

Project

Overview

The goal of this project is for you to use simulation to predict the effects of making a modification in an existing real-world system for a hypothetical client. For example, your client might be a local coffee shop interested in improving its operations.

Project milestones:

1. **Problem definition and initial model ideas**, due March 8
2. **Model walk-through**, due on the week of April 8
3. **Oral presentation**, due on the week of April 22
4. **Final report**, due April 29

You must work in teams of 3. Detailed requirements for each of these milestones are given below.

General guidelines for written reports

- Reports should be typed. Diagrams should be done using a computer.
- Grammar and spelling must be correct. Be neat and organized. The quality of work is judged by its presentation as well as its technical correctness.
- Use graphs, tables and drawings. Visual aids enhance a report. Usually a graph is more easily understood than a table of values.

1 Problem definition and initial model ideas

Task. Non-technical report, typed, addressed to the client.

Purpose. To ensure agreement between the team of analysts (you) and the client on the goal and scope of your simulation study.

Format. Your report should include the following:

1. Clear statement of the problem: the purpose of your study and the objectives that the client wants accomplished
2. Description of operation of current system. Include visual aids as appropriate.
3. Discussion of the aspects of the system you will include or exclude from your model.
4. Discussion of performance measures you will obtain from your model and their use in helping the client obtain his or her objectives.
5. List of data required and how you will collect it.

2 Model walk-through

Task. Oral presentation by the group to me.

Purpose. To help me monitor the progress of each team.

Format. In your presentation, you should:

1. Identify the parts of your model, including locations, entities, attributes, variables, resources, events, activities and delays.
2. Walk through the data analysis and explain the reasons you made certain assumptions, which certain statistical tests you performed, and where the results of the data analysis were used in the simulation model.
3. Walk through a flow chart of your model.
4. Walk through the steps you followed to verify that your simulation model is working properly.

3 Oral presentation

Task. Oral presentation by the group to the class.

Purpose. To brief the client on the findings of your study.

Format. Your briefing must address the following:

1. The purpose and goals of your study.
2. Key assumptions and the rationale for them.
3. Your model and experiments.
 - Explain and motivate your model and experiments.
 - Summarize the results of your experiments.
 - Use diagrams and graphs.
4. Validation of your model. Discuss limitations of your model.
5. Conclusions and recommendations based on your model and experiments.

Other briefing guidelines:

1. Prepared remarks should be between 8 and 10 minutes.
2. Assume the briefing is for your client. As such it should be non-technical. You must summarize.
3. Use presentation software.
 - List bullets and talk about them.
 - Use diagrams and graphs to visually present results.
 - Do not put too much on one slide.
4. Prepare a handout for your slides and give it to me before the presentation begins.
5. Talk to the audience, not to the screen.
6. Each team member must give part of the briefing and be conversant on the whole presentation. The entire team must be at the front of the room during the entire report.
7. You will entertain questions at the conclusion of your remarks. Be prepared. If you are unable to answer a question, do not bluff an answer. Offer to look into the question.

Seriously consider the following:

1. **Practice the presentation** before you give it in class. Delivery is important.
2. Be enthusiastic and proud of your work. Sell your results.
3. Avoid the temptation to show detailed mathematical derivations. Be aware of your audience and adjust your presentation accordingly.
4. Choose your slides carefully. Usually the audience receives a copy of them and this is the only written record they have of your talk. The slides should contain the key points of your project.

4 Final report

Task. Report summarizing the entire project, typed, addressed to the client.

Purpose. To present the results of the study to the client.

Format. Write your report in the past tense; it is a report of a completed project. Your report must contain:

1. Description of problem.
2. A summary of your work on the problem, including
 - A discussion of your input data analysis.
 - A discussion of your model.
 - A discussion on what you did to validate your model.
 - A discussion of your experimental plan.
 - A discussion of how you handled the initial state of your model and how long you ran your simulation experiments.
 - A discussion of your conclusions and recommendations based on your simulation experiments.

In addition, one team member must upload the following files to a separate folder in his or her submission folder on Google Drive:

- A spreadsheet file containing your output data analysis (including validation).
- A ProModel model file defining your model of the original system.
- A ProModel model file defining your model of the proposed system.