

# Box2D v2.2.1 User Manual

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# Chapter 1 Introduction

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## 1.1 About

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### 1. Prerequisites

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Caution

### 1. About this Manual

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### 1.4 Feedback and Reporting Bugs

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**1. Core Concepts**

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## 1.7 Units

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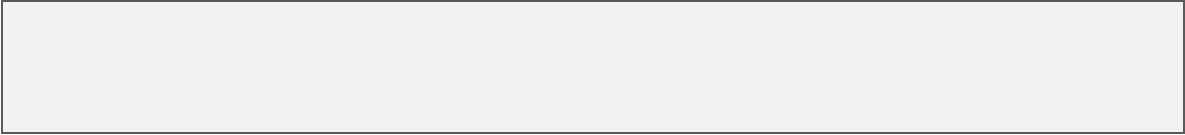
Caution

## 1.8 Factories and Definitions

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## 1.9 User Data

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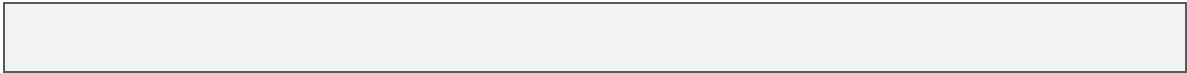


## Chapter Hello Box D

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### .1 Creating a World

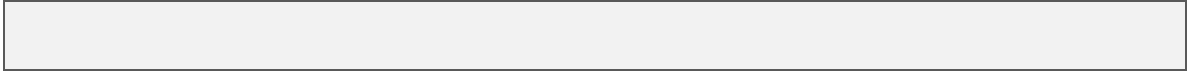
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### . Creating a Ground Box

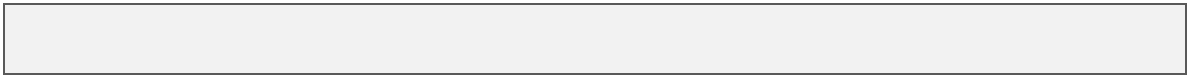
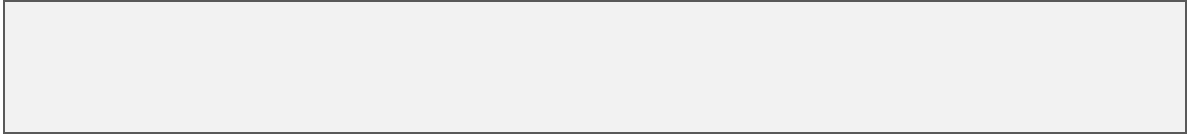
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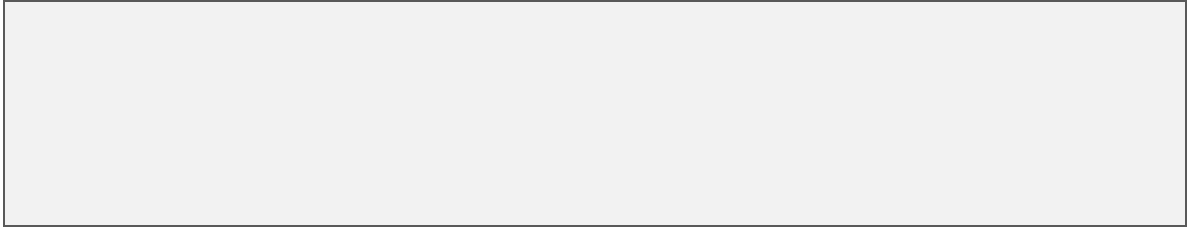
## . Creating a Dynamic Body

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#### .4 Simulating the World of Box D



