#include <stdio.h>

#include <math.h>

int main()

{

int queue[20], n, head, i, j, k, seek = 0, max, diff, temp, queue1[20],

queue2[20], temp1 = 0, temp2 = 0;

float avg;

printf("Enter the max range of disk\n");

scanf("%d", &max);

printf("Enter the initial head position\n");

scanf("%d", &head);

printf("Enter the size of queue request\n");

scanf("%d", &n);

printf("Enter the queue of disk positions to be read\n");

for (i = 1; i <= n; i++)

{

scanf("%d", &temp);

if (temp >= head)

{

queue1[temp1] = temp;

temp1++;

}

else

{

queue2[temp2] = temp;

temp2++;

}

}

for (i = 0; i < temp1 - 1; i++)

{

for (j = i + 1; j < temp1; j++)

{

if (queue1[i] > queue1[j])

{

temp = queue1[i];

queue1[i] = queue1[j];

queue1[j] = temp;

}

}

}

for (i = 0; i < temp2 - 1; i++)

{

for (j = i + 1; j < temp2; j++)

{

if (queue2[i] < queue2[j])

{

temp = queue2[i];

queue2[i] = queue2[j];

queue2[j] = temp;

}

}

}

for (i = 1, j = 0; j < temp1; i++, j++)

queue[i] = queue1[j];

queue[i] = max;

for (i = temp1 + 2, j = 0; j < temp2; i++, j++)

queue[i] = queue2[j];

queue[i] = 0;

queue[0] = head;

for (j = 0; j <= n + 1; j++)

{

diff = abs(queue[j + 1] - queue[j]);

seek += diff;

printf("Disk head moves from %d to %d with seek %d\n", queue[j],

queue[j + 1], diff);

}

printf("Total seek time is %d\n", seek);

avg = seek / (float)n;

printf("Average seek time is %f\n", avg);

return 0;

}