PART 2

1. Task 3

The main purpose is to implement a simple linear regression scheme to regress the daily log return of DJIA index r_{it} on the market return, which is the daily log return of S&P 500 r_{mt}. The specification is

$$r_{it} = a + br_{mt} + u_t.$$

Use the same data given to you. For reporting, you need to document at least the following estimates and statistics:

- $\widehat{a}$ and $\widehat{b}$
- $\widehat{\sigma_u}$
- t statistics for $\widehat{a}$ and $\widehat{b}$ under the null hypotheses that $a = b = 0$. The alternative hypotheses are $a \neq 0$ and $b \neq 0$.
- Critical values for 5% significance level, and your inference
- R^2 and adjusted R^2
- Jarque-Bera test statistic for the residual $\widehat{u}_t$, $t = 1, 2, \ldots, T$.

2. Task 4

- Resample your index data to obtain the annual data (last day of December each year).
- Repeat the same exercise of Task 3 with annual log returns.

3. Assessment

The hands-on report after each session is to be handed in via the dropbox. The assessment criteria are still the same:

1. Scientific correctness of the numbers crunched out by the computer programmes
2. Soundness and sensibility of the conclusions made
3. Organization and clarity of the report
4. Timeliness of the report submission
5. The $\mathcal{X}$ factor