Assignment 1 - Sock World

Overview

For this individual assignment, you will use skills acquired through practical laboratory exercises to automate a business process, and to visualize the impact of the automation.

You should use Microsoft Excel (or equivalent open-source software) for this assessment task.

Important: This assignment specification is generated just for you. Do not distribute this specification. If your personal specification is made publicly available online, academic misconduct charges may be applied.

Timelines and Expectations

Percentage value of task: 20%

Due: Sunday, Week 6, 16:00 (See Course Description for date)

Learning Outcomes Assessed

The following course learning outcomes are assessed by completing this assessment:

- **A1.** Prepare a basic solution to a business problem;
- **A2.** Select appropriate IT solutions for business functions;
- **A3.** Apply business information software for data visualization and analysis purposes.
- **S1.** Write basic programming logic;
- **S3.** Interpret and construct representations of business data flow and processes;
- **K8.** Outline the basic principles of programming.

Assessment Details

For this assignment, you will complete the following set of tasks using Excel, and build an ePortfolio page to describe your work.

Task 0 - Setting up

Create an ePortfolio page for your assignment. You will submit this page to Moodle as per the lab tasks.

You may call it whatever you like, for example `ITECH1100 Assignment 1 - 30361303`.

Scenario details

Sock World is a small clothing manufacturer, specializing in creating custom, one-of-a-kind socks. They exclusively sell their product through their online store.

Sock World is run by a team of three staff members: Allen, Bhaljeet, and Connor.

Allen and Bhaljeet work together to manufacture socks. Connor manages orders, sales and delivery.

Team hours

Most of the time, team members work the following shifts:

- Allen works **7.5** hours on Mondays, Tuesdays and Wednesdays;
- Bhaljeet works **7.5** hours on Thursdays and Fridays; and
- Connor works **4.5** hours every weekday.

Additionally, Allen and Connor share responsibility for managing the Sock World social media presence, with Allen working one extra hour in the evenings on Monday, Tuesday and Wednesday, and Connor doing the same on Thursday, Friday and Saturday.

Costs

Allen and Bhaljeet, as skilled manufacturing staff, cost $26 per hour to employ.

Connor, a part-time employee, costs $24 per hour to employ.

All staff are also entitled to **four weeks** of paid annual leave, during which a casual replacement is required at a cost of $39 per hour.

Fixed costs such as rent and insurance are $9100 per year, and utilities costs are $260 per month.

Task 1 - Costs of operating the business

Using Excel, create a spreadsheet called *operating_costs.xlsx* that calculates the projected annual outgoing costs of running Sock World.

Your spreadsheet should be configured such that the working hours, hourly rates, and fixed and utility costs can be varied easily.

Document your findings in your ePortfolio page (approximately 100 words).

Manufacturing socks

Sock World receive requests through their online store, and Connor responds with a quote, after consulting with a member of the manufacturing team. If the customer confirms their order, Allen and Bhaljeet manufacture the ordered products, and Connor organizes delivery.

Currently, the process for generating a quote is entirely subjective, based on the requested **material** and sock **size**. Staff members quote an amount based on their personal experience.

For several months, staff have been keeping track of the **quote date**, **material**, **size**, **quote amount**, and **manufacturing cost** for each order in a spreadsheet. As each product is hand-made, the manufacturing cost may vary between similar orders.

If a quote was not accepted by the customer, then manufacturing cost is not included.

This spreadsheet is available for download on Moodle.

Task 2 - Order information

Using Excel, process the history of orders spreadsheet and use appropriate charts to visualize:

- How some aspect of quoting or manufacturing has changed over time; and
- How the quote amount differed for each staff member.

You will need to find a way to use Excel to associate each quote with a staff member.

Describe your approach and your findings in your ePortfolio (approximately 250-400 words), and attach the Excel file to your page.

Task 3 - Price consistency

Using Excel, analyse the historical data you have available, and create a spreadsheet that allows a member of the *Sock World* team to enter the sock **material** and **size**, and gives a **quote amount**.

Ensure that you include enough text and formatting to make your spreadsheet usable by a member of the Sock World team (or by a University lecturer).

