

Truck driver game

The game is a car game which allows the player to drive some different vehicles:

1. A car with a wagon
2. A long bus and a short wagon
3. A short truck with a long wagon
4. A long truck with a short trolley and a wagon

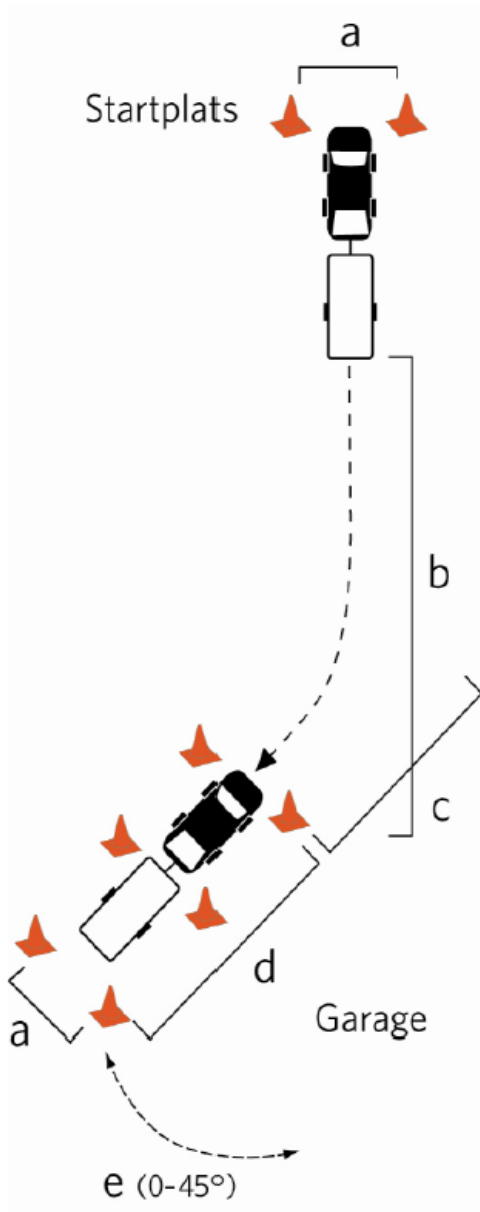
The user may choose which vehicle he wants to drive, and then he may choose which level he wants to try.

The player should drive the vehicle slowly, seen from above. The idea of the game is to park the vehicle without colliding with any objects, and there is a limited time to do this. There are no other vehicles driving around, it is just the player, and the objects that should not be collided with. The player should park the vehicle within a predefined area, and if he accomplish this within the given time, then he succeeds and the remaining time is displayed. There should be some number of predefined "parking lots", with different times. The coordinates of the objects is also predefined.

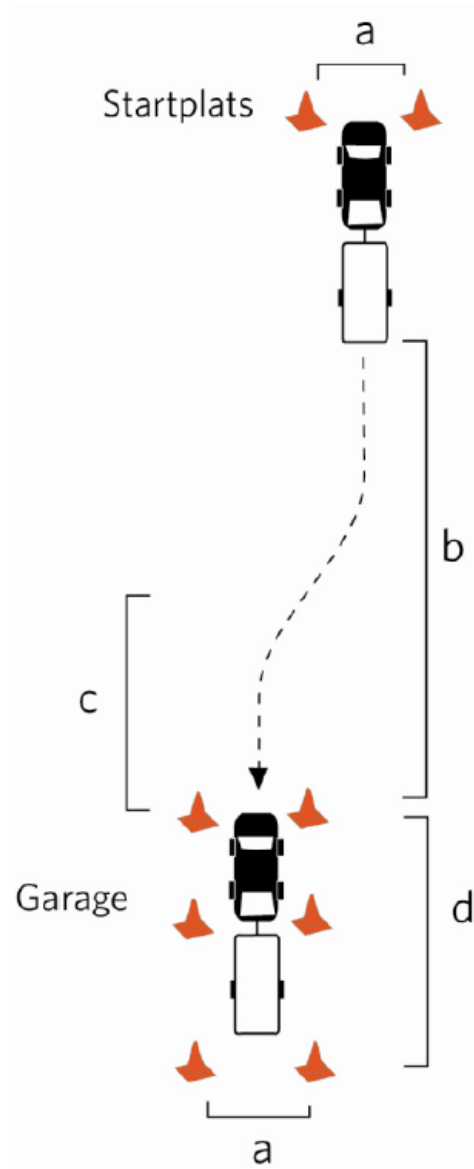
1. The truck seen from above should have two front wheels that have to be seen to the player.
2. The player can turn the steering wheel so that the front wheels are turned.
3. The player can drive forwards and backwards, and he can change the speed in which he is moving.
4. The mathematics for the truck with trolley and wagon is simulated in Matlab and a javaapplet is already developed.
5. When the player releases all buttons on the platform, the truck will stop immediately. It should be a tricky and not very fast game.
6. If the player turns the vehicle in such a way that the truck and the trolley collides, the game is over. The same goes if the player drives any part of the truck or trolley in an object. (The trolley may collide with the objects, but not the truck or the wagon.)
7. There are only one type of object on the screen other than the vehicle, and it looks like a red ball. There will be a straight line drawn between the "balls", to define colliding areas. The vehicle should not collide with the lines between the balls.
8. The parking lot is blank, and it is not so big. But perhaps it will be larger than the screen on a smartphone. The screen will then have to scroll so that the truck is in the middle of the screen. When the truck collides with the edges of the parking lot, the game is over.
9. The truck and wagon is drawn using rectangular boxes or images.
10. The trolley (the part between the truck and the wagon) is drawn using a straight line and two wheels.
11. The time should start when the user starts to move the truck. The time is counting from ten minutes down to 0, each second, for example. Other times may be defined for different parking lots.
12. There will be about 5 levels for each type of vehicle
13. To finish the game the vehicle has to be with all wheels inside the defined parking area, and it has to stand still. The player may not drive into the area with full speed only. Instead he has to release the "gas pedal" at the correct time, so that the vehicle stops. (The vehicle will stop very fast when releasing the gas pedal.)
14. There are no other constraints how the vehicle may move inside of the parking lot, but if the player drive the vehicle outside the parking lot (collides with the edges), then the game is over.

First type of vehicle: A car with a short wagon. The wagon has one axes with wheels, and the wagon turns around this axes (centered, as in the below picture).

Level 1:

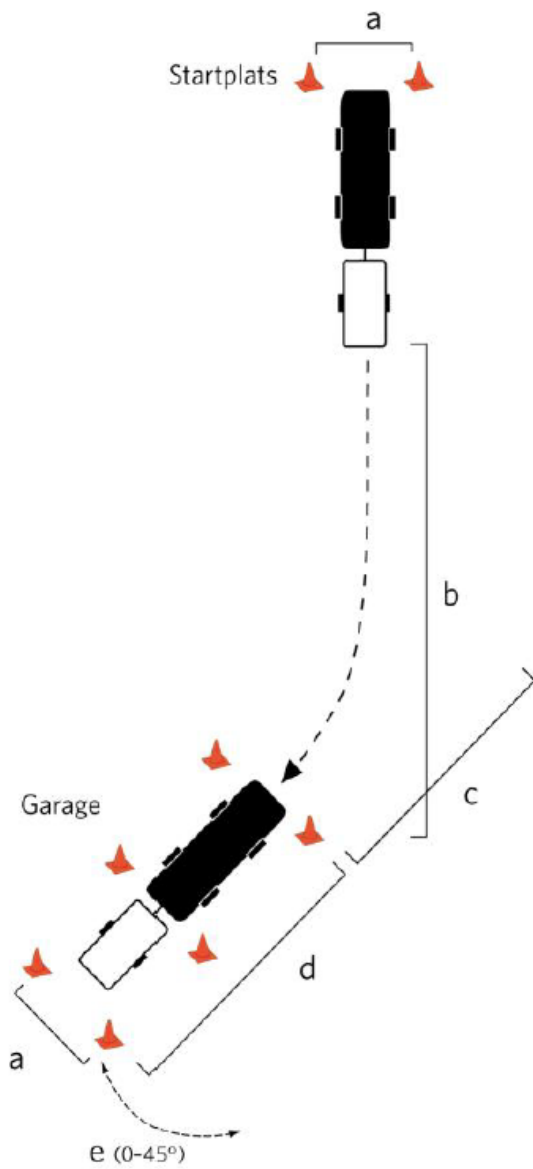


Level 2:

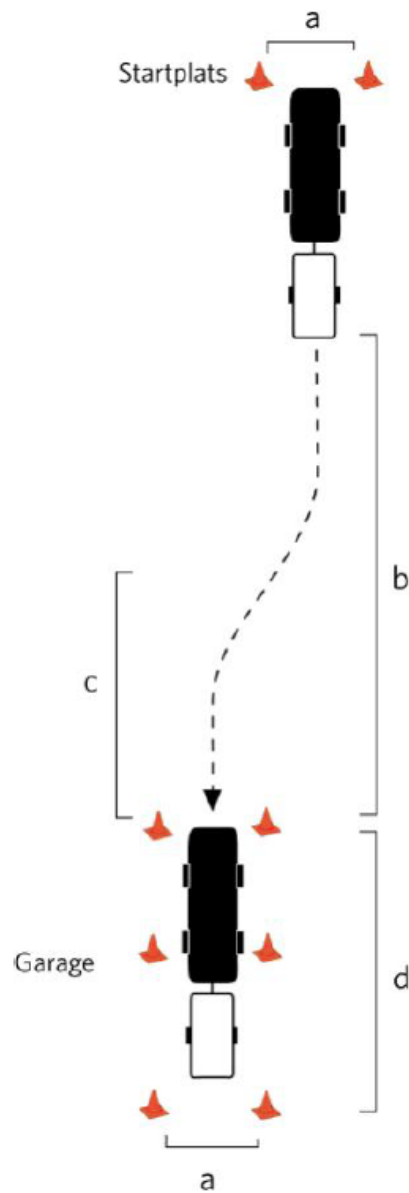


Second type of vehicle: A bus with a short wagon. This is much the same as a car with a wagon, but the vehicle is longer than the wagon.

