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BBM 382

MIDTERM EXAM

MARCH 22nd 2016

Duration: 2 hours (Open book & notes)

– You can take this page away –

Answer midterms questions in accordance to the system definition given below.

ABC Markets Chain E-Shopping Application (ESA):

ABC Markets Chain wants to acquire custom software that enables e-shopping of its products by Customers over the Internet in order to increase the amount of its sales. ABC Markets Chain has many stores and each store has a Store Manager. ABC Markets Chain E-Shopping Application (ESA) is expected to support a Store Manager in maintaining information regarding the departments within the store and the products within the departments.

ESA is also expected to support Customers in their e-shopping. Customer can explore the products in the departments of the store (e.g. delicatessen, bakery, and cleaning), and add the products into his/her basket in the amounts that s/he wishes to buy. Customer can also search the store for specific products, or remove already added products from his/her basket. Customer can display the content and price of his/her basket during e-shopping. When the Customer completes choosing products, s/he can buy the products in his/her basket by a credit-card. Purchased products are then delivered by a Store Assistant to the address that the Customer provides during payment. If the Customer is registered in ESA as a District Customer, the system will allow the District Customer to pay, alternatively, by cash or credit card at the time of product delivery to the address by the Store Assistant.

Project Development:

ABC Markets Chain awarded a contract to XYZ Software Company to develop ESA. The software will include two parts, namely “data management” and “e-shopping”. ABC Markets Chain wants “data management” part to be delivered earlier than “e-shopping part”.

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Arasınav sorularını aşağıda verilen sistem tanımına göre yanıtlayın.

ABC Marketler Zinciri Elektronik Ticaret Uygulaması (ESA):

ABC Marketler Zinciri satışlarını arttırmak amacıyla, alış-veriş işlemlerinin Müşteriler tarafından Internet üzerinden yapılmasını sağlayacak bir uygulama satın almayı istemektedir. ABC Marketler Zinciri'nin birden çok mağazası vardır ve her mağazada bir Mağaza Yöneticisi bulunmaktadır. ABC Marketler Zinciri Elektronik Ticaret Uygulaması'nın (ESA) mağazadaki reyonlara ve reyonlardaki ürünlere ilişkin bilgileri yönetmede, Mağaza Yöneticilerini desteklemesi beklenmektedir.

ESA'nın Müşterileri elektronik alış-verişte desteklemesi de beklenmektedir. Müşteri, mağazanın farklı reyonlarını (şarküteri, unlu mamuller, temizlik, vb.) gezerek ürünleri görebilecek ve almak istediği ürünü istediği miktarda sepetine ekleyebilecektir. Müşteri ayrıca belli bir ürünü mağazada arayabilecek ya da daha önce eklediği ürünleri sepetinden çıkarabilecektir. Müşteri, alış-verişi sırasında sepetinin içeriğini ve fiyatını görebilecektir. Müşteri ürün seçmeyi tamamladığında, sepetindeki ürünleri kredi kartıyla anında satın alabilecektir. Satın alınan ürünler, Müşteri'nin ödeme sırasında belirttiği adrese Mağaza Görevlisi tarafından teslim edilecektir. Müşteri ESA'da Semt Müşterisi olarak kayıtlı ise sistem alternatif olarak Semt Müşterisi'ne, ürünlerin Mağaza Görevlisi tarafından adrese teslimi sırasında ödeme imkânı (nakit veya kredi kartıyla) sunacaktır.

Proje Geliştirme:

ABC Marketler Zinciri, ESA projesi sözleşmesini XYZ Yazılım Firması ile yapmıştır. Uygulama, "veri yönetimi" ve "interaktif alış-veriş" olmak üzere iki bölümden oluşacaktır. Müşteri "veri yönetimi" bölümünün "interaktif alış-veriş" bölümünden önce teslimini istemektedir.