You may base your quote amount either on historical averages, or to ensure that *Sock World* makes a profit.

Validate your quoting approach by applying your formula to historical data.

Justify your approach in your ePortfolio (approximately 150 words), and attach your Excel file to your ePortfolio.

Process improvement

The team want to improve their quoting process to reduce time spent waiting for customers to approve quotes.

They would like to **start manufacturing immediately** for orders that they might be able to sell in future, even if the customer does not go ahead with the order.

That is, they would like to change to the processes indicated in the following swimlane diagrams:

Unpopular item process — Customer / Store

Popular item process — Customer / Store
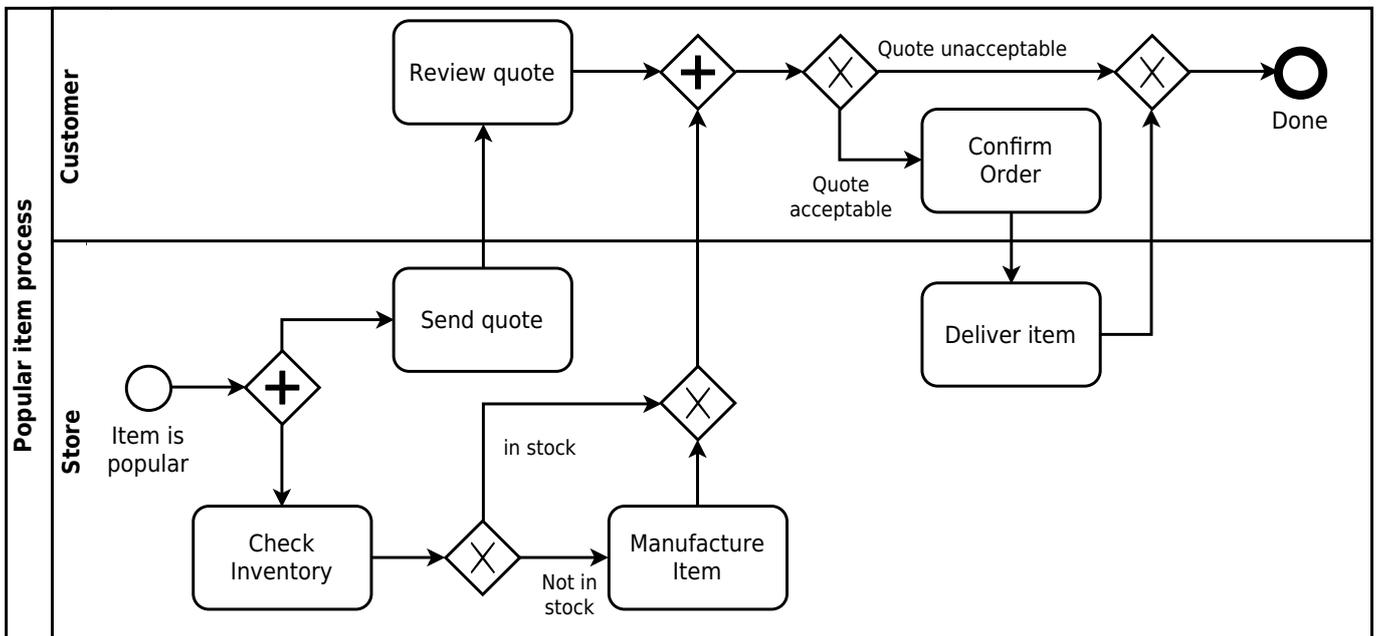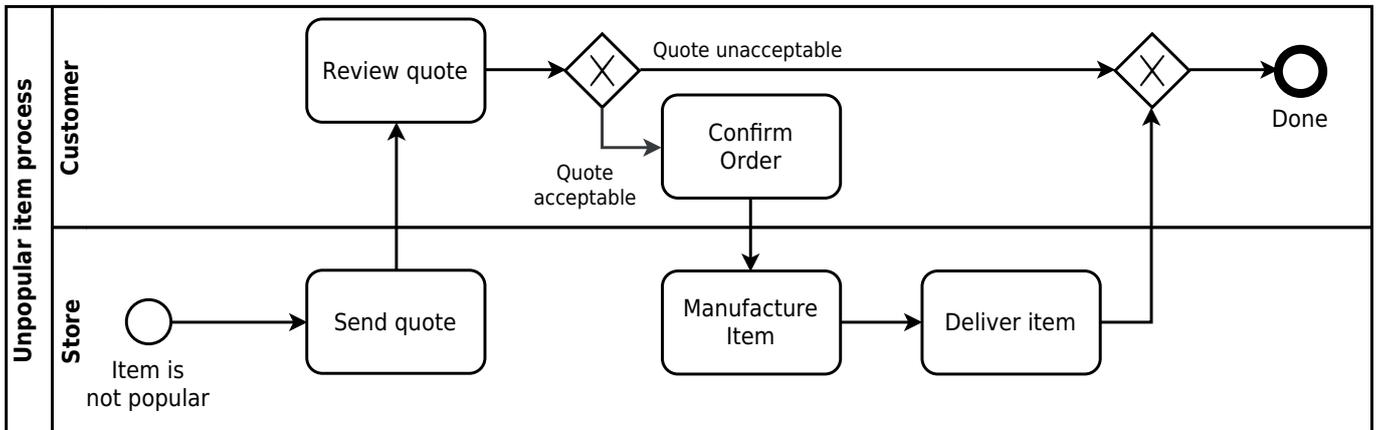
Task 4 - Process improvement

