

## Friend's pairing in C++

```
#include <iostream>
#include <vector>
using namespace std;

int counter = 1;

void solution(int i, int n, vector<bool>& used, string asf) {
    if (i > n) {
        cout << counter << "." << asf << endl;
        counter++;
        return;
    }

    if (used[i]) {
        solution(i + 1, n, used, asf);
    } else {
        used[i] = true;
        solution(i + 1, n, used, asf + "(" + to_string(i) + ")");
        for (int j = i + 1; j <= n; j++) {
            if (!used[j]) {
                used[j] = true;
                solution(i + 1, n, used, asf + "(" + to_string(i) + "," + to_string(j) + ") ");
                used[j] = false;
            }
        }
        used[i] = false;
    }
}

int main() {
    int n = 3;
    vector<bool> used(n + 1, false);
    solution(1, n, used, "");
    return 0;
}
```

## Function Logic Recap

### Dry Run for n = 3

Step	i	used	Action	Output (if any)
1	1	[F, F, F, F]	1 unused → go alone: (1)	
2	2	[F, T, F, F]	2 unused → go alone: (2)	
3	3	[F, T, T, F]	3 unused → go alone: (3)	1. (1) (2) (3)
4			backtrack to pair 2 and 3	2. (1) (2, 3)
5			backtrack to try 1 with 2	
6	2	[F, T, T, F]	3 unused → alone: (3)	3. (1, 2) (3)
7			backtrack	
8			try 1 with 3	
9	2	[F, T, F, T]	2 unused → alone: (2)	4. (1, 3) (2)

### ✓ Final Output

1. (1) (2) (3)  
 2. (1) (2, 3)  
 3. (1, 2) (3)  
 4. (1, 3) (2)

Output:-

1.(1) (2) (3)  
 2.(1) (2,3)  
 3.(1,2) (3)  
 4.(1,3) (2)