



INTELLIGENT ELEVATOR CONTROLLER ANALYZE

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DEFINE ESSENTIAL USE CASE (1)

Use Case	1.input floor in
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : clac path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 가고 싶은 층을 입력한다 2. (S) 목적지 정보를 R2.1(Calc path)로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	Line 1: 입력된 목적지가 운영 제한 층일 경우 사용자에게 운영 불가를 알리고 정보를 R2.1에 전달하지 않는다



DEFINE ESSENTIAL USE CASE (2)

Use Case	2.cancel floor in
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : clac path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 취소 사항을 입력한다 2. (S) 취소된 정보를 R2.1(Calc path)로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	Line 1: 취소 요청한 정보가 운영 계획에 없을 경우 에러



DEFINE ESSENTIAL USE CASE (3)

Use Case	3.input floor out
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : clac path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 가고 싶은 층을 입력한다 2. (S) 목적지 정보를 R2.1(Calc path)로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	Line 1: 입력된 목적지가 운영 제한 층일 경우 사용자에게 운영 불가를 알리고 정보를 R2.1에 전달하지 않는다



DEFINE ESSENTIAL USE CASE (4)

Use Case	4.cancel floor out
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : clac path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 취소 사항을 입력한다 2. (S) 취소된 정보를 R2.1(Calc path)로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	Line 1: 취소 요청한 정보가 운영 계획에 없을 경우 에러



DEFINE ESSENTIAL USE CASE (5)

Use Case	5.Calc path
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.2, R4.1, R4.2 use case : order path, display condition floor, display condition cavins
Pre-Requisites	목적지 입력이 선행되어야 함
Typical courses of event	(A):Actor,(S):System 1. (S) 목적지, 혹은 목적지 취소 사항을 입력받는다 2. (S) 입력된 정보를 바탕으로 경로를 계산한다 3. (S) 계산된 경로를 R2.2(order path)로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (6)

Use Case	6.order path
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	1. 캐빈이 정지 상태이고 2. Calc path에서 계산된 경로를 받아야 함
Typical courses of event	(A):Actor,(S):System 1. (S) Calc path에서 계산된 경로를 받는다 2. (S) 경로에 따라 캐빈을 이동시킨다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (7)

Use Case	7.input limit floor
Actors	Janitor
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : calc path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) Janitor가 운영 제한 층수 정보를 입력한다 2. (S) 운영 제한 정보를 Calc path에 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (8)

Use Case	8.input floor range
Actors	Janitor
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : Calc path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) Janitor가 최저층과 최고층을 입력한다 2. (S) 층 범위 정보를 R2.1 Calc path 에 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (9)

Use Case	9.input number cavins
Actors	Janitor
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R2.1 use case : Calc path
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) Janitor가 가동 캐빈의 대수를 입력한다 2. (S) 캐빈 대수를 R2.1 Calc path에 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (10)

Use Case	10.display condition floor
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	R2.1 Calc path로부터 디스플레이할 정보를 전달받는다
Typical courses of event	(A):Actor,(S):System 1. (S) 캐빈들의 위치, 무게, 방향 정보를 전달받는다 2. (S) 전달받은 정보를 패널에 표시한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (11)

Use Case	11.display condition floor
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	R2.1 Calc path로부터 디스플레이할 정보를 전달받는다
Typical courses of event	(A):Actor,(S):System 1. (S) 해당 캐빈의 위치, 무게, 방향 정보를 전달받는다 2. (S) 전달받은 정보를 패널에 표시한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (12)

Use Case	12.input open
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R5.1.2 use case : open door
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 문 열림 버튼을 누른다 2. (S) 문 열림 버튼이 눌렸다는 것을 R5.1.2로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (13)

Use Case	13.open door
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	문 열림 신호를 받아야 한다
Typical courses of event	(A):Actor,(S):System 1. (S) 문 열림 신호를 받는다 2. (S) 캐abin의 문을 연다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (14)

Use Case	14.input close
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R5.2.2 use case : close door
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 문 닫힘 버튼을 누른다 2. (S) 문 닫힘 버튼이 눌렸다는 것을 R5.2.2로 전달한다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (15)

Use Case	15.open door
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	문 닫힘 신호를 받아야 한다
Typical courses of event	(A):Actor,(S):System 1. (S) 문 닫힘 신호를 받는다 2. (S) 캐빈의 문을 연다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (16)

Use Case	16.input flag something
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R5.1.2 use case : open door
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (S) 문 사이에 이물질이 있는지 탐지 2. (S) 이물질이 있는 경우 R5.1.2에 신호를 보냄
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (17)

Use Case	17.input weight
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R7.2 use case : notify exceed weight
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (S) 현재 캐빈의 중량을 감지 2. (S) 현재중량을 R7.2로 전달
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (18)

Use Case	18.notify exceed weight
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R5.1.2 use case : open door
Pre-Requisites	R7.1에서 캐빈 현재 중량 정보를 받는다
Typical courses of event	(A):Actor,(S):System 1. (S) 전달받은 중량과 허용 중량을 비교 2. (S) 현재 중량이 허용 중량 초과시 R5.1.2에 신호 전달
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



DEFINE ESSENTIAL USE CASE (19)

