#include <iostream>

using namespace std;

const int MAX = 100;

class Heap {

int arr[MAX];

int size;

bool isMax; // true for max-heap, false for min-heap

public:

Heap(bool type) {

size = 0;

isMax = type;

}

void insert(int value) {

if (size >= MAX) {

cout << "Heap Overflow!\n";

return;

}

arr[size] = value;

int i = size;

size++;

// Bubble up

while (i > 0) {

int parent = (i - 1) / 2;

if ((isMax && arr[i] > arr[parent]) || (!isMax && arr[i] < arr[parent])) {

swap(arr[i], arr[parent]);

i = parent;

} else {

break;

}

}

}

int getTop() {

if (size == 0) {

cout << "Heap is empty.\n";

return -1;

}

return arr[0];

}

void display() {

cout << (isMax ? "Max" : "Min") << "-Heap: ";

for (int i = 0; i < size; ++i) {

cout << arr[i] << " ";

}

cout << "\n";

}

};

int main() {

int n;

cout << "Enter number of students: ";

cin >> n;

Heap maxHeap(true);

Heap minHeap(false);

for (int i = 0; i < n; i++) {

int mark;

cout << "Enter mark of student " << (i + 1) << ": ";

cin >> mark;

maxHeap.insert(mark);

minHeap.insert(mark);

}

cout << "\n";

maxHeap.display();

minHeap.display();

cout << "\nMaximum Marks: " << maxHeap.getTop() << "\n";

cout << "Minimum Marks: " << minHeap.getTop() << "\n";

return 0;

}