Albert Wallace (aew0024)
12 February 2013
COMP3700
Assignment #3

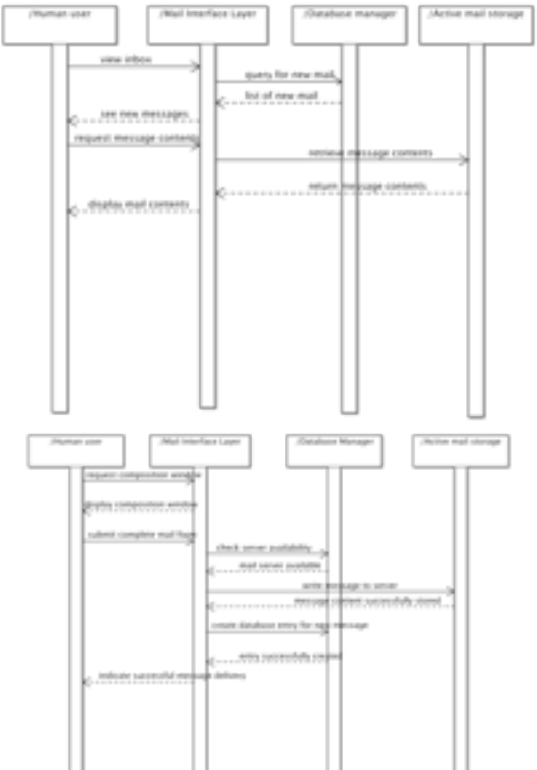
1. {7.2} Consider a computer email system.
   a. List three actors. Explain the relevance of each actor.
      -One actor might be the human user (author or recipient), who sends off emails to other human users. A second might be the automated email dispatcher server, which manages all the email and makes sure it gets routed to the right end user. A third might be an administrator, who deals with maintenance of the email system & keeps the service working.
   b. One use case is to get email. List four additional use cases at a comparable level of abstraction. Summarize the purpose of each use case with a sentence.
      i. Forward email. Creates a duplicate of a given message and sends the duplicate to the intended recipient, possibly with an additional line or two of text from the user who forwards it, and stores it on the servers for the recipient.
      ii. Delete email. Verifies an archived copy of the email exists on the servers, then removes the selected email message(s) from the active inbox (leaving only the archive version in the event the user wants to un-delete).
      iii. Send email. The human user creates an email from scratch, with a dedicated recipient, and stores the message on the servers for the recipient.
      iv. Search email. The the user enters a search query to find email based on title, author, and content.
   c. [see attached image]

d. Prepare a normal scenario for each use case.
    i. Forward email: User receives an email, then opts to forward it. The contents of the original email message are copied, along with message details, to a new email form. The user then enters the recipient's email address (potentially multiple), and sends like a normal email.
    ii. Send email: The human author begins the process of creating a new email, and enters the message into the appropriate text field. When finished, the user enters a title and a recipient (or recipients) and the message is stored on the server until ready for receipt.
    iii. Receive email: The human user opens the email inbox, and the software polls the server for any "new message" flags. The software retrieves the messages and displays them to the human user.
    iv. Delete email: The human user, presented with a list of email, selects one or multiple email messages to remove. The user proceeds, the software checks to verify that a shadow/archived copy exists, and the software soft-deletes the message from the server.
    v. Manage servers: The administrator checks the server logs for any errors, and tweaks any parameters as necessary.
e. Prepare exception scenarios.
    i. Forward email exception: The user to whom the message will be forwarded is not available. The software informs the sender/author of this, and the message is saved in draft form until the sender fixes the recipient's address or cancels the process.
    ii. Send email exception: The server connection fails, and the message cannot be sent. The user receives a message indicating this, and the software saves a copy on the local machine until the connection can be re-established.
    iii. Receive email exception: The message has become corrupted. The software indicates this, offering to recover whatever part of the message is available, and offers to send a notification to the original sender of this situation.
    iv. Delete email exception: There are no email messages selected to delete, so the operation is aborted and the user is asked the select new ones.
    v. Maintain system/manage email: The server goes offline for internal routines, and even the administrator is locked out temporarily. The system's protection has to be circumvented, the internal routines paused, etc, so the administrator can do what's necessary.
f. Prepare a sequence diagram corresponding to each scenario in (d). [See attached]
    i. Receive Mail

