#include<stdio.h>

#include<stdlib.h>

int noOfTapes; //number of tapes

int sizeOfTapes; //size of all tapes

int noOfProcess; //no of process

int len\_process[20] = {0}; //length of each process

int tapes[10][10];

int flag = 0;

int cnt;

int size[20]; //ramaining size of each tape left

void merge(int len\_process[20],int low,int mid,int high)

{

int i,j = 0,temp[20];

int lo = low;

int mi = mid + 1;

int hi = high;

while(lo <= mid && mi <=high)

{

if(len\_process[lo] <= len\_process[mi])

{

temp[j] = len\_process[lo];

lo++;

j++;

}

else

{

temp[j] = len\_process[mi];

mi++;

j++;

}

}

while(lo <= mid)

{

temp[j++] = len\_process[lo++];

}

while(mi <= high)

{

temp[j++] = len\_process[mi++];

}

for(i = low,j = 0;i <= high;i++,j++)

{

len\_process[i] = temp[j];

}

}

void partition(int len\_process[20],int low,int high)

{

int mid;

if(low < high)

{

mid = (low + high) / 2;

partition(len\_process,low,mid);

partition(len\_process,mid+1,high);

merge(len\_process,low,mid,high);

}

}

int store(int len\_process[20],int noOfProcess,int noOfTapes,int tapes[10][10])

{

int tape\_no;

int i = 0;

int k = -1;

int j = 0;

for(i = 0,j = 0;i < noOfProcess;i++,j++)

{

tape\_no = (i % noOfTapes);

if(size[tape\_no] >= len\_process[i])

{

if(tape\_no == 0)

{

k++;

j = 0;

}

cnt++;

tapes[j][k] = len\_process[i];

size[j] = size[j] - len\_process[i];

}

else

{

flag = 1;

}

}

return k;

}

int main()

{

int i = 0,j,count = -1;

printf("Enter the no of tapes\n");

scanf("%d",&noOfTapes);

printf("Enter the size of tapes\n");

scanf("%d",&sizeOfTapes);

for(i = 0;i < noOfTapes;i++)

{

size[i] = sizeOfTapes;

}

printf("Enter the no of process\n");

scanf("%d",&noOfProcess);

for(i = 0;i < noOfProcess;i++)

{

printf("Enter the length of process %d\n",i);

scanf("%d",&len\_process[i]);

}

partition(len\_process,0,noOfProcess-1);

int k = store(len\_process,noOfProcess,noOfTapes,tapes);

i = 0;

for(count = 0;count < noOfTapes;count++)

{

printf("Tape %d\t - \t",count);

for(j = 0;j<=k;j++)

{

i++;

if(tapes[count][j] != 0)

printf("%d\t",tapes[count][j]);

}

printf("\n");

}

if(flag == 1)

{

printf("Memory Full.Cannot store - \t");

for(i = cnt;i< noOfProcess;i++)

{

printf("%d\t",len\_process[i]);

}

printf("\n");

}

}

OUTPUT:

