

NOGADA



CAD Team Project Presentation

2016033590 박기수

2016033836 홍석현

2016033854 황진환

목차



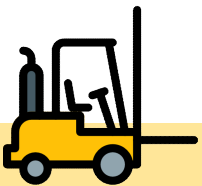
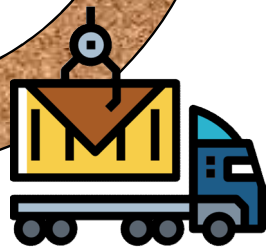
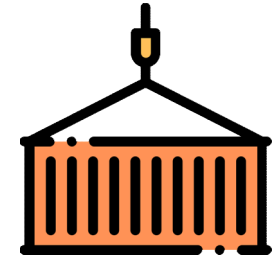
Introduction

Modeling

Kinematics

Conclusion

Q & A



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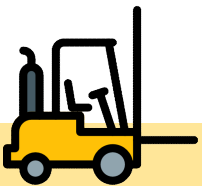
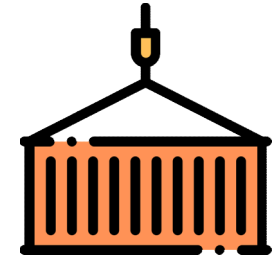
✓
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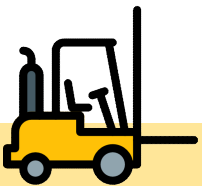
Conclusion

Q & A



Introduction

[팀 소개]



Introduction

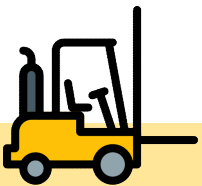
[주제 선정 이유]



Introduction

[모델 선정]

Amazon's Choice for "rc tractor"



Introduction

[모델 선정 이유]

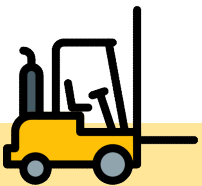
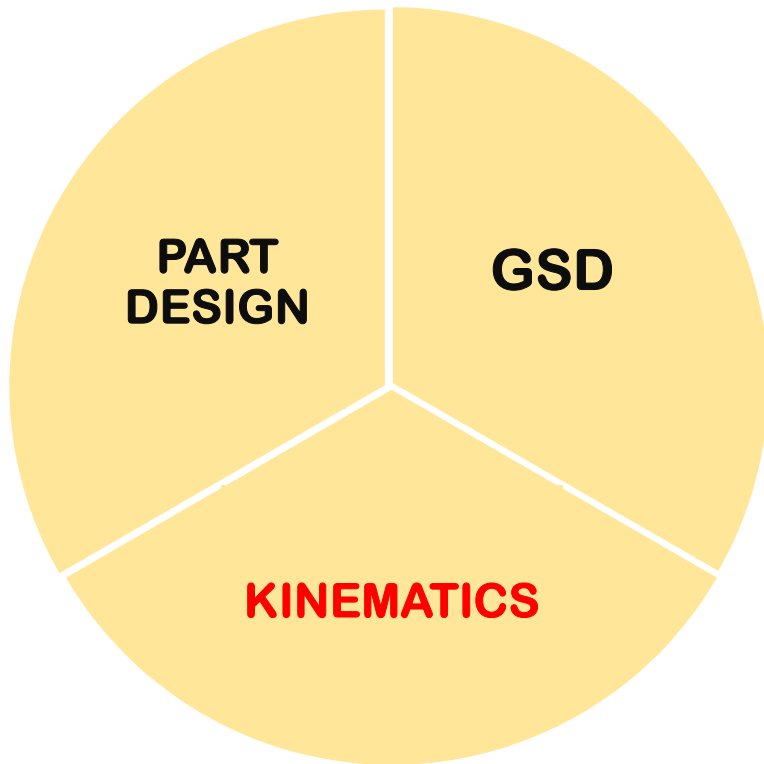
그 동안 배운 내용을 모두 활용

Part Design

Generative Shape Design

KINEMATICS

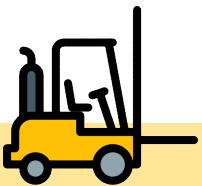
KINEMATICS에 집중하여 Project 진행



Introduction

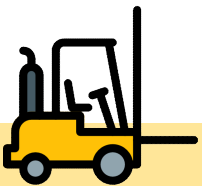
[역할 분담]

| | | | | |
|-----|-------------|-----------------|------------|--------------|
| 박기수 | Part Design | Assembly Design | Kinematics | Presentation |
| 홍석현 | Part Design | Assembly Design | Kinematics | Presentation |
| 황진환 | Part Design | Assembly Design | Kinematics | Presentation |



Introduction

[설계 목표]



목차



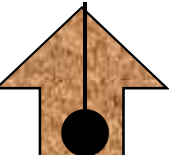
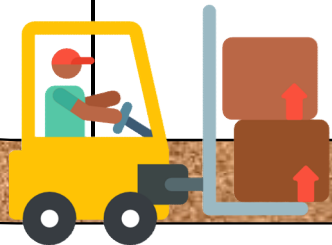
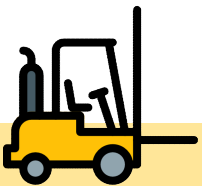
Q & A

Introduction

Modeling ✓

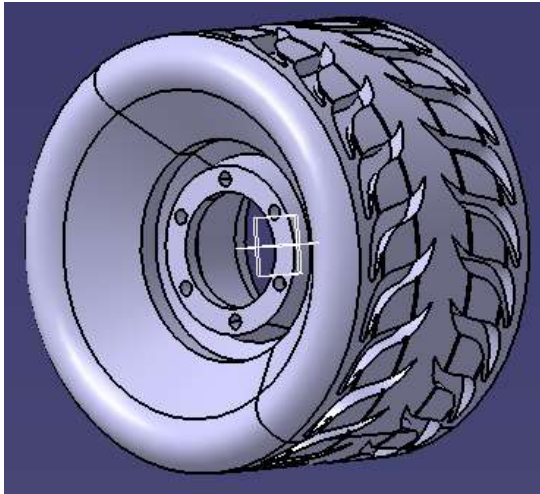
Kinematics

Conclusion

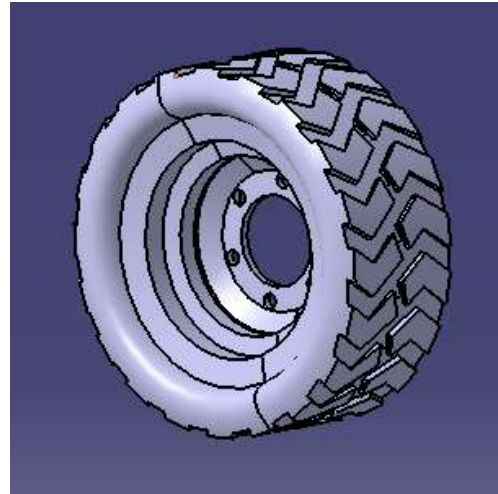


Modeling

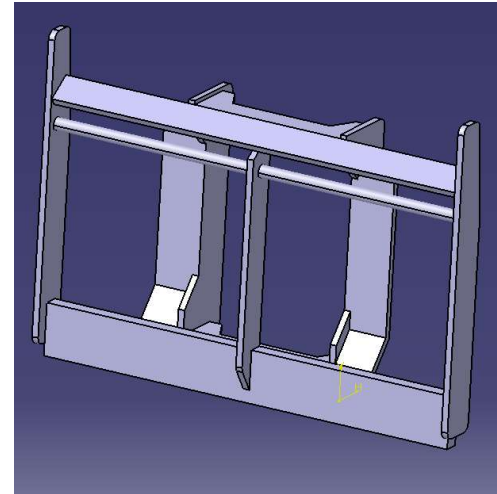
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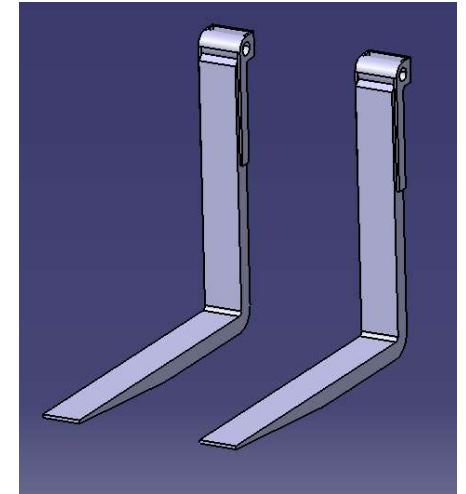
Truck Tire