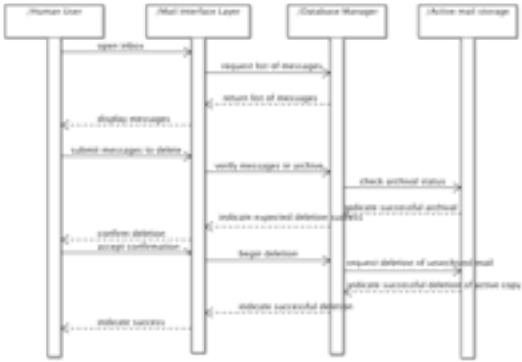
    ii. Send Mail

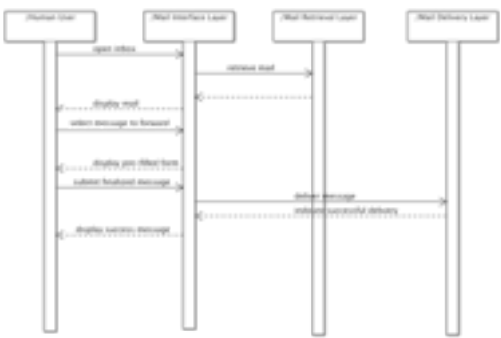
    iii. Delete Mail

iv. Forward Mail



v.

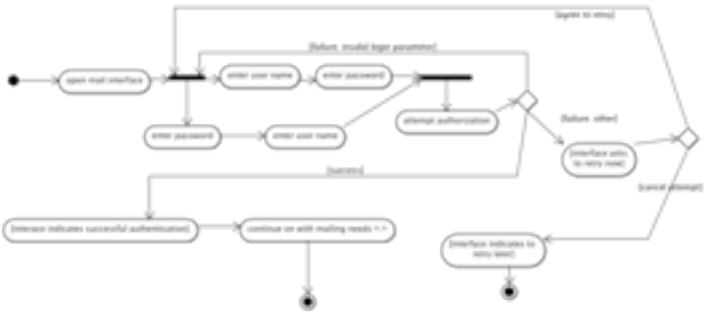

:Human User
:Mail Interface Layer
:Database Manager
:Active mail storage
open inbox
request list of messages
return list of messages
display messages
submit messages to delete
verify messages or archive
check archival status
indicate successful archival
indicate expected deletion success
confirm deletion
accept confirmation
begin deletion
request deletion of unarchived mail
indicate successful deletion of active copy
indicate successful deletion
indicate success


:Human User
:Mail Interface Layer
:Mail Retrieval Layer
:Mail Delivery Layer
open inbox
retrieve mail
display mail
select message to forward
display pre-filled form
submit finalized message
deliver message
indicate successful delivery
display success message

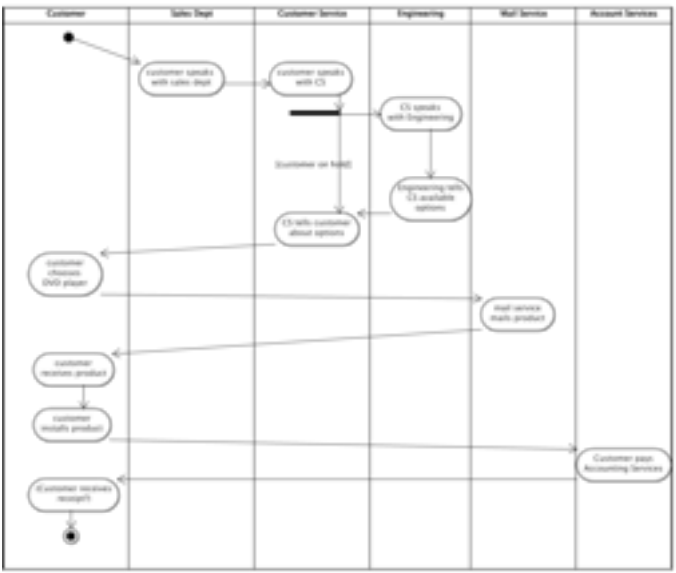
vi. Manage servers [no diagram made, as it would be far too complex]

