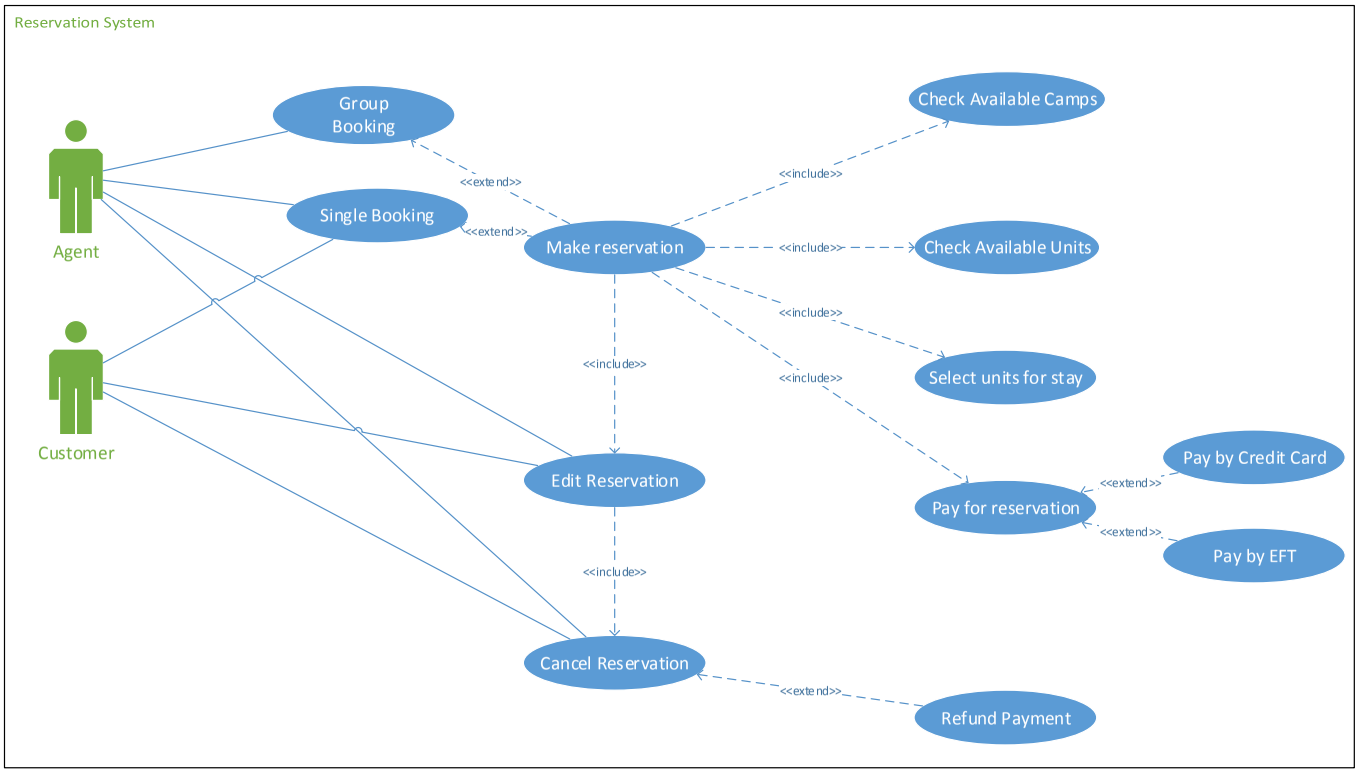
Exercises Class

Read the following narrative and draw an applicable use case diagram which fits the scenario.

At the Kruger National Park reservation office a customer or agent can initiate a group booking or a single booking, is a special form of making a reservation. Agents and customers can also edit a reservation or cancel a reservation. When a reservation is made, available camps are retrieved and shown and available units (huts and accommodation) are shown. As part of making a reservation the units for stay are selected, and payment for the reservation is processed. Payments for the reservation can either be done by Credit-Card or by EFT. In cases where a reservation is cancelled, the refund payment case is activated. The payment refund case is a specialized part of the cancel reservation case.