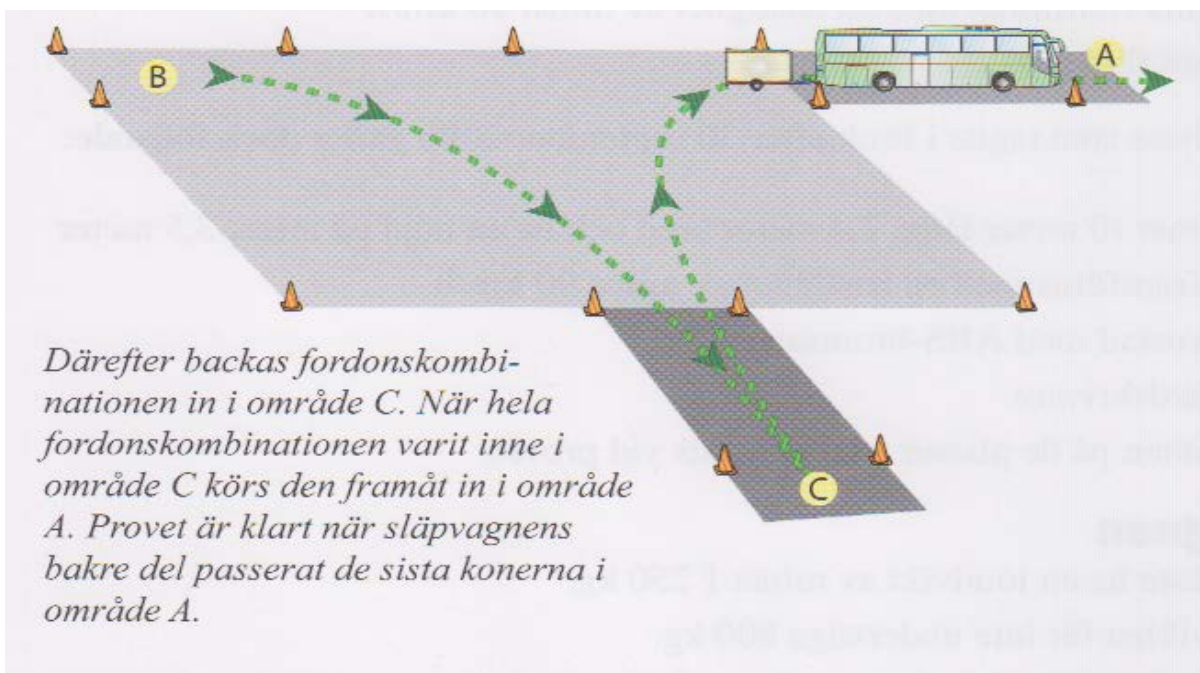
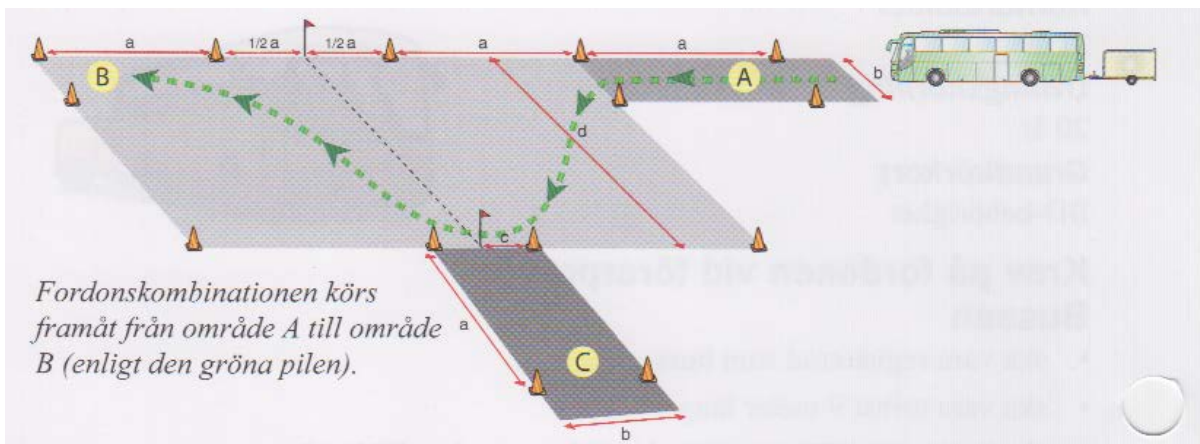
Level 3:



Level 4:



Level 5:



Time limit: 10 minutes

The bus should be driven forward from A in the first picture to B, then backwards down to C (second picture), and then forward to A. The level is completed when the bus is parked in area A with the front of the bus pointing to the right.

The distance "a" is the same length as the distance between the front wheel axle on the bus to the wheel axle on the wagon. The distance $1/2a$ is the half of the distance of a. The distance "b" is the same as the width of the bus plus one meter. The distance c is the half of the distance of b. The distance d is of the same length as the distance between the axles of the bus. There are objects drawn in the picture, telling where the vehicle may drive. The parking lot may be larger than this, but driving outside this area will make the player lose the game. The flag in the pictures above will not be shown in the game.

