

# Freeway Attack

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Developed by Team Duppybats:  
Rick Fujiyama  
Joe Malone  
Nick Taylor  
Jenny Xu

## Overview

*Freeway Attack* is a 3-D OpenGL miniature golf computer simulation. The objective of the game is to get the golf ball from the starting position to the hole with fewest number of strokes. There is one level to the game and score is calculated based on the number of strokes taken to complete the course minus the number of bonus items picked up on the way. There are an infinite amount of strokes available to the player.

## Game Mechanics

### Overview

*Freeway Attack* is a simulation game that starts on the side of the road at the lower left corner of the screen and travels through a typical freeway and exits to the hole where the game ends at the top right corner of the screen. There are several obstacles on the course like cars, cones, water, bridge, and off ramps that will add some difficulty to the game.

### Graphical User Interface

The background consists of scenic views of a typical busy freeway and the number of bonus items picked up is displayed in the lower left corner.

### Control Summary

The player will use the keyboard and mouse to control the ball through rotation and swing.

### Swing

To swing the putter, the player holds down the right mouse button and slowly moves the mouse up and down to control the putter. Once the player's ready to swing, the ball is hit with the desired velocity.

### Rotate

To rotate the position of the putter, the player holds down the left mouse button and makes small circle with the mouse to rotate the putter around the ball.

### Zoom

The player may use the up and down arrow keys on the keyboard to increase and decrease the zoom level.

### Scoring

Score will be based on the number of strokes taken to complete the hole. As in golf, lower scores are better. Special bonuses placed throughout the course will be available to reduce the stroke count. The bonuses are intended for those skillful golfers who need an extra challenge and do not hinder a normal golfer's game.

### Collision Detection

There will be only one type of collision detection, that between the ball and a plane. This includes collisions between the ball and the ground, and the ball and items/walls. Though there will be sloped surfaces, there will be no rounded surfaces other than the ball.

## Physics

There will be only minimal physics in the game. Air resistance is negligible for an object with the density of a golf ball, and in general the ball should not leave the ground. There will be gravity and rolling resistance applied to the ball, as well as some damping in the bouncing behavior of the ball.

## Game Elements

### Items

There are static and dynamic obstacles in *Freeway Attack*. The static objects are cars, cones, off ramps and water. The bridge a dynamic object and moves up and down at a constant speed. The bonus items may be static or dynamic and are placed throughout the game.

### Characters

The only character is that of the player. The player controls the putter and tries to hit the ball into the hole with minimum number of strokes.