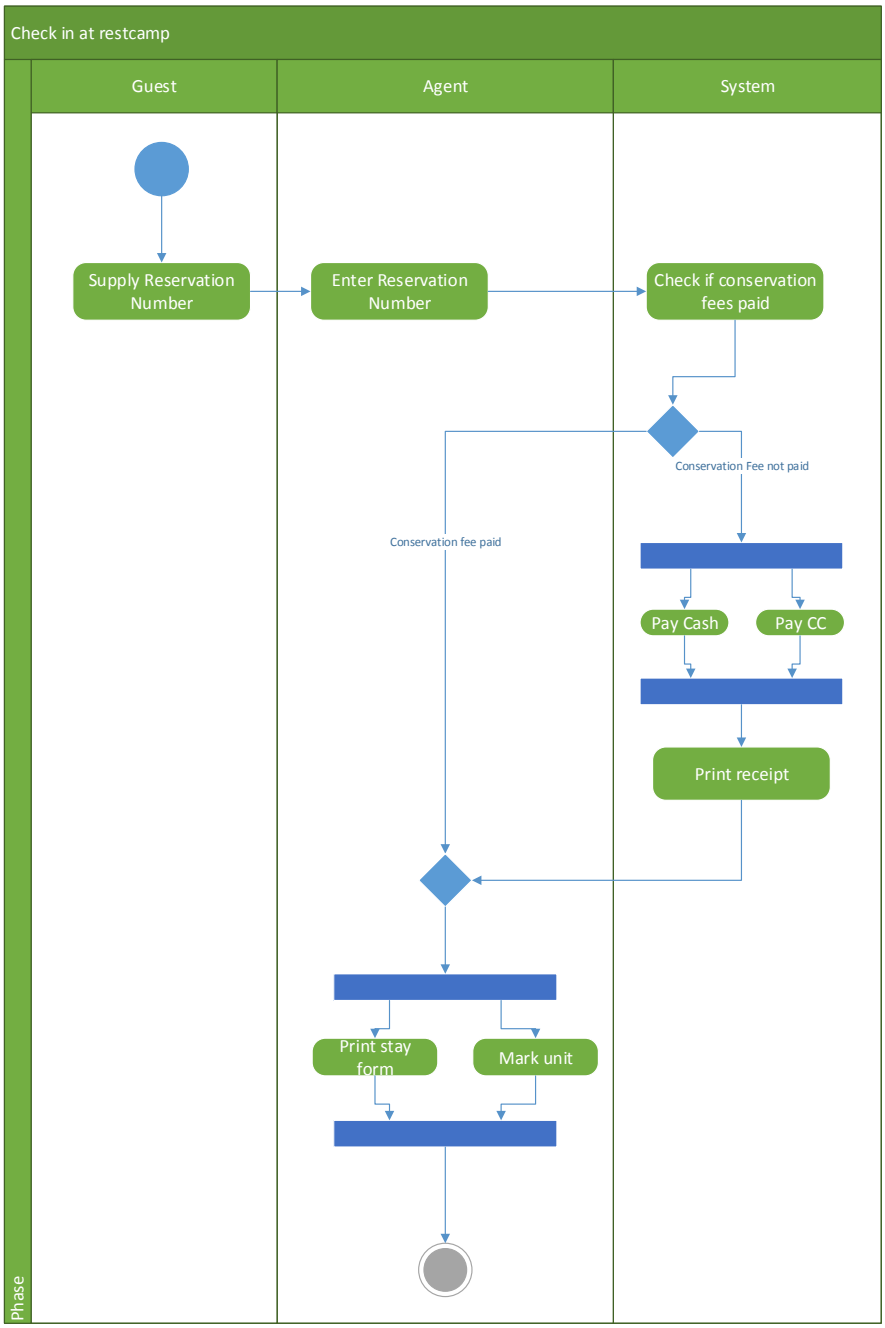


- ✓ ***1 Mark*** for each actor (2)
- ✓ 1 Mark for the Subsystem boundary + name (1)
- ✓ ½ Mark for each use case (12 x ½) (6)
- ✓ All associations correct (2)
- ✓ ½ Mark for all correct <<include>> indications (5 x ½ = 2½) (2½)
- ✓ ½ Mark for all correct key <<extend>> indications (5 x ½ = 2½) (2½)

TOTAL [16]

Read the following narrative and draw an applicable activity diagram.

