Tim Pengajar IF2150

IF2250 – Rekayasa Perangkat Lunak

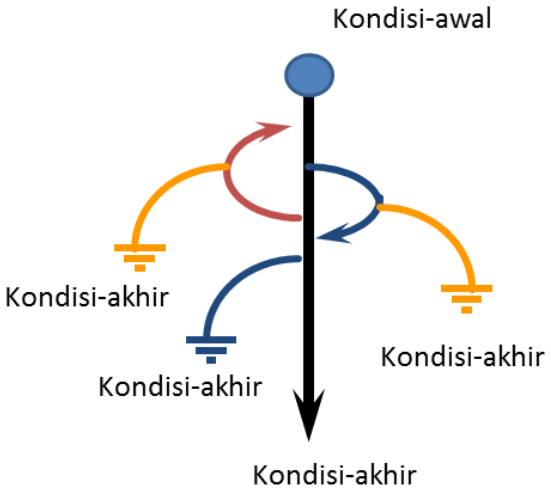
Scenario-based Modeling (2)

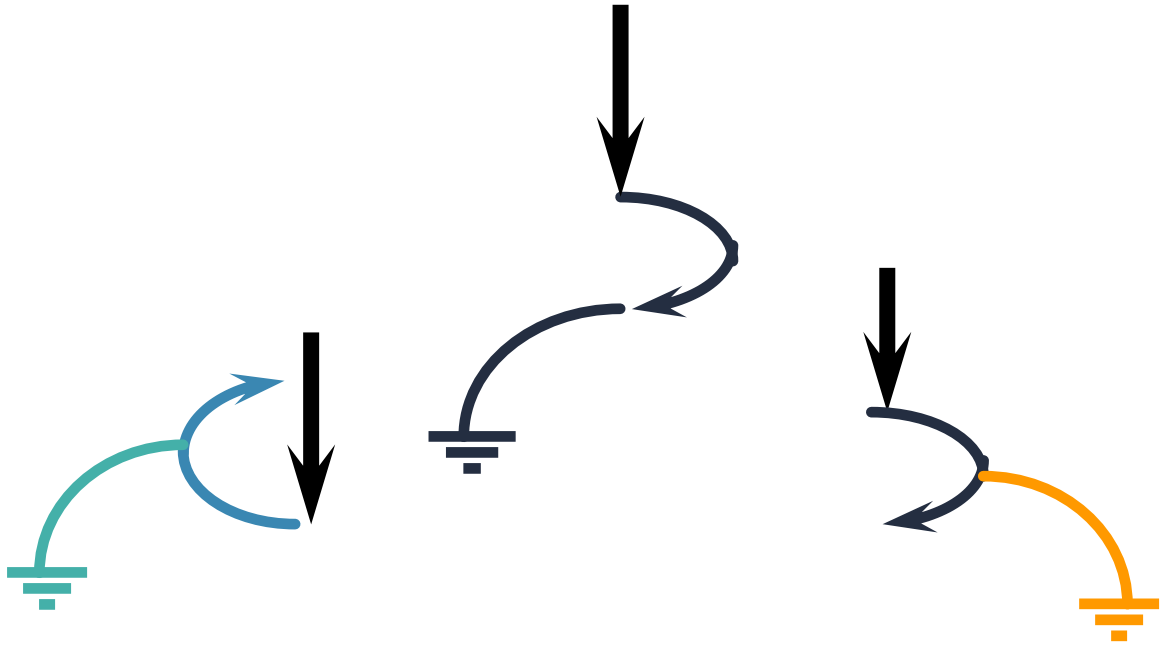
SEMESTER I TAHUN AJARAN 2024/2025

KNOWLEDGE & SOFTWARE ENGINEERING

Skenario Use Case

- Skenario adalah hasil 'instansiasi' dari *use-case*
  - Berisi satu aliran (***flow***) dalam suatu *use-case*