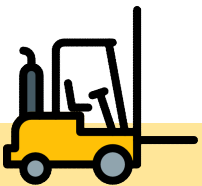
Fork Lift Tire



Fork Lift Frame

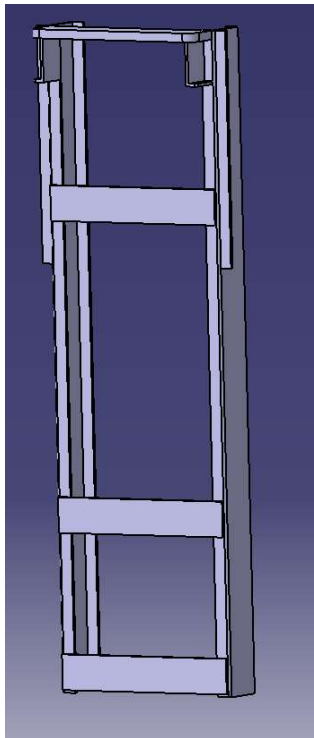


Fork

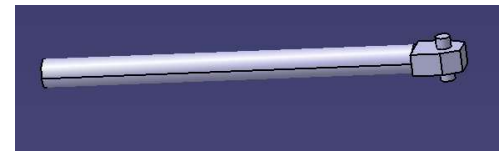
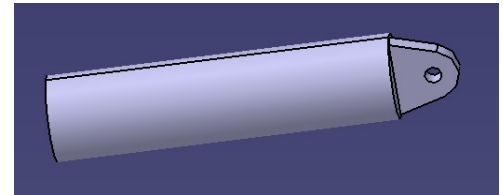
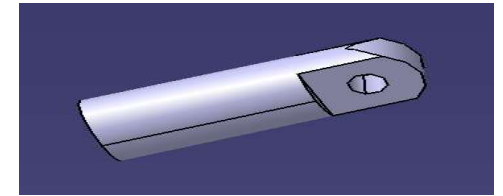
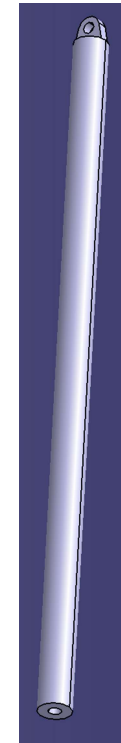


Modeling

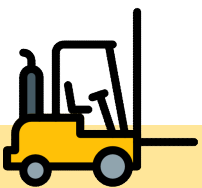
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Fork Lift Frame

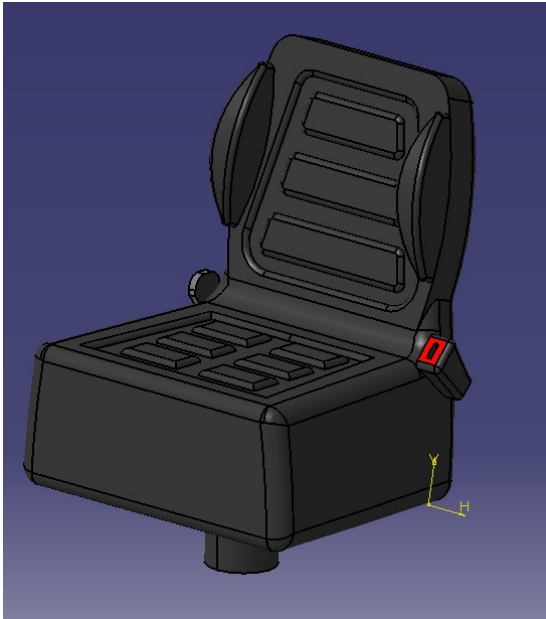


Cylinder arms, Heads

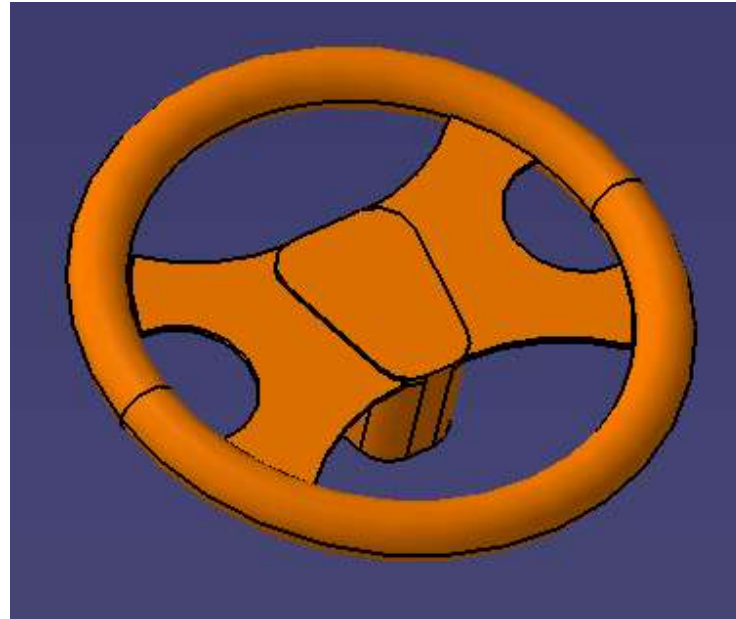


Modeling

[Frame]



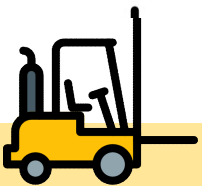
Fork Lift Seat



Truck Steering

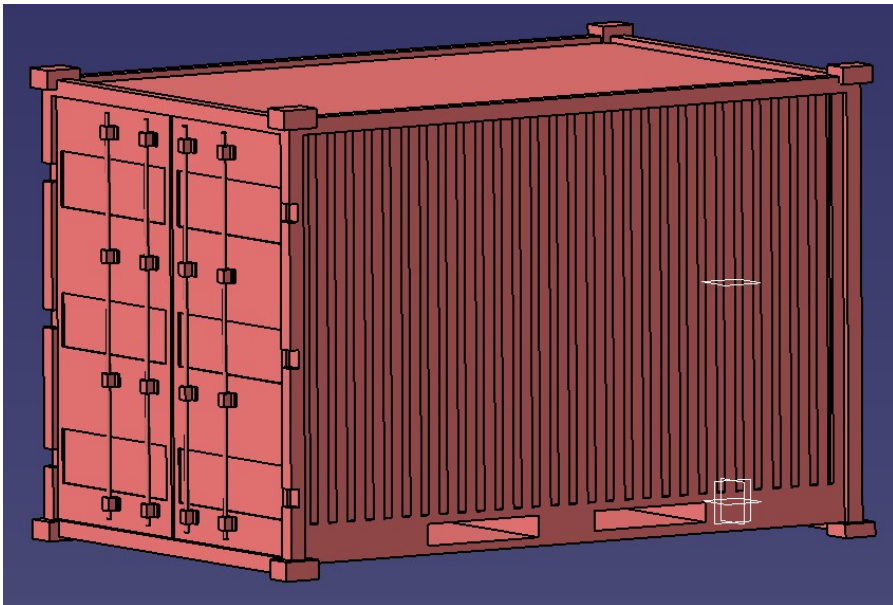


Truck Seat

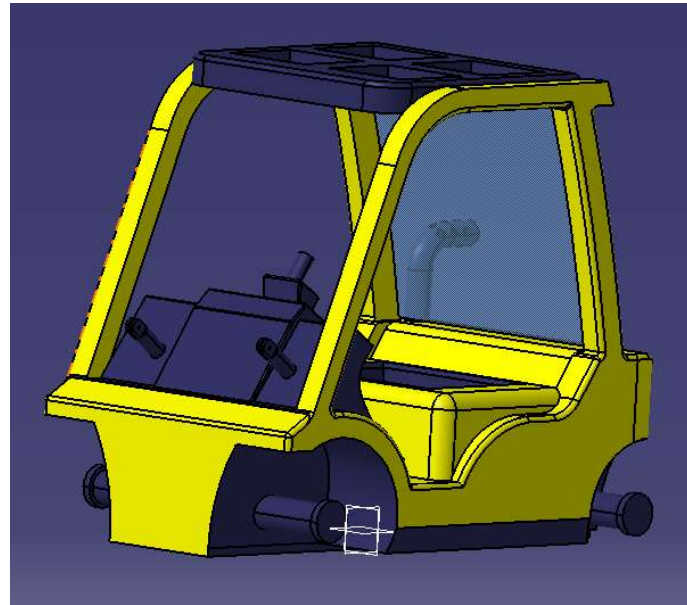


Modeling

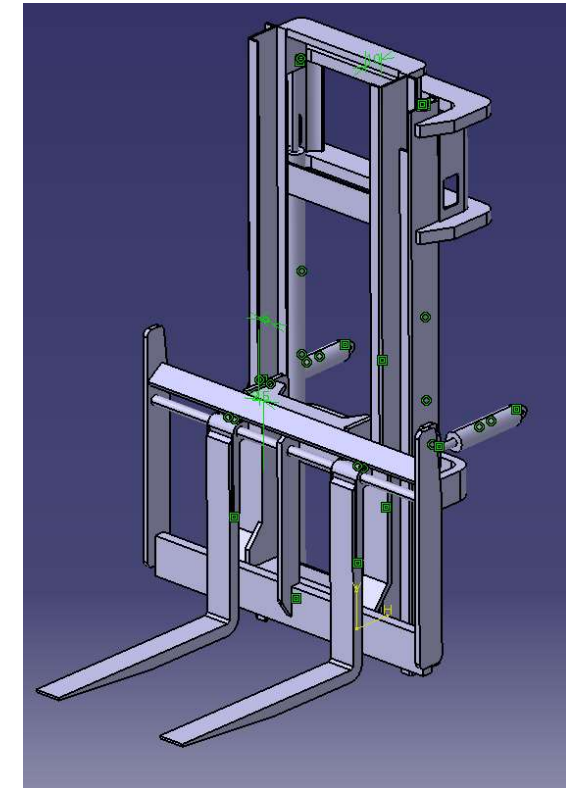
[Shape]



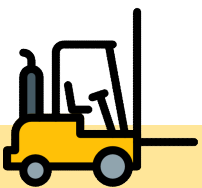
Container



Fork Lift Body

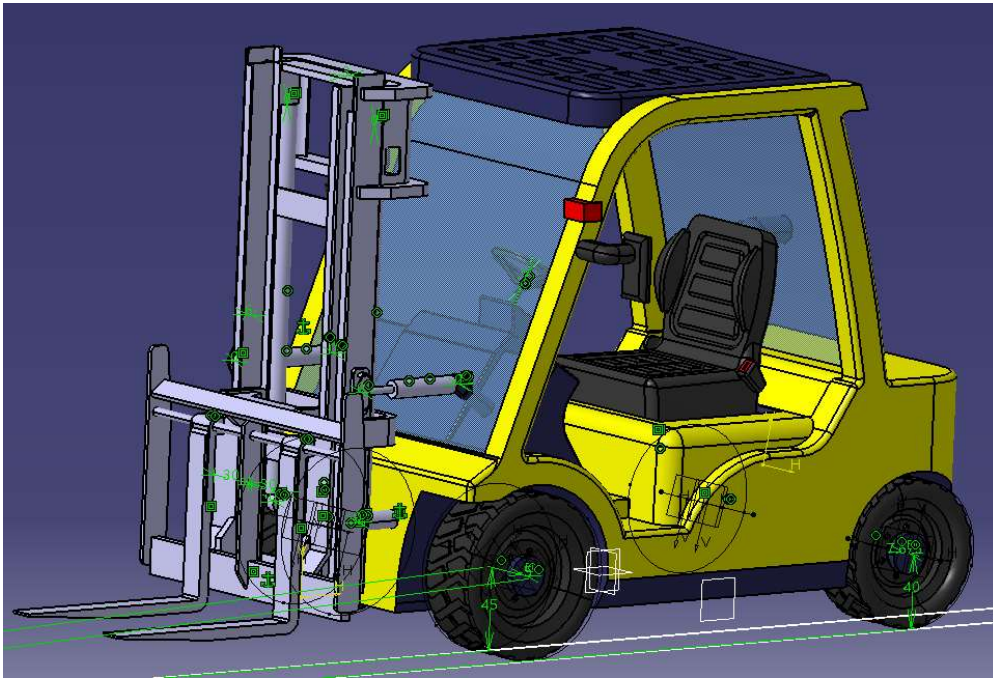


Fork Assemble

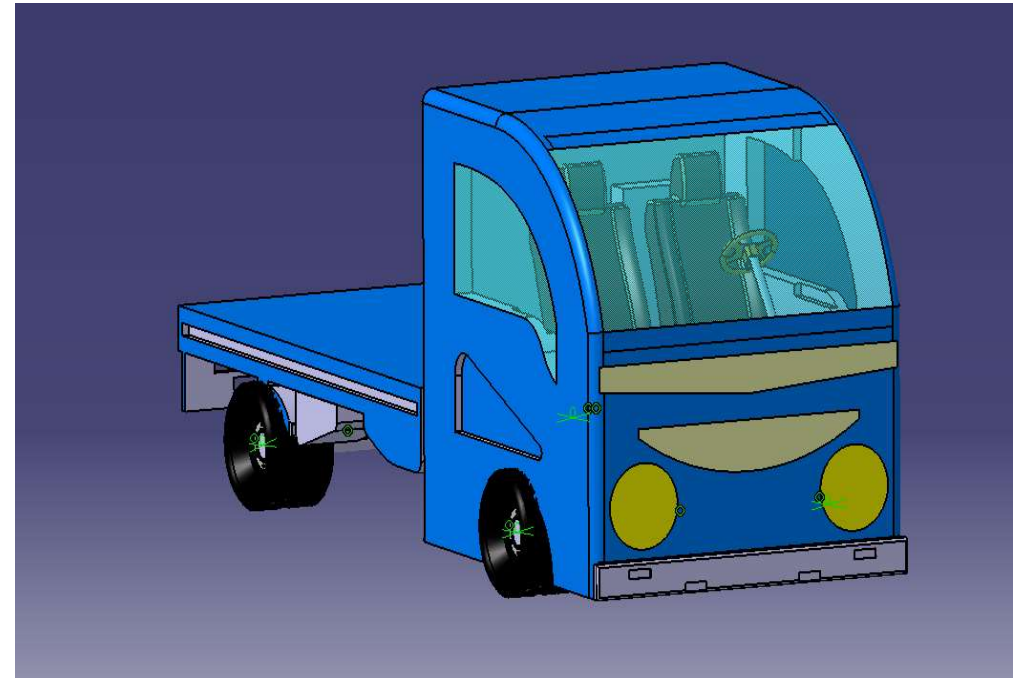


Modeling

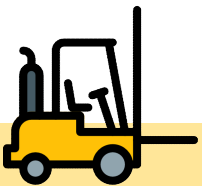
[Shape]



Fork Lift Assemble

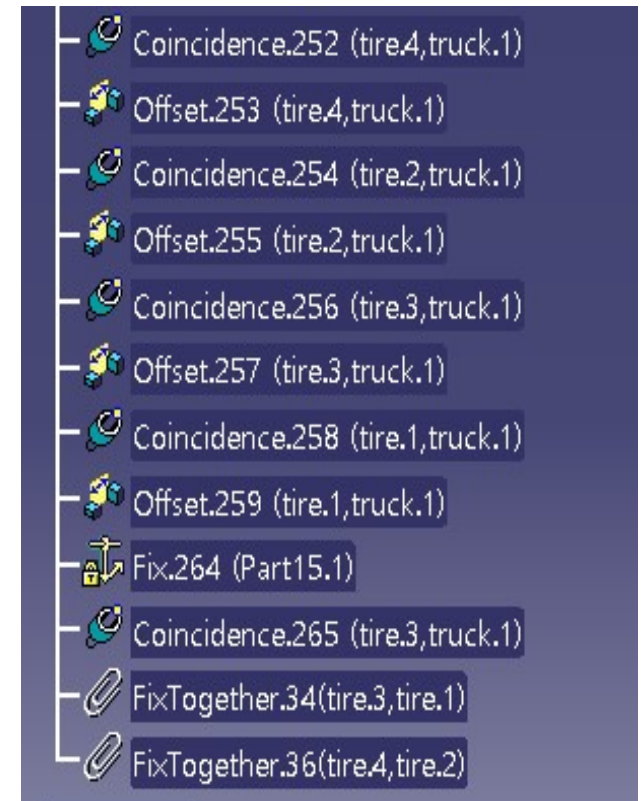
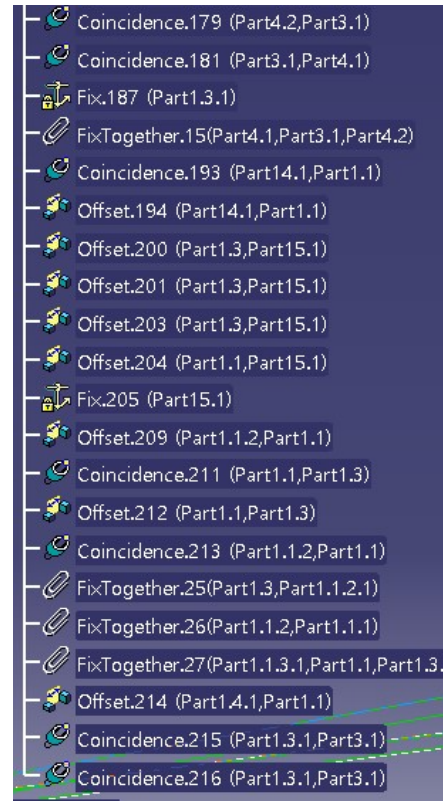
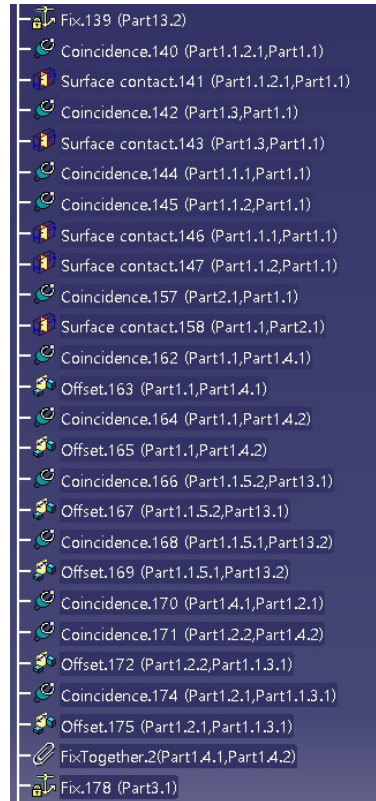
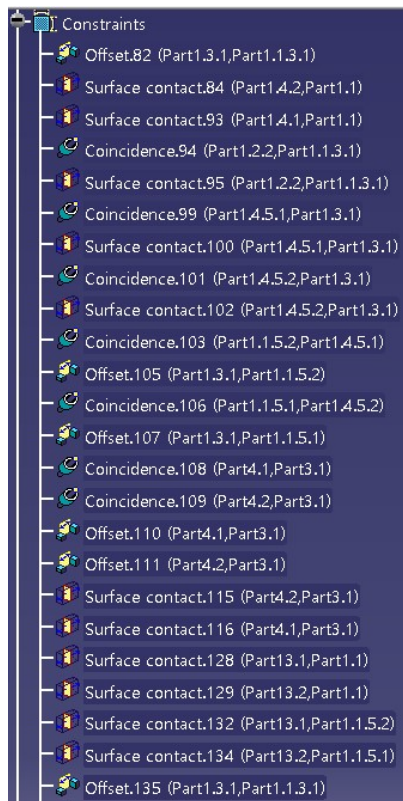


Truck Assemble



Modeling

[Constraints]



Fork Lift Constraints

Truck Constraints



목차



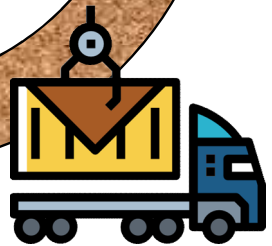
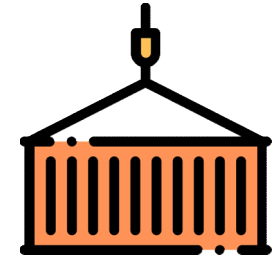
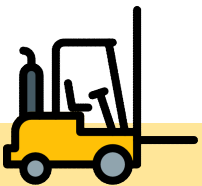
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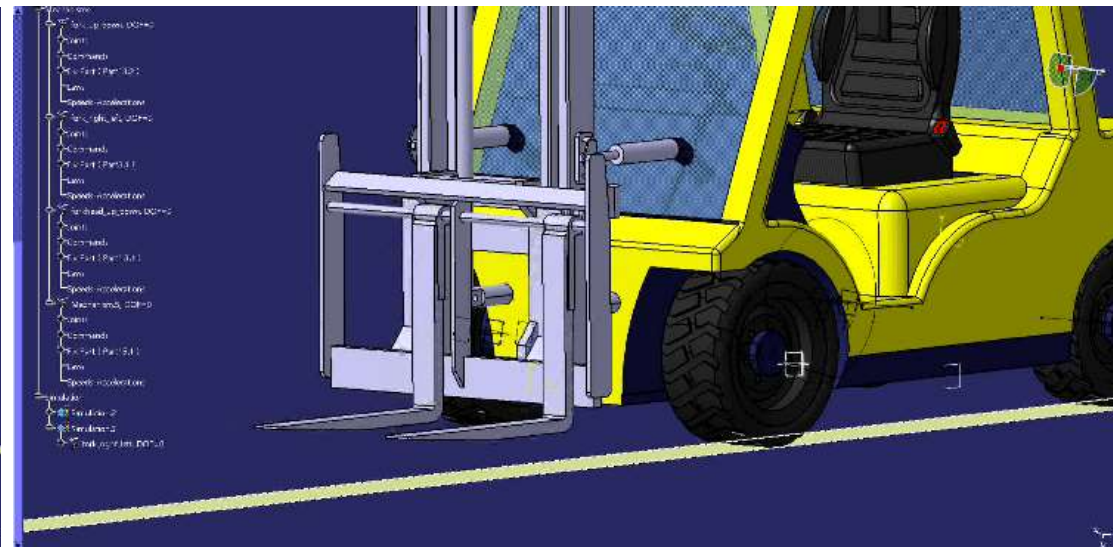