Use Case	19.input emergency
Actors	User
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	System functions : R8.2 use case : report emergency
Pre-Requisites	N/A
Typical courses of event	(A):Actor,(S):System 1. (A) 사용자가 비상 버튼을 누름 2. (S) 비상 버튼을 누른 사실을 R8.2로 전달
Alternative courses of events	N/A
Exceptional Courses of Events	N/A

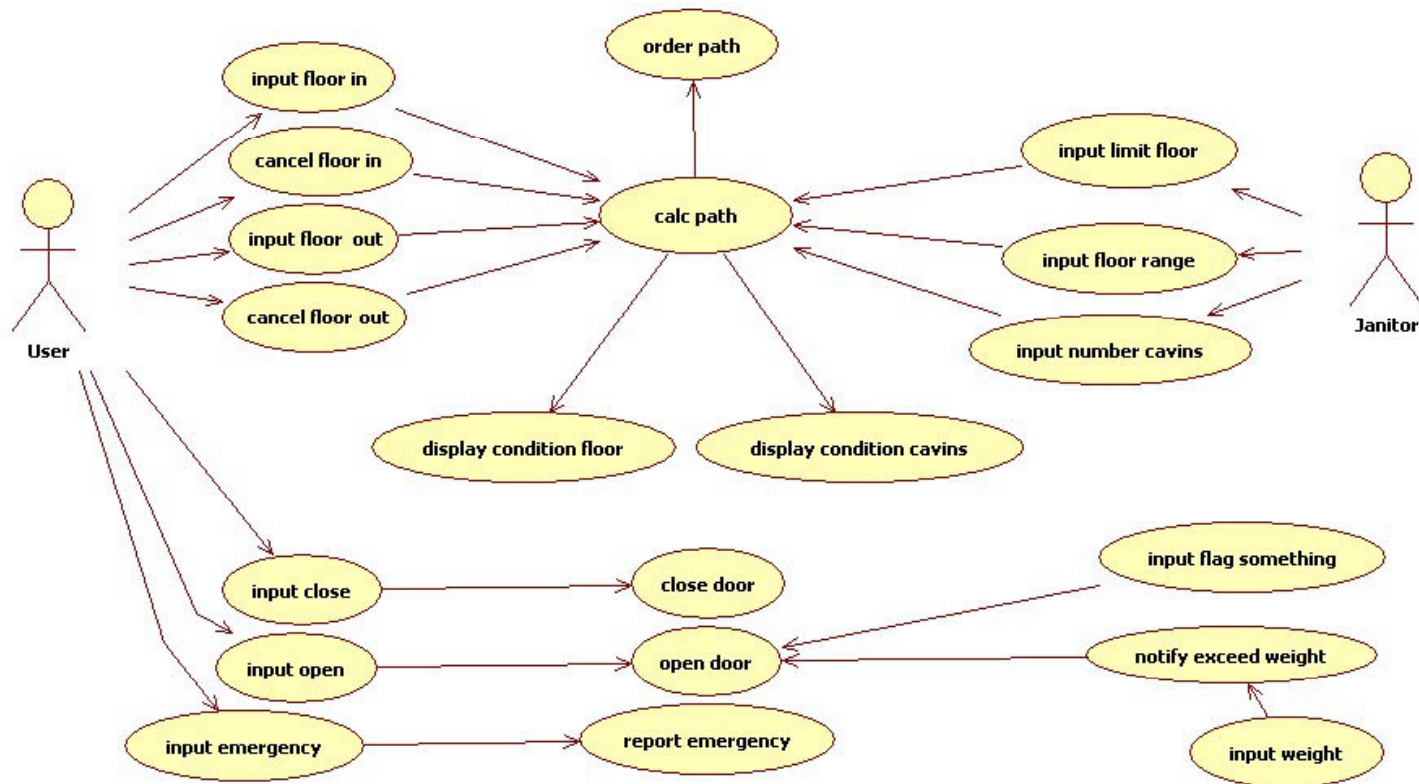


DEFINE ESSENTIAL USE CASE (20)

Use Case	20.report emergency
Actors	None
purpose	(As in the business use case)
Overview	(As in the business use case)
Type	Primary
Cross Reference	N/A
Pre-Requisites	R8.1로부터 신호를 받는다
Typical courses of event	(A):Actor,(S):System 1. (S) 비상 버튼 신호를 받는다 2. (S) 관리자의 패널에 비상 사실을 알린다
Alternative courses of events	N/A
Exceptional Courses of Events	N/A



REFINE USE CASE DIAGRAMS



DEFINE DOMAIN MODEL(1)

- Using Concept Category List

Concept Category	Domain Class
Physical or tangible object	cavin, floor
Specifications, design or descriptions of things	path
containers of other things	system
Things in a container	cavin, floor

- Using Noun Phrases

Cavin

Floor

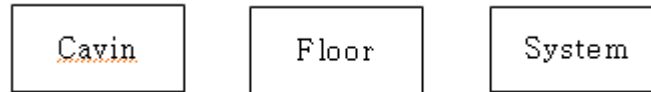
Path

System

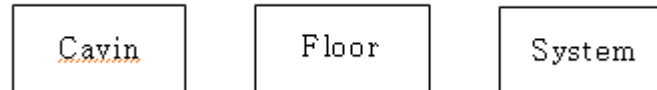


DEFINE DOMAIN MODEL(2)

