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Praktikum Desain PL

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Use Case Diagram

Gambaran awal dari perangkat lunak yang dibentuk berdasarkan hasil *requirement gathering* dengan menggunakan simbol - simbol sederhana.

Specify the expected behaviour (what)

NOT the exact method of making it happen (how)

Use Case Diagram

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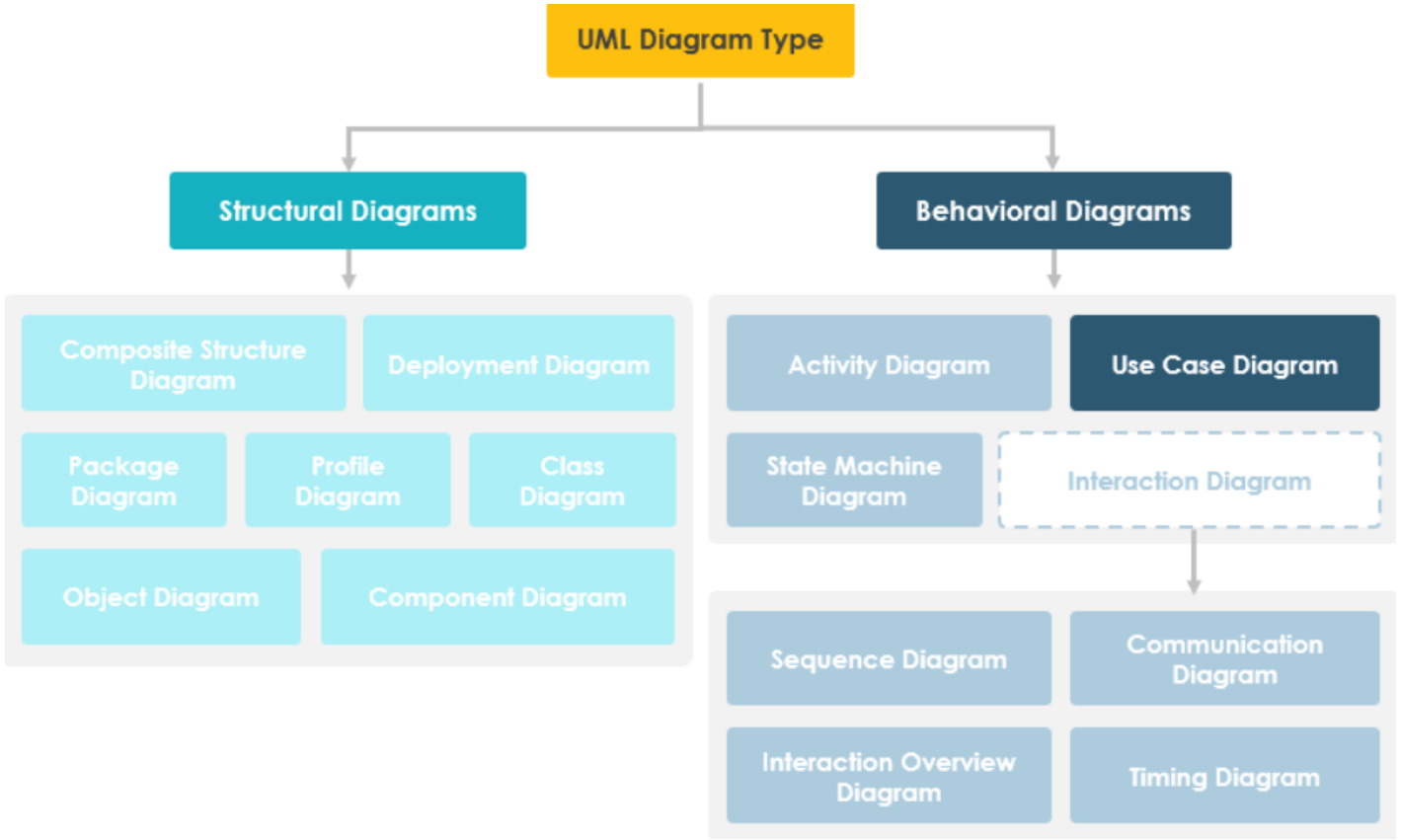
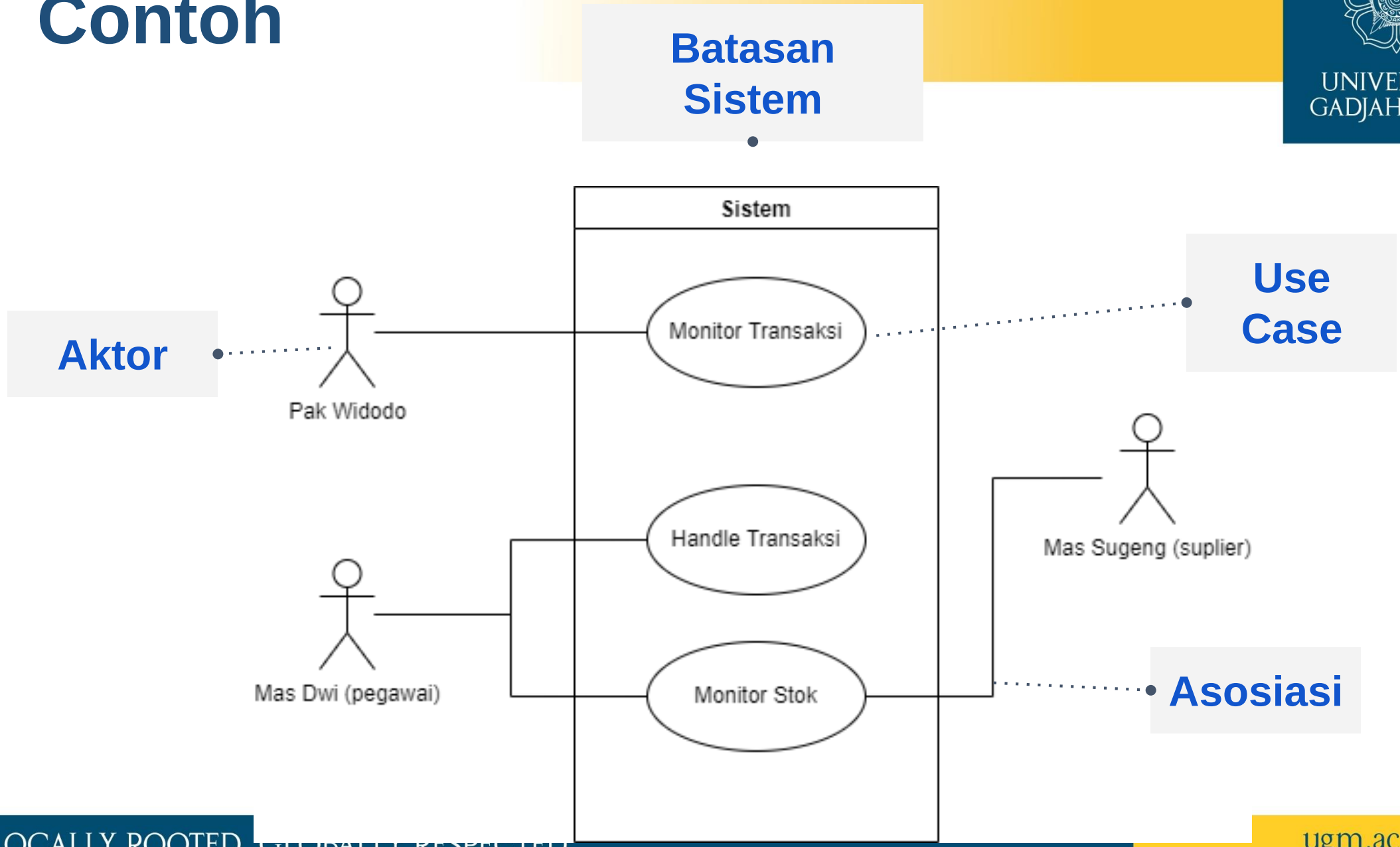
Pemodelan yang membantu untuk merancang sebuah sistem dari perspektif pengguna dan digunakan untuk mengkomunikasikan *system behaviour*.



