

函數的參數傳遞

Tuesday, July 27, 2021 10:11 AM

Call by Name.

Call by Reference.

Pass by Array ← Pass by Address 的變形.

```
void pass-by-array (int arg1[9][2], int N)
    int arg1[][2], int N.
    也行.
```

Struct 的運用

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10:39 AM

```
struct Array {
```

```
    char str[1024];
```

```
    uint32_t begin;
};
```

← 作為 pass by reference 的 argument 時:

- member variable 不被複製, 有加速效果
- 可以修改 caller variables 的介面.

Recursion 遞迴

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Base Cases.

→ 遞迴的終止.

Recursive Step.

→ 單一方向.

Tutorials.

- a. Print An Array → 到 base case 才全部結束.
- b. Factorial
- c. GCD stack, 模擬. Recursion.
- d. Exponentiation.

Recursion Branch

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N-Rooks.



593C4A...

The screenshot shows the Visual Studio Code editor with the file `5_rooks.cpp` open. The code implements a recursive solution for the N-Rooks problem. The `rooks` function is a recursive helper that takes the current row, the total number of rooks `N`, and a status object `s`. It returns the number of ways to place rooks on the remaining rows. The base case is when `row == N`, returning 1. The recursive step iterates over columns `c` from 0 to `N-1`. If a column is already used, it skips. Otherwise, it places a rook, updates the status, and recursively calls `rooks` for the next row. The results are summed. The `main` function reads `N` from standard input and calls `rooks`.

```
demo_W5 > course2 > C: 5_rooks.cpp > rooks(int, int, Status &)\n12  uint64_t rooks(int row, int N, Status &s){\n13      if( row == N )\n14          return 1 ;\n15      \n16      uint64_t sum = 0 ;\n17      \n18      for(int c=0 ; c<N ; c++){ \n19          if( s.column_is_used[c] )\n20              continue ;\n21      \n22          s.rook_of_row[row] = c ;\n23          // s.column_is_used[c] = true ;\n24          s.column_is_used[c] = 1 ;\n25      \n26          sum += rooks(row+1, N, s) ;\n27      \n28          // s.column_is_used[c] = false ;\n29      \n30      }\n31      return sum ;\n32  }\n33  \n34  \n35  int main(void){\n36      int N ;\n37      cin >> N ;\n38  }
```

The terminal shows the execution of the program with `N=6`, resulting in 720 possible arrangements.

```
40320\nwalchl@AER015:~/Working/Course/2021-I2P/demo_W5/course2$ ./5_rooks.exe\n6\n720\nwalchl@AER015:~/Working/Course/2021-I2P/demo_W5/course2$
```

Dynamic Programming

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3:59 PM

邊算邊記，

HW2

Thursday, July 29, 2021

3:37 PM