Question	Points	Mark
1	10	
2	15	
3	15	
4	20	
Part-A	**60**	

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MIDTERM EXAM – PART A

Question-1. (10 points)

Which development model should XYZ Software Company should use and why? Prepare the work breakdown structure (WBS - up to two task levels) of the initial project plan for developing ESA.

XYZ Company should use Incremental Development Model while developing ESA, because the customer wants "data management" part to be delivered earlier than "e-shopping part". With Incremental Model these parts will be developed in increments and delivered to the customer in sequence.

The WBS of such a development would be like the activity tree on the right.

ESA Development Project	
1	Outline requirements definition
2	System architectural design
3	*Increment-1: Data Management (DM)*
3.1	DM Specification
3.2	DM Development
3.3	DM Validation
3.4	DM Deployment
4	*Increment-2: E-shopping (ES)*
4.1	ES Specification
4.2	ES Development
4.3	ES Validation
4.4	ES Deployment
5	ES Integration with DM
6	System Validation
7	System Deployment

Question-2. (15 points)

Explain each requirements level given below by a sentence. For each level, provide an example requirement for ESA. *(Note that not every level of requirement is exemplified in the definition of ESA. You may need to create your own examples for some of them.)*

a. Business requirement (3 pts)
The Customer adds the products into his/her basket in the amounts that s/he wishes to buy.

b. User requirement (4 pts)
The Customer can display the content and price of his/her basket during e-shopping.

c. System requirement (8 pts)
(*regarding the user requirement in (b)*)

i. The system will list the content of the basket by product items.
ii. The system will show the amount to buy and unit price per product item.
iii. The system will show total price per product item.
iv. The system will show the total amount of the basket.

Question-3. (15 points)

Explain each requirement type given below by a sentence. For each type, provide an example requirement for ESA. *(Note that not every type of requirement is exemplified in the definition of ESA. You may need to create your own examples for some of them.)*

a. Functional requirement (3 pts)
When the Customer completes choosing products, s/he can buy the products in his/her basket by a credit-card.

b. Product quality requirement (3 pts)
The system will enable a secure connection during payment by a credit-card.

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c. Domain requirement (3 pts)

The products delivered to the Customer should not be past their last consumption date.

d. Process requirement (3 pts)

The project will be developed by following the incremental development method.

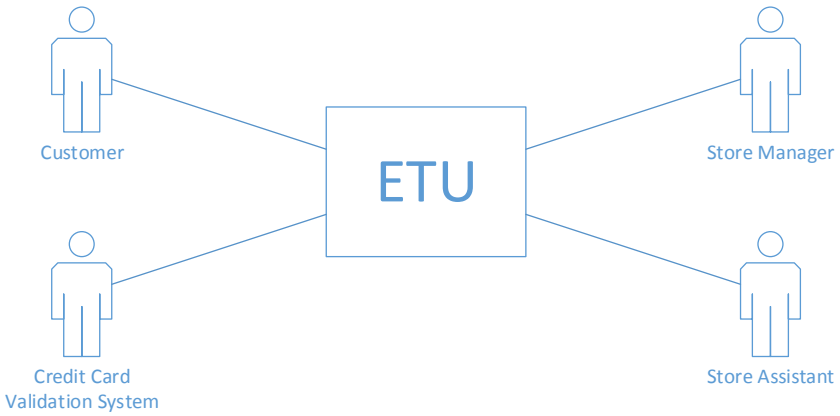
e. Design constraint (3 pts)

The system will be developed as a web-based application.