Tujuan

- Menentukan konteks dari sebuah sistem,
- *Capture requirements of the system,*
- Validasi arsitektur sistem,
- Acuan implementasi sistem,
- Pemodelan yang mudah dipahami (analis dan domain expert)

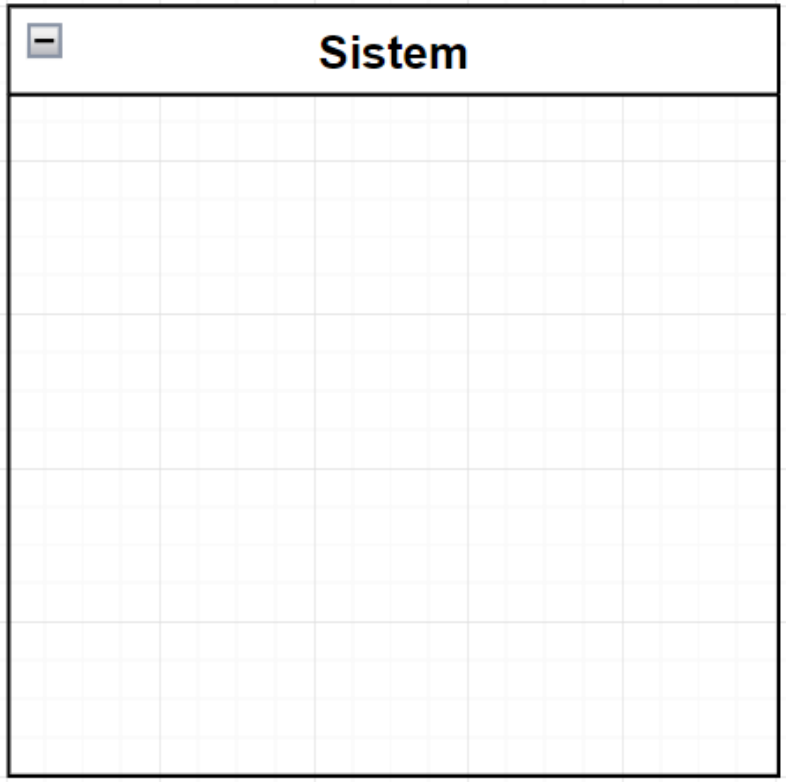
Contoh


Batasan Sistem
Sistem
Aktor
Use Case
Monitor Transaksi
Handle Transaksi
Monitor Stok
Pak Widodo
Mas Dwi (pegawai)
Mas Sugeng (suplier)
Asosiasi

Notasi - Batasan Sistem

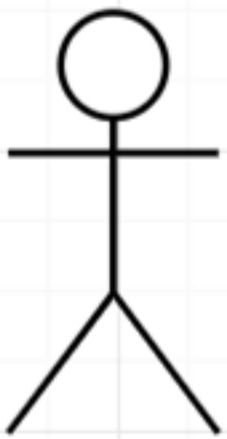
It's a system which you are going to develop. In general.

Jika sistemnya kompleks dan rumit, dapat dipecah berdasarkan modul,



Notasi - Aktor

- Seseorang yang berinteraksi dengan sistem (noun),
- Memainkan sebuah peran dalam sebuah proses bisnis,
- Konsep nya mirip seperti pengguna, tapi seorang pengguna dapat berbeda peran,
- *Has responsibility and expectations toward the system.*



