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Information Systems 01PDWOV

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Books, notes are not allowed. Write only on these sheets.

Virtual money in vacation resort

A vacation resort has many places where a customer can buy things or services for small amounts of money (ex. drinks, ice creams, towels, etc.). Instead of using cash or credit cards, customers currently use plastic tokens. A token has a nominal value (ex 1 Euro). When a customer arrives at the resort he can buy, in an office, a number of tokens (using cash or credit card). Then she can use them, and possibly buy more. She can also exchange them back for change.

The TO BE situation aims at replacing tokens with more convenient 'virtual money'. Each customer, upon arrival, receives a bracelet with a unique ID written on the bracelet as a bar code. The customer can then buy (using cash or credit card) virtual money to be attached to the ID. Then he can use virtual money showing the ID, recharge, exchange back.

In the following, analyze and model in detail the TO BE situation (24 points).

1 IT Model / Technological model: describe the hardware architecture of the system

Client server

Server: data base with customers and accounts

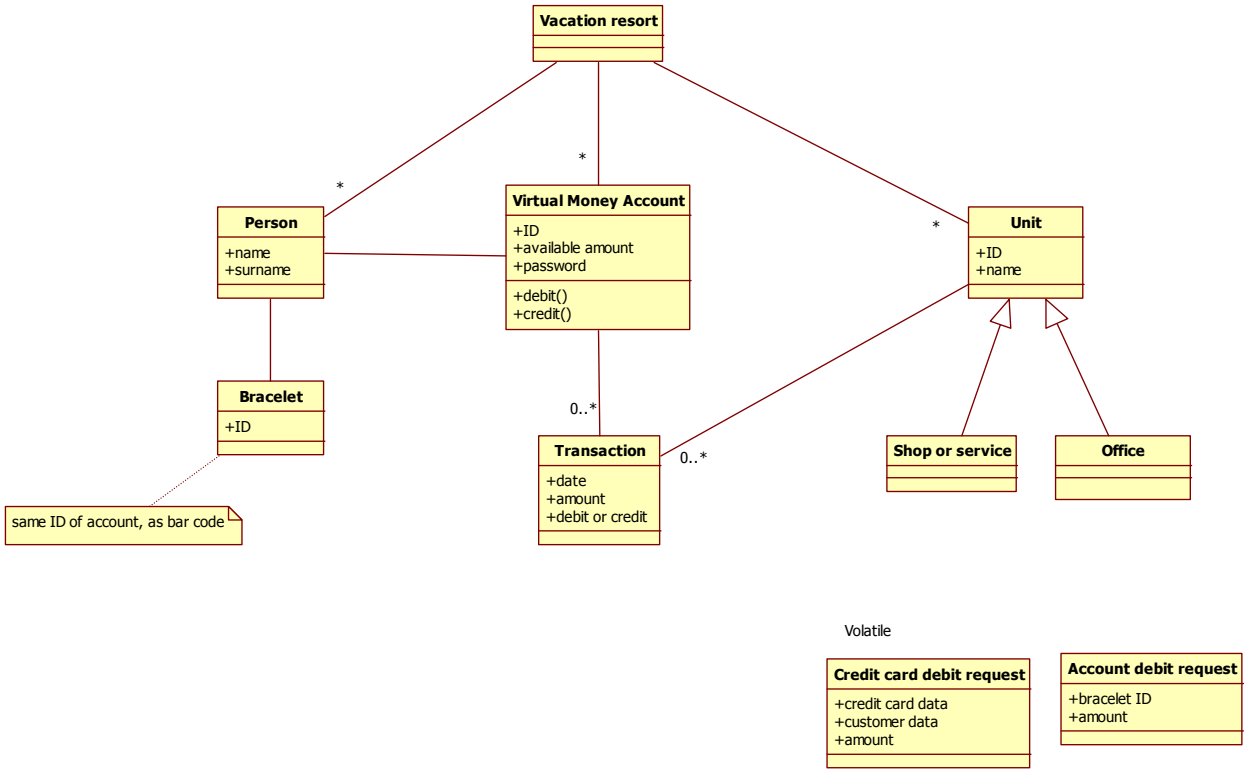
Client: PC and bar code reader in every place where the customer can use virtual money (bar, shop) or buy / exchange money (offices); printer or specific device to produce bar code on bracelet, or produce complete bracelet.

