Question 1 – Python

1. Compute the daily returns for 4 stocks with closing prices in provided spreadsheet (prices_202209.xlsx).
2. Build a volatility (assumed 250 days a year) and a correlation table for those names by using the computed historical daily return and use the format below.

   For example,

   Volatility

	Meituan	Tencent	Alibaba	Xiaomi
Meituan	40%	10%	19%	25%

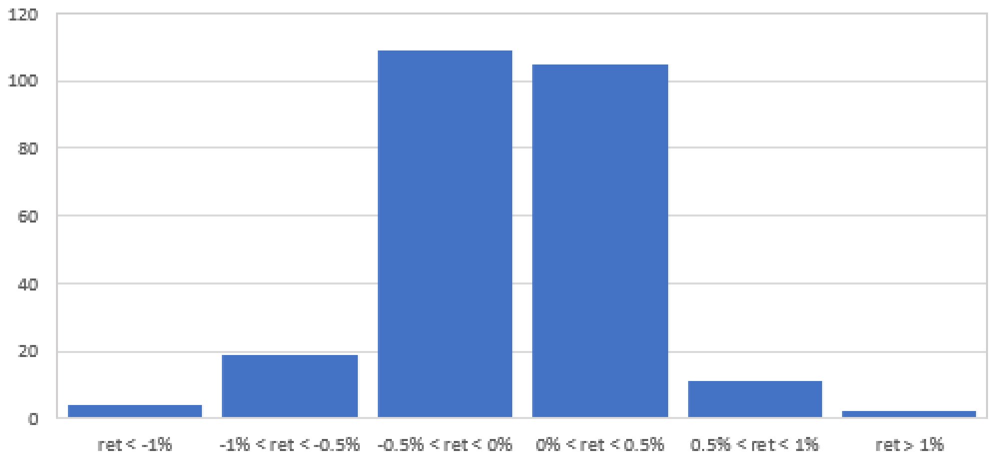
   Correlation

	Meituan	Tencent	Alibaba	Xiaomi
Meituan	1.00			
Tencent	0.76	1.00		
Alibaba	0.07	0.56	1.00	
Xiaomi	0.44	1.00	0.31	1.00

3. Assumed an equal weighted portfolio. Find the 99% 1-day VaR by using the 250 day historical daily return, given the portfolio is as of 7 September 2022. (Historical price can be found in file prices_202209.xlsx. VaR can be either historical simulation VaR or parametric VaR)
4. Assume we hold an equal weighted portfolio as of start of year 2020. Create a line graph of portfolio cumulative historical returns.

5. Create a histogram and table of portfolio daily returns you obtained from the equal weighted portfolio in part 4. Suggested format as below:

	ret < -1%	-1% < ret < -0.5%	-0.5% < ret < 0%	0% < ret < 0.5%	0.5% < ret < 1%	ret > 1%
#of events	4	19	109	105	11	2
%of events	1.6%	7.6%	43.6%	42.0%	4.4%	0.8%



Question 2 – Excel VBA

1. Save a **macro-enabled** file with name **TW.xlsm**. Macro inside the macro can do,
   - Copy the "Data" tab from the provided holding file (Holdings_202209.xlsx) in the same folder to TW.xlsm
   - Create a new tab "holding" to format the data in "Data" tab which is the same as New format below
   - Create a new tab, "MktCap" to show a market value table, aggregated by Industry shown in Column E in "Data" tab in holding file. (i.e. Market value is defined as multiple of price and NumOfShares)
   - Use the market value table to create a pie chart to show the composition breakdown
   - Save a excel file with the file name like <Cell B1 in Data tab>_<8 digit date format for Cell B2 in Data tab>.xlsx (i.e. TWIndex_20220907.xlsx)

Original Format

	A	B	C	D	E	F
1	**Name**	TWIndex				
2	**Date**	2022-09-07				
3						
4	**BBGTicker**	**ConstituentName**	**Price**	**NumOfShares**	**Industry**	**SuperSector**
5	2610 TT	CHINA AIRLINES LTD	106.0	5704	Industrials	Travel and Leisure
6	2618 TT	EVA AIRWAYS CORP	161.0	5076	Industrials	Travel and Leisure
7	2105 TT	CHENG SHIN RUBBER INDUSTRY CO LTD	170.8	3566	Consumer Discretionary	Automobiles and Parts
8	5876 TT	SHANGHAI COMMERCIAL & SAVINGS BANK LTD/T	242.8	7171	Financials	Banks
9	2880 TT	HUA NAN FINANCIAL HOLDINGS CO LTD	114.0	17736	Financials	Banks

New Format

	A	B
1	Date	20220907
2		
3	Ticker	NumOfShares
4	TW2610	5704
5	TW2618	5076
6	TW2105	3566
7	TW5876	7171
8	TW2880	17736

Submission Instructions:

1. Zip all files in one folder including your code. Name the zip file **RiskTask_yourname_School**. E.g. RiskTask_Evelyn_HKU
2. Pls email us back the zip file by replying to our email chain. You can provide a short description on how to use your python script and macro-enable excel spreadsheet.
3. **Email Direct to:** han.zhang@dymonasia.com and tracy.chow@dymonasia.com