When a guest arrives at a guest camp for overnight stay at the Kruger National park, the guest will supply the reservation agent, with the guest's reservation number. The agent enters the reservation number. The reservation system checks whether the guest has paid the conservation fees as part of the booking or opted to do the payment upon arrival. If the conservation fee has been paid, then the agent goes on to print a confirmation of stay form. At the same time the unit is marked as occupied. In the case where the guest still need to pay the conservation fee, a payment is done either in cash or by card and a receipt is printed before a confirmation of stay form is printed.

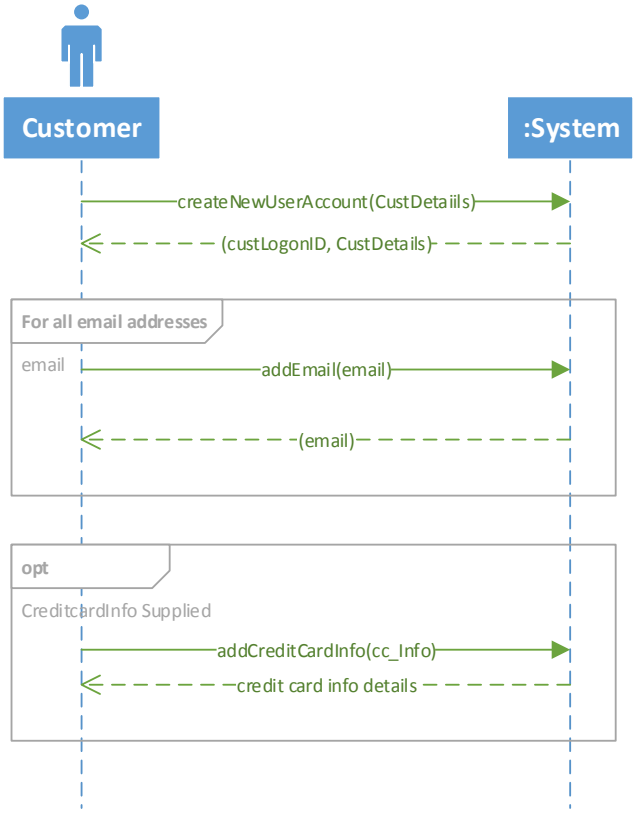


- ✓ *1 Mark for each swimline* (3)
- ✓ 1 Mark for the Title (1)
- ✓ 1 Mark for the Initial node and end node (2)
- ✓ 1 Mark for each action (8)
- ✓ 2 Marks for indicating the decision and conditions (2)
- ✓ 2 Marks for indicating the fork nodes and join nodes (2)
- ✓ 2 Marks for a logical design and proper construct (2)

TOTAL [20]

Read the following narrative and draw an applicable Systems Sequence Diagram.

A user (customer) are able to create an account as part of the SANParks system. The user will supply some personal details such as, details pertaining to his/her name, address, and telephone numbers). The system generates some login details for the customer. The system allows the customer to enter one or more email addresses for communication purposes, and if the customer wants to some credit card details for future booking payments.



- ✓ *1 Mark for the Actor and Lifeline* (1)
- ✓ 1 Mark for the System and lifeline (1)
- ✓ 2 Marks for each message and parameters passed (2x3 = 6)
- ✓ 1 Mark for each return message with value (1x3 = 3)
- ✓ 2 Marks for indicating loop fragment (2)
- ✓ 2 Marks for indicating the optional fragment (2)