2 Organizational model: list roles or organizational units involved

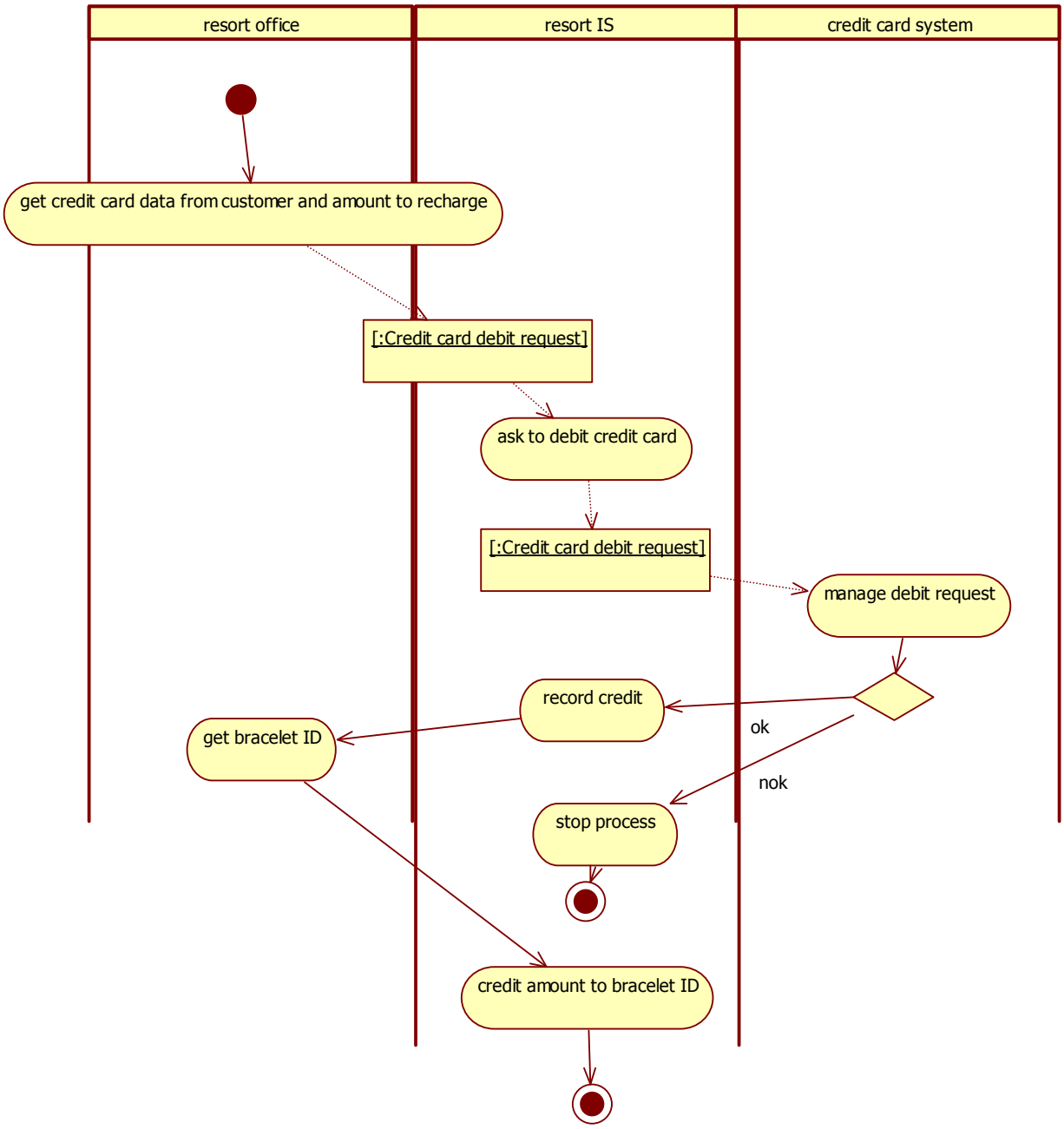
Customer
Resort office (for charging / exchanging back virtual money)
Resort shop/service (where money can be spent)
Credit card system (for exchanges with virtual money)