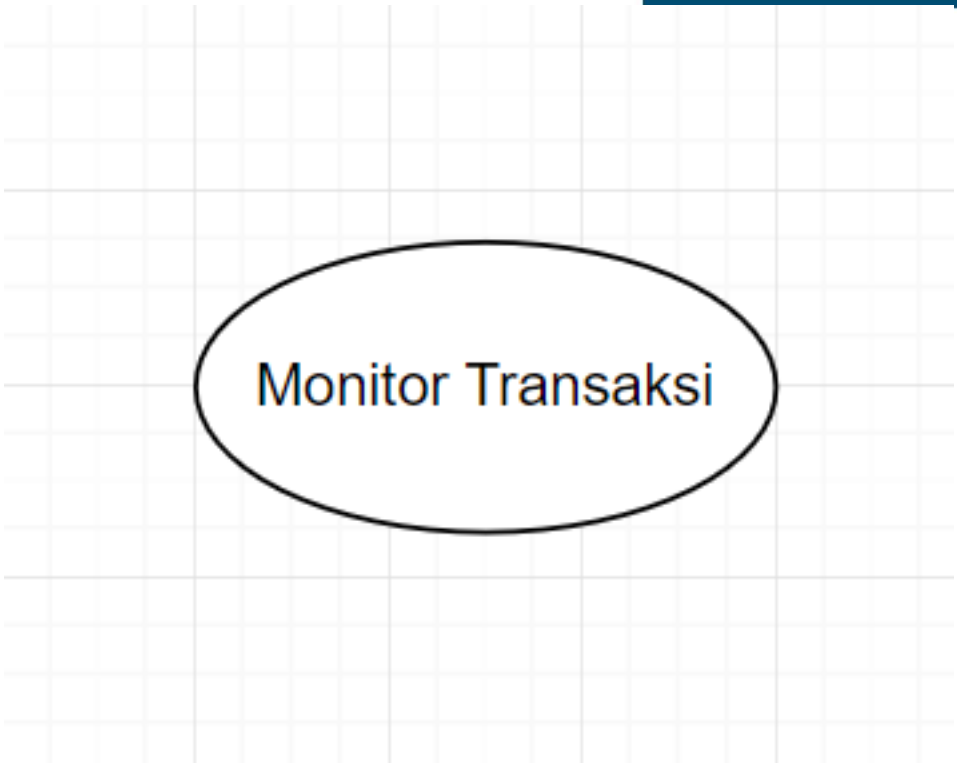
Actor

Notasi - Use Case

- kasus penggunaan menggambarkan proses sistem (kebutuhan sistem dari sudut pandang user)
- Biasanya dalam bentuk:

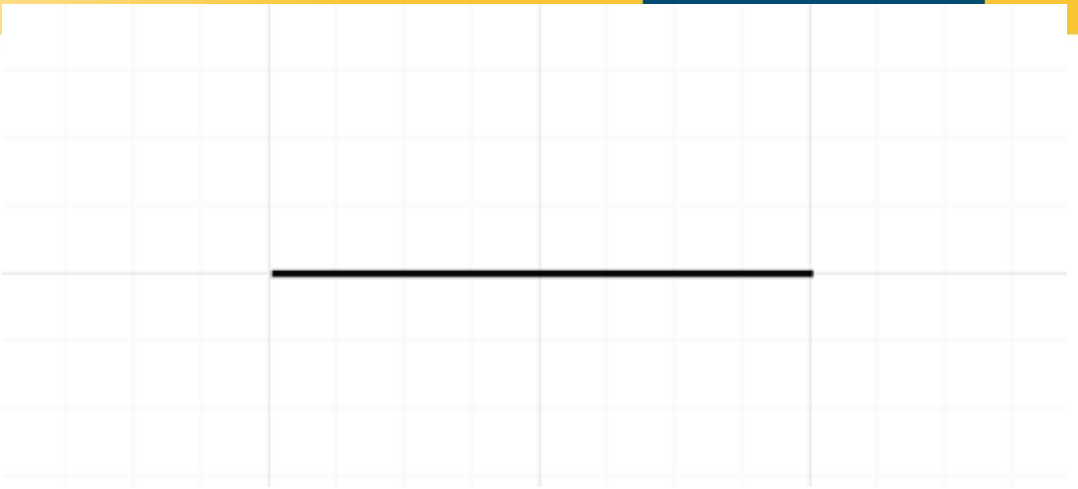
  kata kerja + kata benda

- Setiap aktor terhubung pada setiap use case, tapi beberapa use case mungkin tidak terhubung dengan aktor.



Notasi - Relasi

Partisipasi aktor dalam sebuah use case ditampilkan dengan menarik garis tegas dari aktor ke use case.



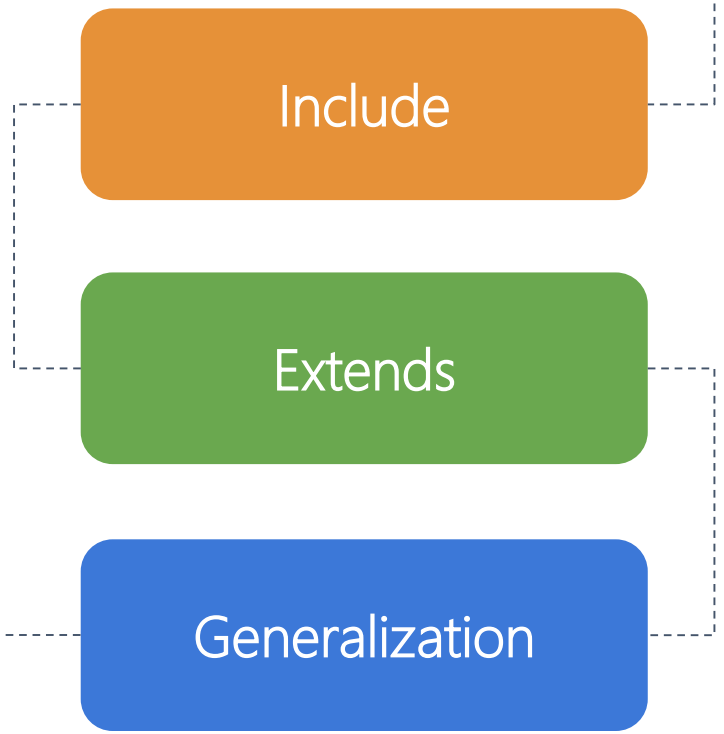
Case Study

What Relationship?