- Assign Class name into a concept



- Draw a conceptual class diagram



DEFINE DOMAIN MODEL(3)

- Identify and add associations

Association Category	Associations
A is Known/logged/rocorded	System-Cavin
/reported/captured in B	System-Floor

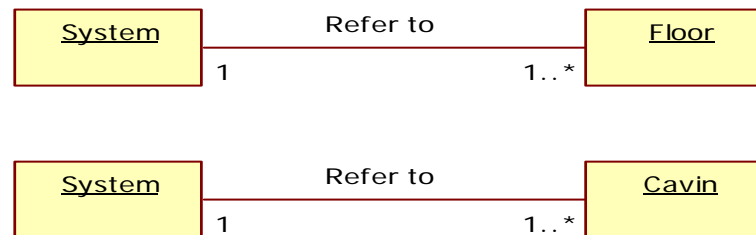
- Assign priority into associations

Association Name	priority
System-Cavin	High
System-Floor	High



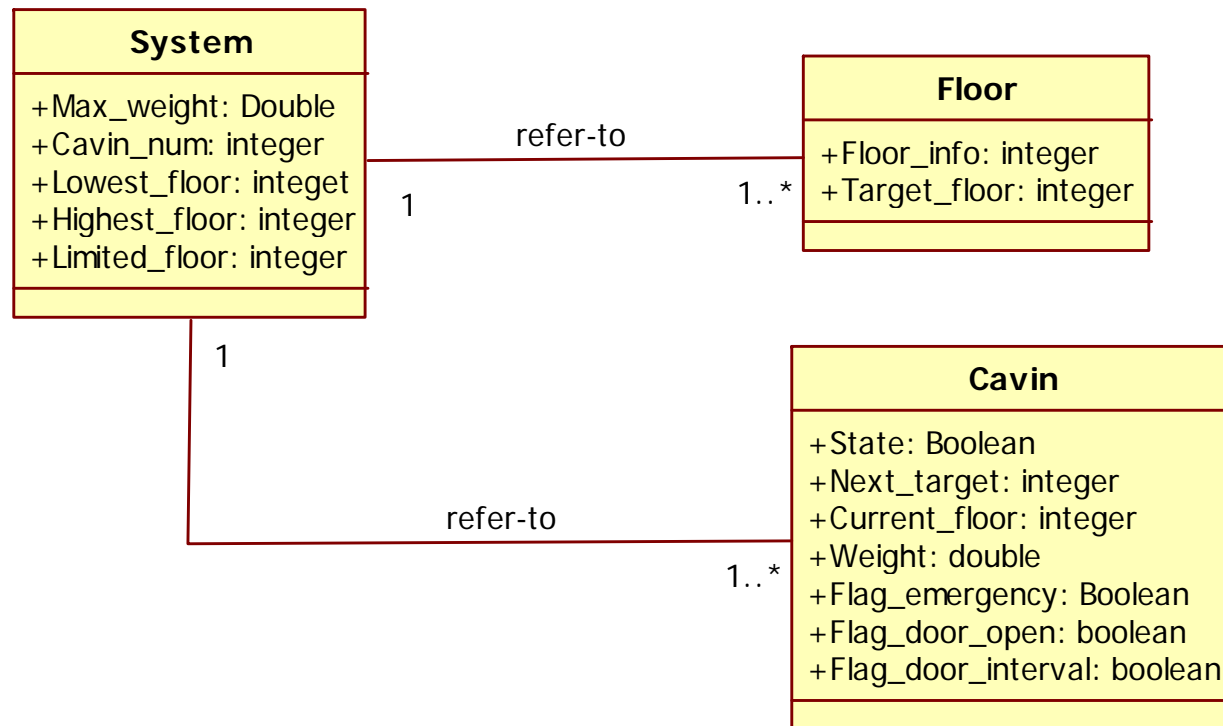
DEFINE DOMAIN MODEL(4)

- Assign names into Associations
 - System Refer-to Cavin
 - System Refer-to Floor.
- Add Roles and Multiplicity



DEFINE DOMAIN MODEL(5)

- Add Attributes



REFINE GLOSSARY

Term	Category	Remarks
System	Class	시스템 객체
Cavin	Class	엘리베이터 캐빈 객체
Floor	Class	층 객체
System.Max_weight	Attribute	최대 적재 하중
System.Cavin_num	Attribute	캐빈 대수
System.Lowest_floor	Attribute	가장 낮은 층수
System.Highest_floor	Attribute	가장 높은 층수
System.Limited_floor	Attribute	운영 제한 층 정보
Cavin.State	Attribute	캐빈 상태 정보(이동/정지)
Cavin.Next_target	Attribute	캐빈이 다음에 이동해야 할 목적지
Cavin.Current_floor	Attribute	캐빈이 현재 있는 층
Cavin.Weight	Attribute	캐빈의 현재 하중
Cavin.Flag_emergency	Attribute	비상 상태
Cavin.Flag_door_open	Attribute	도어 오픈 상태
Cavin.Flag_door_interval	Attribute	도어 사이 이물질 유무
Floor.Floor_info	Attribute	층수 정보
Floor.Target_floor	Attribute	해당 층에서 누른 목적 층들의 정보



DEFINE SYSTEM SEQUENCE DIAGRAMS(1)