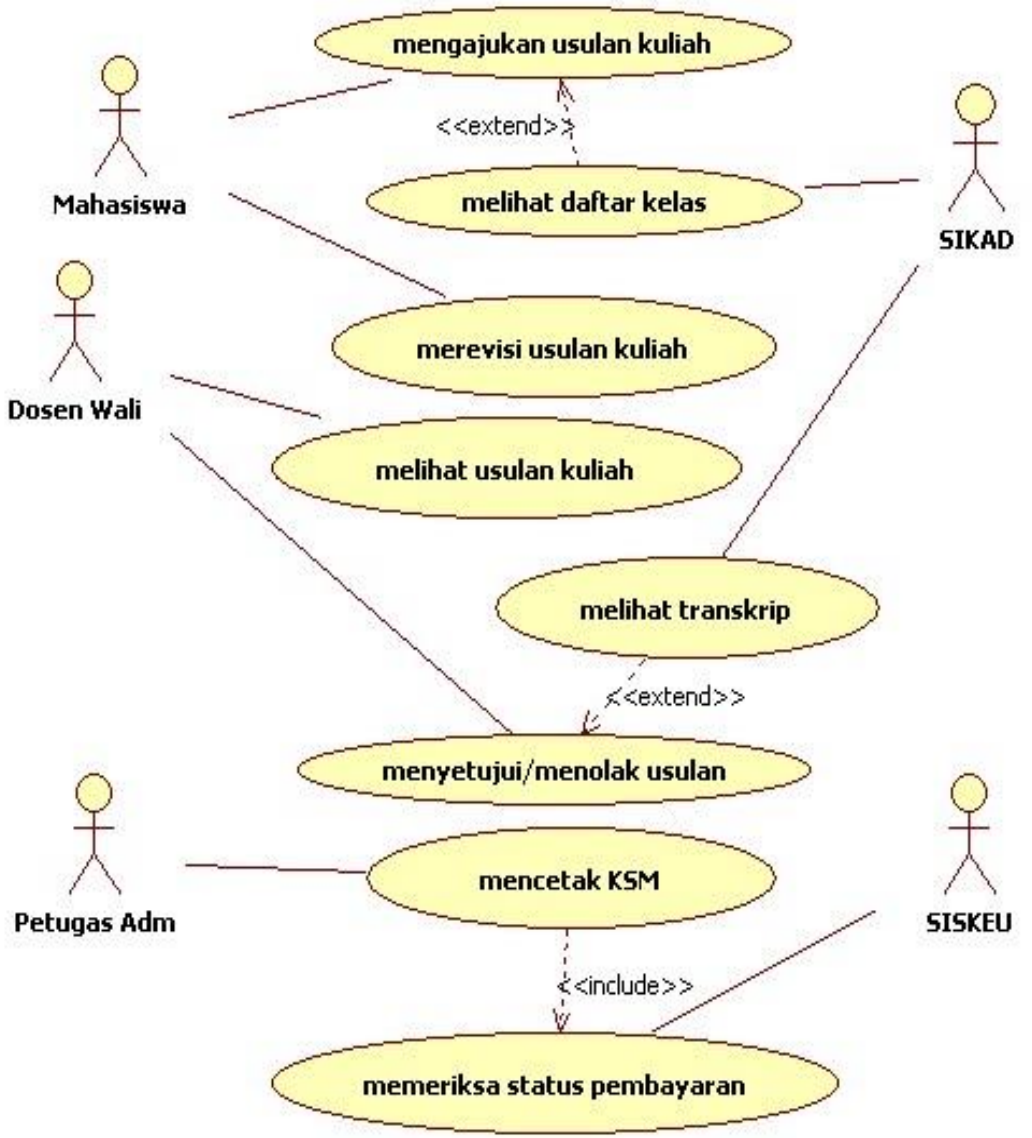


Garis hitam tebal merepresentasikan skenario yang mungkin untuk aliran basic dan alternatif

Skenario use case (2)

- Setiap *use-case* akan memiliki sekumpulan *flow-event* dengan skenario sebagai bagian dari instansiasi suatu aliran *event*
  - Skenario mungkin melibatkan *basic flow* dan alternatif *flow* (dalam berbagai kombinasi)
- Berapa skenario yang dibutuhkan?
  - Sebanyak mungkin, agar sistem dapat dimengerti hingga mudah dikembangkan
  - Dan perlu ditekankan jika ada *use-case* yang 'menarik' atau memiliki resiko tinggi.
    - Skenario dapat digunakan untuk mengerti, juga untuk mem-validasi aliran *event* dalam *use-case*
- Dalam pemodelannya, ada yang menulis skenario lalu *use-case* atau sebaliknya
- Skenario dapat memudahkan pengembangan kasus pengujian (*test case*)

Use-case Diagram



Skenario Mengajukan Usulan

1. Mahasiswa memilih menu entri usulan kuliah
2. P/L menampilkan form entri FRS
3. Mahasiswa mengisikan kode kuliah
4. P/L menampilkan informasi detil matakuliah (nama, sks)
5. Mahasiswa menekan tombol SIMPAN
6. P/L menyimpan data usulan ke dalam basisdata

Skenario Use Case Mengajukan Usulan

Aksi Aktor (Mahasiswa)	Reaksi P/L
1. Memilih menu entri usulan kuliah	
	2. Menampilkan form entri FRS
3. Mengisikan kode kuliah	
	4. Menampilkan informasi detil matakuliah (nama, sks)
5. Menekan tombol SIMPAN	
	6. Menyimpan data usulan ke dalam basisdata

Alternatif skenario Mengajukan Usulan dan Melihat Daftar Kelas

1. Mahasiswa memilih menu entri usulan kuliah
2. Mahasiswa memilih untuk melihat daftar kelas
3. P/L meminta daftar kelas dari SIKAD
4. SIKAD mengirim daftar kelas
5. P/L menampilkan daftar kelas yang dibuka
6. Mahasiswa memilih matakuliah dari daftar
7. Mahasiswa menekan tombol SIMPAN
8. P/L menyimpan data usulan ke dalam basisdata

Alternatif skenario Mengajukan Usulan dan Melihat Daftar Kelas

Actor (Mahasiswa)	Reaksi P/L	Actor (SIKAD)
1. Memilih menu entri usulan kuliah		
2. Memilih untuk melihat daftar kelas		
	3. Meminta daftar kelas ke SIKAD	
		4. Mengirim daftar kelas
	5. Menampilkan daftar kelas yang dibuka	
6. Memilih matakuliah dari daftar		
7. Menekan tombol SIMPAN		
	8. Menyimpan data usulan ke dalam basisdata	

Alternatif skenario... (2)

1. Mahasiswa memilih menu entri usulan kuliah
2. P/L menampilkan form entri FRS
3. Mahasiswa mengisikan kode kuliah
4. P/L menampilkan pesan bahwa kelas untuk kuliah tersebut tidak dibuka

Skenario lainnya ?

