

Group Assignment report – 30% of Marks & Group Simulation & data analysis – 20% of Marks

- This assignment is a 2 part insight into simulation of production processes.
 - As explained in class, there are many software packages available. This assignment looks to help you understand the fundamentals rather than just dragging and dropping elements in from some slick software package.
 - In this assignment, the software is used to provide data for a management report. The focus is not learning a software package, but the report and the data required to make the simulation. Obviously the software (we are going to use Matlab) is needed to create the data that will go into the report but the focus is not how proficient you are in Matlab. The focus is making sure you collect, understand and then can analyse the data required
- The report must look professional and so be compelling to your audience, articulate the manufacturing scenario before optimisation, articulate the manufacturing scenario after optimisation, describe the cost of implementing this change, describe the benefits of the change and discuss risks/risk mitigation
- Group based assignment – Max 4 students / group

Video of scenario

- For this assignment, your group needs to source and select a video of a production process. This is what your report will be based on.
- Each group must select a **unique** video. To ensure it is unique, you must place the link to your video in the google sheet in the google drive. First in best dressed. Click the link below to access the sheet, add the name of your group to your line, and the YouTube link to the video you want me to watch for your assignment
- https://docs.google.com/a/rmit.edu.au/spreadsheets/d/18rZR-EpPlthdfAYmHSW4bqclQ_cX9KNDKPsp_ScaSFU/edit?usp=sharing
- The 'assembly' process should be about 1 min in length
 - You may make your own video and upload it to YouTube if you wish (that will ensure your group is unique). A video of assembling a bike, or maintaining a motorbike etc. is OK but make sure there is about 1 minute in length of 'assembly or manufacturing'

Record the data from the video

- You are looking to optimise the assembly or manufacturing process, so you need to record all the elements that are important
- Examples include, the amount of labour in quantity and baffle plates
- , the tools used, the amount of movement of the operators or machines, the amount of Work In Progress (WIP) the number of steps etc. etc. etc.
- Your report needs to include a basic diagram of the process and record of the key elements, this is what you need to provide to the model once it is built. This forms the datum, ie. what you will measure optimisation against

Model the system

- Again, there are lots of software packages that do this automatically for you. You need to use Matlab to encourage you to think more deeply about why the software needs information, what information you get back from the simulation and that many processes can be represented very simply without the need for expensive simulation tools. Most of the assignment marks are for the report, but, you need to use Matlab as well.
 - Below are some examples that you can use to help you. There is no one right answer, use Matlab which ever way represents your production system. There are lots more examples that show you how to use Matlab to model a production process
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- http://au.mathworks.com/videos/discrete-event-simulation-with-simevents-68923.html?form_seq=
 - <http://au.mathworks.com/videos/model-a-discrete-event-system-overview-1-of-7-81124.html>
 - <http://au.mathworks.com/videos/production-simulation-software-for-manufacturing-68930.html>
 - http://au.mathworks.com/videos/operations-research-and-optimization-of-discrete-event-simulation-81871.html?form_seq=conf1050&elqsid=1475129226242&potential_use=Education&country_code=AU

Use RMIT desktop to access Matlab, or as a student you can download Matlab onto your computer

The image shows a screenshot of the MATLAB R2015b Simulink interface. The main window is titled 'untitled1 * - Simulink academic use'. The top menu bar includes 'HOME', 'PLOTS', and 'APPS'. Below the menu bar is a toolbar with various icons for file operations, workspace management, and simulation. The main workspace is currently empty, showing a 'No details available' message. A 'Simulink Library Browser' window is open on the right side, displaying a tree view of Simulink libraries. The 'SimEvents/Generators/Entity Generators' folder is expanded, showing sub-folders like 'Event-Based' and 'Time-Based'. Two callout boxes are present: one pointing to the 'Simulink Library Browser' window with the text 'Choose new Simulink model', and another pointing to the main workspace with the text 'Drag the blocks into your model'. A third callout box, 'Choose Simulink library', points to the 'SimEvents/Generators/Entity Generators' folder in the library browser.

