factorial
//
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//
// Revision history:
//   02/18/10  original version
//
// Notes:
//   * Based on http://www.cprogramming.com/debugging/segfaults.html
//
//*****

// include files
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;

// function prototypes
int factorial (int n);

//***** main program *****
int
main (void)
{
    int n_max = 5;
    int stored_factorials[n_max] = {0};

    for (int i=0; i < n_max; i++)
    {
        stored_factorials[i] = factorial(i);
    }

    int j = 2;
    int k = 3;

    cout << stored_factorials[j+k] << " " << stored_factorials[j-k] << endl;

    int dynamic_max = 0;
    cout << "Input maximum integer: ";
    cin >> dynamic_max;
    int *dynamic_factorials = new int [dynamic_max + 1];

    for (int i=0; i <= dynamic_max; i++)
    {
        dynamic_factorials[i] = factorial(i);
        cout << i << "!=" << dynamic_factorials[i] << endl;
    }

    return (0);           // successful completion
}

//*****

//***** factorial *****
//
// Calculate n! recursively.
//
//*****
int
factorial (int n)
{
    if (n == 0)
    {
        return 1;
    }
    else

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{
    return n * factorial(n);
}
}

```