- Merevisi usulan matakuliah
- Melihat usulan matakuliah
- Menyetujui/menolak usulan matakuliah
- Menyetujui/menolak usulan matakuliah dengan meilhat transk
- Mencetak KSM dan memeriksa status pembayaran

Diagram untuk Skenario Use Case

- Untuk jumlah *use-case* yang **besar** dengan berbagai **alternatif**, maka penulisan skenario dalam bentuk teks menjadi tidak praktis
- **Diagram** yang dapat digunakan:
  - **Diagram *Statechart***
    - Untuk menggambarkan *use-case* yang kompleks
    - Berisi penjelasan *state* dan transisi dalam *use-case*
  - **Diagram Aktivitas**
    - Menggambarkan transisi antar *state* dalam bentuk urutan aksi
    - Bentuk yang lebih umum dari *State Transition Diagram*
  - **Diagram Interaksi**
    - Menjelaskan interaksi antar instansiasi dari aktor dan instansiasi dari *use-case*

Activity Diagram

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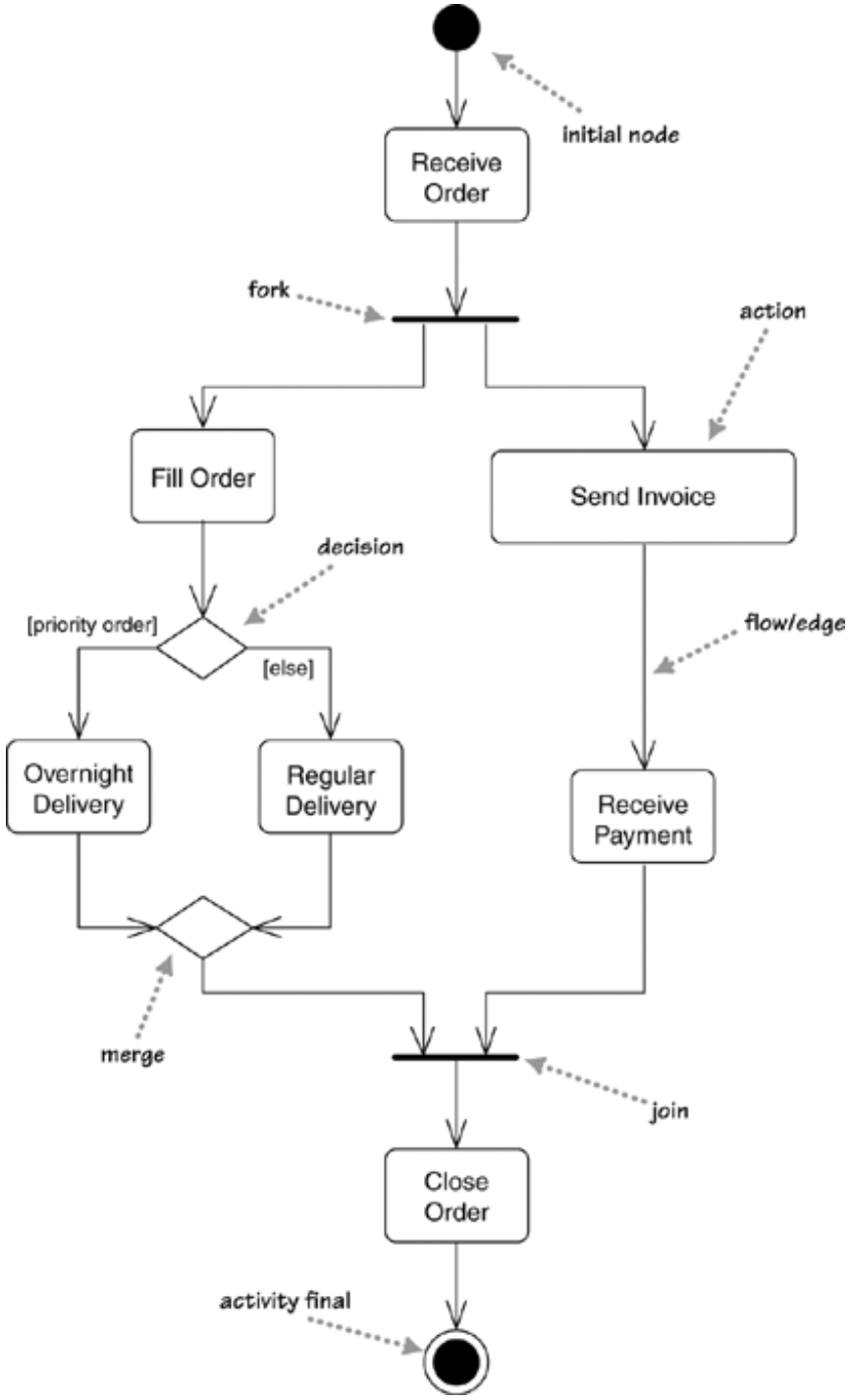
Activity Diagram

- Diagram aktivitas menjelaskan
  - Urutan proses prosedural
  - Urutan bisnis proses
  - Urutan kerja (*work flow*)

