BISM7216 Business Process Improvement
End of Semester Exam S2 2021

Section A has a total of 20 of the 100 marks available in this exam.

Question A1.

Please model the process below with all relevant constructs including data.

Your answer to A1 should be modelled in Signavio, and **upload both the BPMN 2.0 XML file (.bpmn) and a PDF** (using the Import / Export menu function for Export PDF files).
Alternatively, you may also draw this on paper, take a photo or scan, and upload an image file. For any models you draw, please pay attention to legibility and understandability (pragmatic quality).

Be mindful that modelling in Signavio can be time consuming, so use your time wisely.

In BuyRightAlwaysBuyOnce (BRABO), a utility comparison site, once a service improvement suggestion has been received via email from a customer, it is first entered into BRABO's database by a Customer Service Officer (CSO), who sends the suggestion's reference number to the customer by email. Then the suggestion is investigated by the CSO so that a response can be prepared. In order to do this, the CSO contacts the Operations Improvement (OI) team who first assess the CSO's suggestion for feasibility and then consider the customer benefit. The Operations Improvement team will draft a formal response to the CSO, who can then prepare a draft response to the customer. Once ready, the CSO provides that draft response for review by the GM Operations Improvement. If the GM Operations Improvement (GM OI) does not approve the response, it needs to be prepared again by the officer, going through the same steps with the Technical Delivery team until the GM OI is happy with it. As soon as the new comments are received, all activities on that suggestion stop and the process requires the CSO to undertake part of the process again, returning to the "Investigate suggestion" stage. The service improvement suggestions process finishes only once the response has been approved by the GM OI, in which case the response is immediately sent to the customer.

[20 marks]

Section B has a total of 80 of the 100 marks available in this exam.

Instructions for Section B:
Please complete this section by editing this document in a text editor such as Microsoft Word.
Please type your answers immediately below the relevant question.
Hint: Dot points are often a good way of communicating quickly, and they also help make your key points readily identifiable.

This section includes multiple questions based on the process scenario described below.
This process / context should be already largely familiar to you, as we have discussed this in tutorials this semester, though some of the details may be different.

Student admissions process
In order to apply for admission to I-PU, students first complete an online form, available via I-PU's website. Online applications are recorded in I-PU's Student Registration system, an information system to which all staff members involved in the admissions process have access. After a student has submitted the online form, a PDF document is automatically generated and then automatically sent as an email requesting the student download, sign, and return it by post together with the required documents, which include:

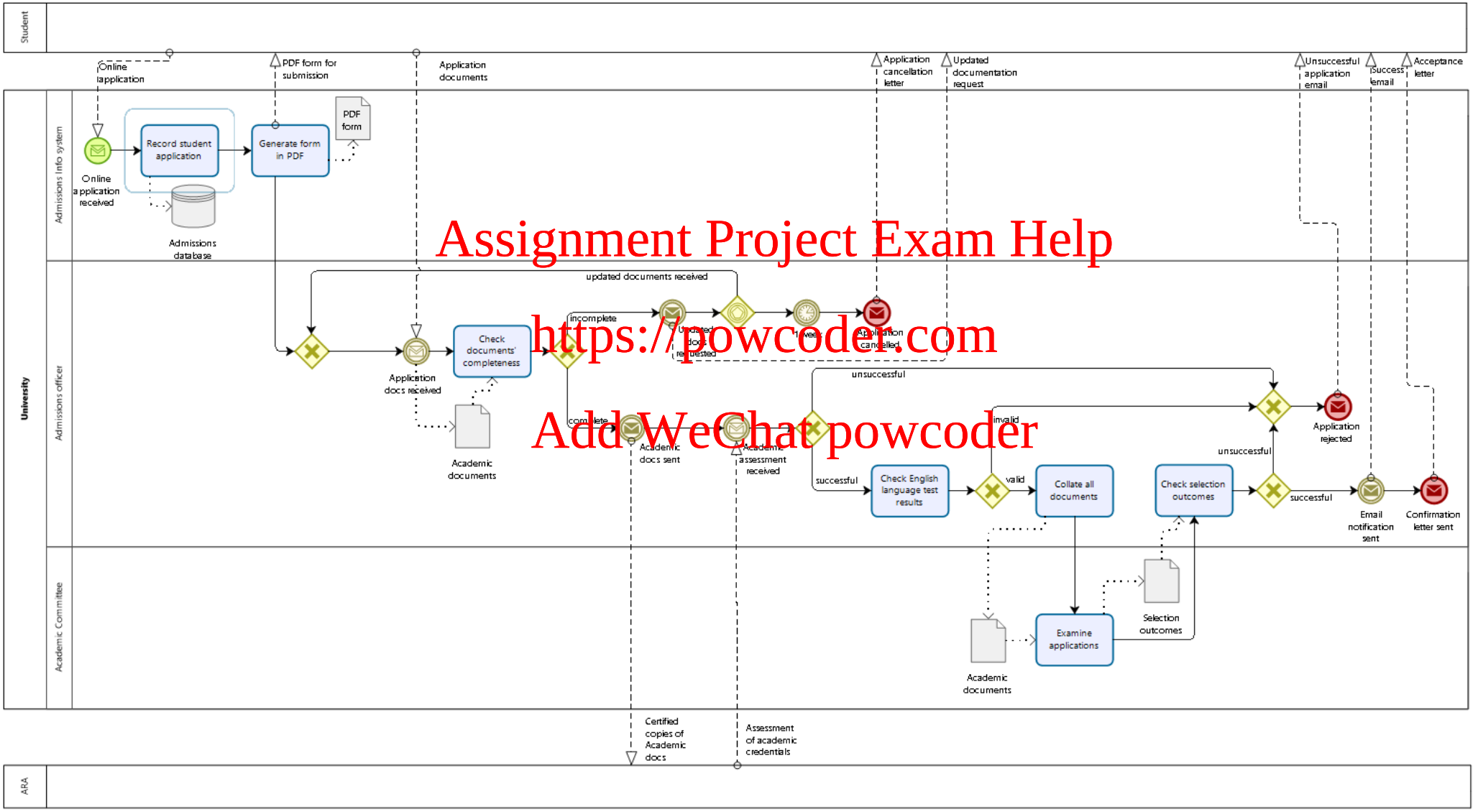
- Certified copies of previous degree and academic transcripts
- Results of English language test
- Curriculum vitae

When these documents are received by the Admissions officer, that officer checks the completeness of the documents. If any document is missing, the officer sends an e-mail to the student, reminding the student to send the missing documents by post. If the missing documents are not received within 2 weeks, the application is cancelled, with the student being informed they must restart a new application if they wish to try again. Once all the application documents have been received, the admissions office sends the certified copies of the degrees to an Academic Recognition Agency, which checks the degrees and gives an assessment of their validity and equivalence in terms of local education standards. This check costs $245 per prospective student, and the agency requires that all certified copies of the originals are sent to it by post. The agency also uses the postal service to send its assessment results to the university. If the degree verification is negative, the process ends with an "Unsuccessful application" email sent to the student. Where the degree verification is successful, the English language test results are then checked online by an Admissions officer. If the validity of the English language test results cannot be verified, the application is rejected (such notifications of rejection are sent by e-mail).

Once all documents of a given student have been validated, the admission office collates and forwards these documents by internal mail to the corresponding academic committee, which is responsible for deciding whether to offer admission or not. The committee makes its decision based on the academic transcripts and the CV. The committee meets once every 2 to 3 weeks and examines all applications that are ready for academic assessment at the time of the meeting. At the end of the committee meeting, the chair of the committee notifies the admissions office of the selection outcomes. This notification includes a list of admitted and rejected candidates. The Admissions Officer notifies the outcome to each candidate via e-mail, typically a few days later. Additionally, successful candidates are then sent a confirmation letter by post.

An Admissions officer is paid $40/hour.

The process can be modelled as follows:



Question B1. **[12 marks total]**

a) Identify which information gathering method or methods the analyst most likely used to discover this scenario. What is the benefit of using those methods? **[6 marks]**

b) If, as the analyst, you were not familiar with the processes that are typically used in a pharmacy, what external sources of information could you reference to understand the typical process structure? **[3 marks]**

c) Would you expect that kind of external information source to show hierarchical relationships, sequential relationships, or both? Please explain using very brief examples. **[3 marks]**

Question B2. **[18 marks total]**

Consider the following three process improvement possibilities:

1. Blockchain technology enables verifiable digital copies of all documents to be sent. As such, I-PU integrates its online application and student registration systems, drastically reducing timelines due to student error rates and the repeated requests for information to students because the system can now verify that the correct documents have been received. The cycle and processing times for each of these registration and checking activities now reduces to 1 minute. This also leads to increasing student satisfaction with the application process and to reducing the amount of checking the Admissions officer has to do.