Kinematics

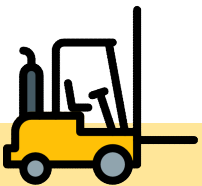
[Simulation]



Fork Head Up & Down

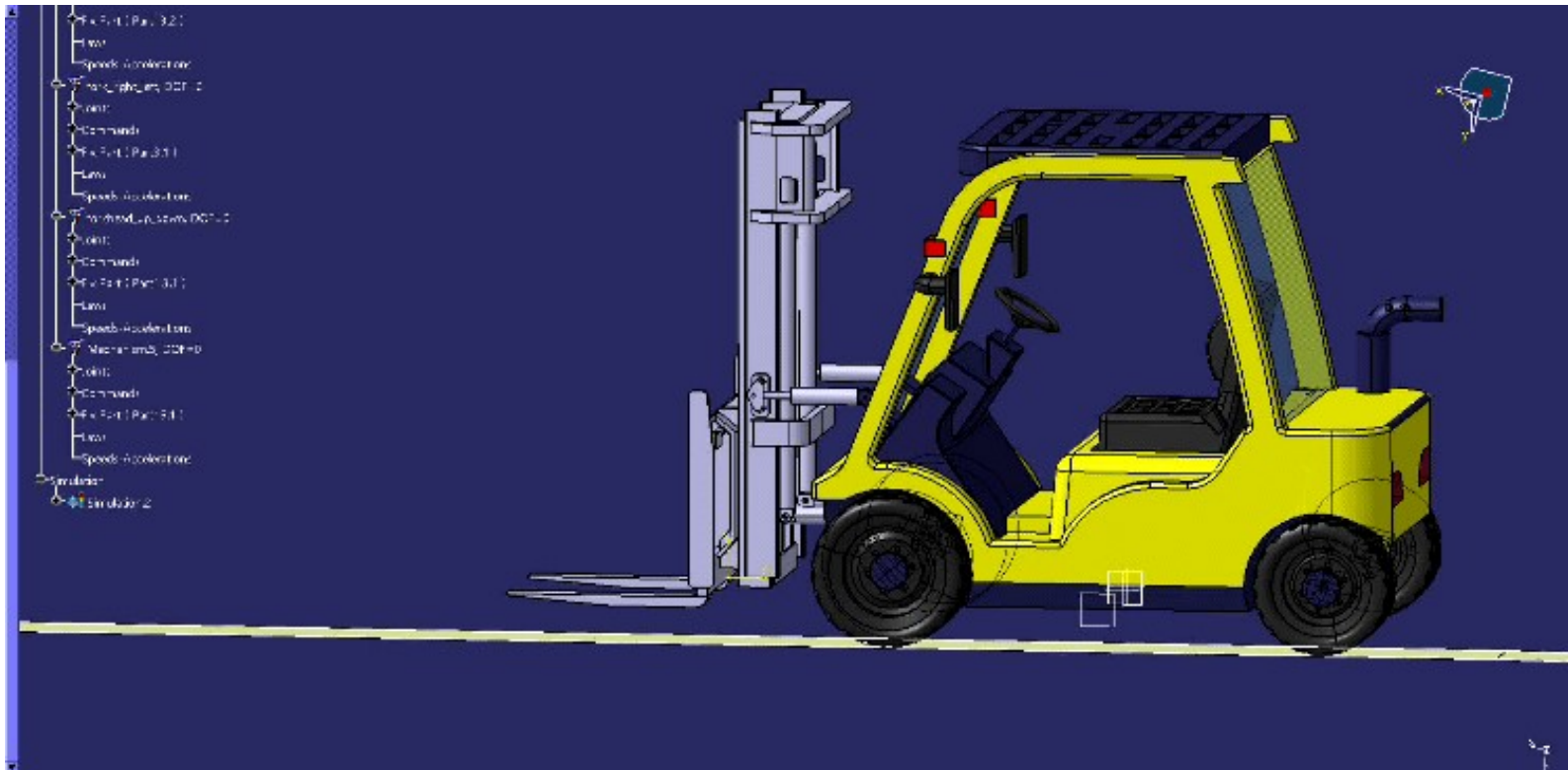


Fork Left & Right

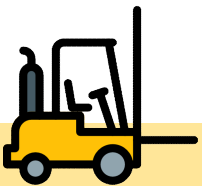


Kinematics

[Simulation]

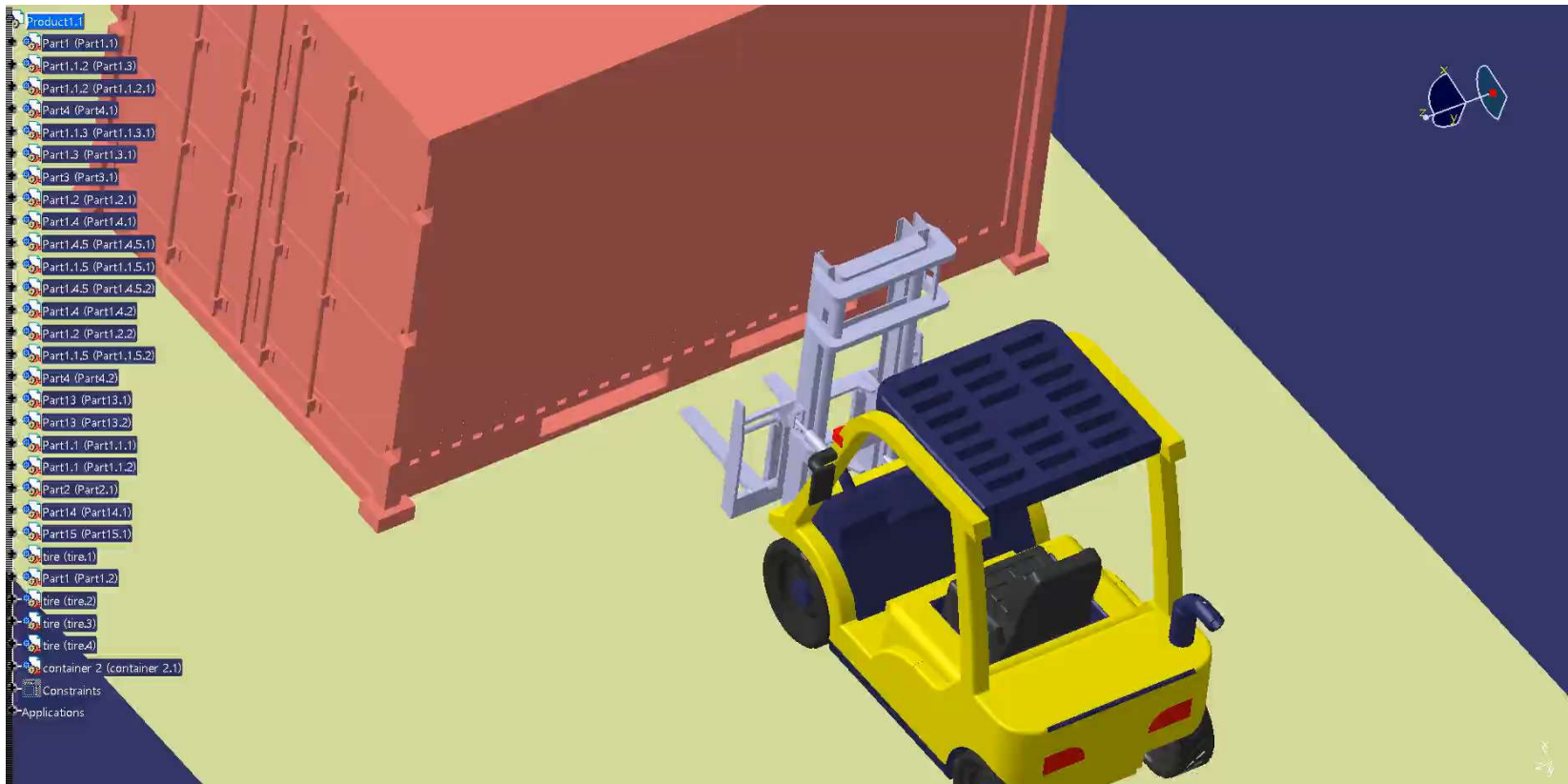


Fork lifting & Up & Down

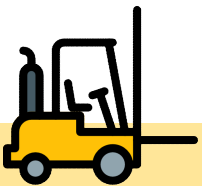


Kinematics

[Simulation]