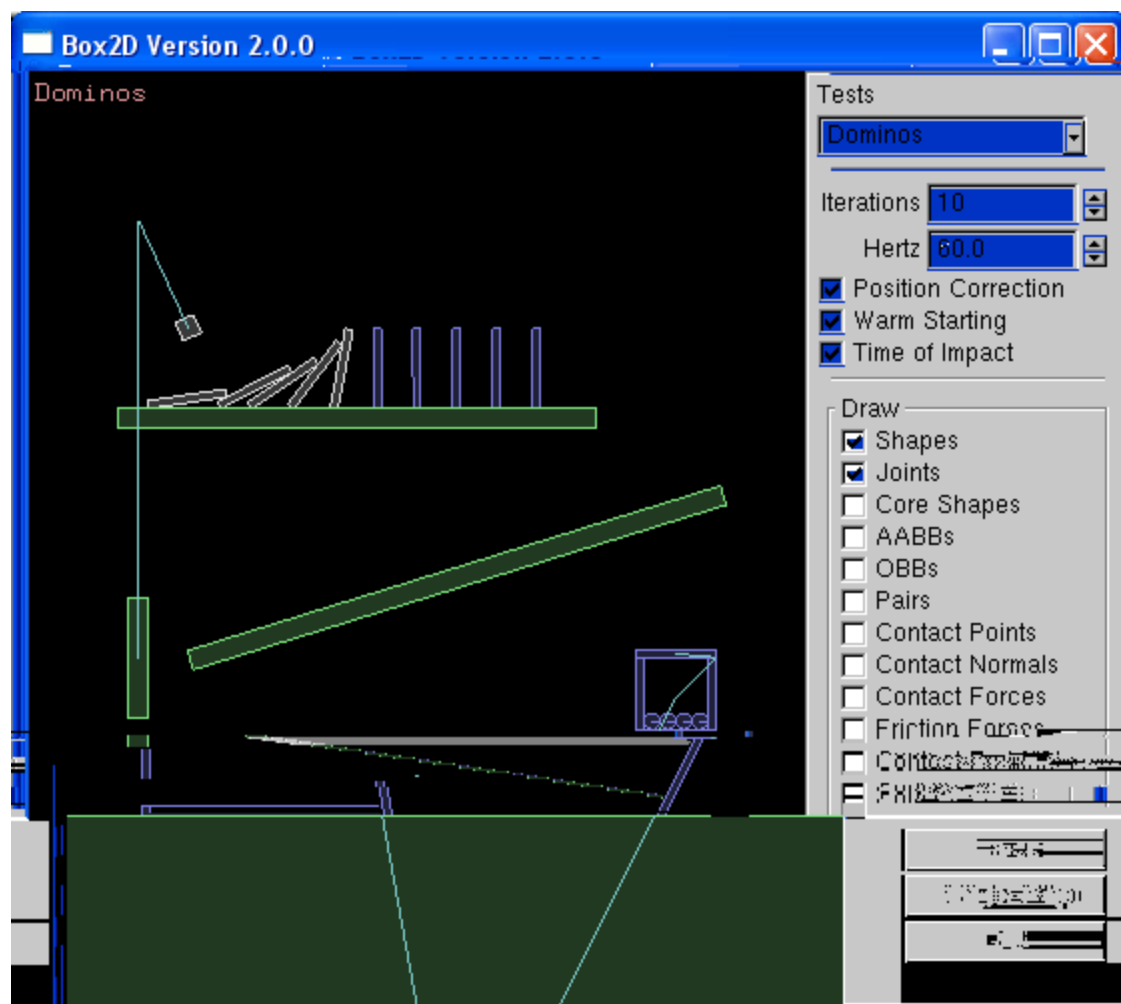


## **. Cleanup**

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## **.6 The Testbed**

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## Chapter Common

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### [.1 About](#)

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### [. Settings](#)

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### Types

### Constants

### Allocation wrappers

### Version

### [. Memory Management](#)

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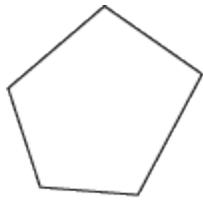
## Chapter 4 Collision Module

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### 4.1 About

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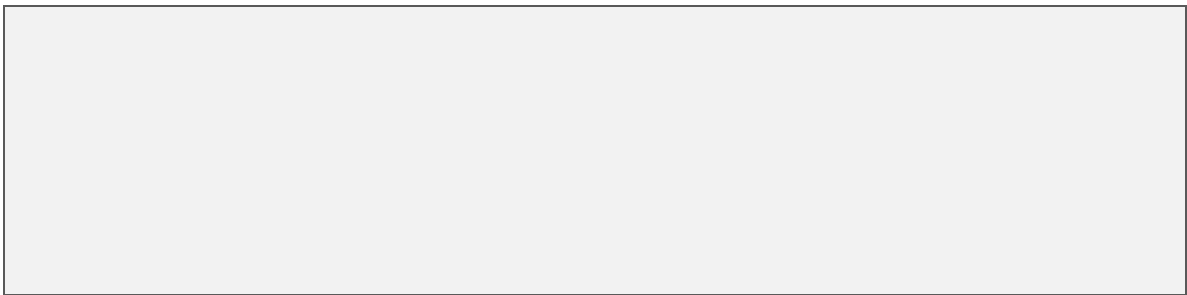
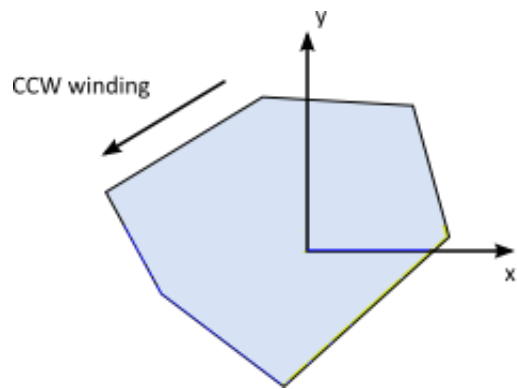


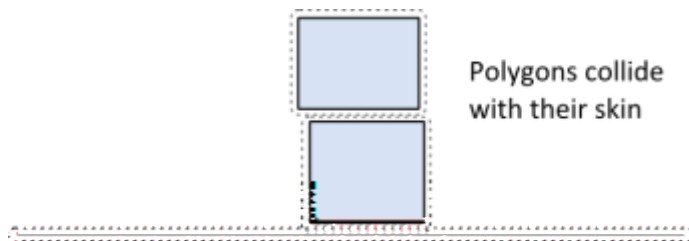
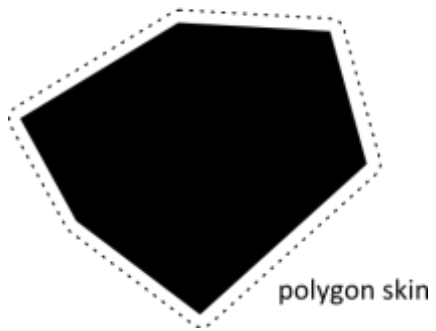


