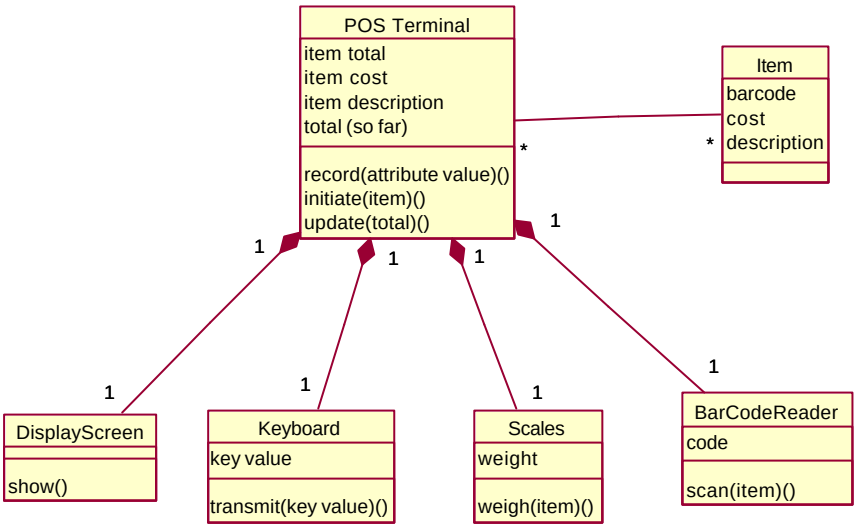
IS352: Advanced Systems Development

Exercise 3

(A) A point of sale (POS) system can be modelled by the class diagram:

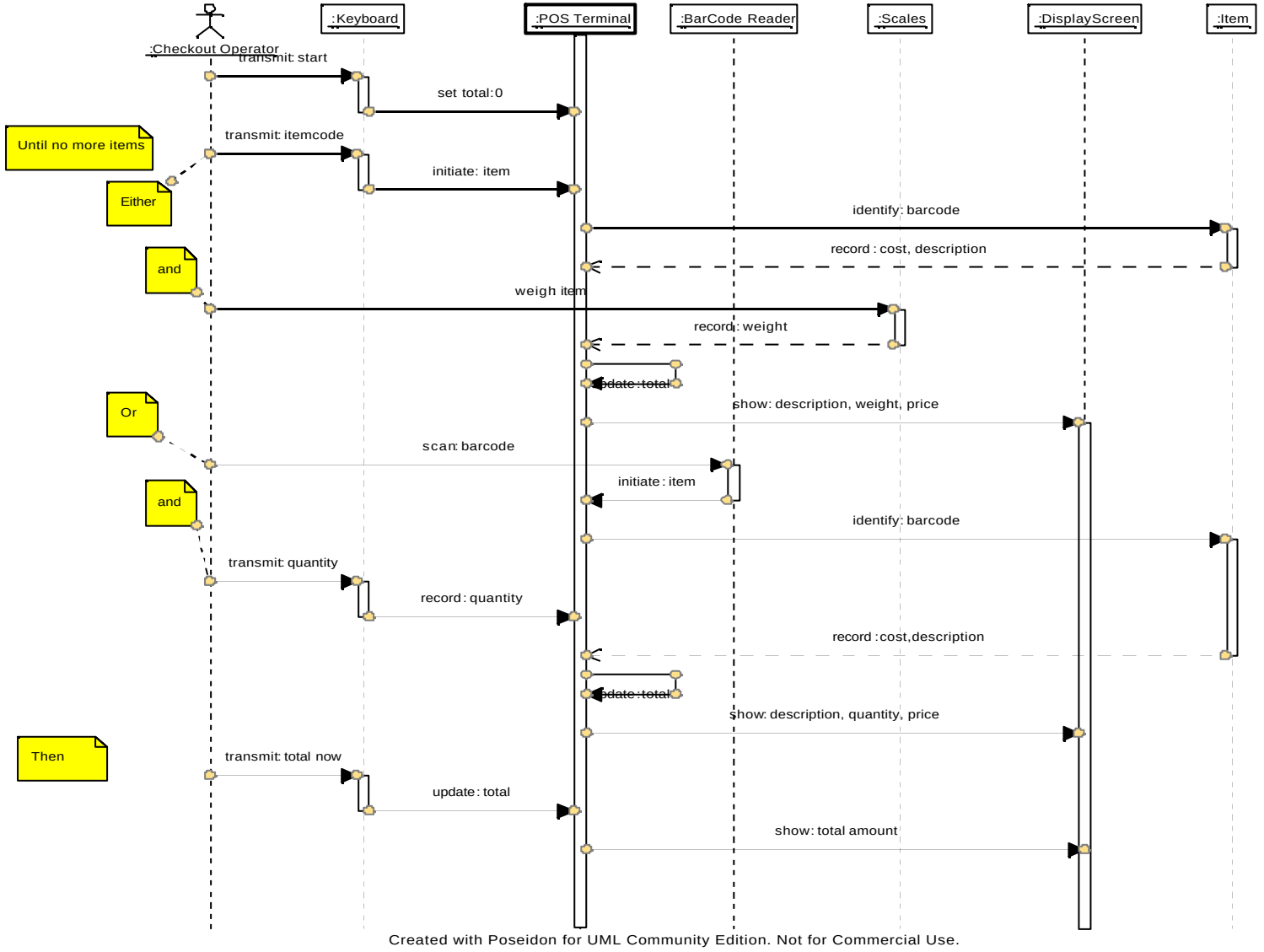


Consider the following scenario for this computerized point of sale system:

> Press "new customer" key on keyboard to initialize (including setting running total to zero)
> For each item the customer has:
> Either scan item code and type in quantity on keyboard
> Or type in item code and weigh item on the scales
> If item code is not valid display shows an error message
> Otherwise display shows item description and price
> Add price to running total
> Press "total now" key on keyboard to indicate that there are no more items
> Display shows total amount owed

Draw a sequence diagram illustrating the given scenario, using objects from the classes shown in the class model and no others.

1 mark for each message, ½ for the message being between reasonable objects and ½ for the label using an operation given in the question, up to a total of 16 marks
5 marks for dealing with the alternative actions (scales + keyboard / barcode reader/keyboard)
5 marks for the overall logic
Total 26 marks.


:Checkout Operator
:Keyboard
:POS Terminal
:BarCode Reader
:Scales
:DisplayScreen
:Item
transmit: start
set total:0
Until no more items
transmit: itemcode
initiate: item
Either
identify: barcode
record : cost, description
and
weigh item
record: weight
update :total
Or
show: description, weight, price
scan: barcode
initiate : item
and
identify: barcode
transmit: quantity
record : quantity
record :cost,description
update :total
show: description, quantity, price
Then
transmit: total now
update : total
show: total amount
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(B) Consider the case where the instruments on a vehicle dashboard have to be refreshed periodically. This is shown on a collaboration diagram by a message "display current reading" being sent from an object "Dashboard Monitor" to an object "Instrument". Decide whether this message should be shown as:

(i) A synchronous message

(ii) A flat (or simple) message

(iii) An asynchronous message

The message is asynchronous because the Dashboard Monitor "watches a clock" to determine when it is time to update the display, after sending the message it continues with its own processing.

2 marks for the correct answer and 5 marks for the reason, Total – 7 marks