Example:

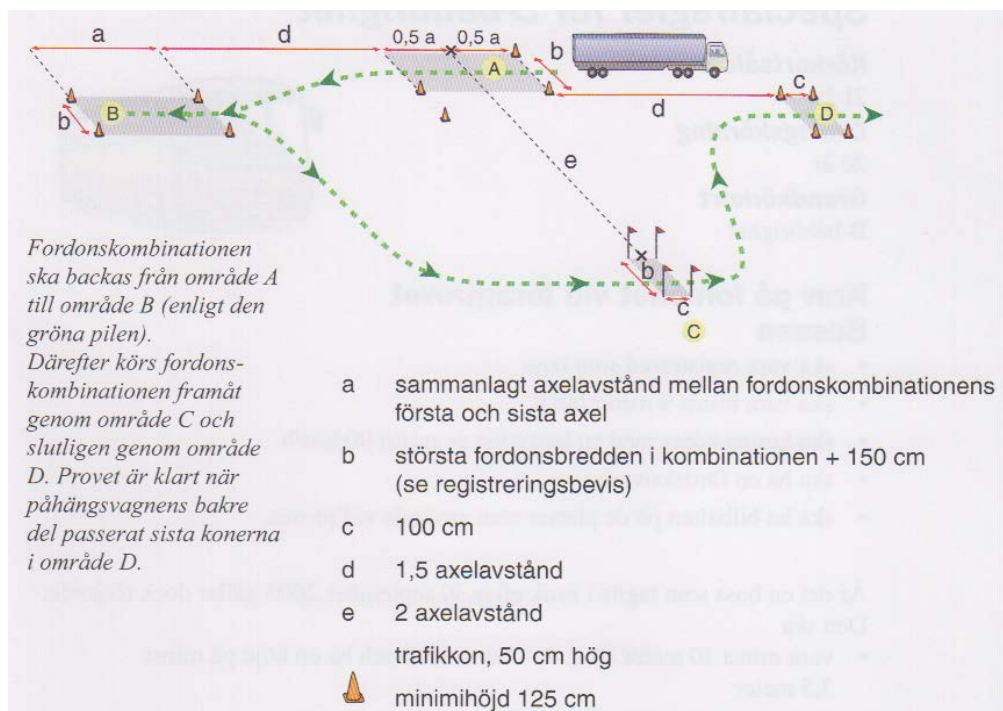
The bus has the length 12 meters. This is the distance between the front of the bus and the back of the bus. The distance between the wheel axis is 6.2 meter. The distance "d" is then 6.2 meter. The distance between the rear axle of the bus and the axle of the wagon is 6 meter. Then the distance "a" will be 12.2 meter. The width of the bus is 2.5 meter. The distance "b" in the picture will then be 3.5 meter.

Third type of vehicle: A short truck with a long wagon. This is much the same as the car with a wagon, but the vehicle is much shorter than the wagon. Please look at the following series of pictures how this vehicle behaves. The truck will have one front axle with wheels that the driver can turn with the steering wheel, and the truck will have one rear axle with wheels that sits under the front of the wagon. The wagon will only have one axle with wheels, and they will be located very far back of the wagon. If the wagon is disconnected from the vehicle, the wagon will have only one axle with wheels to stand on, just as the vehicle consisting of a car and a wagon. The big difference of this vehicle from the car and the wagon, is the position of the wheel on the wagon, and the fact that the wagon is very long.