Convex



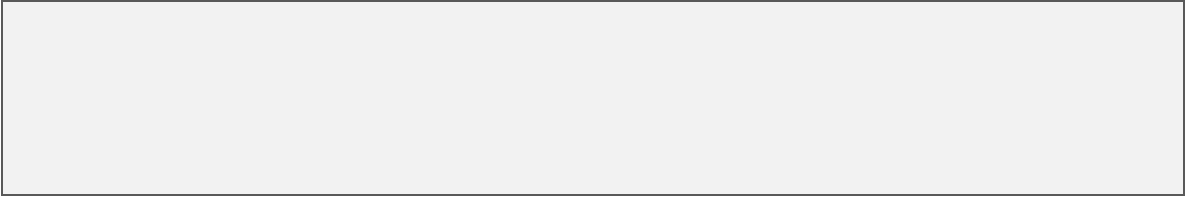
Concave





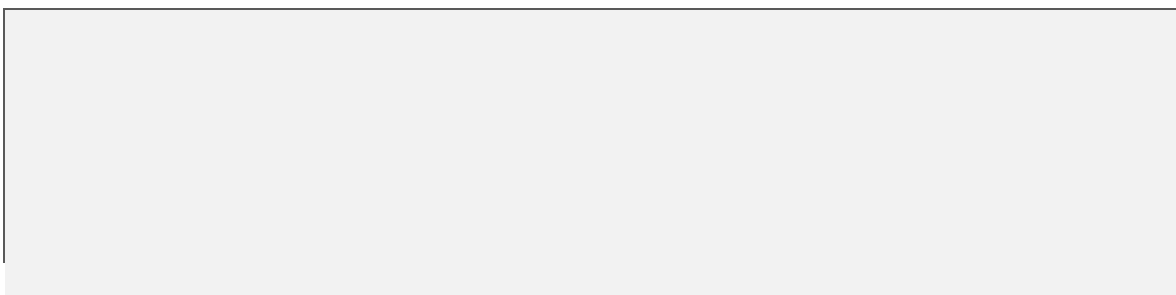
#### 4. Edge Shapes

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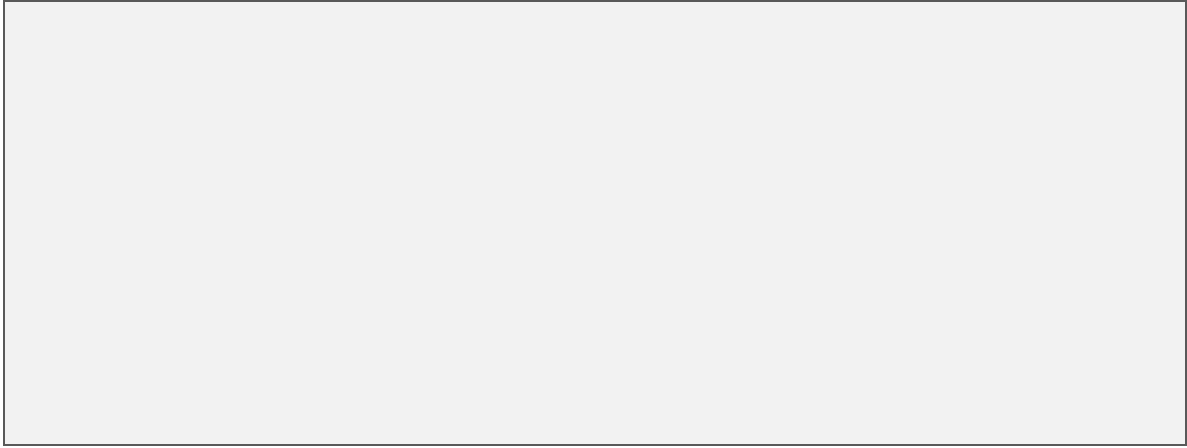


## 4.6 Chain Shapes

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## 4.9 Bilateral Functions

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## 4.10 Overlap

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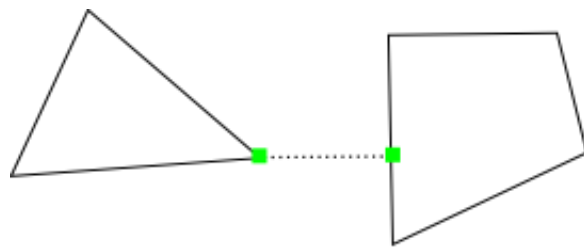
## 4.11 Contact Manifolds

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## 4.1 Distance

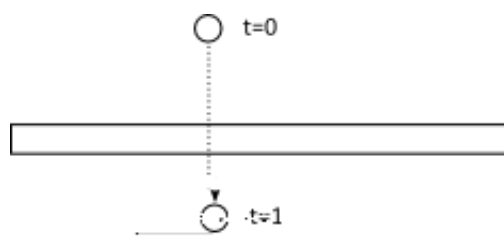
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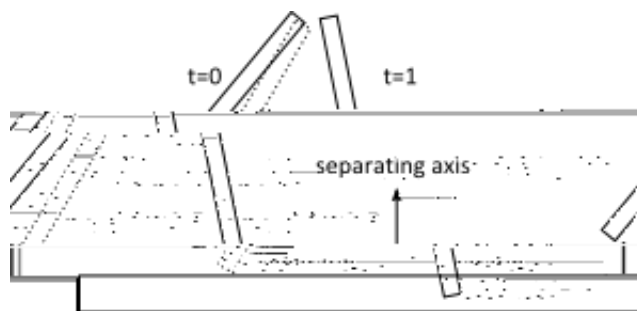
distance and closest points

