#include<iostream>

#include<string>

using namespace std;

void swap(int \*a, int \*b) {

int t = \*a;

\*a = \*b;

\*b = t;

}

int partition(int array[], int low, int high, int ind[]) {

int pivot = array[high];

int i = (low - 1);

for (int j = low; j < high; j++) {

if (array[j] <= pivot) {

i++;

swap(&array[i], &array[j]);

swap(&ind[i], &ind[j]);

}

}

swap(&array[i + 1], &array[high]);

swap(&ind[i+1], &ind[high]);

return (i + 1);

}

void quickSort(int array[], int low, int high, int ind[]) {

if (low < high) {

int pi = partition(array, low, high, ind);

quickSort(array, low, pi - 1, ind);

quickSort(array, pi + 1, high, ind);

}

}

int getSum(int n)

{

int sum=10;

while(sum>9){

sum=0;

while (n != 0)

{

sum = sum + n % 10;

n = n/10;

}

n=sum;

}

return sum;

}

int main(){

int n,m;

cout<<"Enter n: ";

cin>>n;

int a[n],b[n],ind[n];

cout<<"Enter the array: ";

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

cin>>a[i];

b[i]=getSum(a[i]);

ind[i]=i;

}

quickSort(b,0,n-1,ind);

int k,ch;

while(1){

cout<<"Enter k: ";

cin>>k;

cout<<"Enter 1 for min k, Enter 2 for max k, Enter 3 to exit: ";

cin>>ch;

if(ch==1){

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

cout<<a[ind[i]]<<" ";

}

cout<<endl;

}

else if(ch==2){

int j=0;

for(int i=n-1;j<k;i--){

cout<<a[ind[i]]<<" ";

j+=1;

}

cout<<endl;

}

else if (ch==3){

cout<<"Thank you! "<<endl;

break;

}

else{

cout<<"Choose properly"<<endl<<endl;

}

}

}