Experiment 1.3

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Subject Name: Competitive Coding-II
Subject Code: 20CSP-351

Aim: To demonstrate the concept of Heap model

1. Kth Largest Element in a Stream

```
class KthLargest {
public:
priority_queue<int, vector<int>, greater<int>> pq;
int K;
KthLargest(int k, vector<int>& nums) {
K = k;
for(int x : nums) {
pq.push(x);
if(pq.size() > k) {
pq.pop();
}
}
}
int add(int val) {
pq.push(val);
if(pq.size() > K) {
pq.pop();
}
cout<<"Saumyamani Bhardwaz_20BCS1682"<<endl;
return pq.top();
}
};
```

Output

2. Last Stone Wieght

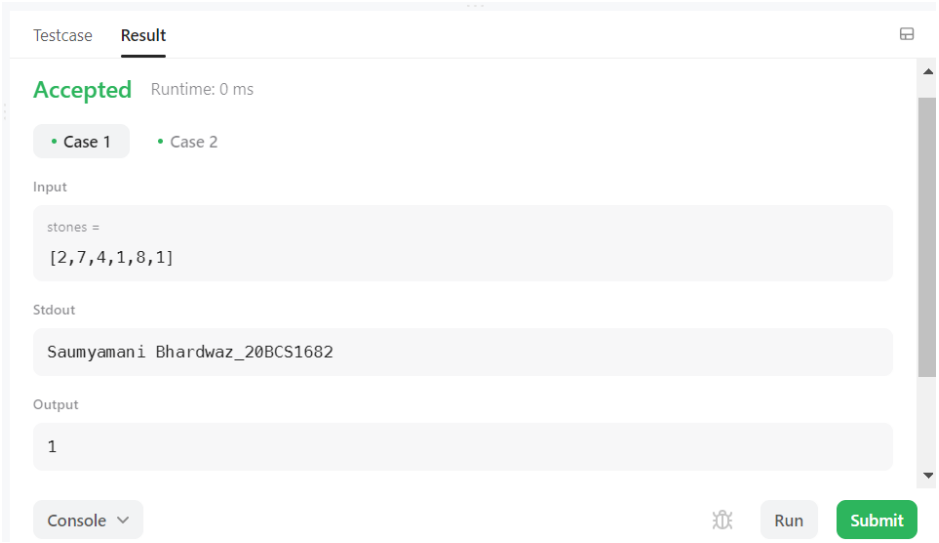
```
class Solution {
public:
int lastStoneWeight(vector<int>& s) {
make_heap(s.begin(), s.end());

while (s.size() > 1)
{
int x = s.front();
pop_heap(s.begin(), s.end());
s.pop_back();

int y = s.front();
pop_heap(s.begin(), s.end());
s.pop_back();

if (x == y)
continue;
s.push_back(x - y);
push_heap(s.begin(), s.end());
}
cout<<"Saumyamani Bhardwaz_20BCS1682";
return s.size() ? s.front() : 0;
}
};
```

Output:

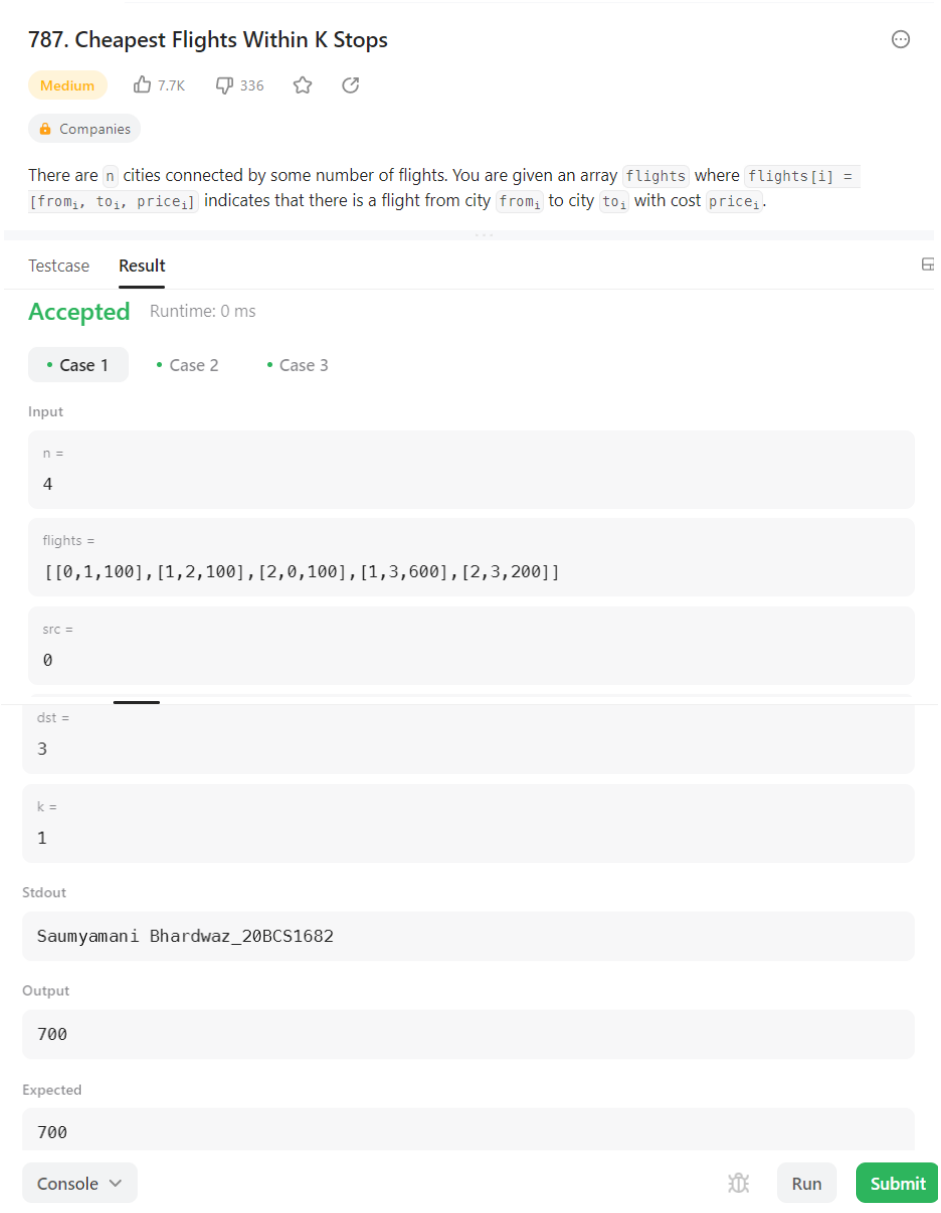


3. Cheapest Flights Within K Stops

```
class Solution {
public:
    int findCheapestPrice(int n, vector<vector<int>>& flights, int src, int dst, int k) {
        vector<pair<int,int>> adj[n];
        for(auto it : flights){
            adj[it[0]].push_back({it[1],it[2]});
        }
        queue<pair<int,pair<int,int>>> pn;
        pn.push({0,{src,0}});
        vector<int> dist(n,1e9);
        dist[src] = 0;
        while(!pn.empty()){
            auto front = pn.front();
            pn.pop();
            int stops = front.first;
            int node = front.second.first;
            int distance = front.second.second;
            if(stops>k)continue;
            for(auto it:adj[node]){
                int adjnode = it.first;
                int d = it.second;
                if(distance + d<dist[adjnode]&&stops<=k){
                    dist[adjnode] = distance + d;
                    pn.push({stops+1,{adjnode,distance+d}});
                }
            }
        }
        if(dist[dst]==1e9)return -1;
        return dist[dst];
    }
```

```
};
```

Output:


787. Cheapest Flights Within K Stops
Medium
7.7K
336
Companies
There are n cities connected by some number of flights. You are given an array flights where flights[i] = [from_i, to_i, price_i] indicates that there is a flight from city from_i to city to_i with cost price_i.
Testcase
Result
Accepted
Runtime: 0 ms
Case 1
Case 2
Case 3
Input
n =
4
flights =
[[0,1,100],[1,2,100],[2,0,100],[1,3,600],[2,3,200]]
src =
0
dst =
3
k =
1
Stdout
Saumyamani Bhardwaz_20BCS1682
Output
700
Expected
700
Console
Run
Submit