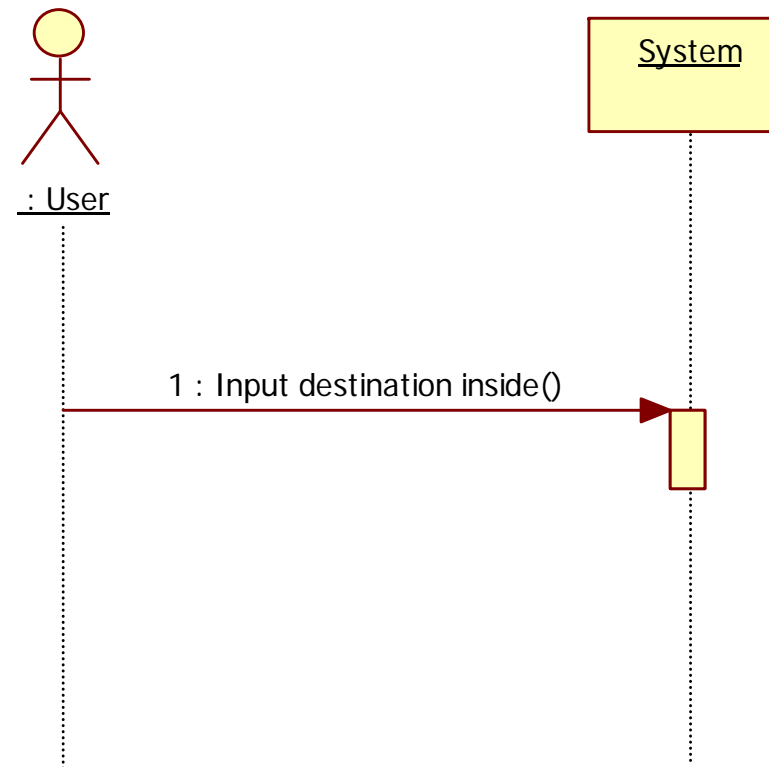
Use case	Name of Actor-Activated Event
1.input floor in	1: input Destination from inside()
2.cancel floor in	1: Cancel Destination from inside()
3.input floor out	1: input Destination from outside()
4.cancle floor out	1: Cancel Destination from outside()
5.calc path	N/A
6.order path	N/A
7.input limit floor	1:Input Limit floor()
8.input floor range	1:Input floor range()
9.input number cavins	1:Input number cavins()
10.display condition floor	N/A
11.display condition cavins	N/A
12.input open	1:Input open()
13.open door	N/A
14.input close	1:Input close()
15.close door	N/A
16.input flag something	N/A
17.input weight	N/A
18.notify exceed weight	N/A
19.input emergency	1:Input weight()
20.report emergency	N/A



DEFINE SYSTEM SEQUENCE DIAGRAMS(2)

Use Case1: Input destination inside()

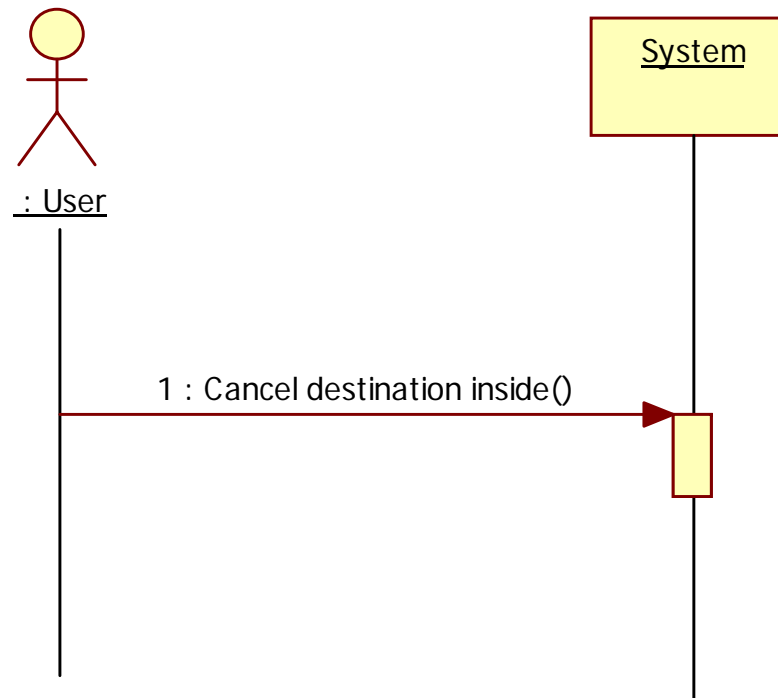
1. 사용자가 가고싶은 층을 입력한다
2. 입력받은 목적지를 Calc Path에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(3)

Use Case2: Cancel destination inside()