Pemodelan *dependency* diantara dua *use case*.

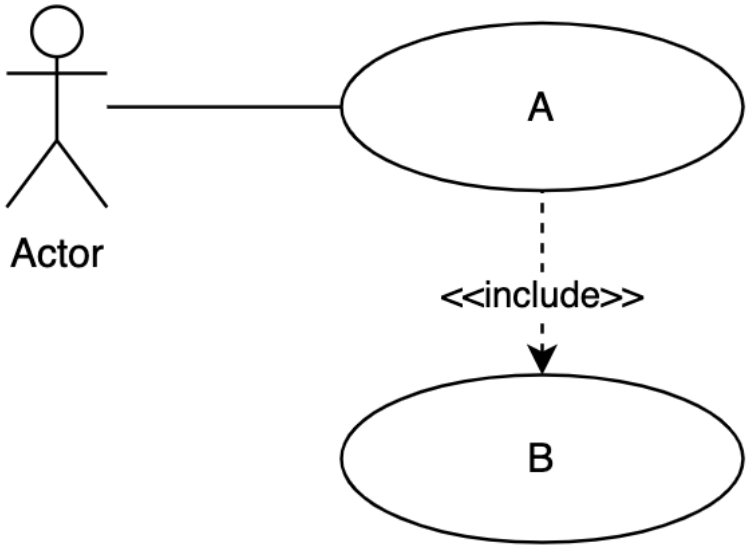
Tujuannya adalah untuk breaking down use case yang masih bersifat *general* atau *high level use case*.

Digambarkan dengan garis tidak tegas.

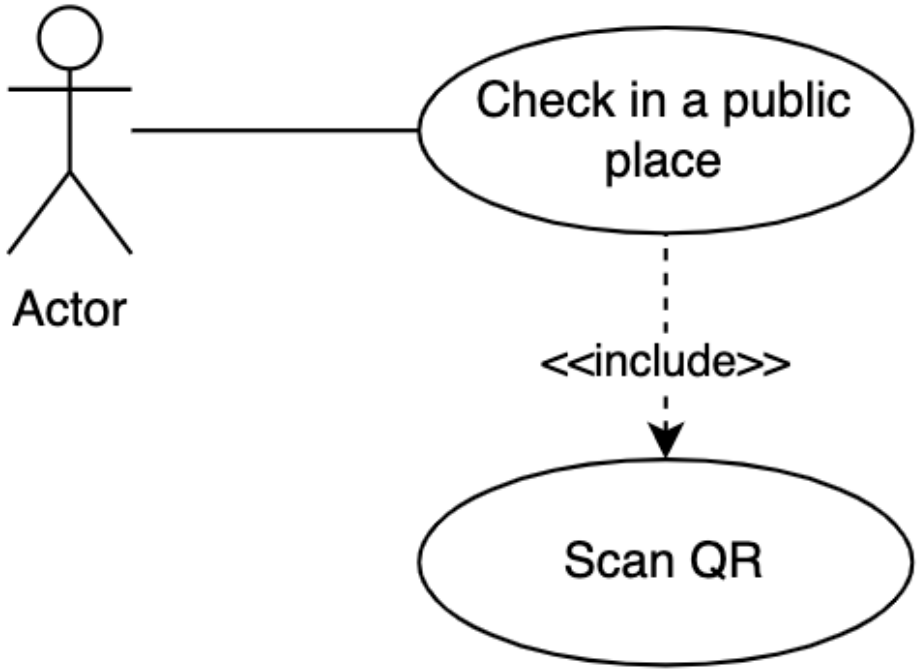


Include

- Relasi yang menggambarkan
  - Use case tambahan (sub usecase) ke sebuah usecase, dan
  - Use case yang utama memerlukan sub use case untuk menjalankan fungsinya atau sebagai syarat dijalankannya use case utama
- Panah mengarah pada sub use case
- Contoh : Apabila use case A dilakukan, use case B harus dijalankan.
- Apakah B bisa dijalankan tanpa menjalankan use case A?