Choose new Simulink model

Choose Simulink library

Drag the blocks into your model

Save your file in a google drive folder

- Make your own group folder under the class folder. You don't need to change the access rights, but you can if you don't want others seeing your finished work. Make sure I can still get access to the folder to mark the work.
- In the folder save;
 - Your report. This needs to have an written and graphical explanation (and YouTube link) of the production process. You are writing a management report so assume your audience is someone who works for the company so you don't need a lot of background.
 - Your Matlab file (DO NOT simply copy an example from the internet, it must relate to the video of your production process)
 - Describe and measure the current state
 - Create an optimisation of the process
 - Write up the recommendation, the measurements before and after with the benefits explained, the costs of implementing and the risks/risk mitigation

Creating the folder for your group to store/hand in the report & the matlab file

The screenshot shows the RMIT Drive interface. The left sidebar contains navigation options: My Drive, Shared with m, Recent, Google Photos, Starred, and Bin. The main area shows the path 'My Drive > Auto1025 Assignment II'. Below this, a table lists files and folders:

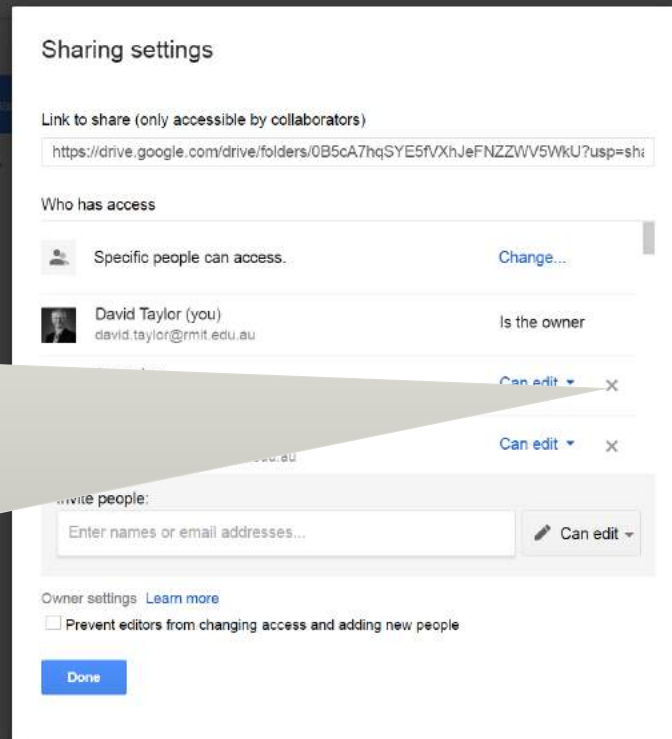
Name	Owner	Last modified	File size
Untitled folder	me	27 Sep 2016 me	-
Group Assignment sheet	me	15:40 me	-

Two callout boxes provide instructions:

- A callout pointing to the 'NEW' button in the top left says: "Make a new group folder. Now you can limit the access if you wish to be just your group and me".
- A callout pointing to the 'Auto1025 Assignment II' folder says: "Class folder, you have all been given access to".

Set the access if you don't want the whole class to see your work. Make sure I can see it though!!

Once you have made your group folder, do a right click and you will see the sharing settings. Click on the list of names and the screen should look like this. If you don't want others to see your work, then click the X for all the people NOT in your group. Remember to leave me, or I can't mark you work



The screenshot shows the 'Sharing settings' dialog box in Google Drive. At the top, it says 'Sharing settings'. Below that is a 'Link to share (only accessible by collaborators)' field with a URL: 'https://drive.google.com/drive/folders/0B5cA7hqSYE5fVXhJeFNZZWV5WkU?usp=sh:'. Underneath is a section titled 'Who has access' with a 'Change...' link. The list shows 'Specific people can access...' and 'David Taylor (you) david.taylor@rmit.edu.au' who is 'Is the owner'. There are 'Can edit' buttons with an 'X' icon next to them. At the bottom, there is an 'Invite people:' section with a text input field 'Enter names or email addresses...' and a 'Can edit' button. Below that is an 'Owner settings' section with a link 'Learn more' and a checkbox 'Prevent editors from changing access and adding new people'. A 'Done' button is at the very bottom.