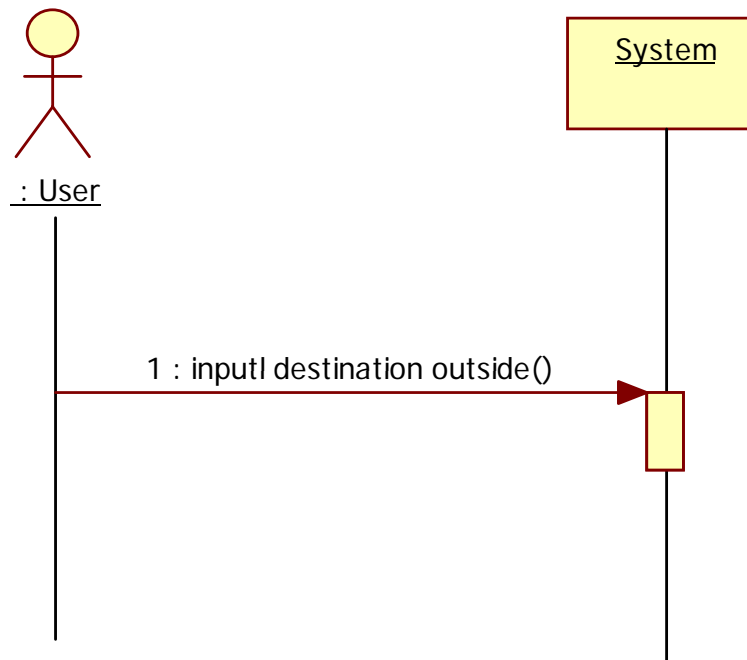
1. 사용자가 취소 사항을 입력한다
2. 입력받은 사항을 Calc Path에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(4)

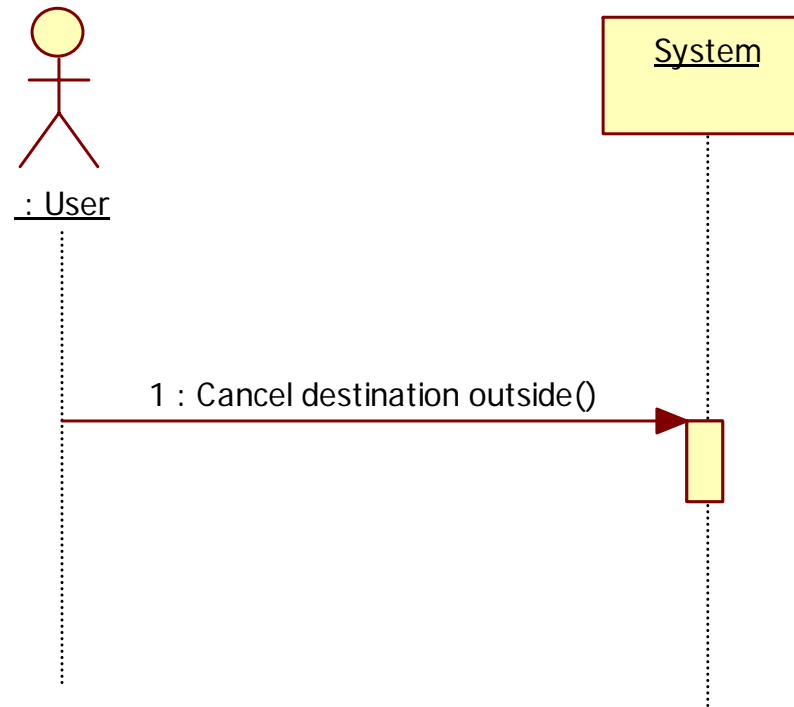
Use Case3: Input destination outside()

1. 사용자가 가고싶은 층을 입력한다
2. 입력받은 목적지를 Calc Path에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(5)

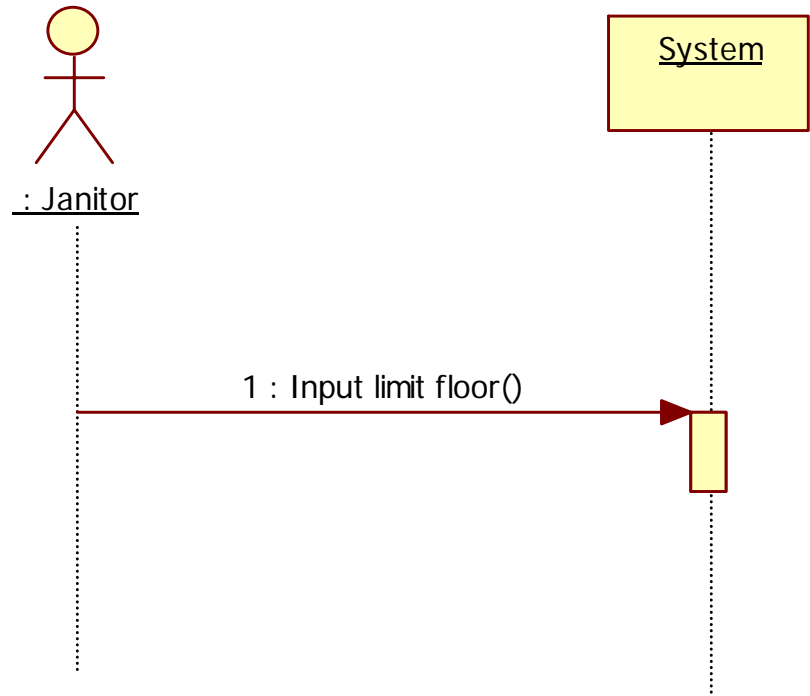
Use Case4: Cancel destination outside()
1. 사용자가 취소 사항을 입력한다
2. 입력받은 사항을 Calc Path에 전달