## 4.1 Time of Impact

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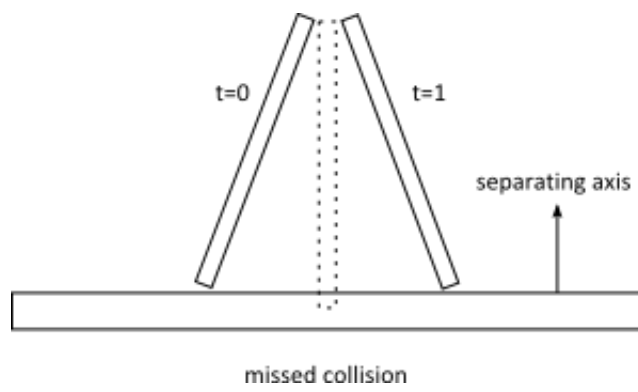


tunneling



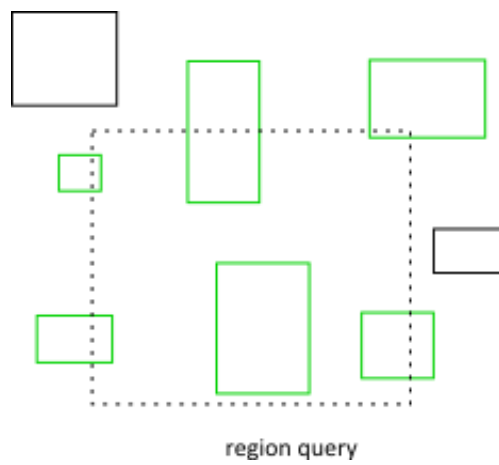
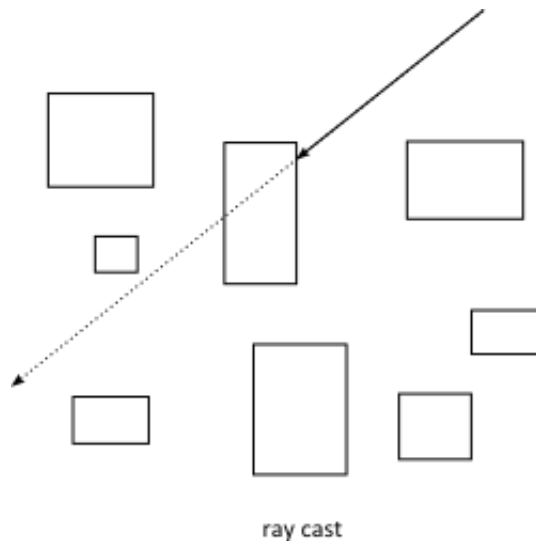
captured collision





#### 4.14 Dynamic Tree

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- **4.1 Broad phase**

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## Chapter Dynamics Module

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### .1 Overview

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## Chapter 6 Fixtures

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### 6.1 About

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### 6. Fixture Creation

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Density



**Friction**



**Restitution**



## 6. Sensors

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## Chapter 7 Bodies

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### 7.1 About

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## 7. Body Definition

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**Body Type**

**Position and Angle**

Caution

**Damping**





**Activation**



**User Data**



## 7. Body Factory

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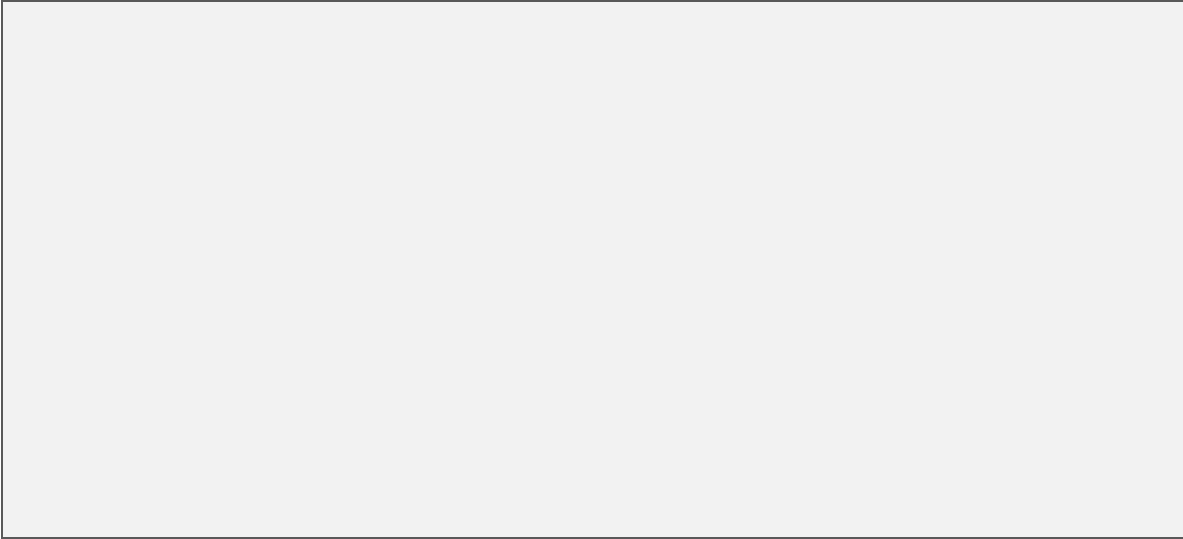
Caution

### 7.4 Using a Body

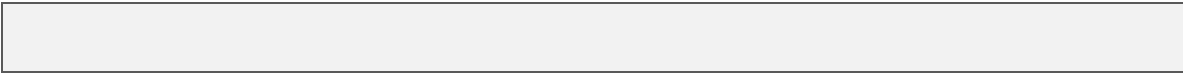
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**Mass Data**

**State Information**



**Position and Velocity**



# Chapter 8 Joints

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## 8.1 About

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## 8. The Joint Definition

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8. Joint Factory

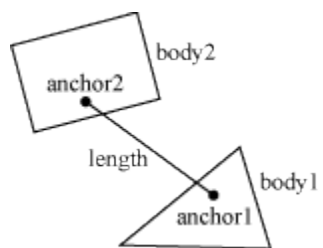
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Caution