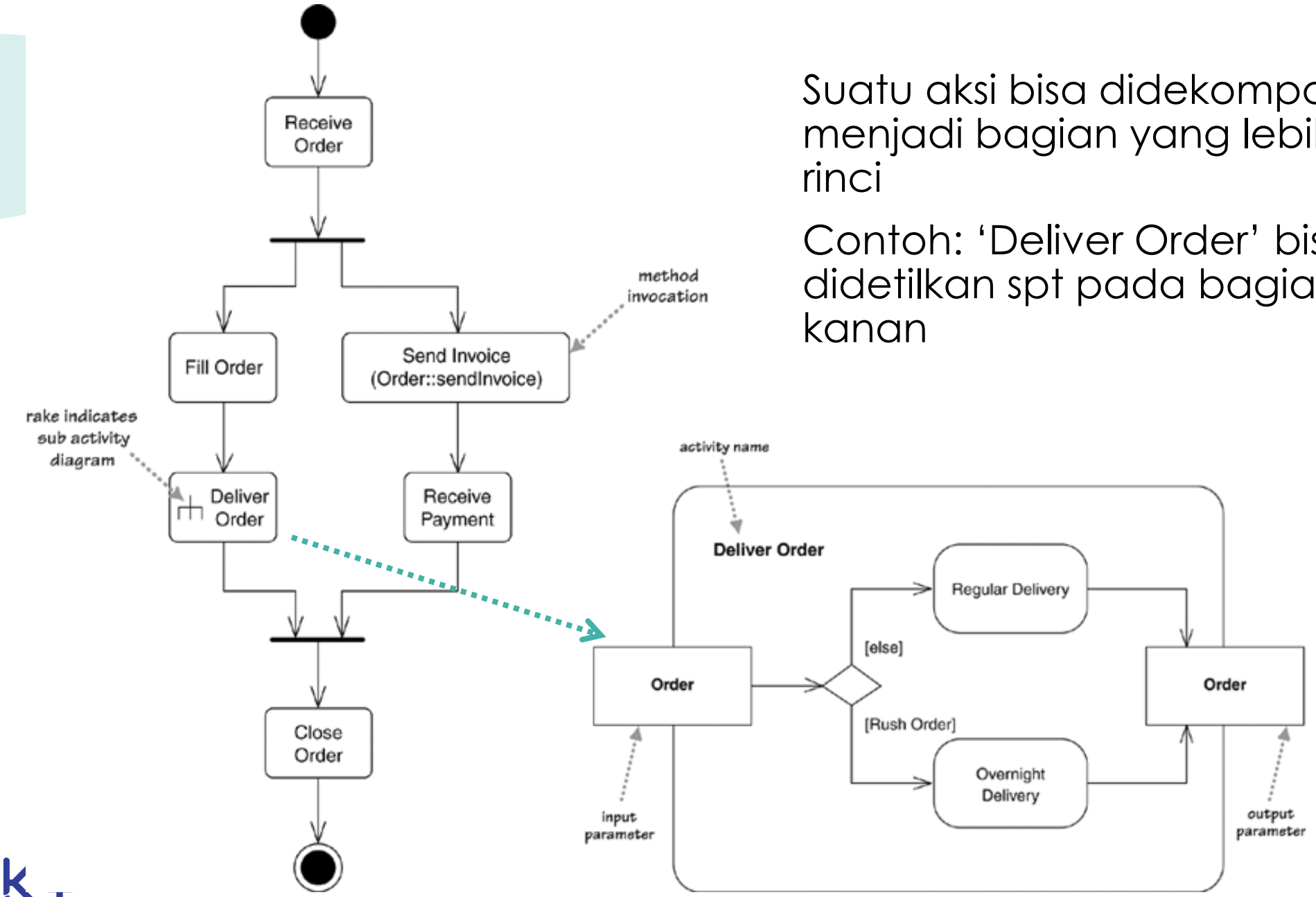
- Diagram aktivitas ini mirip seperti '*Flow chart*'
  - Tetapi *flow-chart* tidak mengenal 'perilaku paralel'/'konkuren'

Contoh


initial node
Receive Order
fork
action
Fill Order
Send Invoice
decision
[priority order]
[else]
flow/edge
Overnight Delivery
Regular Delivery
Receive Payment
merge
join
Close Order
activity final