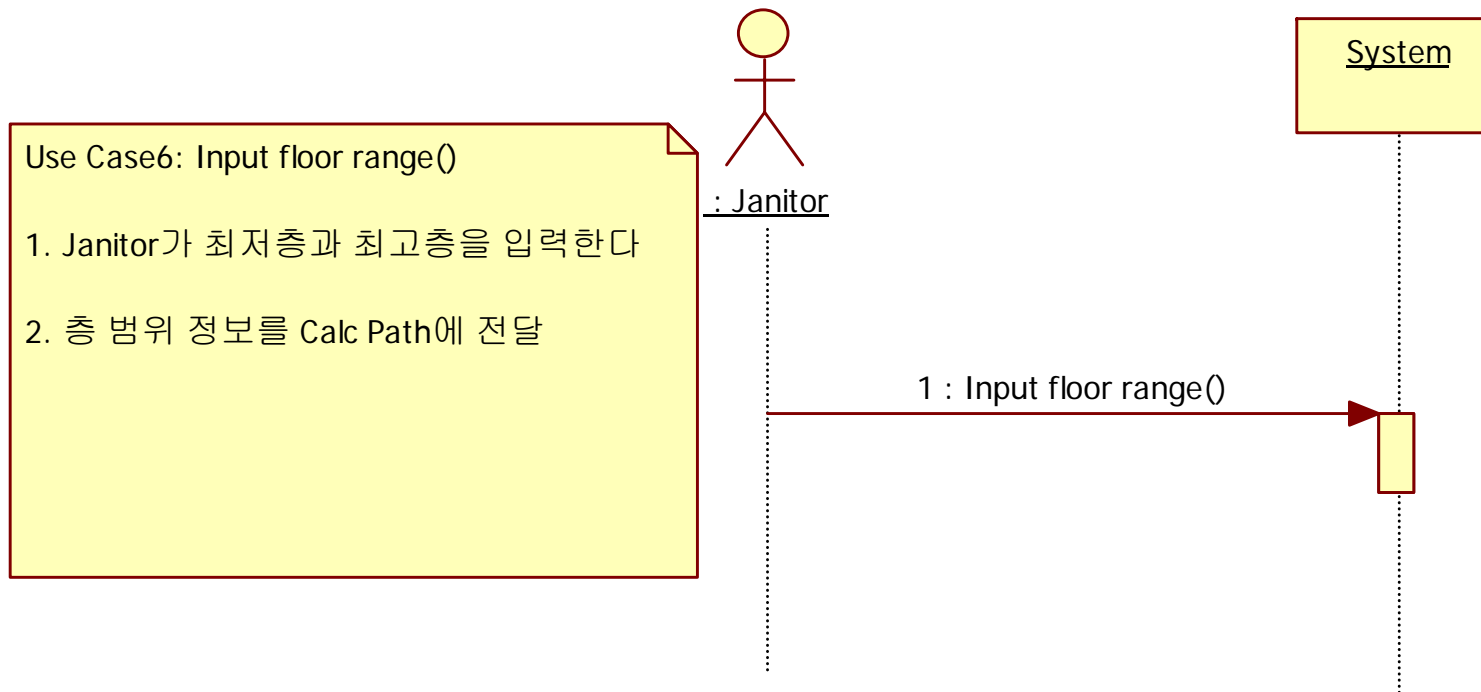
DEFINE SYSTEM SEQUENCE DIAGRAMS(6)

Use Case5: Input Limit floor()

1. Janitor가 운행 제한 층 정보를 입력한다
2. 입력받은 사항을 Calc Path에 전달



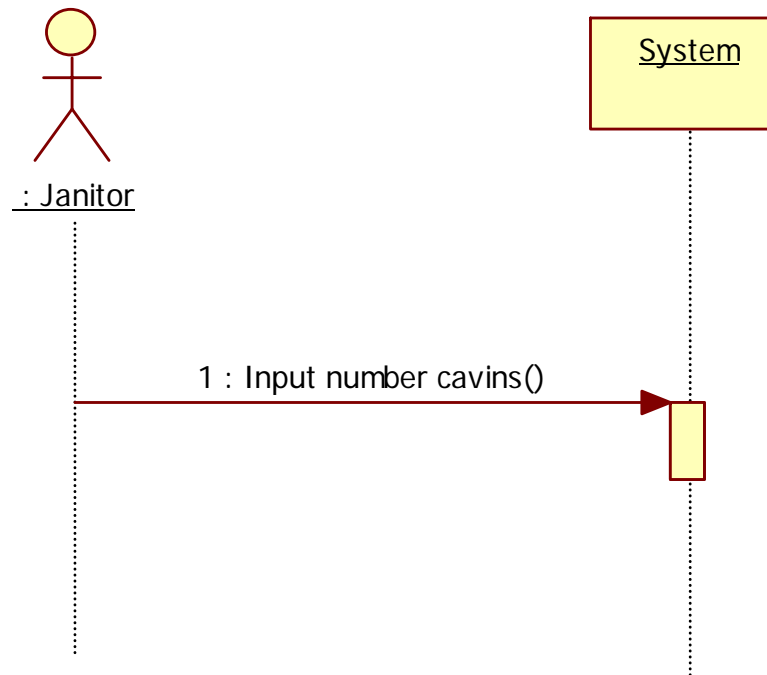
DEFINE SYSTEM SEQUENCE DIAGRAMS(7)



DEFINE SYSTEM SEQUENCE DIAGRAMS(8)

