Path sum: four ways

In the **5 X 5** matrix below, the minimal path sum from the top left to the bottom right, by moving left, right, up, and down, is indicated in bold red and is equal to 2297.

$$\begin{pmatrix} \mathbf{131} & 673 & \mathbf{234} & \mathbf{103} & \mathbf{18} \\ \mathbf{201} & \mathbf{96} & \mathbf{342} & 965 & \mathbf{150} \\ 630 & 803 & 746 & \mathbf{422} & \mathbf{111} \\ 537 & 699 & 497 & \mathbf{121} & 956 \\ 805 & 732 & 524 & \mathbf{37} & \mathbf{331} \end{pmatrix}$$

Find the minimum path sum in given matrix.

Input Format

Each test case begins with an integer N followed by N lines containing the description of the matrix.

Output Format

A single line for each test case containing the value of the minimal path sum.

Sample Input

5

131 673 234 103 18

201 96 342 965 150

630 803 746 422 111

537 699 497 121 956

805 732 524 37 331

Sample Output

2297