***Practice Questions – Level: 800***

**Task – 01**

**You work in the quality control department of technical support for a large company. Your job is to make sure all client issues have been resolved. Today you need to check a copy of a dialog between a client and a technical support manager. According to the rules of work, each message of the client must be followed by one or several messages, which are the answer of a support manager. However, sometimes clients ask questions so quickly that some of the manager's answers to old questions appear after the client has asked some new questions.**

**Due to the privacy policy, the full text of messages is not available to you, only the order of messages is visible, as well as the type of each message: a customer question or a response from the technical support manager. It is guaranteed that the dialog begins with the question of the client.**

**You must determine, if this dialog may correspond to the rules of work described above, or the rules are certainly breached.**

**Input Each test contains multiple test cases. The first line contains the number of test cases t (1≤t≤500).**

**Description of the test cases follows.**

**The first line of each test case contains one integer n (1≤n≤100) — the total number of messages in the dialog.**

**The second line of each test case consists of n characters "Q" and "A", describing types of messages in the dialog in chronological order. Character "Q" denotes the message with client question, and character "A" — the message with technical support manager answer. It is guaranteed that the first character in the line equals to "Q".**

**Output For each test case print "Yes" (without quotes) if dialog may correspond to the rules of work, or "No" (without quotes) otherwise.**

**Task – 02**

**There's a chessboard of size n×n. m rooks are placed on it in such a way that:**

**no two rooks occupy the same cell**

**no two rooks attack each other.**

**A rook attacks all cells that are in its row or column.**

**Is it possible to move exactly one rook (you can choose which one to move) into a different cell so that no two rooks still attack each other? A rook can move into any cell in its row or column if no other rook stands on its path.**

**Input**

**The first line contains a single integer t (1≤t≤2000) — the number of testcases.**

**The first line of each testcase contains two integers n and m (1≤n, m≤8) — the size of the chessboard and the number of the rooks.**

**The i-th of the next m lines contains two integers xi and yi (1≤xi, yi≤n) — the position of the i-th rook: xi is the row and yi is the column.**

**No two rooks occupy the same cell. No two rooks attack each other.**

**Output**

**For each testcase, print "YES" if it's possible to move exactly one rook into a different cell so that no two rooks still attack each other. Otherwise, print "NO".**

**Task – 03**

**You have an array a of size n consisting only of zeroes and ones. You can do the following operation:**

* **choose two indices 1≤i,j≤n, i≠j,**
* **add ai to aj,**
* **remove ai from a.**

**Note that elements of a can become bigger than 1 after performing some operations. Also note that n becomes 1 less after the operation.**

**What is the minimum number of operations needed to make a non-decreasing, i. e. that each element is not less than the previous element?**

**Input**

**Each test contains multiple test cases. The first line contains the number of test cases t (1≤t≤104). The description of the test cases follows.**

**The first line of each test case contains an integer n (1≤n≤105), the size of array a.**

**Next line contains n integers a1,a2,…an (ai is 0 or 1), elements of array a.**

**It's guaranteed that sum of n over all test cases doesn't exceed 2⋅105.**

**Output**

**For each test case print a single integer, minimum number of operations needed to make a non-decreasing.**