Use Case7: Input number cavins()

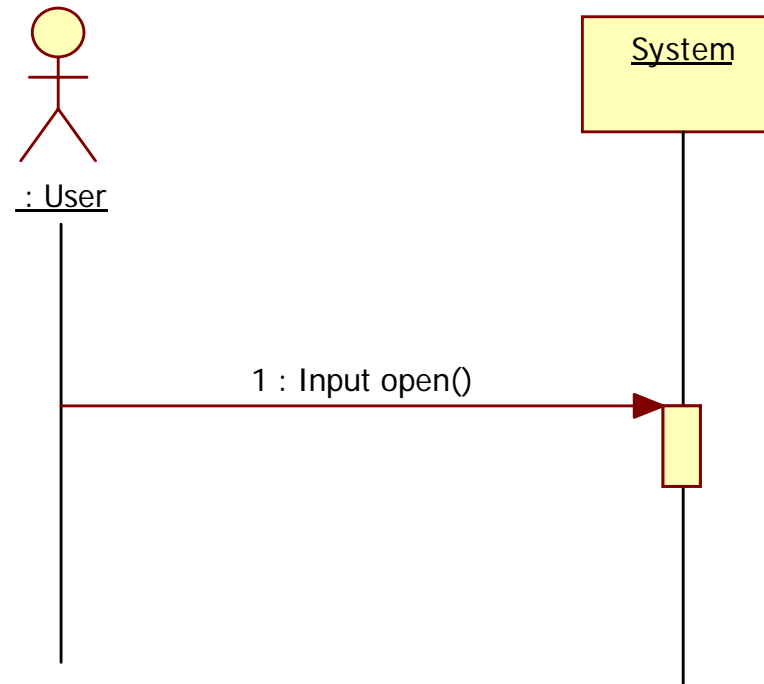
1. Janitor가 가동 캐빈 대수를 입력한다
2. 가동 캐빈 대수를 Calc path에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(9)

Use Case8: Input open()

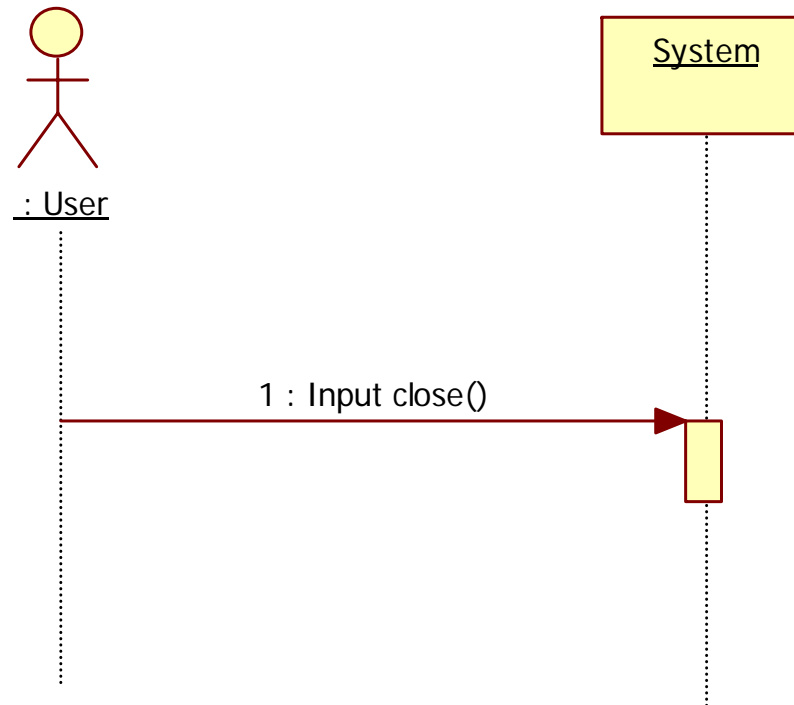
1. 사용자가 문열림 버튼을 누름
2. 문열림 신호를 Open door 에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(10)

Use Case9: Input close()

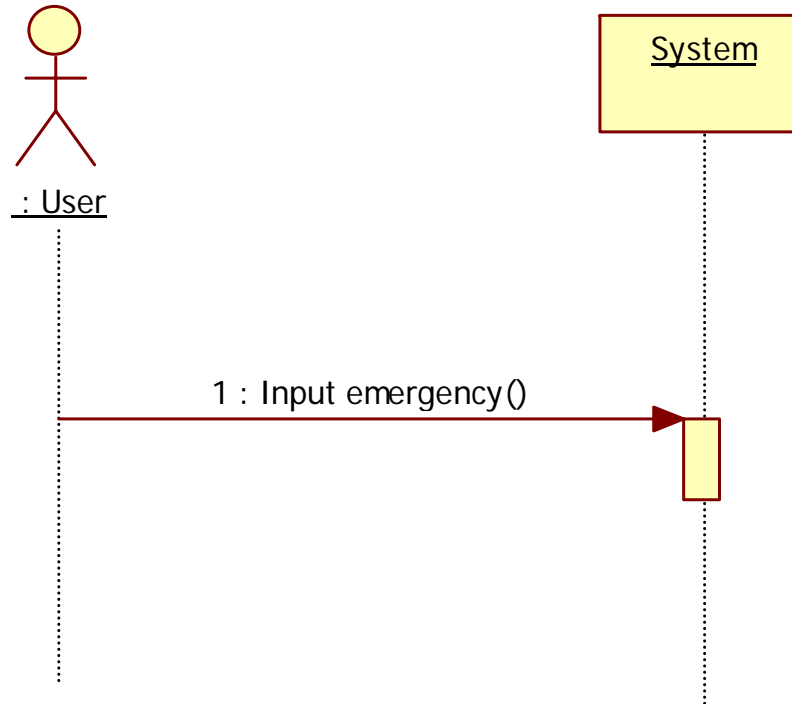
1. 사용자가 문닫힘 버튼을 누름
2. 문닫힘 신호를 Close door 에 전달