2. {7.3} Consider an online airline reservation system. You may want to check airline Web sites to give you ideas.
   a. List two actors. Explain the relevance of each actor.
      i. One actor might be the passenger. This passenger is the one using the system to order a reservation/plane ticket.
      ii. Another actor might be a customer service representative. This person can check all the reservations for verification in the event the passenger needs to know more information or be reminded of a reservation.
   b. Beyond making a flight reservation, there might be…
      i. Canceling a flight reservation.
      ii. Checking an ordered flight reservation for more information, such as departure time, gate, plane type, and the like,
      iii. Compare prices for different flights.
      iv. Change flight reservations to a different time or different seat/class.
   c. Create a class diagram for each scenario. [See attached].

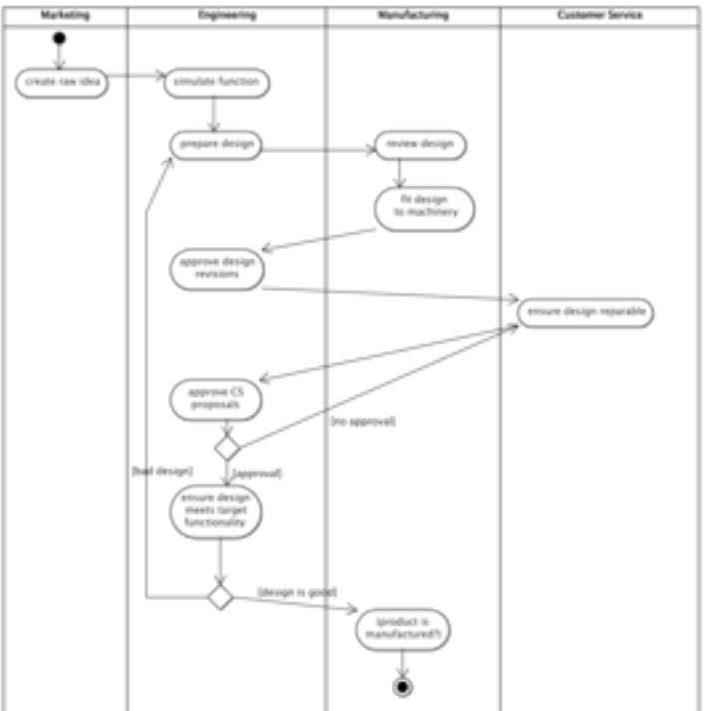
3. {7.10} Prepare an activity diagram that elaborates the details of logging into an email system. Note that entry of the user name and the password can occur in any order. [See attached]



4. {8.9}


Customer
Sales Dept
Customer Service
Engineering
Mail Service
Account Services
customer speaks with sales dept
customer speaks with CS
CS speaks with Engineering
[Customer on hold]
Engineering tells CS available options
CS tells customer about options
customer chooses DVD player
mail service mails product
customer receives product
customer installs product
Customer pays Accounting Services
[Customer receives receipt?]

5. {8.10}


Marketing
Engineering
Manufacturing
Customer Service
create raw idea
simulate function
prepare design
review design
fit design to machinery
approve design revisions
ensure design reparable
approve CS proposals
[no approval]
[bad design]
[approval]
ensure design meets target functionality
[design is good]
(product is manufactured)