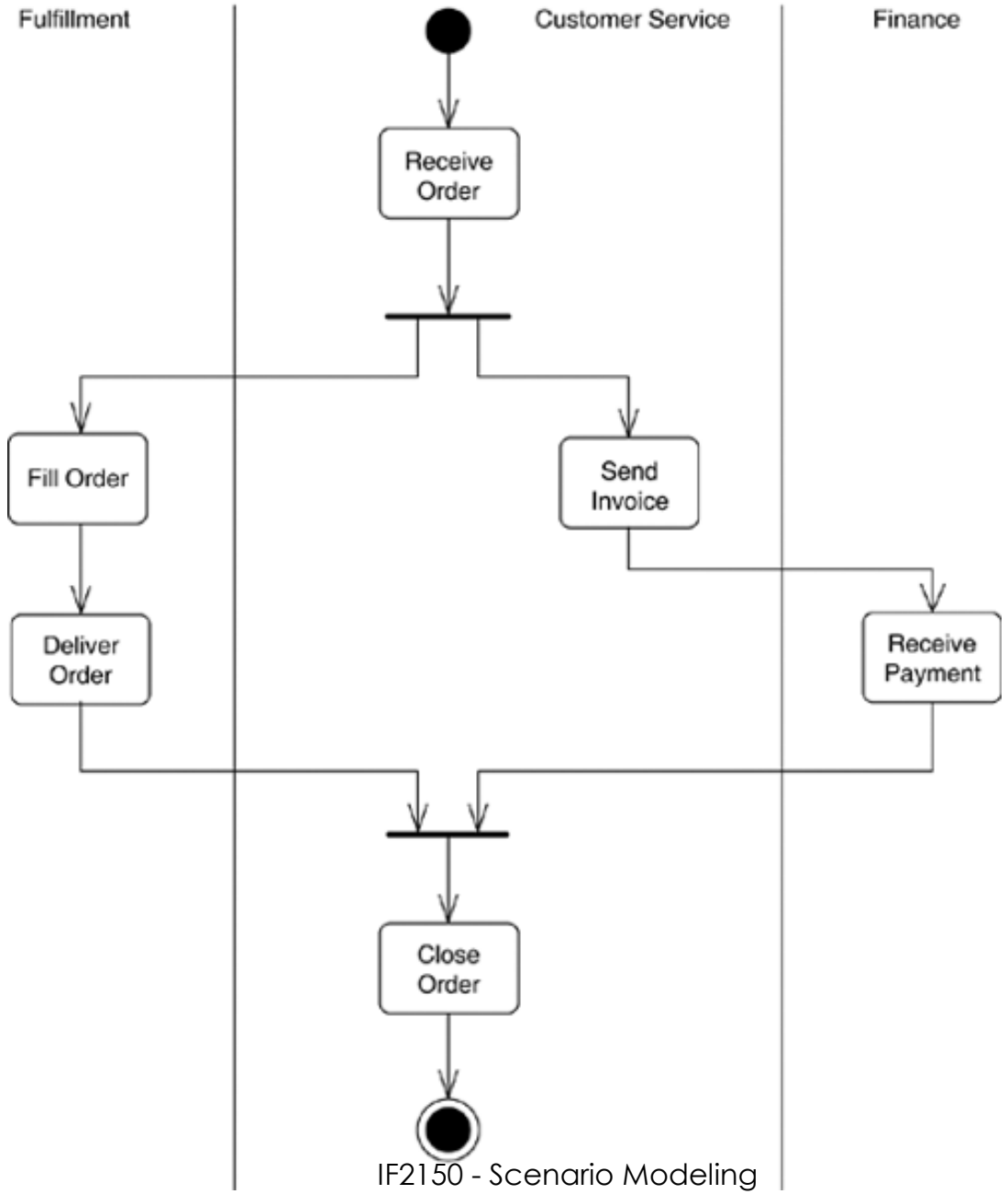
Suatu aksi bisa didekomposisi menjadi bagian yang lebih rinci

Contoh: 'Deliver Order' bisa didetilkan spt pada bagian kanan



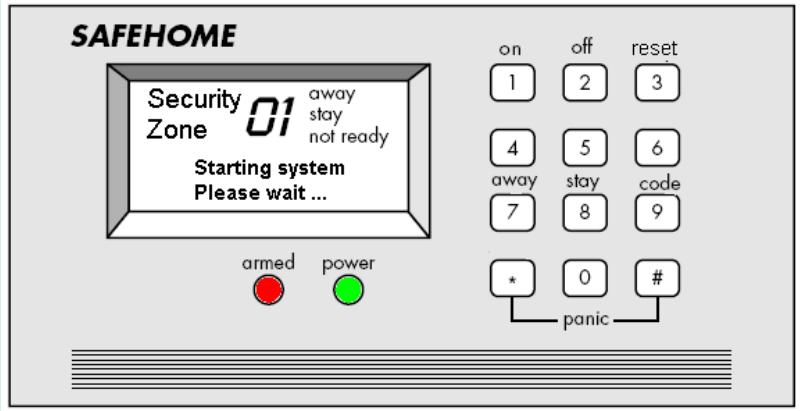
Partisi

Diagram aktivitas dapat dipartisi berdasarkan 'siapa' yang melakukan 'apa'



Contoh Pengembangan Use-Case untuk Safe Home

(Referensi: R. Pressman, "Software Engineering: A Practitioner's Approach" 7th edition)



See SEPA 193,231pg for more details

Diskusi Awal (Safe Home)

The scene: A meeting room, during the second requirements gathering meeting.

The players: Jamie Lazar, software team member; Ed Robbins, software team member; Doug Miller, software engineering manager; three members of marketing; a product engineering representative; and a facilitator.

The conversation:

Facilitator: It's time that we begin talking about the SafeHome surveillance function. Let's develop a user scenario for access to the surveillance function.

Jamie: Who plays the role of the actor on this?

Facilitator: I think Meredith (a marketing person) has been working on that functionality. Why don't you play the role?

Meredith: You want to do it the same way we did it last time, right?

Facilitator: Right . . . same way.

Meredith: Well, obviously the reason for surveillance is to allow the homeowner to check out the house while he or she is away, to record and play back video that is captured . . . that sort of thing.

