Assignment 1
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Task 1:
The function ‘equal_pieces_of ‘ used to divide the total capital (20000) into 20 different pieces. The initial price of all assets is 1000. An array with the shape (row = 20, column = 100) stored in the variable developing_price, which is later used to store each random walk. The function "create_random_walk" and "for" loop used to build 20 different price development with length = 100, decrement = -1 and increment =1. Which also used to find the difference of each random walk from the initial price and store those in the array developing_price.

Task 2:
Here the nested plot is used "ax[i][j], used two "for" loops to access each index of 4 rows and 5 columns (in total 20 price development). I also used "while loop" together to access each price development which was stored in the NumPy array "developing_price". It plotted in red.

Task 3:
I used a "for" loop to sum all 20 random walks and assign it to the variable time_series_sum, then divided it by 20 to calculate the average. I plot the price development and average of time series together, and two "for" loops are used in total to access each index set of ax[i][j].

Task 4:
It can be said that the risk is decreasing if we include more assets. I run the code for few times and see that price development (in red) is on high than the average (in black) for some assets and below for some cases. We are not losing all asset together, so it's less risky *(since this is a random process, the figure will look different each time.)*

The figure is on the following page:

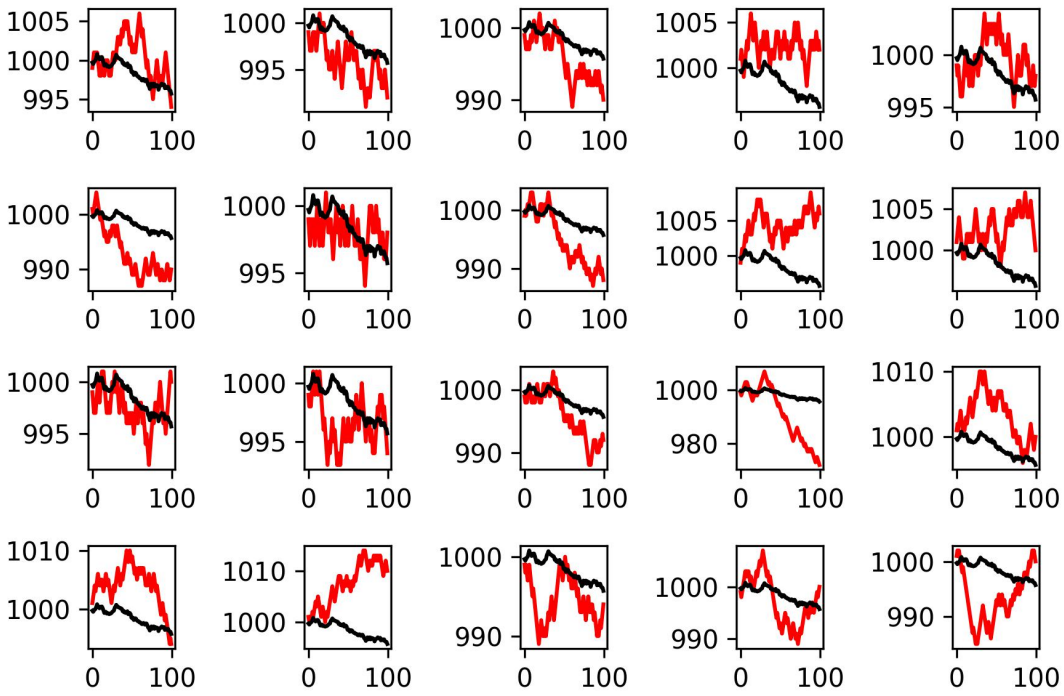

Figure: 20 Random price development (red) and the average of those price development (black) against the Time.