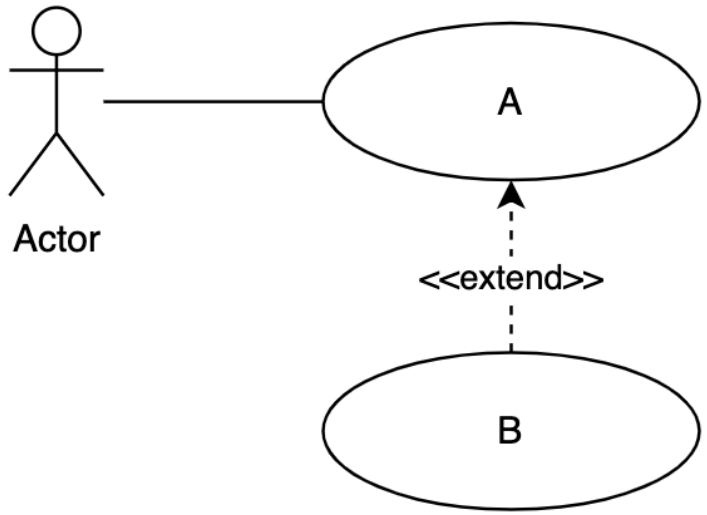


Contoh (Include)

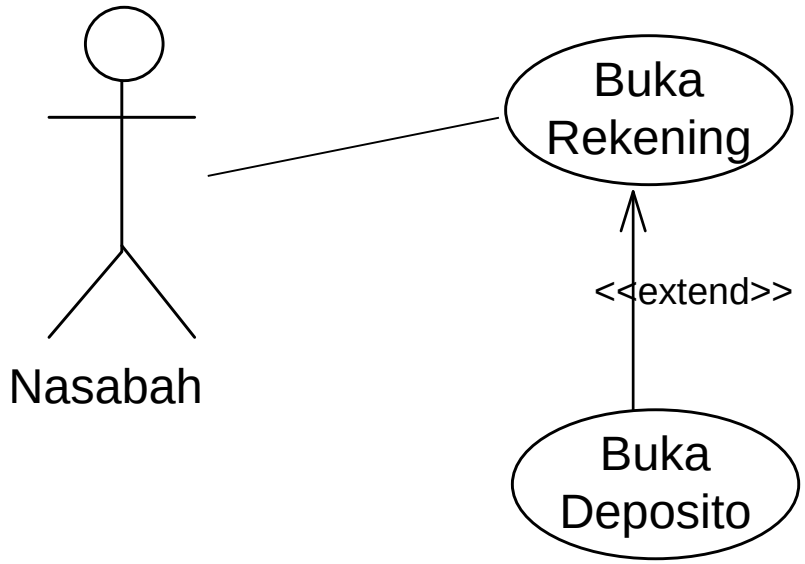


Extend

- Relasi yang menggambarkan
  - Use case tambahan ke sebuah usecase, dan
  - Use case yang utama dapat berdiri sendiri meskipun tanpa sub use case
- Panah mengarah pada use case utama
- Contoh : Asecase A dapat dilakukan, tanpa harus menjalankan use case B.
- Apakah B bisa dijalankan tanpa menjalankan usecase A?

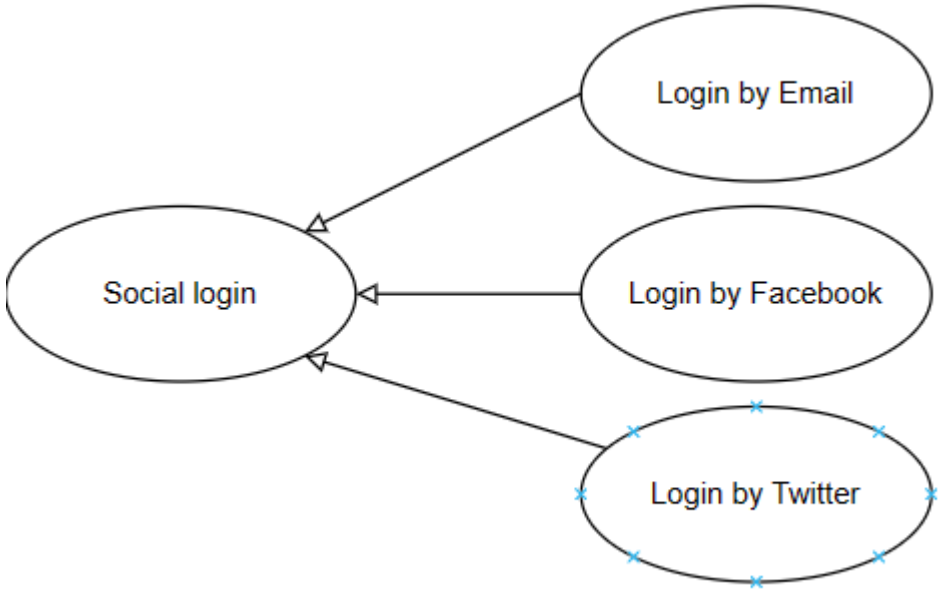


Contoh (Extends)



Generalisasi

Child use case yang mewarisi behaviour dari sebuah use case parent.