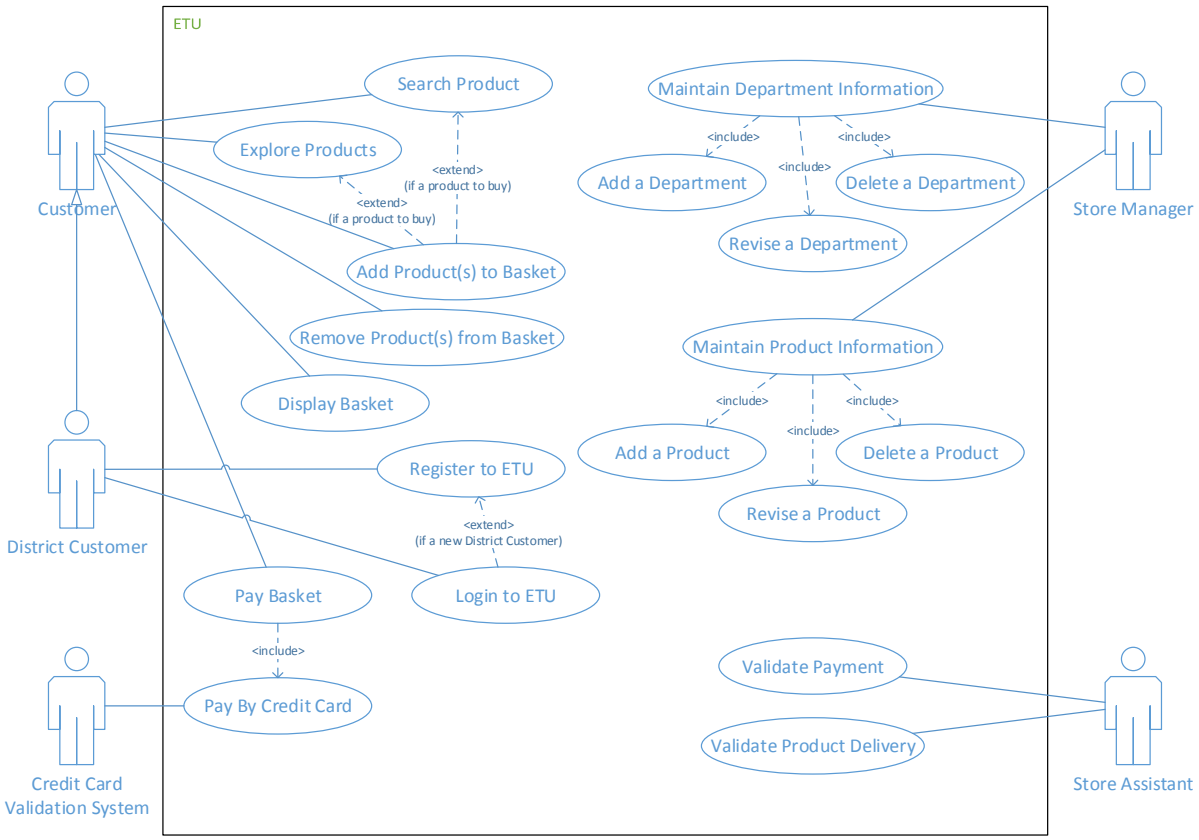
Question-4. (20 points)

Identify the scope of and carry out requirements analysis for ESA.

a. Draw *Context Diagram* for developing ESA. (5 pts)



b. Draw *UML Use-case Diagram* for developing ESA. (10 pts)