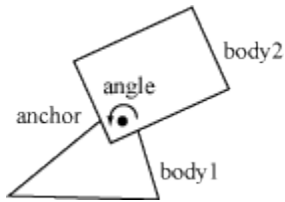
## 8. Distance Joint

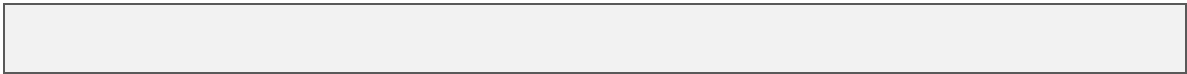
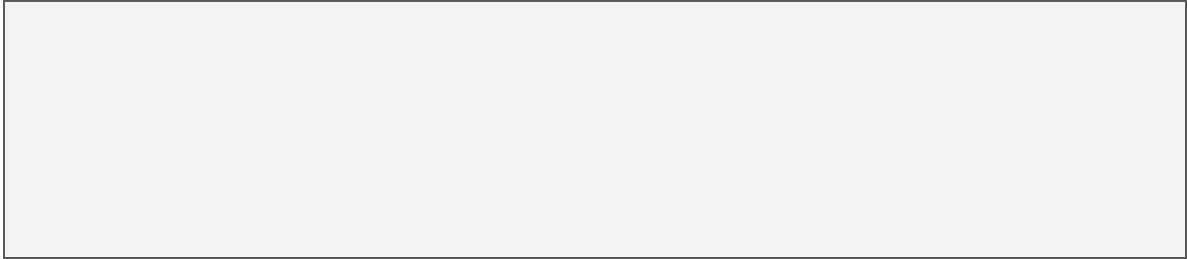
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### 8.6 Revolute Joint

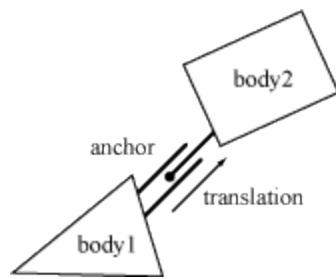
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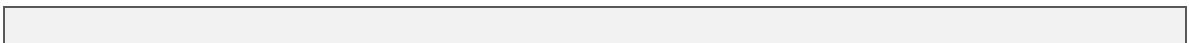
## 8.7 Prismatic Joint

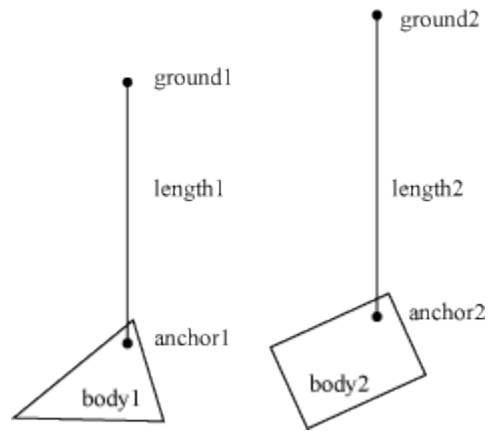
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## 8.8 Pulley Joint

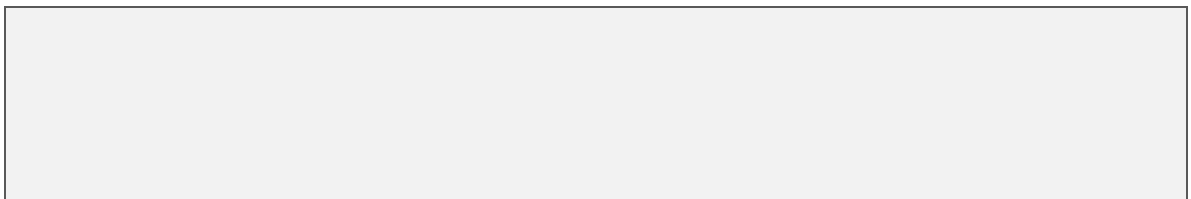
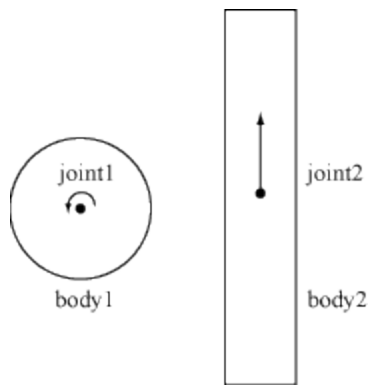
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## 8.9 Gear Joint

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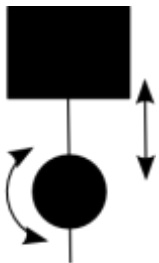
**Caution**

