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Spring term 2013

„IS 510 Process Management“

Name and first name:	_____
Course of study:	_____
Final degree:	Master <input type="checkbox"/> Diploma <input type="checkbox"/> Bachelor <input type="checkbox"/> Other <input type="checkbox"/>
Stud.-#:	_____
Room and place#:	_____
Signature:	_____

Important remarks:

- The exam assignment is provided in English!
- You may answer in English or German!
- Select **one** task out of two!
- Time budget: **60 minutes (+ 5 minutes reading)**
- Please acknowledge time budget distribution over questions as indicated!
- Auxiliary devices: anything except notebook computers, PDAs and cell phones



Task 1

The order processing in the sales department of XYZ-Corp. is structured as follows. The incoming order is checked whether it arrived via the traditional paper based sales channel or via the online channel using the Sales & Distribution (SD) system (traditional: 1000€; online: 1500€; oqn: 500€). If it arrived via the traditional channel the order data is entered into the SD system (traditional: 1500€; online: -). After this, orders from both channels are checked for completeness in the SD system (traditional: 1000€; online: 1000€). If the order is incomplete, the missing data is gathered from the customer. Once the order completeness check is finished, the sales department verifies if the customer's master data is already present in the Customer Relationship Management (CRM) System (traditional: 800€; online: 800€). If the customer is not present in the system yet, the customer data is entered and the order is assigned to the created customer. If the customer has already been entered previously into the CRM system, then only the order is assigned to the customer. After this, the order processing in the sales department is finished.

- a) Model this process as an extended EPC (eEPC) according to existing eEPC rules. Please include information objects, organizational units and application systems.

(15 minutes)

- b) Transform the designed eEPC into a P/T net according to existing design rules.

(15 minutes)

- c) The order processing has direct costs of 5€ per order. In the timeframe considered, the traditional sales channel has received 50 orders, the online channel 100. The oqi costs are indicated in parentheses behind the process steps to be evaluated.

1. Please calculate the total cost as well as the process cost of both traditional and online orders with a process costing approach.
2. Which fields are appropriate to a process costing approach? What other costing approaches are relevant instruments in process controlling?

(20 minutes)

- d) What "optimization areas" and "levers" can be considered in an optimization endeavour? How would you apply them to the given process?

(10 minutes)

Good luck!

Task 2

A bank has hired you to analyze its back office processes. As a first step, you are asked to take a look at a part of one of its loan application processes (LOANPR). You notice that during the 8 hours the case workers are on the job, loan applications arrive equally distributed between 3 and 9 minutes. These applications form a single queue to be handled by four accounting clerks (CLERKS). The processing time of the accounting clerks for every application is on average between 20 and 30 minutes (equally distributed). 10 percent of processed applications have errors in them and need to be adjusted by another clerk who spends between 4 and 6 minutes (equally distributed) to correct each application (ERRCHK). After these steps, this part of the loan application process is finished.

- a) Model this situation as a GPSS model that has all details about the waiting queue and the time that applications spend in the process as output. Please use the names in brackets as identifiers for the modeling symbols.

(20 minutes)

- b) Your GPSS program has yielded the following results:

Facility	(1) Average utilization	(2) Number of entries	(3) Average time/trans		
ERRCHK	8.72	8	5.23		
Storage	(1) Capacity	(2) Average contents	(3) Average utilization	(4) Entries	(5) Average time/trans
CLERKS	4	3.90	97.46	77	24.30
Storage	(6) Current contents	(7) Maximum contents			
CLERKS	4	4			

Result: Stations

Queue or AD set	(1) Maximum contents	(2) Average contents	(3) Total entries	(4) Zero entries	(5) Percent zeros
LOANPR	10	7.15	82	0	0.00
CLERKS	6	3.15	82	4	4.88
ERRCHK	1	0.01	8	6	75.00
Queue or AD set	(6) Average time/trans	(7) \$Average time/trans	(8) Current contents		
LOANPR	41.84	41.84	9		
CLERKS	18.46	19.41	5		
ERRCHK	0.48	1.94	0		
\$Average time/trans=average time/trans excluding zero entries					

