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# Algorithmen und Wahrscheinlichkeit
# Programming Exercises 0

**Notes** The enrolment key for the judge is "`bellmanford`".

## Exercise 1 – *Sum It*

Given $n \geq 1$ integers $a_0, a_1, \ldots, a_{n-1}$, calculate the sum $\sum_{i=0}^{n-1} a_i$.

**Input** The first line of the input file will contain an integer $1 \leq t \leq 10$ giving the number of test cases that follow. Each of the $t$ test cases is described as follows.

- It starts with a line containing an integer `n` ($0 \leq n \leq 10$), the number of numbers you have to sum up.
- The following line contains $n$ integers $\texttt{a}_0, \ldots, \texttt{a}_{n-1}$, separated by space, such that $-100 \leq a_i \leq 100$ for every $i \in \{0, \ldots, n-1\}$.

**Output** For each test case you should output a separate line with a single integer that denotes the required sum for the corresponding test case.

**Points** This exercise gives no bonus points.

**Sample Input**

```
2
6
-3 -1 4 2 0 3
1
1
```

**Sample Output**

```
5
1
```

## Exercise 2 – *Distances*

You are given an undirected graph $G$ on the vertex set $\{0, \ldots, n-1\}$. Compute the distances of all vertices of $G$ from a given starting vertex $v$ using BFS algorithm.

**Input** The first line of the input file will contain an integer $1 \leq t \leq 20$ giving the number of test cases that follow. Each of the $t$ test cases is described as follows.

- It starts with a line containing three integers `n m v`, separated by space, describing the number of vertices in $G$, the number of edges in $G$ and the given vertex $v$, such that $1 \leq n \leq 10^4$, $0 \leq m \leq 10^4$ and $0 \leq v \leq n-1$.
- The next $m$ lines contain two integers `a b` ($0 \leq a < b \leq n-1$), separated by space, indicating that $\{a, b\}$ is an edge of the graph.

**Output** For each test case you should output a separate line containing the distances of all the vertices from $v$ ordered by increasing vertex labels and separated by space. In case a vertex is not connected to $v$ at all, you should output -1 for its distance.

**Points** This exercise gives no bonus points.

**Sample Input**

```
2
5 4 0
0 1
1 2
2 3
3 4
5 2 1
0 1
0 2
```

**Sample Output**

```
0 1 2 3 4
1 0 2 -1 -1
```