4156 send email about date

par design assignment

pas 10/6/15

ch 5 design

- book assumes you already have a design & seek to improve it
- but how do you get that initial design?

1st rule - do not start coding
no editor
instead index card, paper, whiteboard

analysis - understand (what)
design - plan (how)
programming - build

but agile (iterative), not waterfall
good enough, not perfect

look for nouns & verbs in your user stories &/or use cases

noun → class
verb → behavior

remove duplicates
split up if mean more than one thing

some nouns will be attributes of others

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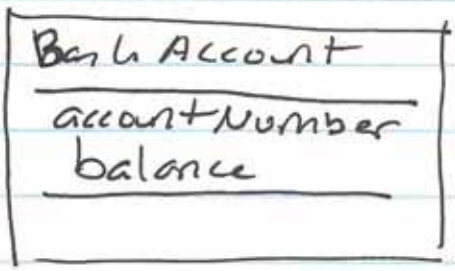
class name – what is it?
type
attributes – what describes it?
properties, data
behavior – what can it do?
operations, responsibilities

focus on essentials that you need for this application, for this iteration, not for all possible uses of the class

YAGNI – you ain't gonna need it

example



every bank account has a dateOpened, but if not needed NOW, do not include

now choose the most important objects (classes) & determine what are the interactions between them

→ draw corresponding class diagrams & sequence diagrams

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mitral class diagrams may just show class names

then add associations between classes, perhaps originally unnamed & w/o multiplizity

for behaviors, need to distinguish between which object initiates the behavior vs. which performs
→ need to determine which class bears responsibility for the behavior

be careful about assigning responsibilities to objects representing actors — who initiate but don't "do" operations

also watch out for references to "system" doing something, which really means some part of the system does it
— avoid global master objects

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example: Customer confirms items in shopping cart. Customer provides payment to process sale. System validates payment & confirms order, System sends customer a copy of order details by email.

what are the nouns? Customer
Item
Shopping cart
Payment
Sale
System
Order
Order Details
Email

Which are duplicates? Sale & order

Which are attributes of other objects?
Order details ∈ Order

"System" stands in for ~~it~~ its objects, ~~itself~~ not itself an object

Customer initiates, but doesn't hold responsibilities

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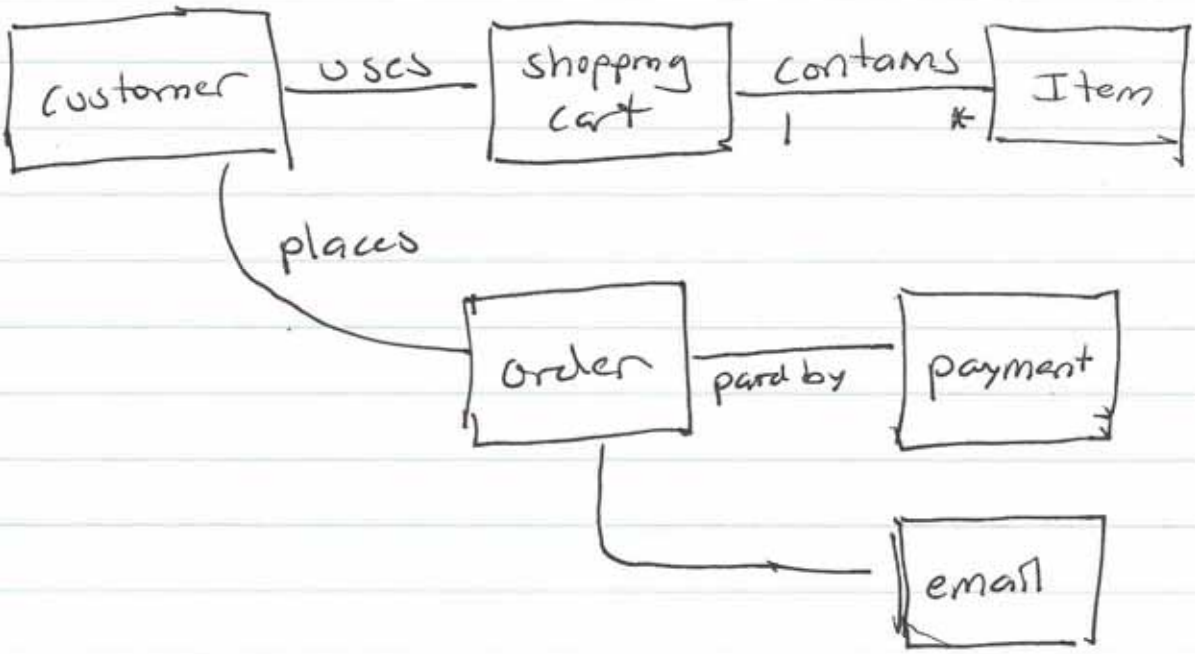

