

# CPA Cache Reference Sheet

Text\_content

[github.com/OneStig/cpa-cache](https://github.com/OneStig/cpa-cache)

## Table of Contents

- 1. graphs
  - 1.1 Disjoint Set Union
- 2. range
  - 2.1 Segment Tree

## 1. graphs

**1.1 Disjoint Set Union** Some information about disjoint set unions

```
struct DSU {
    vector<int> e;

    void init(int n) {
        e = vector<int>(n, -1);
    }

    int find(int x) {
        return (e[x] < 0 ? x : e[x] = find(e[x]));
    }

    bool unite(int a, int b) {
        a = find(a);
        b = find(b);

        if (a == b) {
            return false;
        }

        if (e[a] > e[b]) {
            swap(a, b);
        }

        e[a] += e[b];
        e[b] = a;

        return true;
    }

    int size(int x) {
        return -e[find(x)];
    }

    bool is_same(int a, int b) {
        return find(a) == find(b);
    }
};
```

## 2. range

### 2.1 Segment Tree This is a segment tree

```
struct SegTree {  
    int a;  
};
```