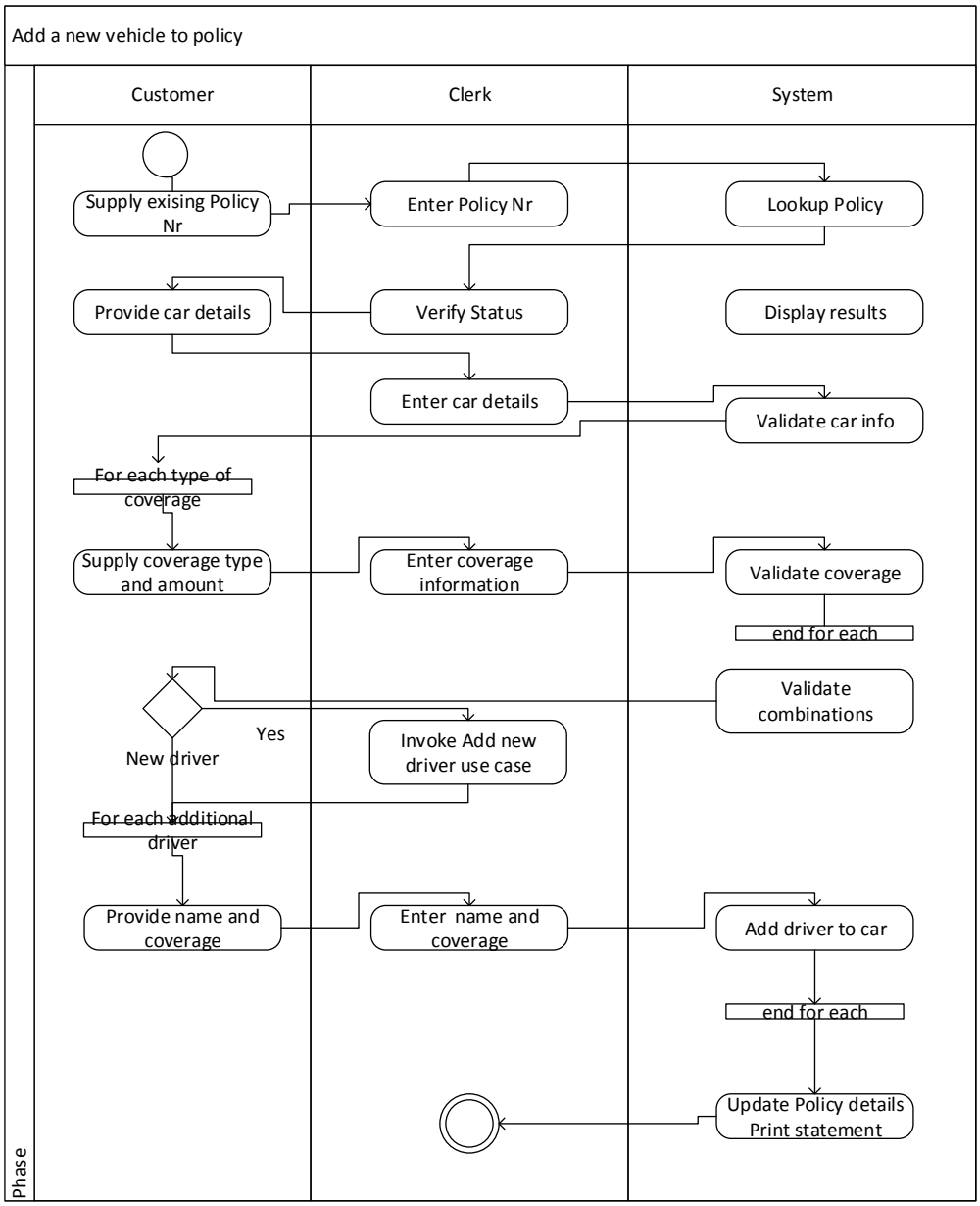
TOTAL [15]

Maximum Marks [14]

Study the following use case description as part of the systems design for an insurance company. Draw an applicable **activity** diagram based on the scenario. Include any applicable methods calls and returns.