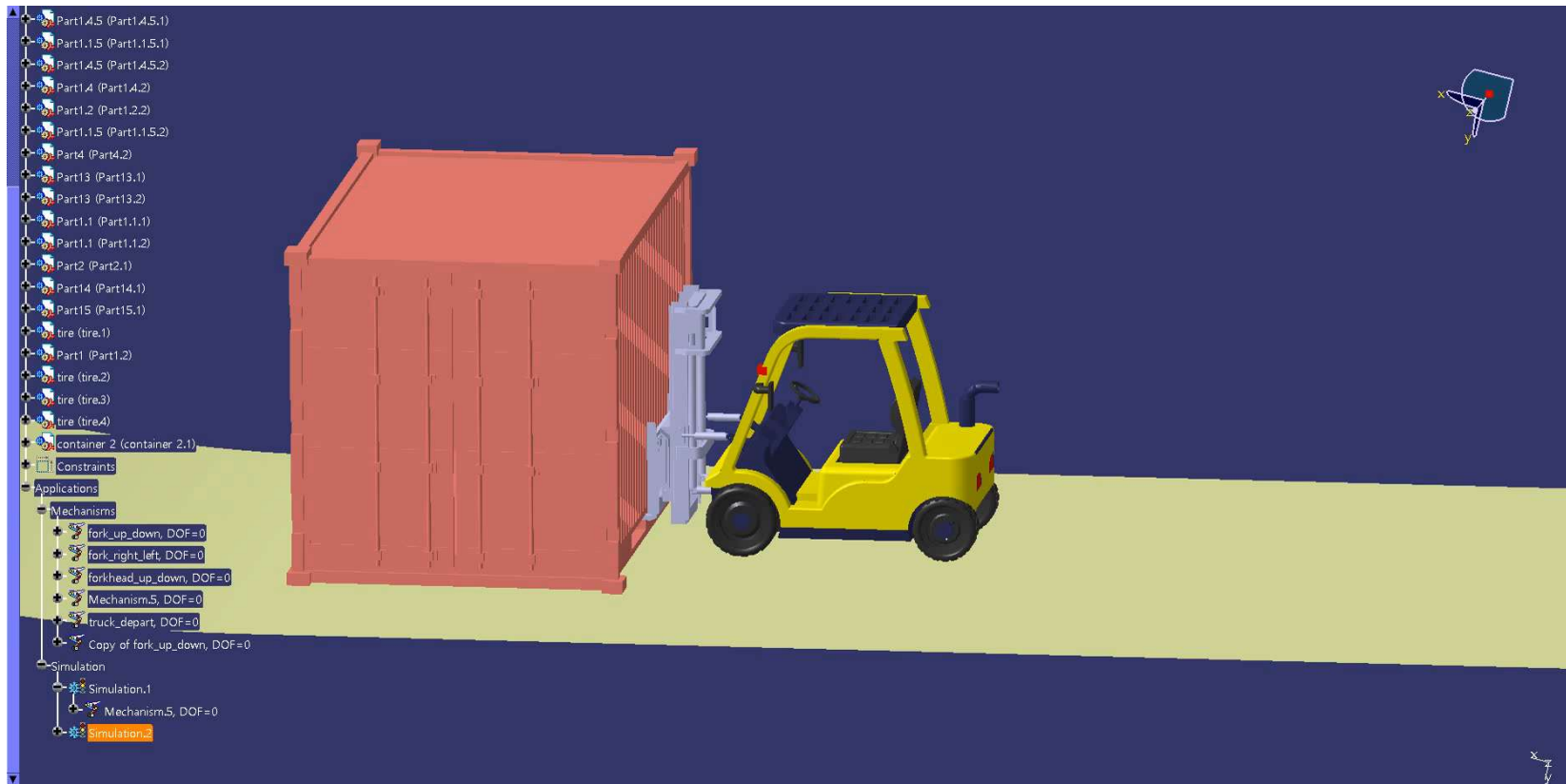


Fork lift Moving With Container

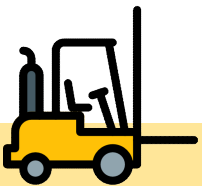


Kinematics

[Simulation]



Fork Lifting up

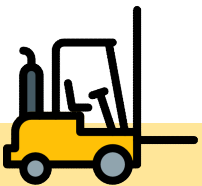


Kinematics

[Simulation]