2. I-PU provides the Academic Recognition Agency with approver access privileges to its student registration system. This accelerates the approvals process, and eliminates the cost of sending certified copies by courier.

3. The English language test is conducted *before* sending the application to the Academic Recognition Agency.

For questions a) to d) below, use the table provided to answer:

a) Which of the 8 Lean wastes are likely to be behind the issues being addressed by these improvements? **[6 marks]**

b) Which performance measure(s) are affected by these (Hint: consider the Devil's Quadrangle)? **[4 marks]**

c) If the effect is positive or negative. **[3 marks]**

d) Which Process Redesign heuristic is behind each of these changes? **[5 marks]**
NB: there may be more than one heuristic behind each improvement, so please insert additional lines for each listed improvement option (1, 2, 3) as needed!

Improvement option #	Possible Lean Waste	Performance measure impacted	Effect: positive / negative?	Process redesign heuristic
1				
2				
3				

Question B3 **[20 marks total]**

The cycle times for the Student admissions As-Is process model above are shown in the table below, followed by a list of assumptions. Please review those prior to answering questions a) and b) below.

a) Calculate the cycle time of the entire process and explain your calculations by showing clear workings. State any additional assumptions you have made. **[14 marks]**

b) State whether you can calculate the theoretical cycle time (TCT) based on the information provided in this question, and briefly explain your reasoning. If TCT can be calculated based on the information provided in this question, please calculate it and the cycle time efficiency. **[6 marks]**

Activity	Cycle time
Record student application	15 seconds
Generate form in PDF	30 seconds
Check documents' completeness	2 hours
Application documents received (when students respond to the updated documents requested message)	8 days
Academic assessment by Academic Recognition Agency	1.5 days
Check English language test results	25 minutes
Collate all documents	10 minutes
Examine applications	2 weeks
Check selection outcomes	0.25 days

Assumptions:

- Application documents are incomplete in 50% of the cases.
- Students provide updated documents in 90% of the cases.
- 20% of the cases reviewed by the Academic Recognition Agency are unsuccessful.
- 65% of the English language tests are valid.
- 70% of Academic Committee selection outcomes are successful.
- There are 8 working hours each day, and 5 working days per week.

Question B4. **[10 marks total]**

a) Identify where in the above process you should create a sub-process BPMN construct to improve its pragmatic quality. **[5 marks]**

b) Explain under what circumstances you could **normally** (i.e., your answer does not have to be linked to this scenario) consider using a global sub-process BPMN (or "call activity") construct when modelling a process. **[5 marks]**

Question B5. **[20 marks total]**

Choose one of the three process improvement opportunities in question B2 above, and quantify the impacts of that one improvement by comparing **just that improvement (i.e. a small fragment** of the overall process) to the equivalent section of the "as-is" model.
Please use the following assumptions, and state any further assumptions you make.

Assumptions:

- There are 10,000 student applications each year.
- Application documents are incomplete in 50% of the cases.
- Students provide updated documents in 90% of the cases.
- 20% of the cases reviewed by the Academic Recognition Agency are unsuccessful.
- 65% of the English language tests are valid.
- 70% of Academic Committee selection outcomes are successful.
- There are 8 working hours each day, and 5 working days per week.
- Cycle time values in the As-Is process are as follows:

Activity	Cycle time	Processing time
Record student application	15 seconds	15 seconds
Generate form in PDF	30 seconds	30 seconds
Check documents' completeness	2 hours	12 minutes
Application documents received (when students respond to the updated documents requested message)	8 days	0 minutes
Academic assessment by Academic Recognition Agency	1.5 days	1.5 hours
Check English language test results	25 minutes	3 minutes
Collate all documents	10 minutes	5 minutes
Examine applications	2 weeks	90 minutes
Check selection outcomes	0.25 days	20 minutes

Questions you would have liked to ask

Please use this section to ask the questions you would have liked to ask relating to the exam, but were unable to. You may also use this section to include any additional, generic assumptions that are not related to any specific question or questions.

END OF EXAMINATION