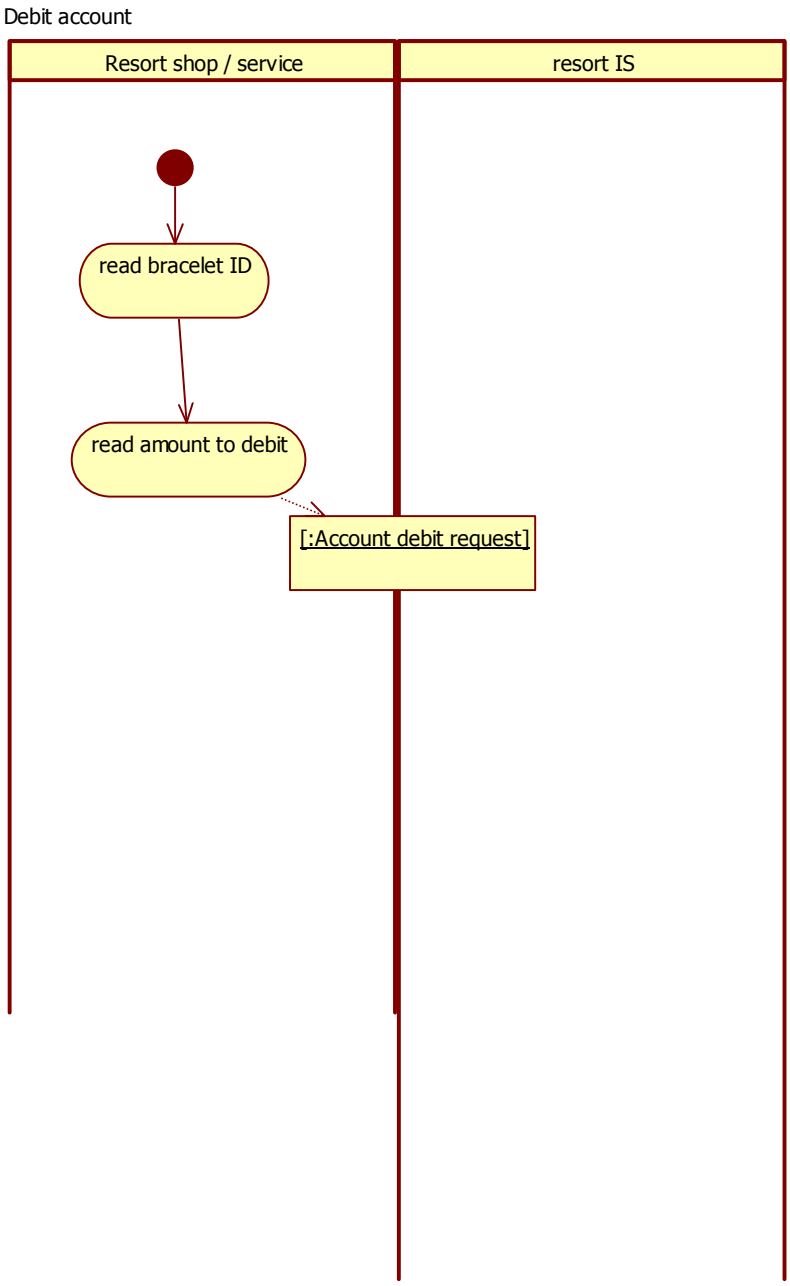
3 Functional model: Design and model (using UML activity diagrams with swimlanes + class diagram) the following processes:

- Sale and debit of account
- Recharge of account
- Return of cash



Recharge account





Process ‘return of money’ is very similar to ‘recharge account’

4 Define the KPI, considering as strategic goal ‘customer satisfaction’ and ‘reduction of cost to manage the virtual money system’.