## 8.10 Mouse Joint

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### 8.11 Wheel Joint

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Wheel Joint

### 8.1 Weld Joint

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### 8.1 Rope Joint

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### 8.14 Friction Joint

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# Chapter 9 Contacts

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## 9.1 About

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**contact point**

**contact normal**

**contact separation**

**contact manifold**

**normal impulse**



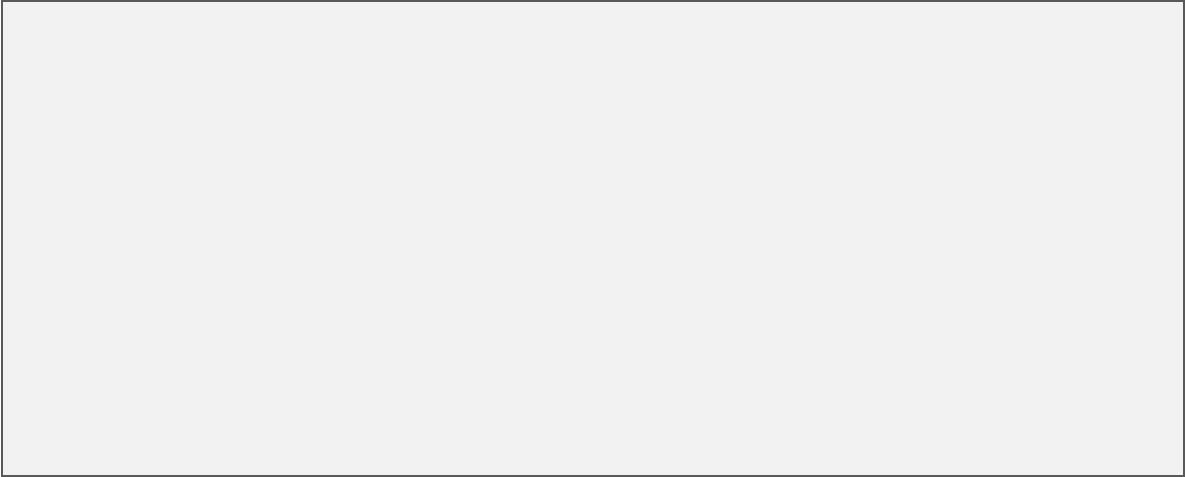
tangent impulse

contact ids

9. Contact Class

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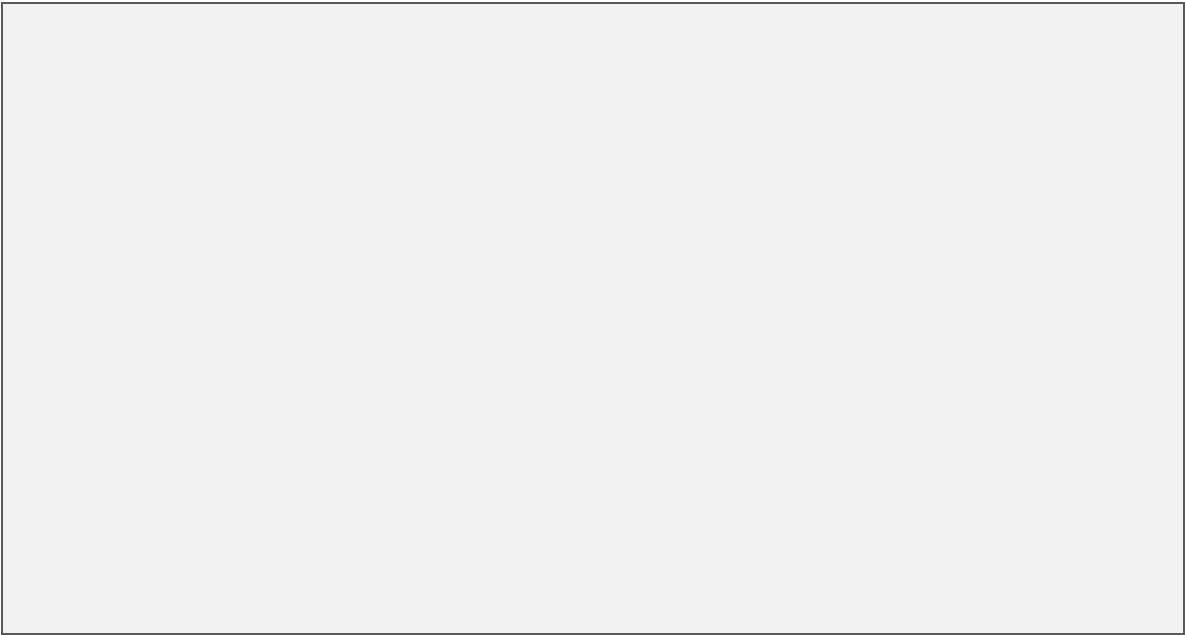