Result: Queue/AD

Table LOANPR						
(1)	(2)	(3)	(4)	(5)	(6)	
Entries	Mean AD set	time St. dev.	Total time	Minimum	Maximum	
73	43.94	10.15	3207.77	22.33	64.21	
Range		Observed frequency	Per cent of total	Cumulative percentage	Cumulative remainder	
-	0	0	0.00	0.00	100.00	
0.01 -	5	0	0.00	0.00	100.00	
5.01 -	10	0	0.00	0.00	100.00	
10.01 -	15	0	0.00	0.00	100.00	
15.01 -	20	0	0.00	0.00	100.00	
20.01 -	25	3	4.11	4.11	95.89	
25.01 -	30	4	5.48	9.59	90.41	
30.01 -	35	12	16.44	26.03	73.97	
35.01 -	40	7	9.59	35.62	64.38	
40.01 -	45	8	10.96	46.58	53.42	
45.01 -	50	12	16.44	63.01	36.99	
50.01 -	55	19	26.03	89.04	10.96	
55.01 -	60	6	8.22	97.26	2.74	
Overflow		2	2.74	100.00	0.00	
(7) Average value of overflow			62.93			

Result: Tables

The bank executives want to know what to expect from their current back office setup and would like to have following questions answered:

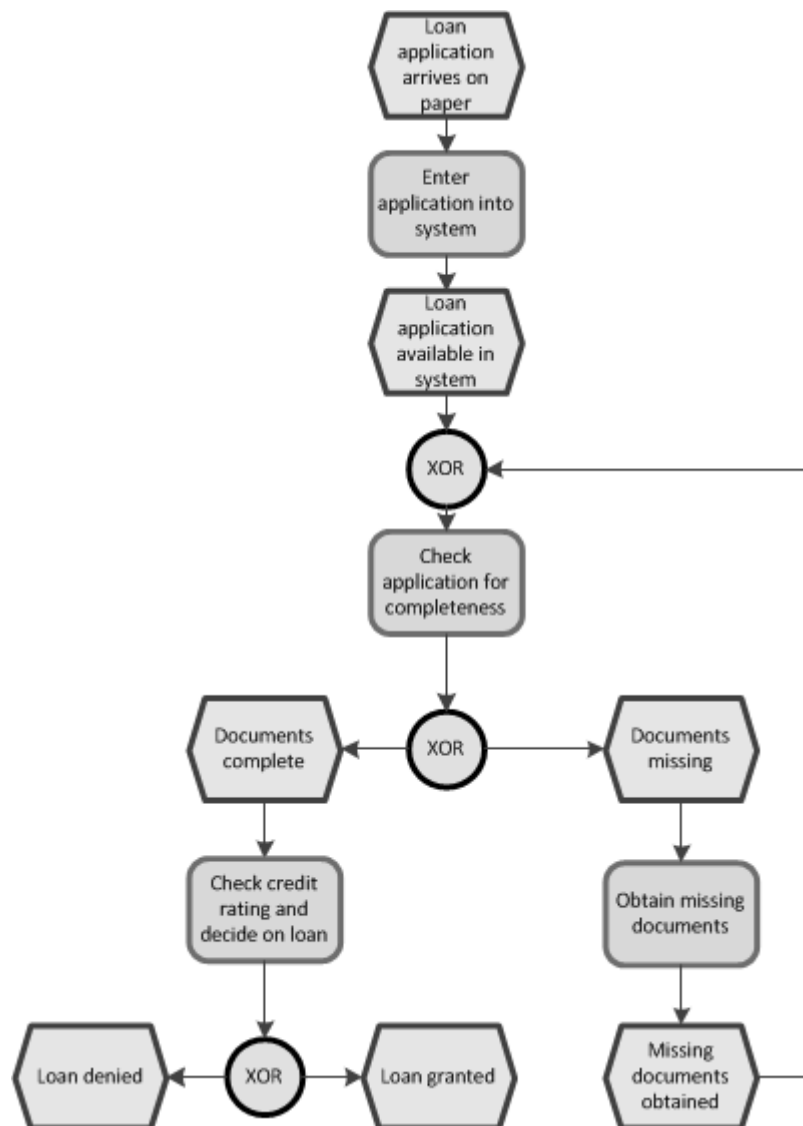
1. How many applications entered the process during work hours?
2. How many applications were processed by the accounting clerks without waiting?
3. How many applications spent more than 50 minutes in this part of the loan application process?
4. What percentage of applications was in the process longer than 60 minutes?
5. What was the maximum time an application spent in the process?
6. How can the total processing speed of applications be increased? How can this be modeled in GPSS? Give two examples.

(10 minutes)

c) In a different branch of the same bank, you encounter the following EPC of a loan application process. Please transform the presented EPC into a P/T net according to existing design rules.

1. Please transform the presented EPC into a P/T net according to existing design rules.
2. Why would one want to transform an EPC to a Petri-Net? Please briefly explain.

(20 minutes)



d) What “optimization areas” can be considered from the process in a) and how would you “leverage” them? Please describe and give examples from your model.

(10 minutes)

Good luck!