this is not a database schema
we do not need primary keys, etc.

now look for verbs

confirms items
provides payment
process sale
validates payment
confirms order
sends order details
email

which of these responsibilities belong to which objects?

- avoid objects with only data, no behaviors

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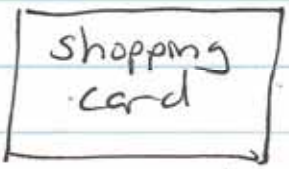
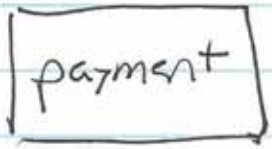
customer needs to confirm items, how does system make this possible?



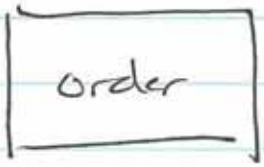
display items

customer needs to provide payment, how?



set payment details

System needs to process sale



process order

validate payment - payment
confirm order - order
send order details email
↳ split order creates confirmation email
email sends email

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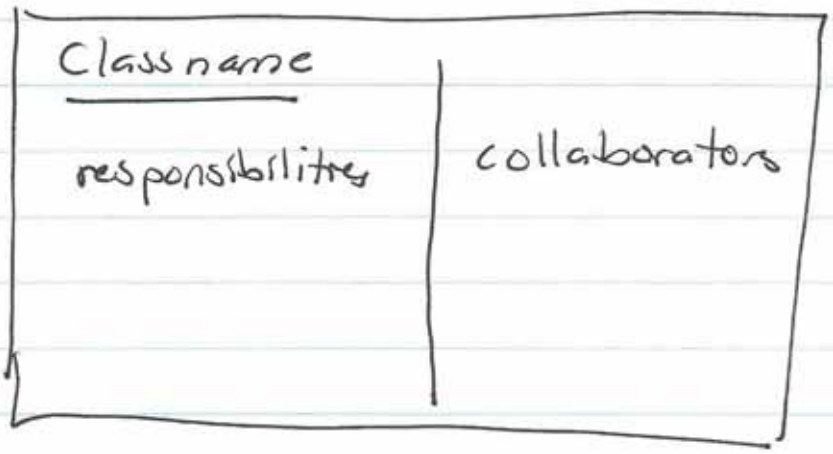
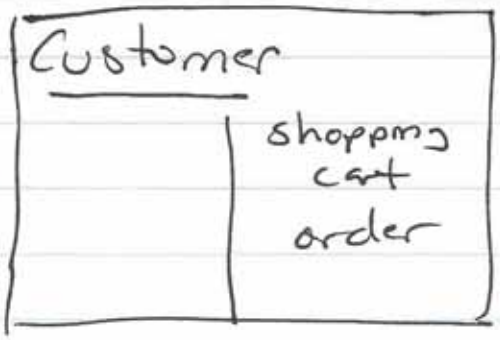
many designers use CRC cards to help get from user story / use case to class diagram, a.k.a simple step

CRC card - another index card



size of card enforces constraint on class's # of resp. & coll.



etc.

physically move cards around on table to "act out" scenario (helps w/ sequence diagrams)

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now back to Head First ch. 5

We have our original design in terms of class & sequence diagrams

need to check that its reasonable

- single responsibility principle (SRP)
  aka cohesion

one reason to exist

each class should have only a single purpose, & should change only when the specifics of that purpose change

(book says single responsibility, but its using term differently than CRC)

if changes to one class would require changes to other classes, this is BAD (ripple effect)

- don't repeat yourself (DRY)

& design!

avoid duplicate code by abstracting or separating out those things that are common into a single location