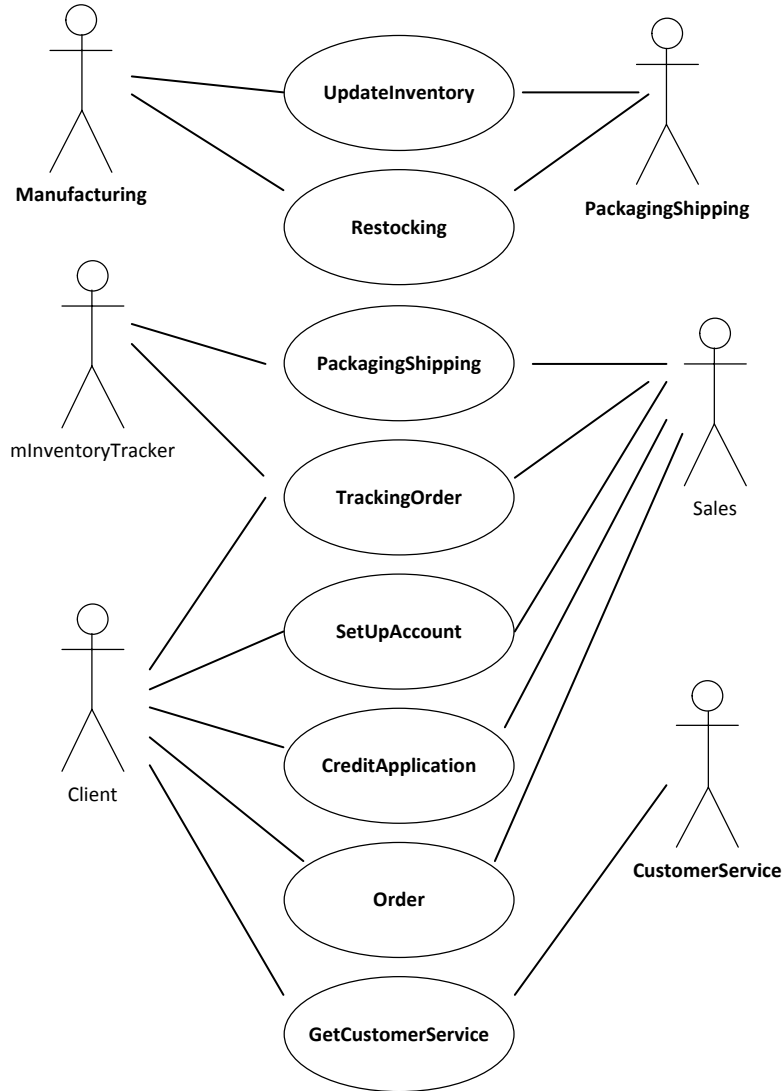


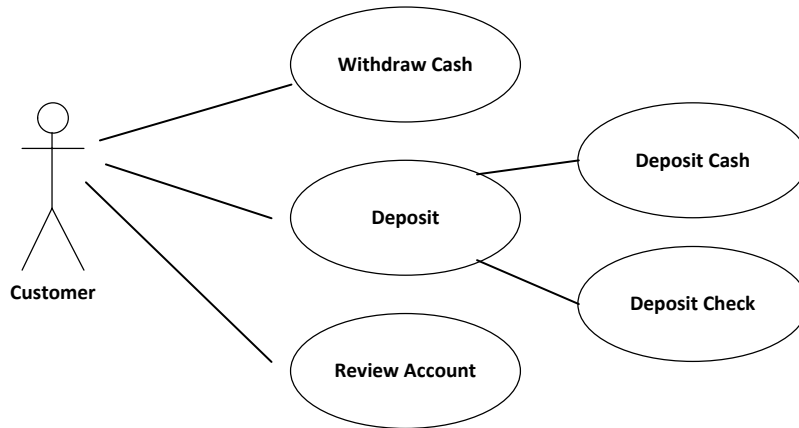
CPET 565/CPET 499 Mobile Computing Systems

Lecture Note
UML Diagrams
2014/10/20

Use Cases (Inventory Tracking Example)



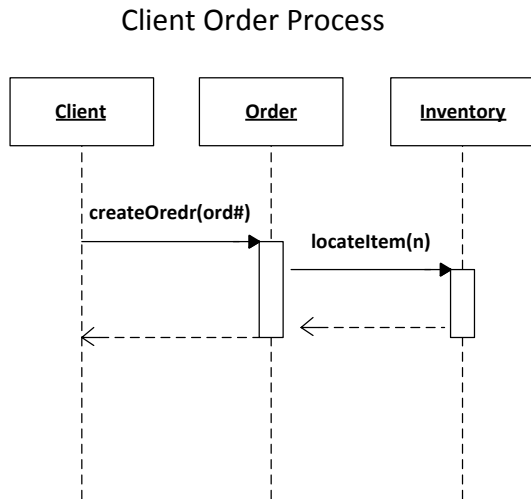
Use Cases (ATM Machine Example)



Use Case Specification (An Example)

- Use Case Name: Withdraw Cash
- Use Case Purpose: This use case provides the function for a customer to withdraw cash from an ATM machine.
- Optimistic flow:
 - a) Customer slides the bank card, enters the pin#.
 - b) Customer chooses either Checking account or Saving account for withdrawing.
 - c) Customer makes a choice, enter the desired amount, and the ATM machine checks if the fund is sufficient for withdrawing.
 - d) ATM counts and dispenses the bills.
 - e) ATM asks if a printed receipt is needed.
 - f) ATM exits and redisplay welcome message.
- Pragmatic flows
 - Conditions triggering alternative flow
 - Condition 1: Customer slides the bank card, but enter an incorrect pin#
 -
 - Condition 2: There is insufficient fund in the account
 -
 - Condition 2:

Sequence Diagram (Client Order Process)



Example Classes for Inventory App

Source: [9][10]

InventoryItem class (collaborators: NONE)

- itemNumber
- name
- description
- unitPrice
- totalPrice

Order class (responsibility; collaborators: OrderItem class, Customer class)

- orderID: string
- orderDate: String
- dateShipped
- orderItems
- orderedTotals
- orderDate: String
- costRange: float
- priceRange: float
- tax: float
- priorityCode: int
- completionProgress: float
- rawMaterialIssued: Boolean
- customerInfo: String
- deliveryInfo: String
- printInvoice()
- cancel()

Customer class (collaborators: Order class, CustomerAddress class)

- name
- phoneNumber
- customerID
- makeOrder()
- cancelOrder()
- makePayment()

OrderItem class (collaborators: InventoryItem class)

- quantity
- inventoryItem()
- calculateTotal()

References

- [1] OMG Specifications, <http://www.omg.org/spec/index.htm>
- [2] OMG Unified Modeling Language (UML) Infrastructure Specification and Superstructure Specification, Version 2.4.1, 2011/8/6, <http://www.omg.org/spec/UML/2.4.1/>
- [3] Object-Oriented Analysis and Design with Applications, 3rd edition, by Grady Booch, Robert A. Marsimchuk, Michael W. Engle, Bobbi J. Young, Jim Conallen, and Kelli A. Houston, 2007, Addison-Wesley
- [4] “Supply Chain Management Use Case Model,” Final Specification, Web Services Interoperability Organization, 2003/12/1, <http://www.ws-i.org/sampleapplications/supplychainmanagement/2003-12/scmusecases1.0.pdf>
- [5] UML Use Case Diagrams: Tips and FAQ, <http://www.andrew.cmu.edu/course/90-754/umlucdfaq.html>
- [6] Use Case Tutorial, by Joseph Lewis Aguirre, <http://www.atwebo.com/Use%20Case%20Tutorial.pdf>
- [7] Case Study: Design and Implementation of an Ordering System using UML, Formal Specification, and Java Builder, by A. Tchantchane, SETIT 2005 Conference, http://www.setit.rnu.tn/last_edition/setit2005/applications/374.pdf
- [8] Inventory Management, <http://creately.com/diagram/example/gz0v7rar/Inventory+Management>
- [9] “Automated Inventory Tracking System,” Ben Standish and Steve Sullivan; faculty advisors: Mark Austin and John Baras, Sept 2002 to Dec. 2003, <http://www.isr.umd.edu/~austin/ense621.d/projects04.d/project-tracking-system.html>
- [10] “Preliminary Models using UML for Reverse Logistics Systems,” R. Srinon, S. Ramakrishnan, and C. H. Gagli, <http://sse.stevens.edu/fileadmin/cser/2004/papers/121-Paper114.pdf>
- [11] Class Responsibility Collaborator Cards (CRC) Modeling, 1998 copyright by Scott W. Ambler, <http://www.uml.org.cn/umlapplication/pdf/crcmodeling.pdf>
- [12] Business Use Case for Inventory Management – WMS, SAP Community Network, <http://wiki.sdn.sap.com/wiki/display/CK/Business+Use+case+for+inventory+management+-+WMS>
- [13] Class Diagram for Inventory Management, IBM DeveloperWorks, <http://www.ibm.com/developerworks/topics/class%20diagram%20for%20inventory%20management/>

- [14] A Unified Modeling Language for Describing Supply Chain Management in Retail Sector, by Zhu Haibo, <http://www.seiofbluemountain.com/upload/product/201002/1265261580ibwql255.pdf>
- [15] Workflow in UML, by Peter Rittgen, Idea Group Publishing, <http://www.irma-international.org/viewtitle/32473/>
- [16] Modeling Mobile Agent Applications in UML 2.0 Activity Diagrams, by Miao Kang, Lan Wang and Kenji Taguchi, http://www.imamu.edu.sa/DContent/IT_topics/Modelling%20Mobile%20Agent%20Applications%20in%20UML2.0%20Activity%20Diagrams.pdf
- [17] Extending Activity Diagrams to Model Mobile Systems, by H. Baumeister, N. Koch, P. Kosiuczenko, and M. Wirsing, <http://www.pst.informatik.uni-muenchen.de/projekte/agile/papers/netobjectdays2002.pdf>
- [18] Using UML Sequence Diagrams for Requirement Analysis of Mobile Distributed Systems, thesis, Aron G. Hamvas, 2010/5/12, http://home.mit.bme.hu/~micskeiz/education/onlab/hamvas_aron/hamvas_aron_diploma.pdf
- [19] A Mobile Application for Smart House Remote Control System, by A. Rajabzadeh, A. R. Manashty, and Z. F. Jahromi, World Academy of Science, Engineering and Technology 62 2010, <http://arxiv.org/ftp/arxiv/papers/1009/1009.5557.pdf>
- [20] Using the UML 2.0 Activity Diagram to Model Agent Plans and Actions, by V. T. da Silva, R. C. Noya, and C. J. de Lucena, 2004, ftp://ftp.inf.puc-rio.br/pub/docs/techreports/04_48_silva.pdf