Ed: Will we use compression to store the video?

Facilitator: Good question, Ed, but let's postpone implementation issues for now. Meredith?

Meredith: Okay, so basically there are two parts to the surveillance function . . . the first configures the system including laying out a floor plan—we have to have tools to help the homeowner do this—and the second part is the actual surveillance function itself. Since the layout is part of the configuration activity, I'll focus on the surveillance function.

Facilitator (smiling): Took the words right out of my mouth.

Meredith: Um . . . I want to gain access to the surveillance function either via the PC or via the Internet. My feeling is that the Internet access would be more frequently used. Anyway, I want to be able to display camera views on a PC and control pan and zoom for a specific camera. I specify the camera by selecting it from the house floor plan. I want to selectively record camera output and replay camera output. I also want to be able to block access to one or more cameras with a specific password. I also want the option of seeing small windows that show views from all cameras and then be able to pick the one I want enlarged.

Jamie: Those are called thumbnail views.

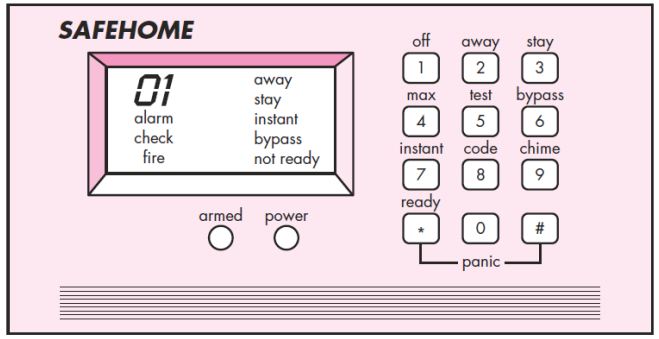
Meredith: Okay, then I want thumbnail views of all the cameras. I also want the interface for the surveillance function to have the same look and feel as all other SafeHome interfaces. I want it to be intuitive, meaning I don't want to have to read a manual to use it.

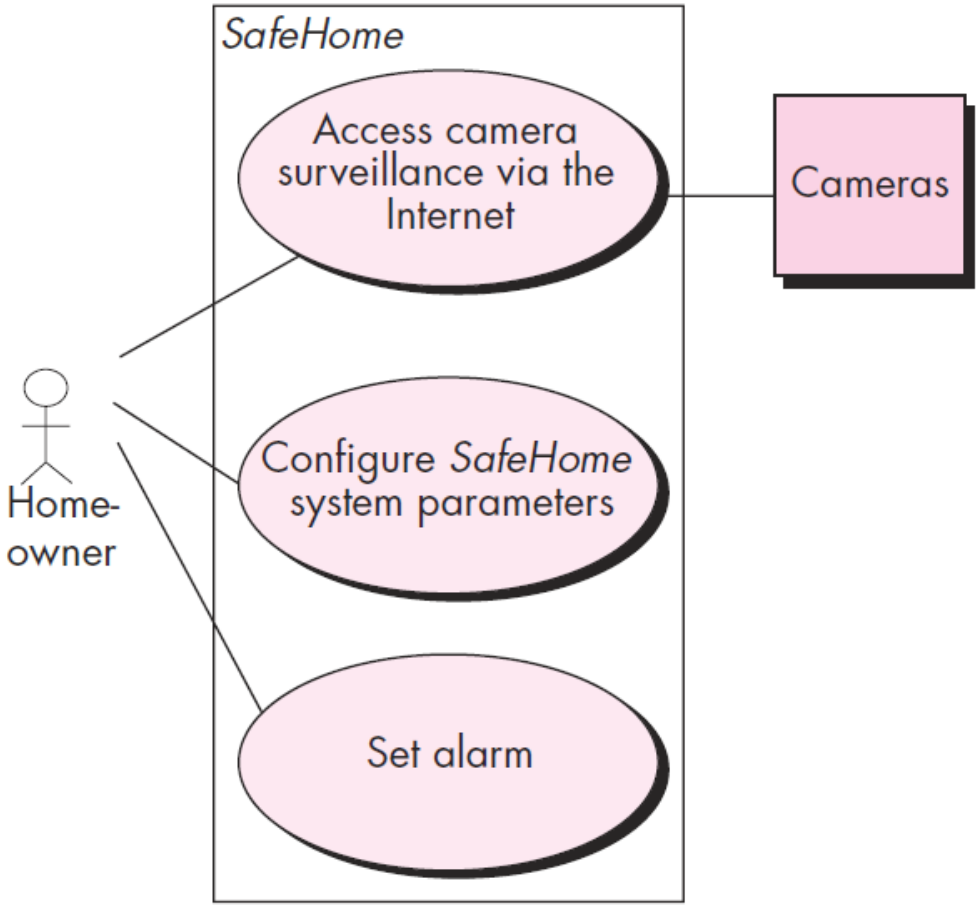
Facilitator: Good job. Now, let's go into this function in a bit more detail . . .

Fungsi "HomeOwner"

- Select camera to view.
- Request thumbnails from all cameras.
- Display camera views in a PC window.
- Control pan and zoom for a specific camera.
- Selectively record camera output.
- Replay camera output.
- Access camera surveillance via the Internet.