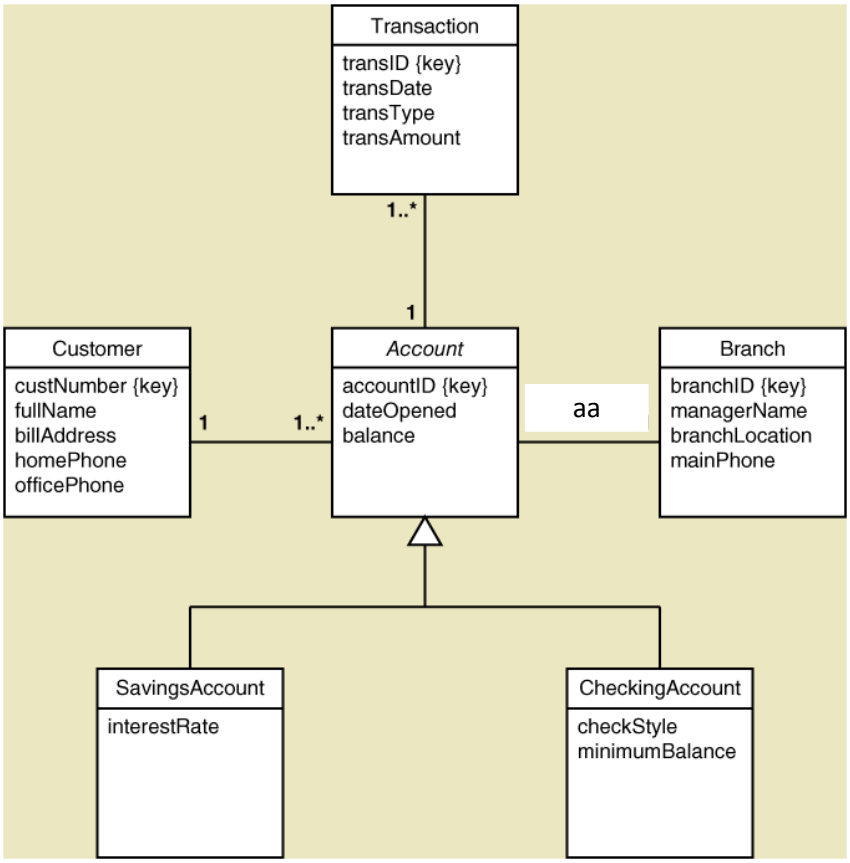
Use case name	Add a new vehicle to an existing policy	
Scenario	Telephone instance with customer and clerk	
Triggering event	Customer buys a new vehicle.	
Brief description	Customer provides car information, requests coverage with amounts, identifies drivers of the new car. System updates the policy.	
Actors	Customer, Service clerk	
Stakeholders	Customer Customer service department	
Preconditions	Customer ***policy*** must exist and be up to date. ***StandardVehicle*** control tables for this vehicle type and year must exist. ***StandardCoverage*** tables exist.	
Post conditions	New ***vehicle*** object created and connected to policy. Also connected to ***StandardVehicle***. New coverage objects created and connected to vehicle. Also connected to ***StandardCoverage***. New driver (***InsuredPerson***) (if necessary) created and added to policy. Existing drivers and percentages updated. Policy updated with new premiums.	
Flow of activities	Actor	System
	1. Clerk enters customer information. 2. Clerk verifies policy is current. 3. Clerk enters car identification information. VIN and Registration number and other information. 4. Clerk enters ***each type*** of coverage (*addons/extras)* customer requests, including deductibles and coverage amount. 5. Clerk indicates all coverages have been entered. 6. Clerk invokes *Add new person* use case if necessary. 7. Clerk changes driver percentages on this car and other cars. Driver ID and percentage use is passed 8. Clerk indicates everything is complete.	1.1 System finds policy and displays details. 3.1 System validates that car has known standard. 4.1 System validates coverage requests. 5.1 System does combination validation on policy. 7.1 System updates driver information. 8.1 System updates policy, calculates new premium, prints new statement.
Exception conditions	2.1 If policy is not current, clerk requests payment or collects necessary information. 3.1 If car type is not in system, clerk refers customer to underwriting to handle this situation. 4.1 If coverage requests are out of range, clerk asks customer for changed amount. 5.1 If some combination is invalid, return to step 4.	

Sugested Solution



1 Mark for each swimline = 3
4 Marks for the logical flow of activities from the description = 4 (Should be logical)
2 Marks for the indication of iterations = 2
1 Mark for decision branch = 1
1 Mark for start and stop = 1
TOTAL [11]

Study the following domain model class diagram and answer the questions that follow:



1	Define the concept of an abstract class.	(2)
2	Does the diagram include an abstract class? Motivate your answer.	(2)
3	How many concrete classes are presented as part of the diagram?	(1)
4	How many attributes does the CheckingAccount class have?	(1)
5	Suggest a multiplicity indication for the Account and Branch classes.	(1)

Suggested Answers

1 Abstract class— a class that allow subclasses to inherit characteristics but never gets instantiated ✓✓ (2)

2 Yes it does. ✓
The Account class is an example of an abstract class because it is presented in italics. ✓ (2)

3 5 ✓ (1)

4 5 ✓ (1)