Use case tips

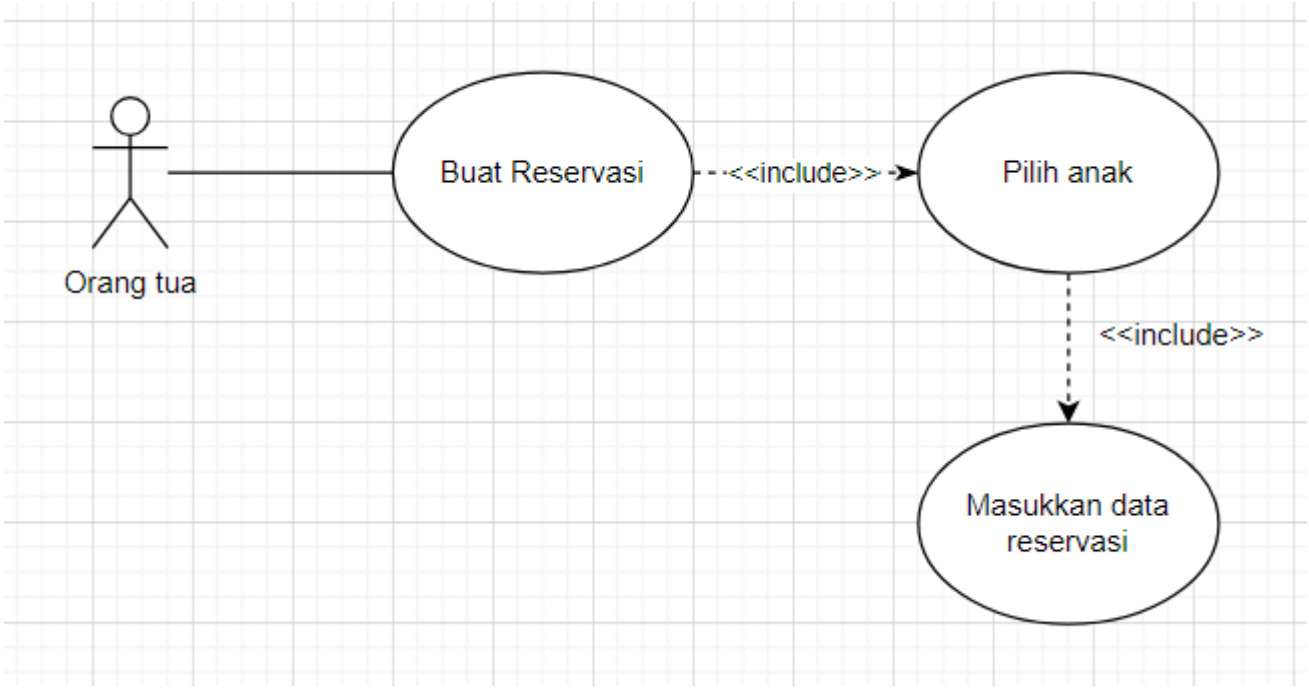
- Structure and organize it from the perspective of actors,
- Mulailah dengan yang sederhana, dalam perspektif *high level*, *details can come later.*
- Use case diagram berbasis pada fungsionalitas, sehingga, fokuslah pada “apa” bukan “bagaimana”.

Diskusi

Apa hubungan antar use case dibawah ini?

Diskusi

Apakah yang salah dari use case diagram berikut?



Use Case Scenario

Developing a use case scenario

Each use case has a description. We will refer to the description as a use case scenario.

There are two paths :

- Primary path : the standard flow of events in the system
- Alternative paths : variations to the behaviour

Studi Kasus

Use case: “Purchase items”:

- Primary paths: the items is **in stock** and the payment are successfully made.
- Alternative scenario : if an item purchased is **out of stock**, or if a **credit card** company **rejects** a customer’s requested purchase.

Developing a use case scenario

A use case scenario is divided into two sections:

1. Identification
2. Steps performed

Use case identifiers

Contains :

- The use case name and a unique ID
- The actors involved in the use case
- Brief description of what the use case accomplishes
- Pre conditions
- Post conditions

Actors

Actors (roles) involved in the use case.