Diagram Use-case Safe Home





Skenario use case

SafeHome

Use Case Template for Surveillance

Use case: Access camera surveillance via the Internet—display camera views (ACS-DCV)

Iteration: 2, last modification: January 14 by V. Raman.

Primary actor: Homeowner.

Goal in context: To view output of camera placed throughout the house from any remote location via the Internet.

Preconditions: System must be fully configured; appropriate user ID and passwords must be obtained.

Trigger: The homeowner decides to take a look inside the house while away.

Scenario:

1. The homeowner logs onto the *SafeHome Products* website.
2. The homeowner enters his or her user ID.
3. The homeowner enters two passwords (each at least eight characters in length).
4. The system displays all major function buttons.
5. The homeowner selects the "surveillance" from the major function buttons.
6. The homeowner selects "pick a camera."
7. The system displays the floor plan of the house.
8. The homeowner selects a camera icon from the floor plan.
9. The homeowner selects the "view" button.
10. The system displays a viewing window that is identified by the camera ID.
11. The system displays video output within the viewing window at one frame per second.

Exceptions:

1. ID or passwords are incorrect or not recognized—see use case **Validate ID and passwords.**
2. Surveillance function not configured for this system—system displays appropriate error message; see use case **Configure surveillance function.**
3. Homeowner selects "View thumbnail snapshots for all camera"—see use case **View thumbnail snapshots for all cameras.**
4. A floor plan is not available or has not been configured—display appropriate error message and see use case **Configure floor plan.**
5. An alarm condition is encountered—see use case **Alarm condition encountered.**

Priority: Moderate priority, to be implemented after basic functions.

When available: Third increment.

Frequency of use: Moderate frequency.

Channel to actor: Via PC-based browser and Internet connection.

Secondary actors: System administrator, cameras.

Channels to secondary actors:

1. System administrator: PC-based system.
2. Cameras: wireless connectivity.

Open issues:

1. What mechanisms protect unauthorized use of this capability by employees of *SafeHome Products*?
2. Is security sufficient? Hacking into this feature would represent a major invasion of privacy.
3. Will system response via the Internet be acceptable given the bandwidth required for camera views?
4. Will we develop a capability to provide video at a higher frames-per-second rate when high-bandwidth connections are available?