5 `0.* … 1` ✓ (1)

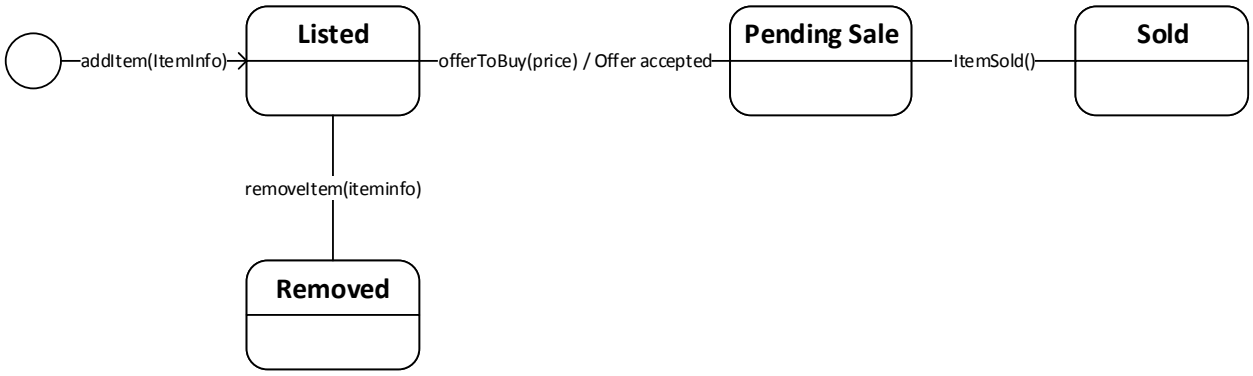
State Machine

Consider the following scenario and information and draw an applicable state machine diagram showing the states of an item listed as part of an online sale website such as (BidorBuy).

A customer may add an item for listing to the site for sale. The details of the product is supplied and the item is listed. A customer may also remove an item which is listed for sale. Another website client could present an offer to purchase the item listed. The customer can then accept or reject the offer, during this stage the item is marked as Sale Pending. After payment has been received the item is marked as sold.

Add applicable (appropriate) transition names to your diagram as well.

Suggested Solution



Accept student interpretation
Mark allocation – 1 Mark for Initial state (1)
1 Mark for each state (4)
1 Mark for each transition name or trigger (4)
TOTAL = [9]

Question

Study the following form as part of a business process. This form is used by the TUT, Asset department to process offers by potential buyers of old/written off assets (e.g. old computers, chairs, desks, etc.).
Present at least 4 facts relating to the operations of the business that can / may be deduced from the form, if this process is to be captured as part of the TUT inventory system. (4)

AA11

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OFFER TO PURCHASE
Finpol - 036

I, _____,

of the Division/Department/in Private capacity _____,

hereby wish to submit an offer for the purchase of the equipment/tools/waste material stated below.

Description:

_____

_____

_____

Amount offered: R_____

_____ _____ _____ _____

SIGNATURE DATE TEL.(W) TEL.(H)

Residential or postal address of private offeror: _____

_____

FOR OFFICE USE ONLY

It is recommended/not recommended that the above offer be accepted.

Asset number/No asset number | | | | | | | | |

Valuation according to Asset Department

Book value R | | | | | | | |

Valuation according to Asset Department R | | | | | | | |

Amount finally agreed on R | | | | | | | |

The amount of the offer is regarded as reasonable.
The goods have been written off in the prescribed manner.

_____ _____
HEAD OF ASSET DEPARTMENT DATE

APPROVED/REJECTED

_____ _____
DIRECTOR OF FINANCIAL CONTROL DATE

This is an open ended question. Accept any well motivated description relating to the process which the form is used for. Examples include.

- The person making the offer (BIDDER) is either an employee, or student, or private person.
- For the BIDDER personal details are required
- For each OFFER, the amount the bidder is willing to pay for the asset is captured
- An OFFER refer to an ASSET, and each ASSET is identified with an AssetNr. For each ASSET, the full description and book value as well as the valuation (real value) value is stored.
- If an OFFER is accepted than a receipt number is captured, and the asset is marked as Sold, as part of the ASSET_SOLD (entity)
- An OFFER to a BIDDER is approved or rejected by the employee from the asset department and from financial control (4x1)