



Experiment 1.3

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Subject Name: Advance Programming-2

Subject Code: 21CSP-251

1. Aim:

- To Solve the Last Stone Weight.
- To Solve the Cheapest Flight Booking with K stops.

2. Objective:

- You are given an array of integers stones where stones[i] is the weight of the ith stone. We are playing a game with the stones. On each turn, we choose the heaviest two stones and smash them together. Suppose the heaviest two stones have weights x and y with $x \leq y$.
- There are n cities connected by some number of flights. You are given an array flights where flights[i] = [fromi, toi, pricei] indicates that there is a flight from city fromi to city toi with cost pricei.

3. Algo. /Approach and output:

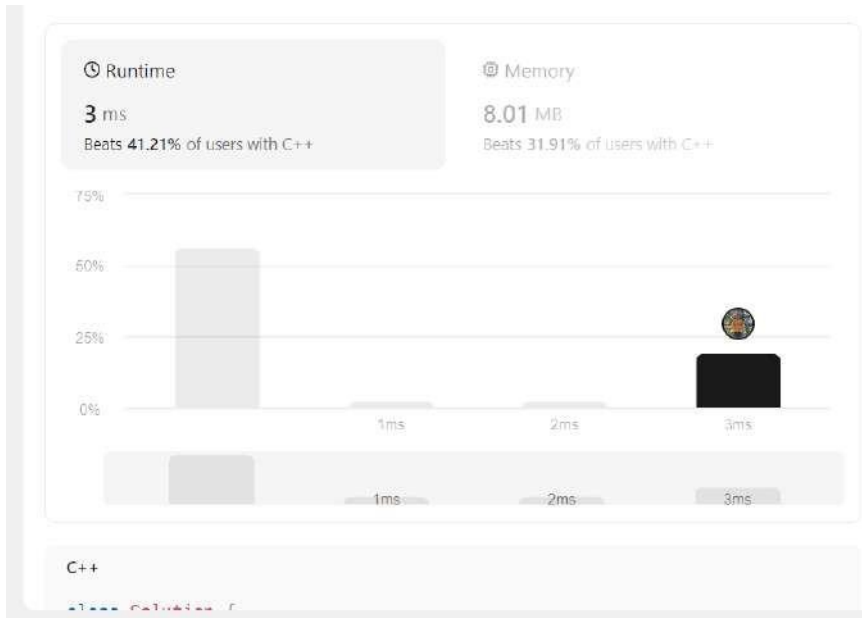
1st:

```
class Solution { public:    int
lastStoneWeight(vector<int>& stones)
{    int
a,b;
    priority_queue<int>pq;
    for(int i=0;i<stones.size();i++)
    {
        pq.push(stones[i]);
    }
    while(pq.size()!=1)
    {
        a=pq.top();
        pq.pop();
```

```

b=pq.top();
pq.pop();      int
c=a-b;
pq.push(c);
    }
    return pq.top();
}
};

```



2nd:

```

class Solution { public:    int findCheapestPrice(int n, vector<vector<int>>&
flights, int src, int dst, int k) {    vector<vector<pair<int,int>>>
adj(n,vector<pair<int,int>>{});    for(auto x:flights){
    adj[x[0]].push_back({x[1],x[2]});
    }

    queue<pair<int,pair<int,int>>> q;
    vector<int> dist(n,1e9);    dist[src]=0;
    q.push({0,{src,0}});

    while(!q.empty()){        auto
front=q.front();        q.pop();

```

```
int stops=front.first;          int
cost=front.second.second;
    int node=front.second.first;

    if(stops>k){continue;}

    for(auto it:adj[node]){
        if(cost+it.second < dist[it.first] && stops<=k){
dist[it.first]=cost+it.second;
        q.push({ stops+1,{ it.first,dist[it.first] } });
        }
    }
}
if(dist[dst]!=1e9){return dist[dst];}
return -1;
}
};
```