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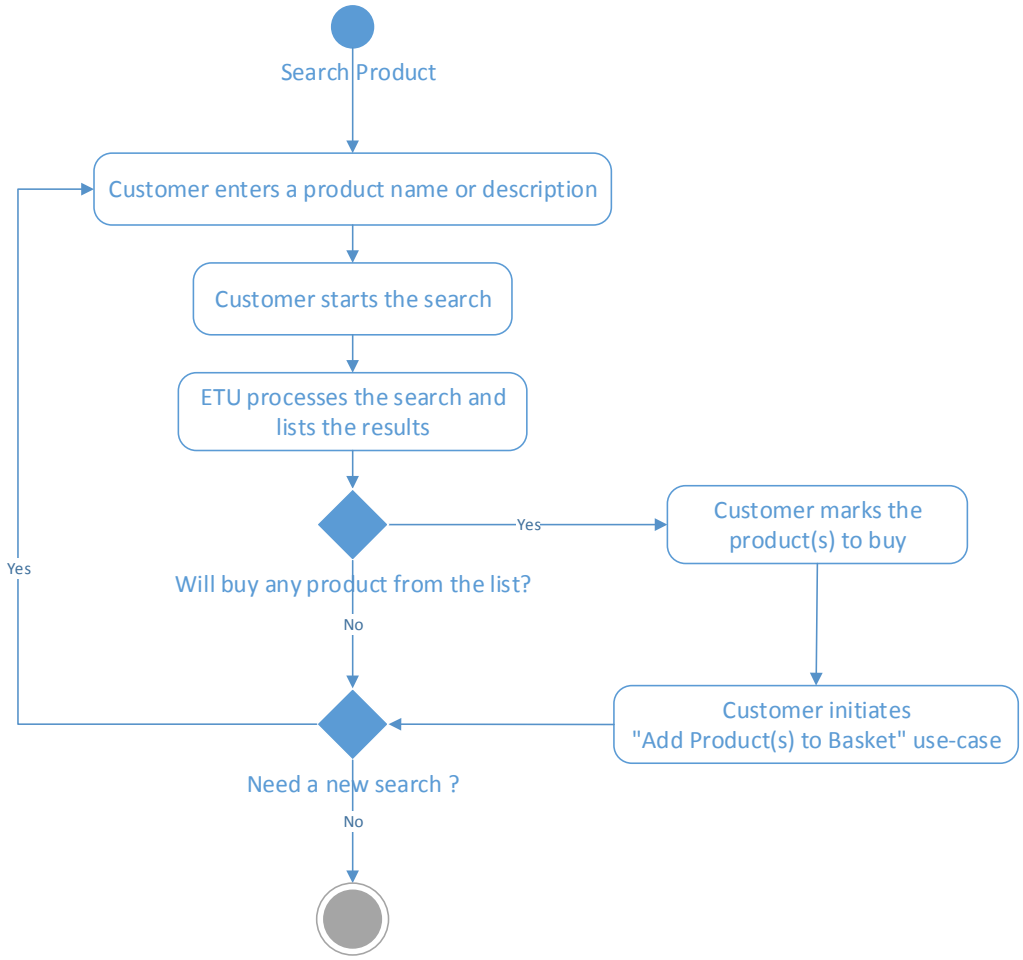
c. Draw *Activity Diagram* for a use-case (other than login!) that you identified in 4.b. (5 pts)



