Programming project

In the first unit/lecture we discussed the four basic combinatorial cases of counting the number of ways to pick k objects from a selection of n different objects.

In this assignment you should create a Python program that takes k and n as inputs and prints four statements corresponding to the four combinatorial cases when applied to the given values.

An example of what the output could look like, when running the program with input $k = 3$ and $n = 5$, is the following.

Anne want to set up a schedule for her coming week at University. She has 3 time spots in the week and for each spot there are 5 different classes to choose from. Then there are 125 possible different time plans for her week.

There are 10 ways to pick 3 out of 5 exam problems to hand in. (Given that the teacher does not care about in which order the solutions are written.)

You have 3 identical marbles and want to distribute them among 5 children (with no intention of being fair). This can be done in 35 different ways.

If we ask 3 out of 5 persons to line up in a queue, this can result in any one of 60 different queues.

Note that you should phrase your own problems. The sentences given above are just one of an inexhaustible number of applications of these four basic counting cases.

Hand in the following:

1. The Python code.

2. The output generated when running the program with inputs $k = 3, 5, 6$ and $n = 5$.

This should be uploaded at the course Canvas site by November 21 at the latest.