Assignment 9 (Programming)

Use methods 1-4 to estimate the probability that we hire exactly twice:

1. Output $\frac{1}{n}\sum_{i=2}^{n}\frac{1}{i-1}$;

2. Generate 10,000 random arrays of ranks, check s : the number of arrays where we hire exactly twice, and output the probability: $\frac{s}{10,000}$;

3. Generate 1,000,000 random arrays of ranks, check s : the number of arrays where we hire exactly twice, and output the probability: $\frac{s}{1,000,000}$;

4. Enumerate all the *n*! permutations of the arrays of ranks, check s - the number of arrays where we hire exactly twice, and output the probability: $\frac{s}{n!}$.

Compare the results you get from method 1, 2, 3, and 4 for *n=6*, 8, and 10 in terms of the probability.

For *n=6,* output all the cases (arrays of ranks) that we hire exactly twice.

For *n* = 30, 50, 100, compare the results you get from method 1, 2, and 3 in terms of the probability.