//[https://www.amazon.in/Century-Star-Copier-Paper-Sheet/dp/B08DXNYS32/ref=sr\_1\_15?dchild=1&keywords=white+paper+for+rough&qid=1623274224&sr=8-15](https://www.amazon.in/Century-Star-Copier-Paper-Sheet/dp/B08DXNYS32/ref=sr_1_15?dchild//=1&keywords=white+paper+for+rough&qid=1623274224&sr=8-15)

//<https://www.amitbookdepot.com/competetive-exams/kids/rough-notebooks>

#include<bits/stdc++.h>

using namespace std;

class median{

public:

priority\_queue<int,vector<int>,greater<int>> right;

priority\_queue<int> left;

void add(int num){

// basic pushing

if(right.size()>0 && right.top()<num){

right.push(num);

}

else{

left.push(num);

}

//balancing the left and right

if(right.size()-left.size()==2){

int temp = right.top();

right.pop();

left.push(temp);

}

else if(left.size()-right.size()==2){

int temp = left.top();

left.pop();

right.push(temp);

}

}

void remove\_top(){

//base case

if(left.size()==0 && right.size()==0){

cout<<"Underflow"<<endl;

}

else if(left.size()>=right.size()){

cout<<left.top()<<endl;

left.pop();

}

else{

cout<<right.top()<<endl;

right.pop();

}

}

int peek(){

if(left.size()==0 && right.size()==0){

cout<<"Underflow"<<endl;

return -1;

}

if(left.size()>=right.size()){

return left.top();

}

else{

return right.top();

}

}

int size\_heap(){

return left.size()+right.size();

}

};

int main(){

string s;

cin>>s;

median med;

while(s!="quit"){

int num;

if(s=="remove"){

med.remove\_top();

}

else if(s=="peek"){

if(med.peek()!=-1)

cout<<med.peek()<<endl;

}

else if(s=="size"){

cout<<med.size\_heap()<<endl;

}

else if(s=="add"){

cin>>num;

med.add(num);

}

else{

//do nothing

}

cin>>s;

}

}