This corresponds to the relationships between use case and actors noted in use case diagram

Brief description

Make sure that the brief description captures

- The stakeholders for whom the use case produces value. This is often captured by the actors, but it is a good idea to explicitly call this out.
- The specific value provided for those stakeholders.
- A short synopsis of what the system does to produce this value. Don't repeat the actual use-case description. Instead, focus on capturing the essence of the use case.

Brief description example :

Withdraw Cash in an ATM system:

This use case describes how a Bank Customer uses an ATM to withdraw money from his or her bank account.

Preconditions

The condition of the system before the use case may be performed, which may be another use case.

An example might be, “The viewer has successfully logged into the system,” or it might be the successful completion of another use case.

Postconditions

The state of the system after the use case has finished, including output people have received, transmissions to other systems, and data that have been created or updated.

Example (1)

Use Case ID	UC10
Use Case Name	Withdraw money
Actor(s)	Bank customer
Description	This use case describes how a bank customer uses an ATM to withdraw money from a bank account
Pre condition	The bank customer must possess a bank card.
Post condition	Cash and card are dispensed from ATM

Steps performed

Steps performed

- It includes the steps required to achieve the use case's goals

- It is desirable to write up a use case for the basic flow, and then to write up one for each of the alternative flow

Basic Flow

The basic flow describes the normal way of achieving the goals of the use case.

1. Customer inserts the bank card.
2. The system reads the card and requests the Customer to enter the Personal Identification Number (PIN).
3. The system presents a menu of choices.
4. The Customer indicates a wish to withdraw cash.
5. The system requests the amount to be dispensed and the Customer enters the amount.
6. The system dispenses the desired amount of cash and ejects the card.
7. The Customer takes the cash and card.

Alternative Flow

Alternative flows extend the basic flow to cater to variants and exceptions. For example :

- Card cannot be identified
- Customer cannot be identified
- Nonstandard amount required
- No money in the account
- Attempt to withdraw more than daily amount
- The ATM is out of money
- A receipt is required

Thus, each variants must be detailed into steps

Other example

Use Case ID	UC01
Use Case Name	Make Order Request
Description	Customer enters an order request to purchase items from the online shopping system. The customer's credit card is checked for sufficient credit to pay for the requested catalog items.
Actor	Customer
Precondition	The customer has selected one or more catalog items.
Post condition	System has created a delivery order for the customer
Basic flow	1. Customer provides order request and customer account Id to pay for purchase. 2. System retrieves customer account information, including the customer's credit card details. 3. System checks the customer's credit card for the purchase amount and, if approved, creates a credit card purchase authorization number. 4. System creates a delivery order containing order details, customer Id, and credit card authorization number. 5. System confirms approval of purchase and displays order information to customer.
Alternative flow(s)	

Alternative flow (s)	[Step 1] If customer does not have an account 1. The system prompts the customer to make an account 2. The customer fills the data 3. The system creates an account [Step 3] If the customer's credit card request is denied 1. The system prompts the customer to enter a different credit card number. 2. The customer can either enter a different credit card number or cancel the order.

Other example

Use Case ID	UC02
Use Case Name	Validate PIN
Description	System validates customer PIN.
Actor	Customer
Precondition	ATM is idle, displaying a Welcome message
Post condition	Customer PIN has been validated.
Basic flow	1. Customer inserts the ATM card into the card reader. 2. If system recognizes the card, it reads the card number. 3. System prompts customer for PIN. 4. Customer enters PIN. 5. System checks the card's expiration date and whether the card has been reported as lost or stolen. 6. If card is valid, system then checks whether the user-entered PIN matches the card PIN maintained by the system. 7. If PIN numbers match, system checks what accounts are accessible with the ATM card. 8. System displays customer accounts and prompts customer for transaction type: withdrawal, query, or transfer.
Alternative flow(s)	

Alternative flow (s)	Step 2: If the system does not recognize the card, the system ejects the card. Step 5: If the system determines that the card date has expired, the system confiscates the card. Step 5: If the system determines that the card has been reported lost or stolen, the system confiscates the card. Step 7: If the customer-entered PIN does not match the PIN number for this card, the system re-prompts for the PIN. Step 7: If the customer enters the incorrect PIN three times, the system confiscates the card. Steps 4–8: If the customer enters Cancel, the system cancels the transaction and ejects the card.

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