Question	Points	Mark
5	10	
6	10	
7	10	
8	10	
Part-B	**40**	

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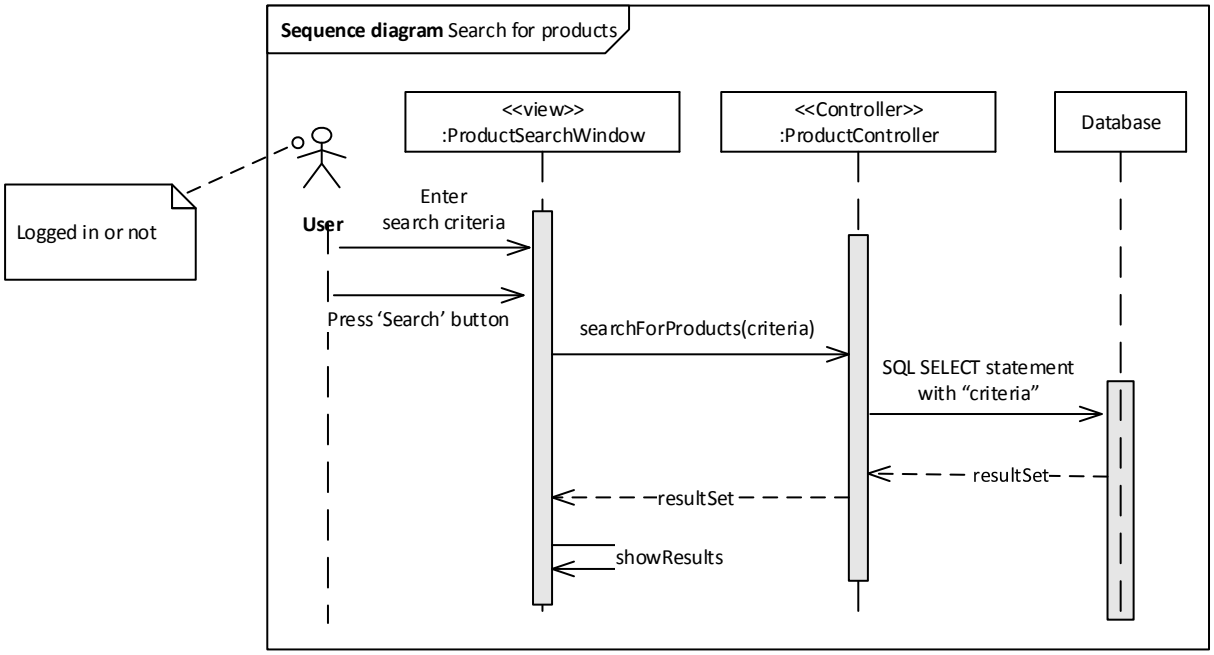
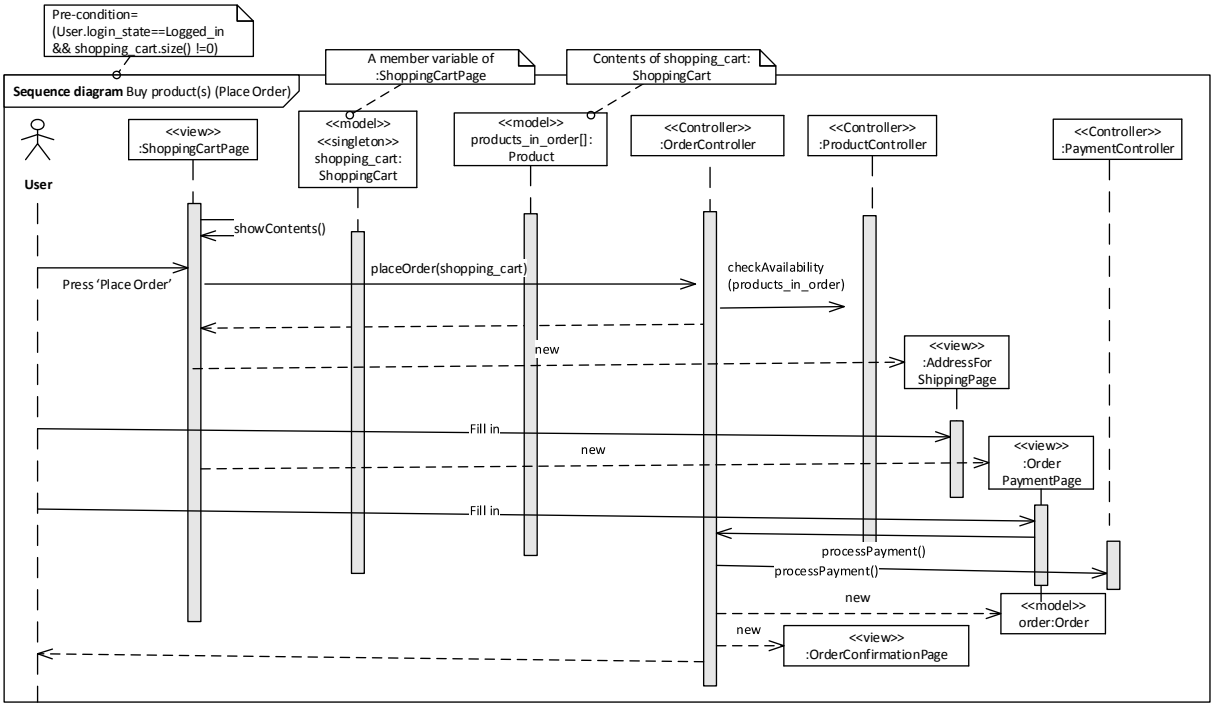
Question-5. (10 points)

Draw sequence diagrams for two use-cases, the ones that relate to buying products, and searching.