Category (General, cost ..)	Name	Description	Unit of measure
general	N_c	Number of customers per year	
	N_b	Number of bracelets per year	
	N_t	Number of transactions per year	
cost	C_t	Cost per transaction = (C_I + C_P)/ N_t	Euro
	C_I	Cost of infrastructure (cost of bracelets + cost of readers, servers, PCs, network)	Euro
	C_P	Cost of personnel per year (only for effort to manage transactions and bracelets)	euro
quality	PLT	Probability to lose a token	
	VT	Volume of tokens to bring around	Dm3
service	LT	Lead time to complete a transaction (debit account)	t
	LTrecharge	LT recharge bracelet process	t
	LTreimburse	LT return of money process	t

5 Compare the previous and the current situation, using the KPIs defined above

KPI	AS IS	TO BE
C_t	Effort of personnel to manage tokens / N_t	(C_I/3 + C_P)/ N_t (C_I /3 because investment is allocated to 3 yrs)
PLT	More than zero	Zero
VT	More than zero	Zero
LT		No meaningful change

6 List costs and benefits (savings) when switching to the TO BE situation.

Cost	**Benefit**
C_I	Effort of personnel, possibly inferior, or similar

From Cost Benefit analysis is the TO BE situation better? (answer Yes or No):
Why?

It is difficult to estimate, at cost level, if C_t decreases. An investment (C_I) is needed, and C_P may or may not decrease. Also lead time for a transaction does not change much. What improves considerably is the convenience for customers (no bags of tokens to bring around VT, no loss of tokens, PLT) and also some new useful services (complete list of all transactions made). It is also possible that N_T increases (and therefore revenues for the resort), due to the greater ease for doing the payment (just show the bracelet)

7 (1 point) Describe the four possible strategic choices for an organization, according to Porter

Leadership in cost or quality, mass production or niche

8 (1 point) A company produces vehicles. What could be its CSF (Critical Success Factors) at Corporate level?

Quality, cost, reliability, dealer's network, brand recognition

9 (2 points) A medium company (40 people, all located in offices) is considering two options for cleaning the offices. One option is to hire some people to do the cleaning. Another option is to outsource the work, or have a specialized company do the cleaning. Analyze this case in term of transaction costs, agency costs, decision costs. Define also max 3 KPIs to monitor the cleaning process.

	Insourced	Outsourced
Agency -Monitoring	Control employees	Control company service
Agency - Bonding	Employees report (cleaning log: what cleaned, when)	Company report (cleaning log: what cleaned, when)
Agency -Residual loss	-	-
Transaction	Na	Search company, establish contract
Decision	Collection of kpis, cleaning logs	Collection of kpis, cleaning logs
Kpi1 cost	Cost of employees and equipment	Cost of service (payment to company)
Kpi2 quality	Level of cleanness (either visual inspection by manager, and/or complaints by users)	
Kpi3 frequency	Frequency of cleaning (n times per week a place is cleaned)	

10 (1 point) What is the management cycle? How indicators such as KPIs fit into it?

Define goals (and related measures such as kpis), collect measures from the operations level, compare actual measures and goals, do corrective actions if needed

11 (1 point) In a large company the IT function can be centralized or decentralized. What are the advantages of centralized IT?

Standardization of data and procedures, no redundancy of data, economy of scale in operation of IT and purchase of hardware and sofwtare.