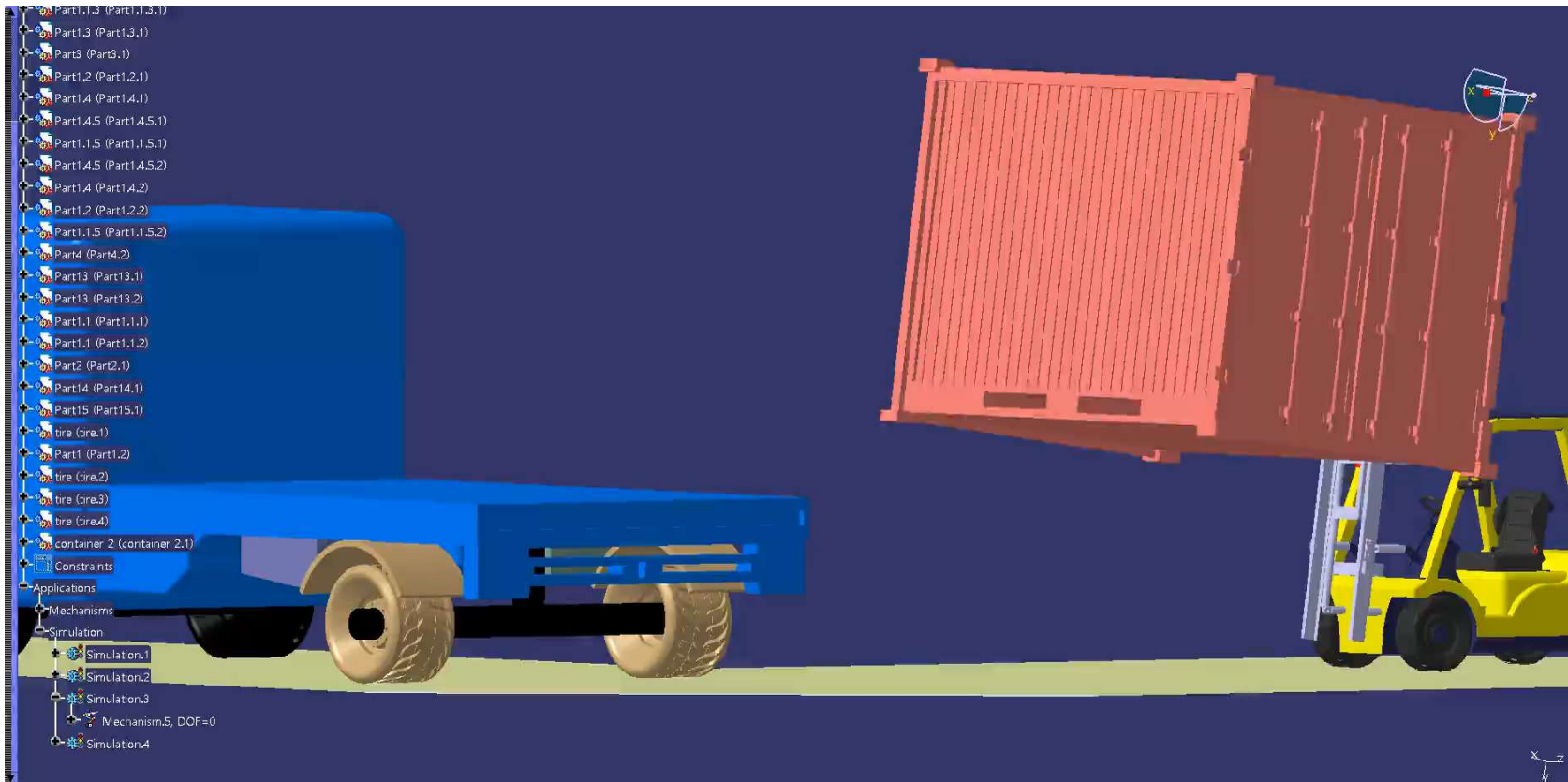


Arrived to Truck

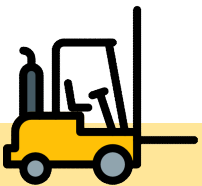


Kinematics

[Simulation]

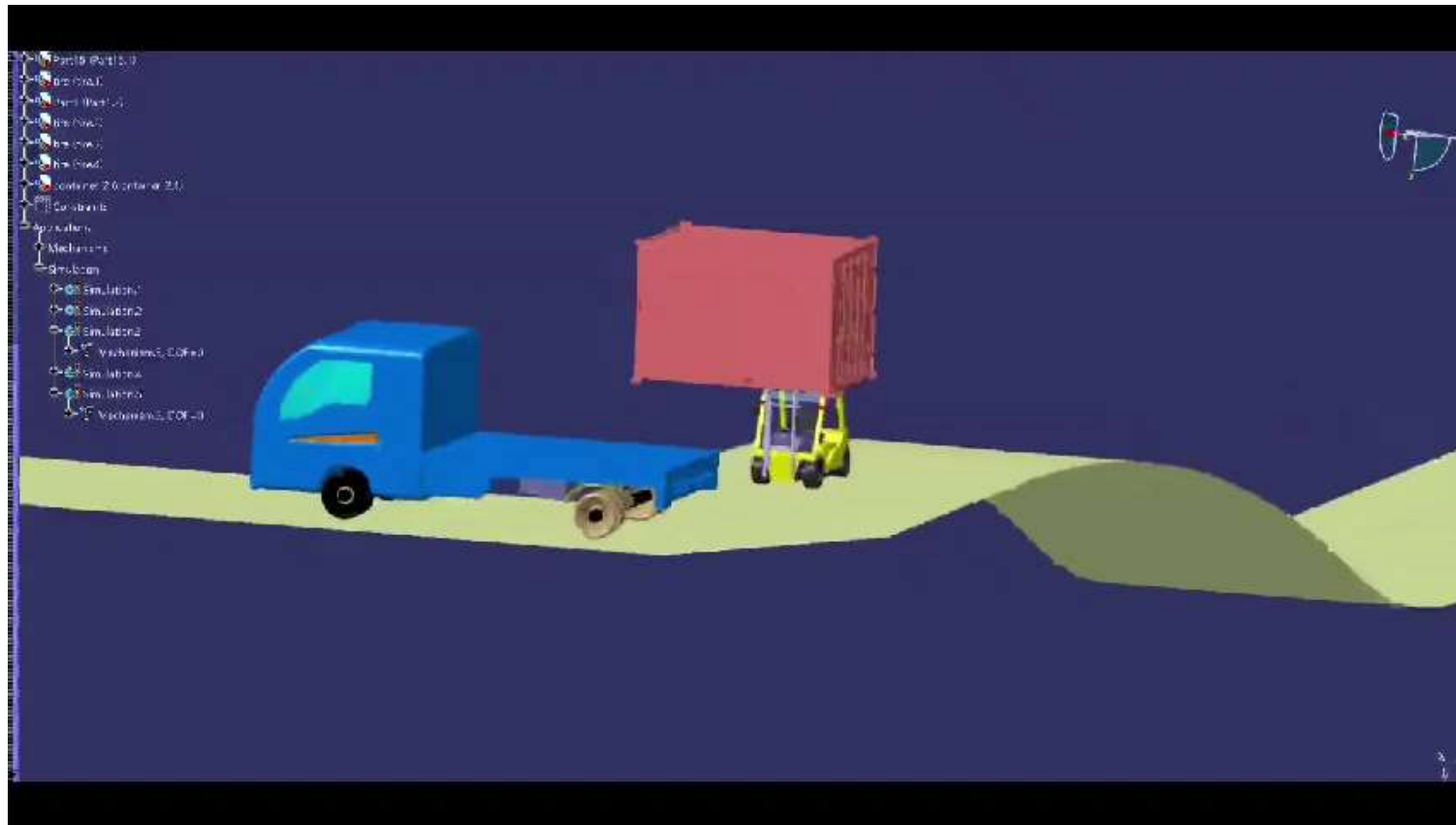


Prepare To Put On The Container

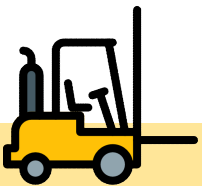


Kinematics

[Simulation]

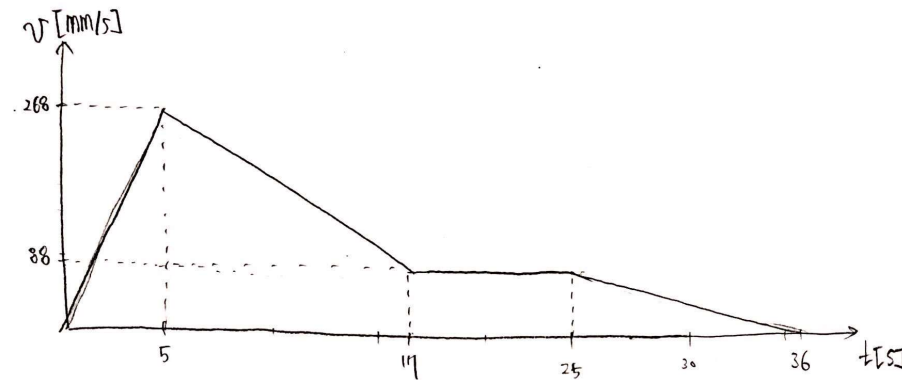


Put Down The Container To The Truck



Kinematics

[Simulation-With Formula]



등가속도 공식 $S = v_0t + \frac{1}{2}at^2$ 이용

변위를 기준으로 함수 구성

$$0 \sim 5 \text{ 초} : 4970 \text{ mm} - \frac{1}{2} \times \frac{268 \text{ mm/s}}{5} \times (5 \text{ s})^2$$

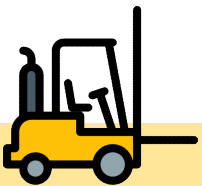
$$5 \sim 17 \text{ 초} : 4300 \text{ mm} - \left(\frac{1}{2} \times \frac{(88-268) \text{ mm/s}}{12 \text{ s}} \times (12 \text{ s})^2 + (268 \text{ mm/s}) \times (12 \text{ s}) \right)$$

$$17 \sim 25 \text{ 초} : 2164 \text{ mm} - (88 \text{ m/s}) \times 8 \text{ s} \quad (\text{등속운동})$$

$$25 \sim 36 \text{ 초} : 1460 \text{ mm} - \left\{ \frac{1}{2} \times \frac{-88 \text{ m/s}}{11 \text{ s}} \times (11 \text{ s})^2 + (88 \text{ m/s}) \times (11 \text{ s}) \right\}$$