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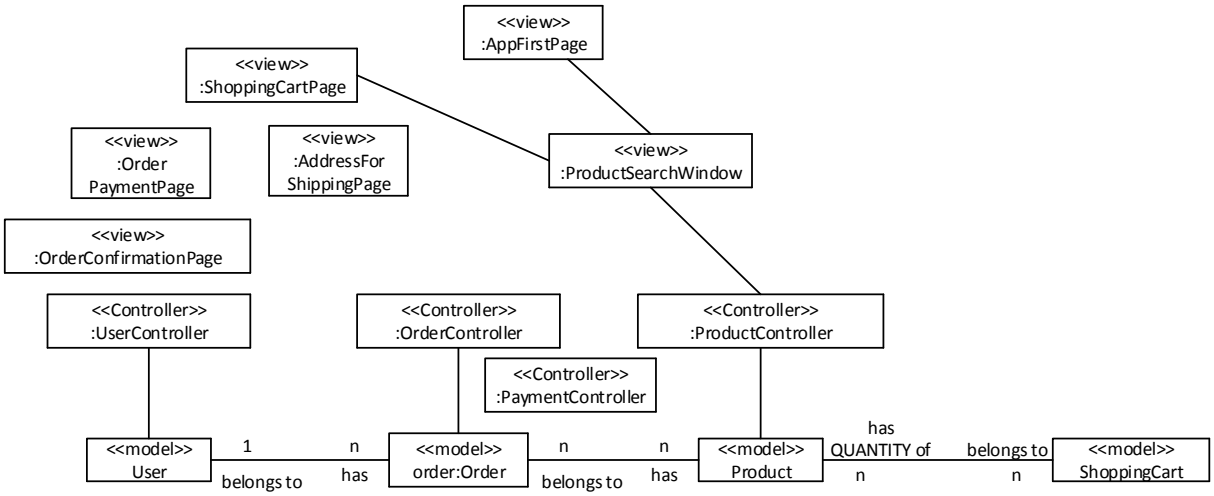
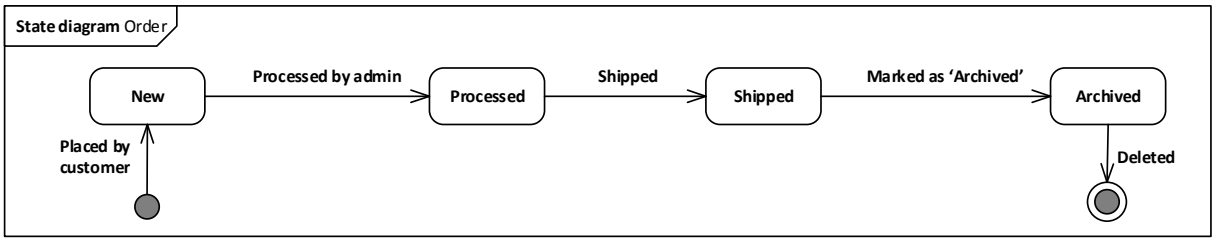
Question-6. (10 points)

Draw the class diagram for this system. Note that details on the class diagram should match with the function names shown on the above sequence diagrams (as discussed in class).



Question-7. (10 points)

Identify a class in this system for which state-driven behavior is important and interesting, and then draw the state diagram for it, with full details (events and guard conditions).



Question-8. (10 points)

Suppose that we want to implement this system as a web-based application. Identify and mention a proper architecture pattern for this system, and then draw the architecture diagram for this system.

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