Diagram Aktivitas untuk Use case Access camera surveillance via the internet

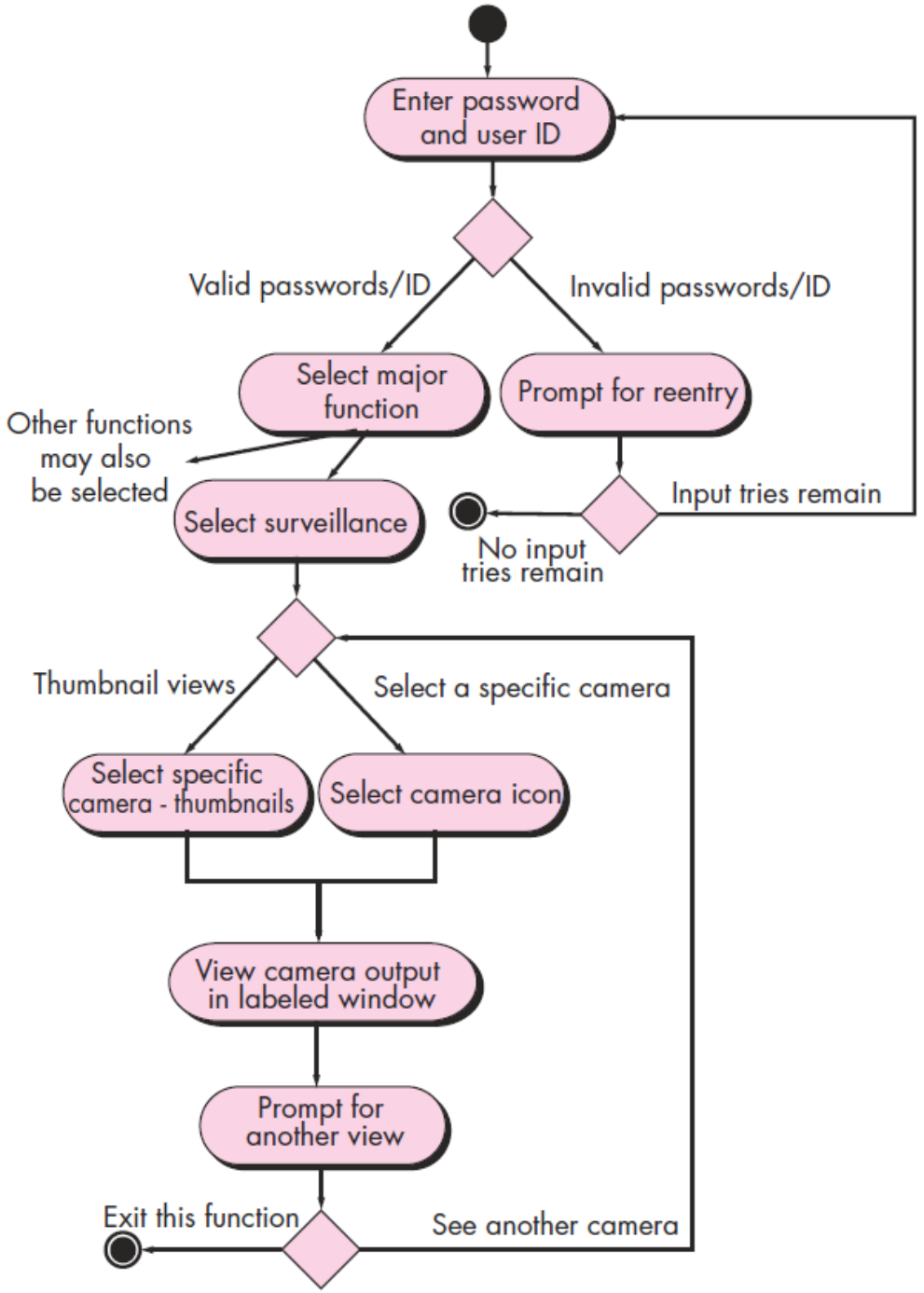
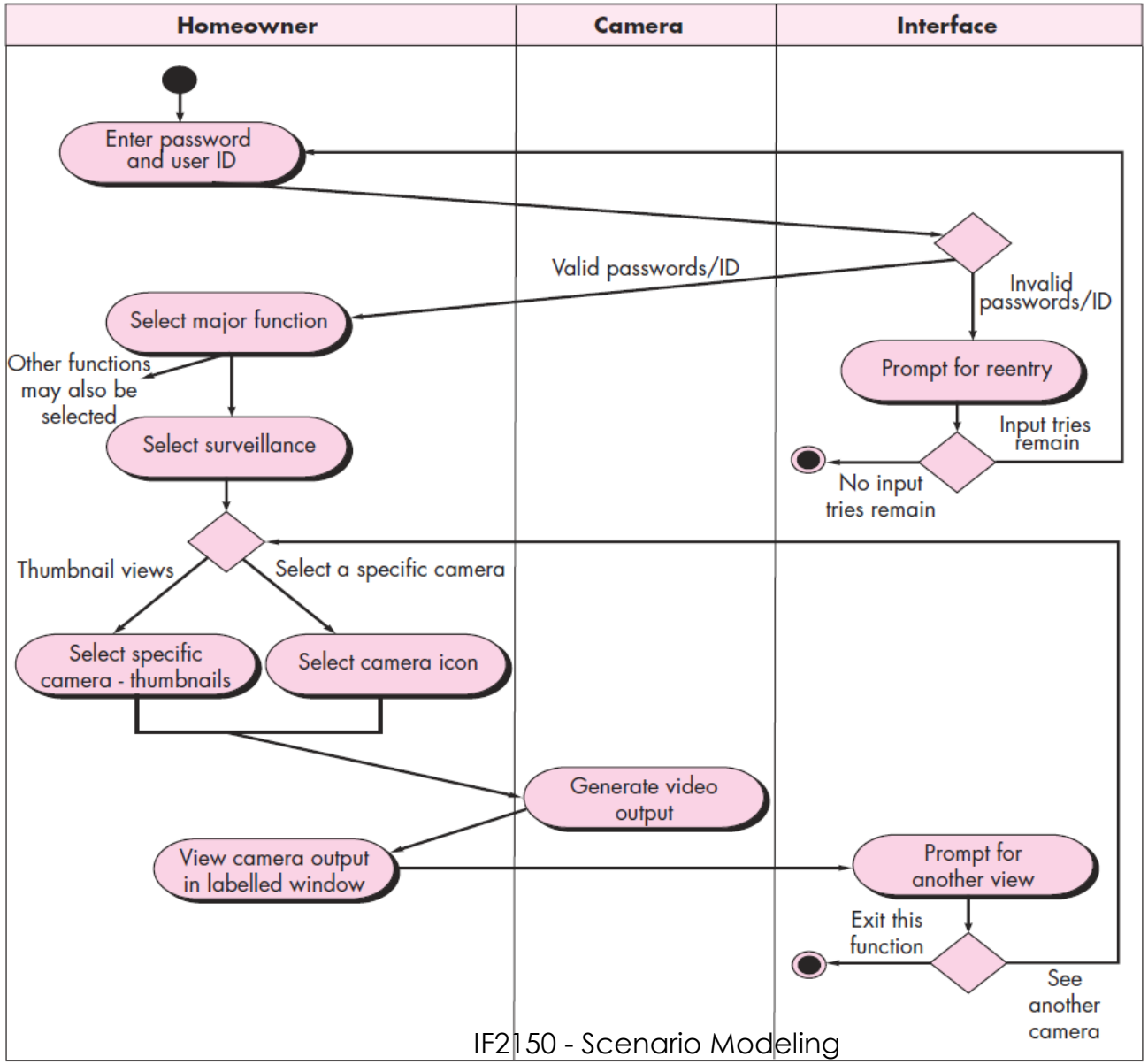


Diagram Aktivitas dalam bentuk swimlane

Diagram ini menunjukkan aliran aktivitas yang dijelaskan dengan *use-case* dan pada waktu yang sama menunjukkan aktor yang bertanggung jawab terhadap suatu aksi (juga akan berguna untuk analisis kelas)



Acknowledgement

- Pengembangan dari slide: "Scenario Based Modeling" IF2036 Sem II - 2012/2013
- Pengembangan dari slide: "Pemodelan Berbasis Skenario" oleh Bayu Hendradjaya, IF2250 Sem II - 2015/2016