

# In How Many Ways Can $n$ (Straight) Men and $n$ (Straight) Women Get Married, if Each Person Has Exactly $k$ Spouses

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**What's so nice about this work is that ONE program does both the symbol-crunching and the number-crunching. Of course, to do serious number-crunching, you might have to go to C, after doing code-generation in Maple, but we can still go pretty far just with Maple.**

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**Important: This article is accompanied by Maple packages**

- **[Bipartite](#)** that computes recurrence operators for computing enumerating sequences for the number of  $n$  by  $n$  zero-one matrices (and more generally, with entries between 0 and  $r$ ) each of whose rows and columns add up to  $k$ , for fixed  $k$ , and then proceeds to use it for actually computing the first few (or many) terms of these sequences.

- **LatinRectangles**, that does the same for  $n$  by  $k$  Latin Rectangles (for fixed  $k$ ).  
(Warning: Already for  $k=4$  it is hopeless!).
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## Sample Output for Bipartite

The **input** yields the **output**.

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## Sample Output for LatinRectangles

- To find the first 20 terms of the enumerating sequence for 1 by  $n$  Latin Rectangles, divided by  $n!$ , The **input** yields the **output**.
- To find the first 20 terms of the enumerating sequence for 2 by  $n$  Latin Rectangles, divided by  $n!$ , The **input** yields the **output**.
- To find the first 20 terms of the enumerating sequence for 3 by  $n$  Latin Rectangles, divided by  $n!$ , The **input** yields the **output**.

- **To find the first 9 terms of the enumerating sequence for 4 by n Latin Rectangles, divided by  $n!$ , The input yields the output.**
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