Green Camp

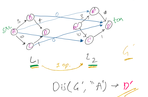
Day 1

- Sort CP
- Prepare
- Solve CP: Phone
- CG
- Graph Lessons

Phone

RECIPE

- Small Span?
- P vs Dijkstra w/ CONSTRAINT
- G → contraction → G' (no components / no cycles)



Dij(G', "A") → D'

Chocolate Problem

1GB-WF

Pixel Tank

A	B	C	D
30L	40L	0	5

Capacity = 4L

Pixel Tank

push which is cheapest.

GRAPH X → C++

idea → code

Classes

class def (blueprint)

```
class CAR {
    int weight;
    double speed;
};
```

int 2;

datatype

CAR bmw;

bmw.weight = 10;

bmw.speed = 22.5;

cout << bmw.speed;

GRAPH X → C++

idea → code

GraphX

- Graph
- BFS

Graph G(500);

class type / obj name → directed

```
G.add_edge(3,4);
G.add_edge(0,1)
G.add_edge(1,0)
```

BFS bfs(&G);

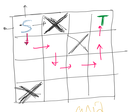
class type / obj → graph source

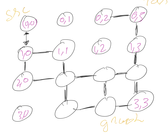
O(V+E) bfs.run(1); 1 → X

O(1) cout << bfs.min_dist(5); 1 → 5

O(1) cout << bfs.min_dist(9); 1 → 9

Graph as Grid





{0,3} → 2D

{0} → 1D

Graph G(N×N);

G.add_edge({0,0},{1,0})

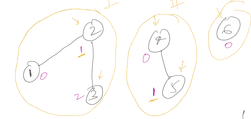
G.add_edge({1,0},{0,0})

BFS bfs(&G)

bfs.run({0,0})

cout << bfs.min_dist({0,3})

P2. Number of components



BFS(G,1)

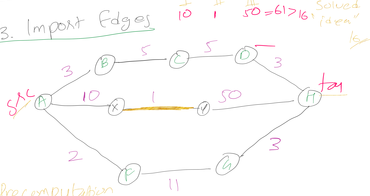
↳ I component

3

```
BFS bfs(&G);
for (node = 1; node <= N; node++) {
    if (bfs.is_visited(node) == false) {
        ans++;
        BFS(G, node)
    }
}
cout << ans;
```

P3. Import Edges

I 10 II 1 III 50 = 61 > 16 "Solved" idea



Precomputation

print all edges that belongs to Spath?

AB BC CD DH DF FG GH

Case #1: AB?

O(1) → computation

Case #2: BC?

(A → B) + (BC) + (C → H) == Spath

SRC I — II — III tan

belongs from

Case #m (X,Y)

I O(1) SRC → X

II (X,Y)

III O(1) Y → tan

Dij(G, "SRC") → C

Dij(G, "tan") → C