**Caution**

**Begin Contact Event**

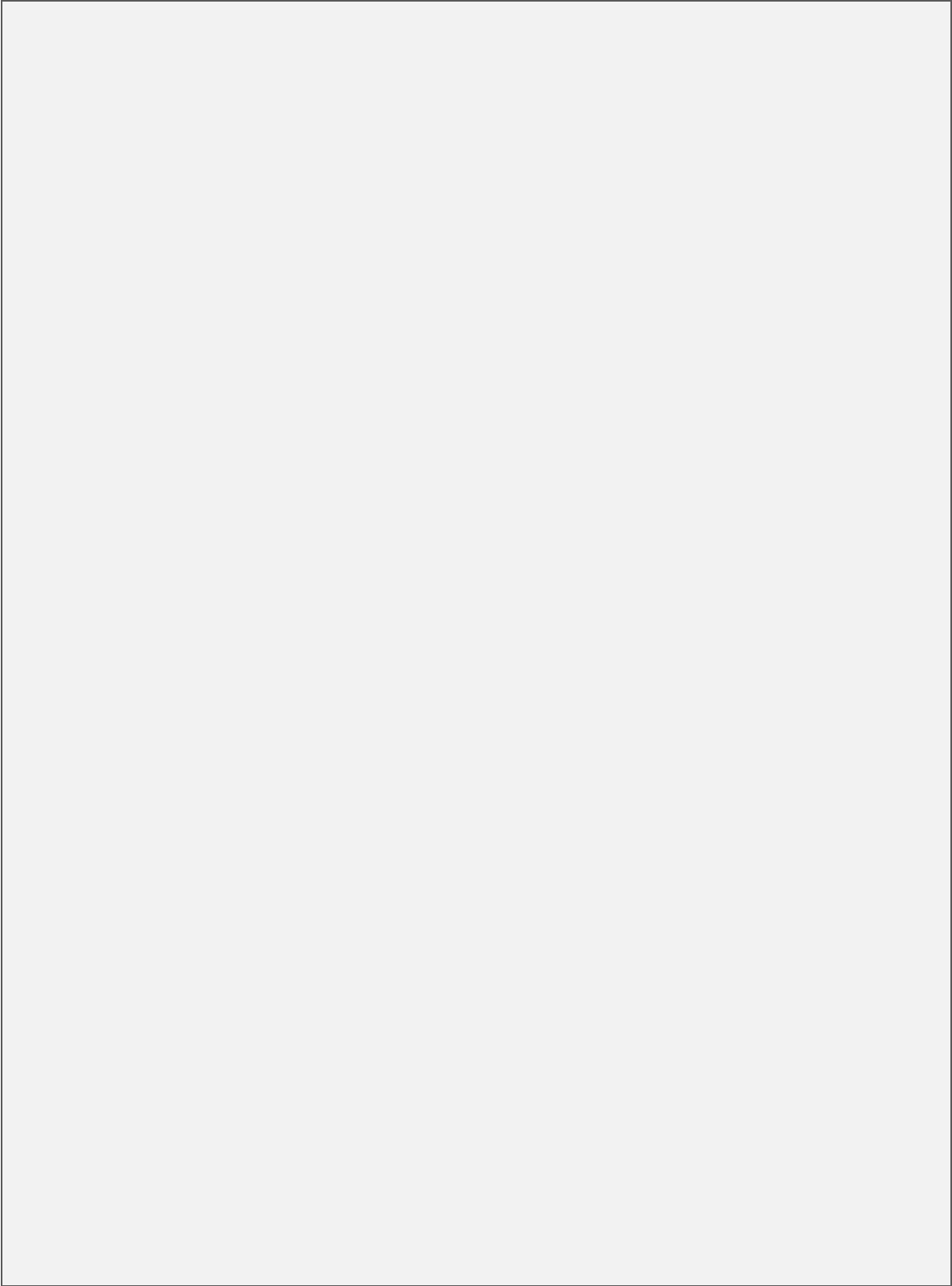
**End Contact Event**

**Pre Solve Event**



- **Post Solve Event**





## 9. Contact Filtering

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# Chapter 10 World Class

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About

Creating and Destroying a World



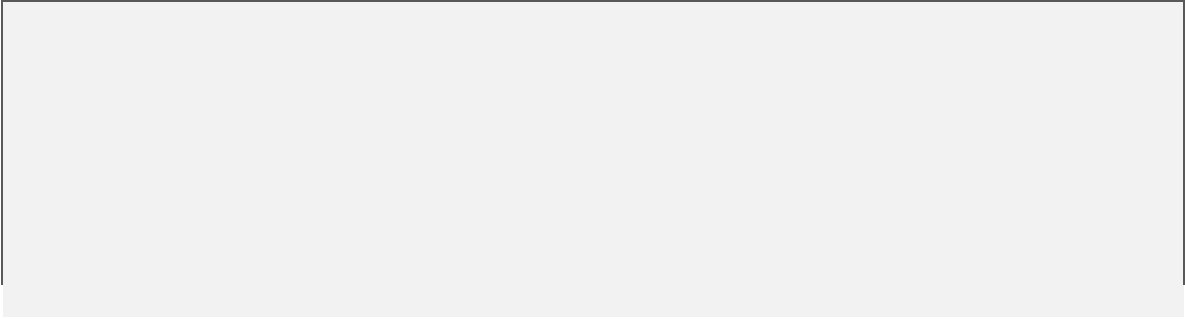
Using a World

Simulation

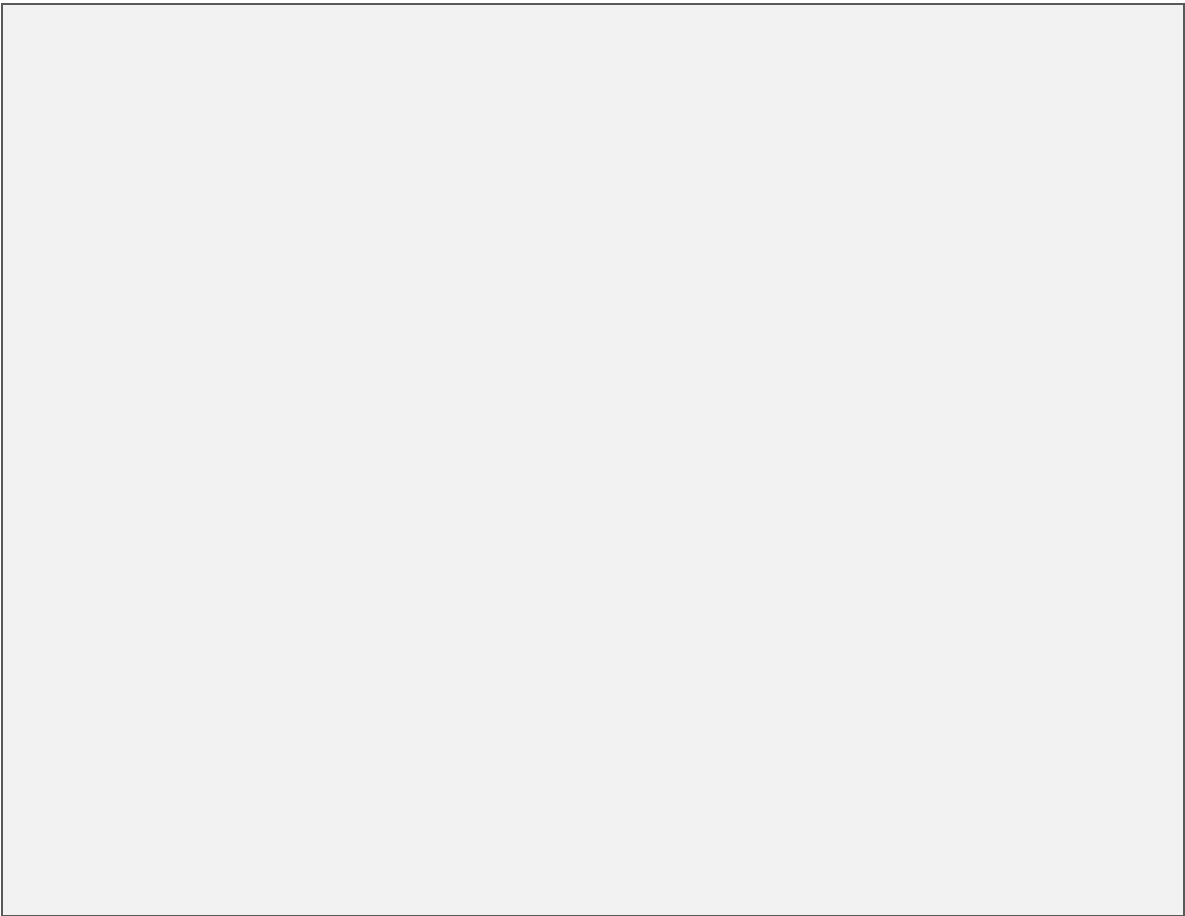




Exploring the World



