Objective: The goal of the final project is to reanalyse a published systematic review and meta-analysis, incorporating additional studies if applicable and conducting further statistical analyses.

The report should include following sections:

**Introduction**

1. Please use PICOS to form a more specific research question on the topic “efficacy of very low-calorie ketogenic diet (VLCKD) in patients with obesity”. (5 marks)
2. Search for published systematic reviews on the topic and select one of these to work from. A necessary feature of the paper is that it includes a meta-analysis and that the study results used in the meta-analysis are available in the paper or in an online supplement to the article to allow your reanalysis.Include a brief synopsis of the systematic review you find. Submit a copy of this published systematic review paper with your report. (5 marks)

For example: Efficacy and safety of very low calorie ketogenic diet (VLCKD) in patients with overweight and obesity: A systematic review and meta-analysis

**New Studies**

1. Check for further studies that might be eligible and were not included in the selected published systematic review. (10 marks)
   1. Include a search equation(s) to identify additional studies, together with the number of hits. You should search at least PUBMED.
   2. Screen the records and apply the meta-analysis inclusion/exclusion criteria to determine if the further studies should be included. Indicate the titles of 2 studies that you consider eligible for inclusion in the meta-analysis. Explain why they can be included.
   3. If you can not find any study that could be included, please find two studies from the screening record and explain why they cannot be included. If you only find one study, please explain why it can be included, and select one study from the screening record to explain why it cannot be included.

[Hint] If you choose to work on the example paper mentioned above, you can find two additional studies.

1. Extract data from the further studies if warranted. Extract data from studies in the published meta-analysis to see if your extraction matches the values in the published meta-analysis. Create the dataset for analysis and submit the dataset. (10 marks)

**Data Analyses**

1. Analyse these data (using the software that you are familiar with).

* Replicate the meta-analysis of the published systematic review that you have selected for your project (add the 2 additional studies if warranted). The idea is to make sure that you can obtain their main results using their data and their method. If they have several outcomes that they consider, just replicate the findings for the primary result. Your replication should include
  + 1. Justication of the model, and the summary estimate of effect and its confidence interval.15 marks)
    2. The forest plot (even if they don’t present a overall forest plot) (5 marks)
    3. The funnel plot and tests for asymmetry of the funnel plot (even if they don’t present a funnel plot) (10 marks)
* Include at least one more analysis learned in class besides the three analyses metioned above. Please inlcude a comprehensive assessment for this analysis. (10 marks)

[Hint]: ] If you choose to work on the example paper mentioned above, you may choose to include subgroup analyses.

1. Interpret the results. ( 15 marks)

**Conclusions**

1. Briefly conclude the findings and limitations of original study and this study. ( 10 marks)

Please submit your report, code, the systematic review, the ex you selected, and datasets.Include relavant output in the report. The report should be **no more than** 5 pages(single-spaced, font:Arial 12, margin:Normal) including all the tables and figures. (5 marks).