Extend your spreadsheet page from task 3 to automate the above processes, allowing a member of the team to enter the sock **material** and **size**, and in addition to the **quote amount** indicate whether to **start manufacturing** immediately.

It is up to you do determine **how** to determine which items are popular.

Justify your approach in your ePortfolio (approximately 150 words), and attach your Excel file to your ePortfolio.

Bonus challenge task (optional!)

Disclaimer: This task is 100% optional, and you can receive full marks without attempting or completing it. It is intended to be a challenge if you are interested in such things, and the marks available do not reflect the significant research and effort required to implement it correctly. Tutors will not provide significant assistance for this challenge task.

Optional task 5

Reimplement Tasks 1, 3 and 4 using either Python or HTML+JavaScript.

Write a brief overview of how to run your solution, and attach a zip file containing your code to your ePortfolio page.

There are **no partial marks** awarded for this bonus task - you must complete all features to attain the bonus marks.

It is possible to attain full marks for this assignment without completing this challenge task.

Further details

Assignment support

This assignment is supported by the first 6 lectures and labs. Work on the assignment should be spread over several weeks after the relevant lab has been mastered.

Submission

All files should be submitted to Moodle by the due date and time. Check with your tutor as to whether a hard copy is required in addition to the electronic submission.

Marking Criteria/Rubric

Refer to the attached marking guide.

Feedback

Feedback will be supplied through Moodle. Authoritative marks will be published through fdlMarks

Plagiarism

Plagiarism is the presentation of the expressed thought or work of another person as though it is one's own without properly acknowledging that person. You must not allow other students to copy your work and must take care to safeguard against this happening. More information about the plagiarism policy and procedure for the university can be found at
http://federation.edu.au/students/learning-and-study/online-help-with/plagiarism.

Marking Guide: Assignment 1

Feature	Criteria	Maximum	Obtained
Operating costs	Appropriate projection calculation	2	
	Configurable hours, rates, fixed annual and monthly costs	2	
	Description of findings	1	
	Uses hand-calculated values	(-1)	
Visualization	Visualization of changes over time	2	
	Visualization of staff member differences	2	
	Description of findings	1	
Price consistency	Spreadsheet interface for pricing	1	
	Validation of approach based on historical data	2	
	Justification of automation	2	
	Unclear instructions	(-1)	
Process improvement	Appropriate identification of popular item combinations	2	
	Use of formula to indicate whether to start manufacturing	2	
	Description of strategy	1	
Miscellaneous penalties	Poor grammar or written English	(-2)	
	Indecipherable file naming scheme	(-1)	
Bonus optional challenge task	Faithful reimplementation of tasks 1, 3 and 4 using Python or HTML+JavaScript	(+2)	
	Total:	**20**	