

**University of Dhaka**  
**Department of Robotics and Mechatronics Engineering**  
**3rd Year 1st Semester B.Sc. Final Examination, 2020**  
**RME 3111: Artificial Intelligence Lab**  
**Programming Part**  
**Full Marks: 40      Time: 70 minutes**

**Exam Roll:**

**Registration ID:**

**Total No. of Pages:**

1. The only printer at the Department of Robotics and mechatronics Engineering is experiencing an extremely heavy workload. Sometimes there are a hundred jobs in the printer queue and all have to wait for hours to get a single print out. The department has appointed you to solve this problem. As some jobs are more important than others, you have implemented a simple priority system for the printing job queue. Each job has a priority between 1 and 9 (with 9 being the highest priority, and 1 being the lowest).

With the priority policy, the printer operates as follows.

- The first job **J** in queue is taken from the queue.
- If there is some job in the queue with a higher priority than job **J**, then move **J** to the end of the queue without printing it.
- Otherwise, print job **J** (and do not put it back in the queue).

Since you are solving the problem, definitely you will try to get your printing job done first. You will now try to determine when your print job will be completed. Given the current queue (as a list of priorities) and the position of your job in the queue, your program must calculate how long it will take until your job is printed. assuming that no additional jobs will be added to the queue. To simplify matters, we assume that printing a job always takes exactly one minute, and that adding and removing jobs from the queue is instantaneous.

**Input:**

- One line with two integers **n** and **m**, where **n** is the number of jobs in the queue ( $1 \leq n \leq 100$ ) and **m** is the position of your job ( $0 \leq m \leq n - 1$ ). The first position in the queue is number 0, the second is number 1, and so on.

- One line with n integers in the range 1 to 9, giving the priorities of the jobs in the queue. The first integer gives the priority of the first job, the second integer the priority of the second job, and so on.

## **Output**

The number of minutes until your job is completely printed.

## **Sample Cases**

<b><u>Input File:</u></b>	<b><u>Output File:</u></b>
1 0 5	1
4 2 1 2 3 4	2
6 0 1 1 9 1 1 1	5

- Explain the output shown above for each of the three sample cases. (10)
- Paste your source code here. (30)