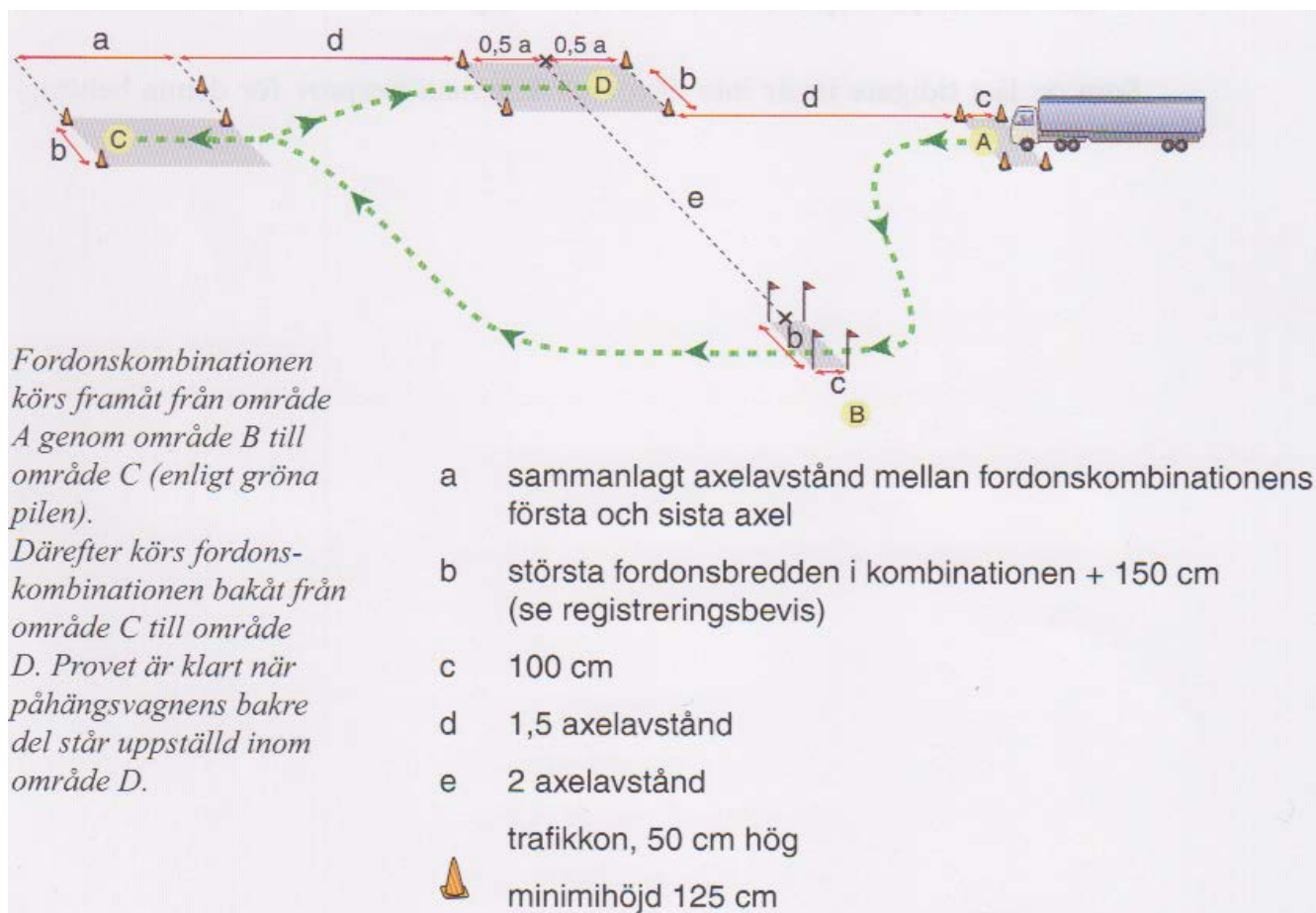
Level 6:



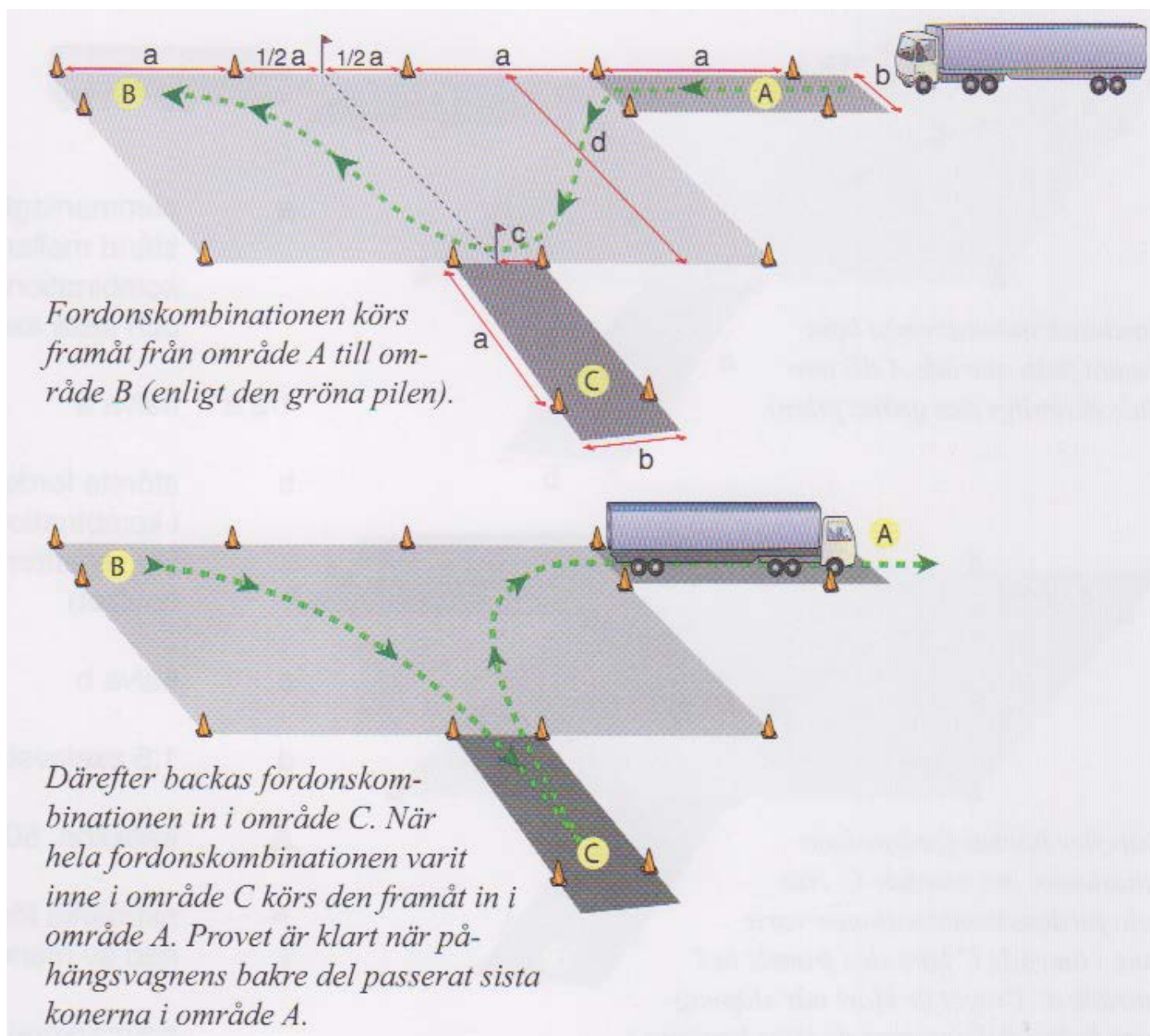
Level 7:



Level 8:



Level 9:



These are the distances used in the picture:

a : The distance between the first axle of the truck to the last axle of the wagon