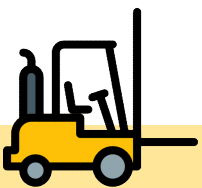
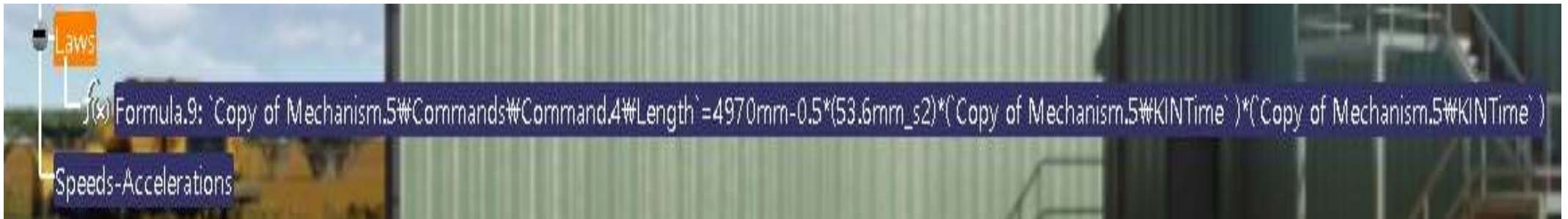


Scanned with
CamScanner



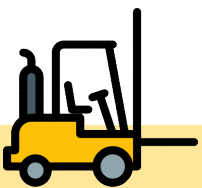
Kinematics

[Simulation-With Formula]



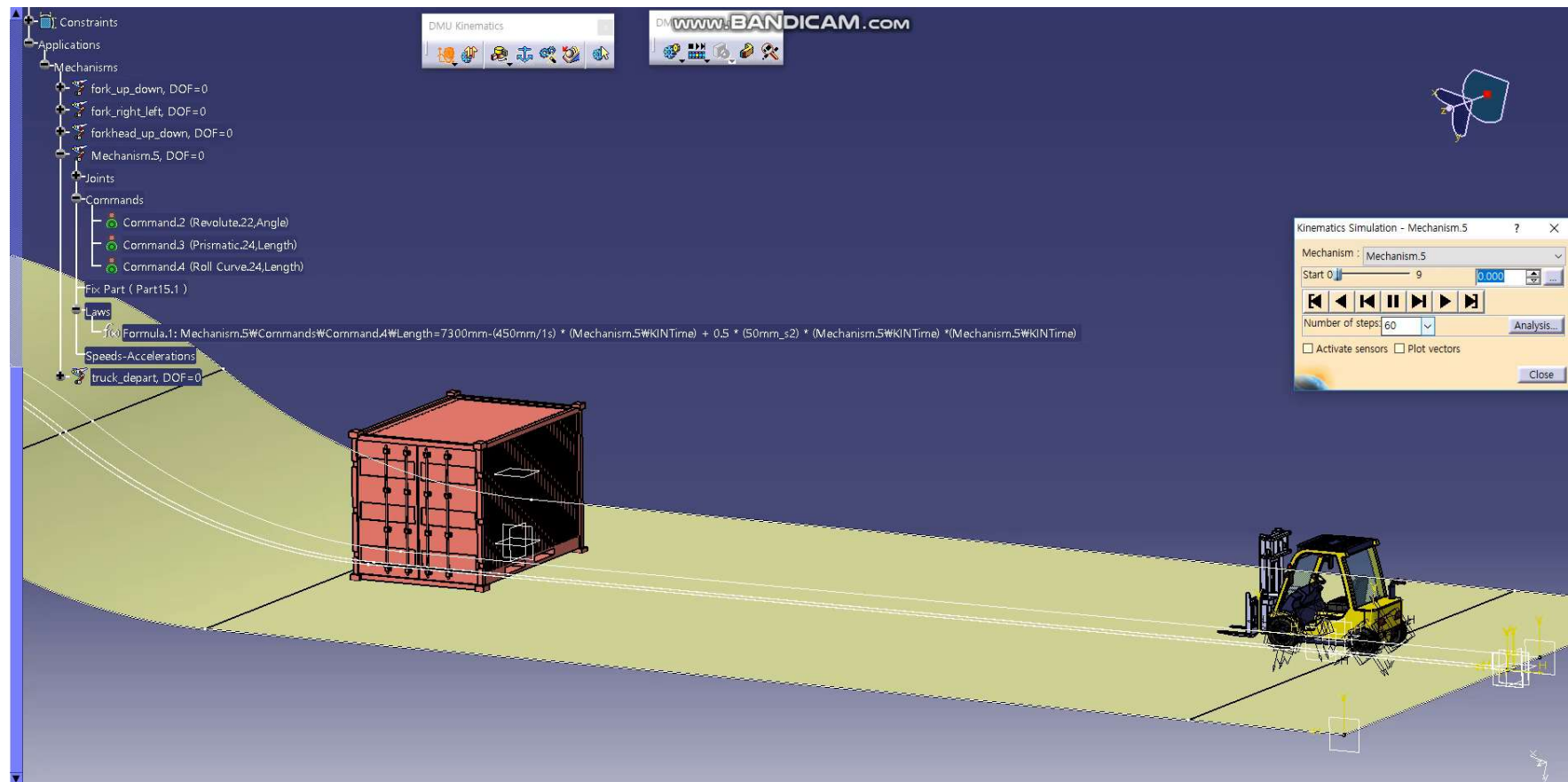
Kinematics

[Simulation-With Formula]



Kinematics

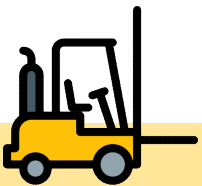
[Simulation-With Formula]



Kinematics

[Full Result]

<https://www.youtube.com/watch?v=RgqMYt6C6uk>



목차



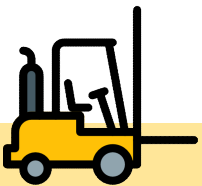
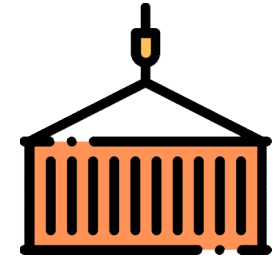
Q & A

Introduction

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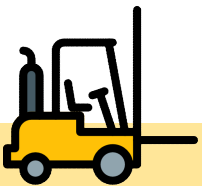
Conclusion



Conclusion

[Project를 진행하면서 느낀 점]

- ☞ 스케일의 사용이 예상보다 사용할 수 있는 부분이 거의 없었음.
- ☞ 가속도가 변할 때 하나의 함수로 표현이 불가함.
- ☞ Assembly에서 잡은 Constraints가 Kinematics를 실행하면서 구속 조건이 변화할 수 있음.
- ☞ 영상과 시뮬레이션에서의 프레임이 많이 깨지면서 우리가 설정한 함수의 모습을 보여주지 못함.



목차



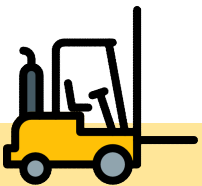
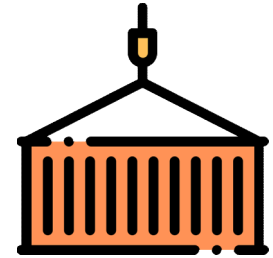
Q & A ✓

Introduction

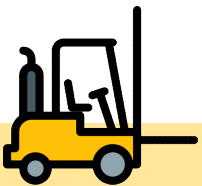
Modeling

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Q&A





Thank You For Listening!