Ray Casts



**Caution**

## **Forces and Impulses**

## **Coordinate Transformations**

## **Lists**



# Chapter 11 Loose Ends

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## 11.1 Implicit Destruction

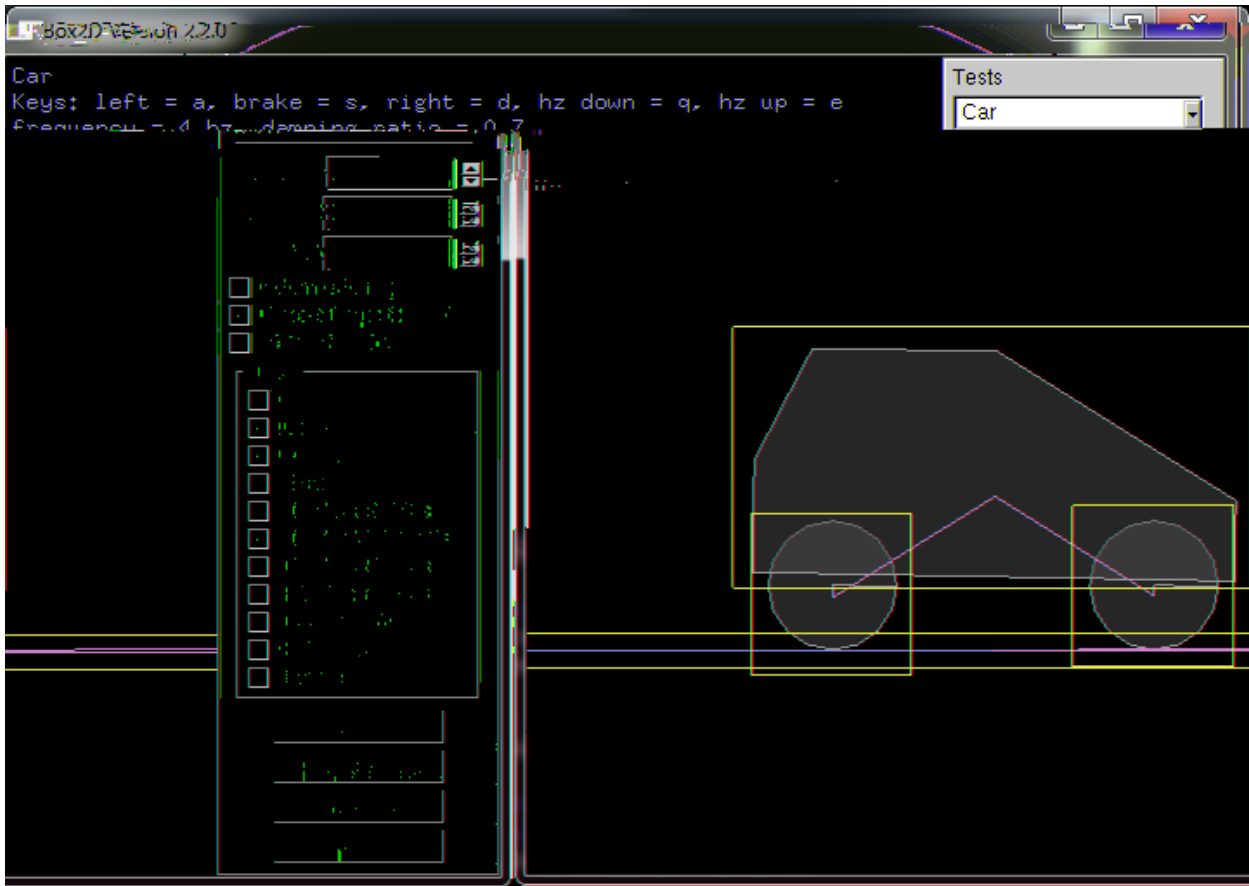
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**Caution**



## 2 Chapter 1 Debug Drawing

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## Chapter 14 References

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