DEFINE SYSTEM SEQUENCE DIAGRAMS(11)

Use Case10: Input Emergency()

1. 사용자가 비상 버튼을 누름
2. 비상 신호를 Report Emergency 에 전달



DEFINE OPERATION CONTRACTS(1)

- Identify system operations from system sequence diagram

Use case	Name of Actor-Activated Event	System Operation
1.input floor in	1: input Destination inside()	1. InputDest_in()
2.cancel floor in	1: Cancel Destination inside()	2. CancelDest_in()
3.input floor out	1: input Destination outside()	3. InputDest_out()
4.cancel floor out	1: Cancel Destination outside()	4. CancelDest_out()
5.calc path	N/A	
6.order path	N/A	
7.input limit floor	1:Input Limit floor()	5. InputLimitFloor()
8.input floor range	1:Input floor range()	6. InputFloorRange()
9.input number cavins	1:Input number cavins()	7. InputNum_Cavin()
10.display condition floor	N/A	
11.display condition cavins	N/A	
12.input open	1:Input open()	8. Input_Open()
13.open door	N/A	
14.input close	1:Input close()	9. Input_Close()
15.close door	N/A	
16.input flag something	N/A	
17.input weight	N/A	
18.notify exceed weight	N/A	
19.input emergency	1:Input emergency()	10. Input_Emer()
20.report emergency	N/A	



DEFINE OPERATION CONTRACTS(1)

Name	InputDest_in()
Responsivilities	목적지를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	입력된 목적지가 운행 제한 층이면 안내함
Pre-conditions	-
Post-conditions	floor.target_floor ^에 목적지 입력



DEFINE OPERATION CONTRACTS(2)

Name	CancelDest_in()
Responsivities	최소 정보를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	최소 요청한 정보가 운영 계획에 없을 경우 에러
Pre-conditions	-
Post-conditions	floor.target_floor ^{에서 해당 정보 제거}



DEFINE OPERATION CONTRACTS(3)

Name	InputDest_out()
Responsivities	목적지를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	입력된 목적지가 운행 제한 층이면 안내함
Pre-conditions	-
Post-conditions	floor.target_floor에 목적지 입력



DEFINE OPERATION CONTRACTS(4)

Name	CancelDest_out()
Responsivities	최소 정보를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	최소 요청한 정보가 운영 계획에 없을 경우 에러
Pre-conditions	-
Post-conditions	floor.target_floor에서 해당 정보 제거



DEFINE OPERATION CONTRACTS(5)

Name	InputLimitFloor()
Responsivilities	운영 제한 층을 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	-
Pre-conditions	-
Post-conditions	System.Limited_floor에 운영 제한 층 정보를 입력



DEFINE OPERATION CONTRACTS(6)

Name	InputFloorRange()
Responsivities	엘리베이터가 운행되는 층 범위를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	-
Pre-conditions	-
Post-conditions	System.Lowest_floor에 최저층, System.Highest_floor에 최고층 정보가 입력된다



DEFINE OPERATION CONTRACTS(7)

Name	InputNum_Cavin()
Responsivilities	가동 캐빈 대수를 입력받는다
Type	System
Cross Reference	System functions : R2.1
Notes	
Exceptions	-
Pre-conditions	-
Post-conditions	System.Cavin_num에 가동 캐빈 개수가 입력된다



DEFINE OPERATION CONTRACTS(8)

Name	Input_Open()
Responsivities	문열림 버튼이 눌리면 문을 연다
Type	System
Cross Reference	System functions : R5.1.2
Notes	
Exceptions	-
Pre-conditions	-
Post-conditions	R5.1.2에 신호를 전달하고 Cavin.Flag_door_open을 True로 세팅한다



DEFINE OPERATION CONTRACTS(9)

Name	Input_Close()
Responsivities	문닫힘 버튼이 눌리면 문을 닫는다
Type	System
Cross Reference	System functions : R5.2.2
Notes	
Exceptions	Cavin.Flag_door_interval ^이 True ^{이면} 문을 닫지 않는다
Pre-conditions	Flag_door_open ^이 True ^{여야} 작동
Post-conditions	R5.2.2에 신호를 전달하고 Cavin.Flag_door_open ^을 False로 세팅한다



DEFINE OPERATION CONTRACTS(10)

Name	Input_Emer()
Responsivities	비상 버튼이 눌리면 비상을 알린다
Type	System
Cross Reference	System functions : R8.2
Notes	
Exceptions	-
Pre-conditions	-
Post-conditions	R8.2에 신호를 보내고 Cavin.Flag_emergency를 True로 세팅한다

