Summative Project Instructions

You should follow all the instructions below. You will lose points if you don't.

Deliverables and report content

You are expected to write a report helping Foodys with all their questions above. The report should be accompanied with the corresponding R scripts. The report should be divided into parts where each part corresponds to a question posed above. In your answer for each part of a question you should include both technical parts and explanations of these technical parts as well as offer intuition where appropriate.

Some further rules and pointers:

1. For generating random variables, you are only allowed to use the function **runif(n)** for n a positive integer. If you use any other function to generate random variables you will be penalised.

2. Start every R script with the command **set.seed(1)**.

3. You may use R code from some of the R scripts that I provided for the lectures or the exercises. If you do that, you need to write this clearly in your report otherwise this will be considered **plagiarism.**

4. Each R script should have detailed comments and explanations so that someone who does not understand R can figure out what the code does at each step.

5. The technical part of the report should explain what each corresponding R script does so that someone that has not seen the R code can read the report and understand what you have done.

6. Use a separate R script for each question part. If in one question you are using the same R script from a previous question but with some modifications, then make another copy of the R script and name it with the corresponding question number.

7. **Do not use an executive summary or appendices.**

8. Include all necessary graphs in the report. Make sure the graphs is at the correct position in the report.

9. The report should be typed and in pdf format.

10. Do not copy the R code in the report. Submit the R files along with the report.

1   Guidelines and Group dynamics

(a) The deadline for submitting this project is Thursday February 5th 2026 at 11:59pm UK time.

(b) All students in a group will produce together the same report in pdf format and name it with all the group members' examination numbers separated with "_". All students in a group will also produce together the R scripts; each R script should be named according to the question number that it answers. Each student will produce a single page (not counted in the page limit) as a separate file called "group_dynamics" + "_" + "their examination number" and they will describe on this page (be brief and precise) who did what in the group using the examination numbers to identify themselves and the other students (no names!!). If there were disagreements or disputes in the group then this is where each student should describe their side of the story.

(c) Then all the above files (single pdf report, R scripts, group dynamics files from each group member) should be zipped together using .zip (I will not accept any other format). The .zip file should have identical name to the pdf report (group members' examination numbers separated with "_" in the same order). Then only one of the group members should upload this on Moodle. All other members should be present to confirm that the upload has happened.

(d) The groups are not allowed to discuss the project between them. Similarly, the R code should be written by each group separately and not shared with other groups.

(e) The report should not exceed 8 pages. It should be with font 11pts, and single spacing.

(f) If an answer is given in the report that cannot be confirmed by your code, then this will be considered as **plagiarism**.

(g) You are allowed to ask only clarification questions to the MA424 lecturer. You can do that in person or via email.

2   AI, plagiarism and interviews

1. You may use the AI to help you with the project. However, the style of the code should be similar to the style of my code that I gave you in the lectures and seminars. And the style of the report should be similar to the style of the solutions that I gave you in the seminars or the style that the lecture slides and lecture notes were written.

2. In discrete event simulation, when I say provide the pseudo code I mean what I have in my slides for the queueing and inventory models. You should provide a similar amount of detail as I do in the lecture slides. You will get 0 points if you provide R code instead of the pseudo code.

3. Note that I will interview certain groups if there is disagreement of disputes in the group dynamics reports. Also, if I suspect that you copied the R code from AI generated code then I will interview you. That is why the safest option is to take my code and edit it using many comments and explanations along the way. Further, I will interview you if the pdf report does

not explain things well or looks like it was generated by an AI. So your best bet would be to write the report yourself.

4. You might be interviewed together or separately. And in the interview I will expect that you understand all aspects of the pdf report and all lines of R code.

Marking scheme

$$Q1 : \quad 40 \; points$$
$$Q2 : \quad 10 \; points$$
$$Q2 : \quad 25 \; points$$
$$Q2 : \quad 25 \; points$$