$1/2a$: This is the half of a

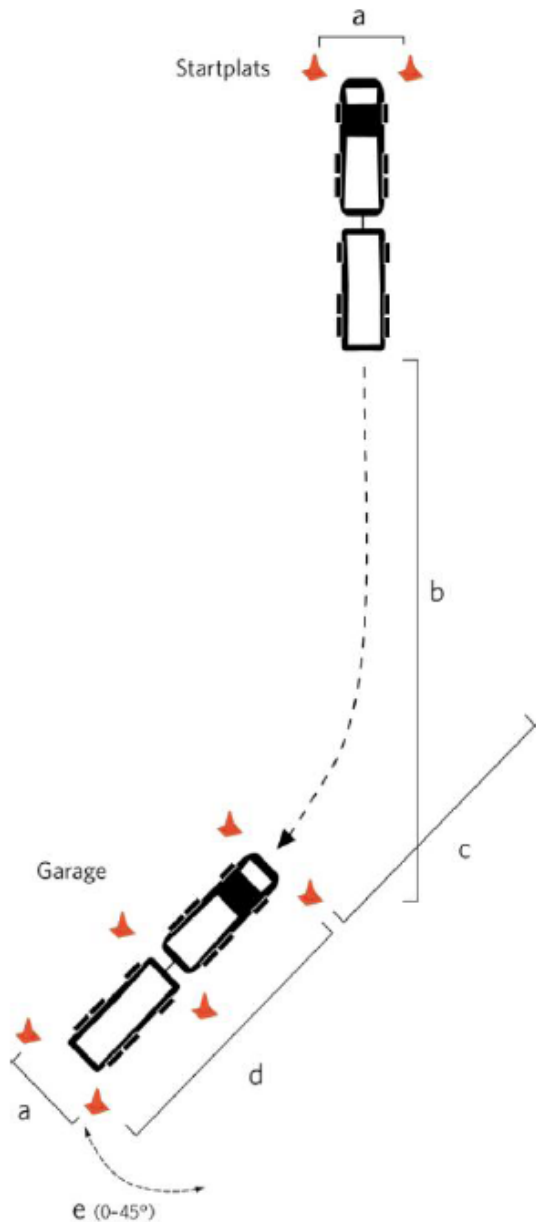
b : The width of the truck and wagon plus 1 meter

c : The half of b

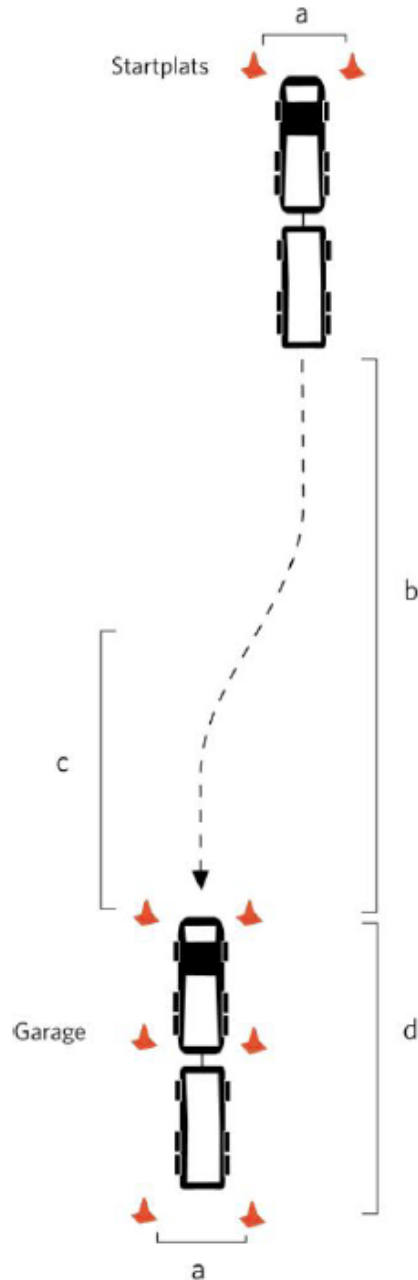
d : Two times the distance between the front axle of the truck to the rear axle of the truck

Fourth type of vehicle: A long truck with a short trolley and a long wagon. The truck in the picture has two rear axles with wheels, but in the mathematical formulas it will be ok to use only one rear axle. The trolley that connects the truck and the wagon has one axle with wheels. The wagon in the picture has two rear axles with wheels, but in the mathematical formulas it will be ok to use only one rear axle.

Level 10:



Level 11:



a: The width of the truck and wagon plus 1.5 meter

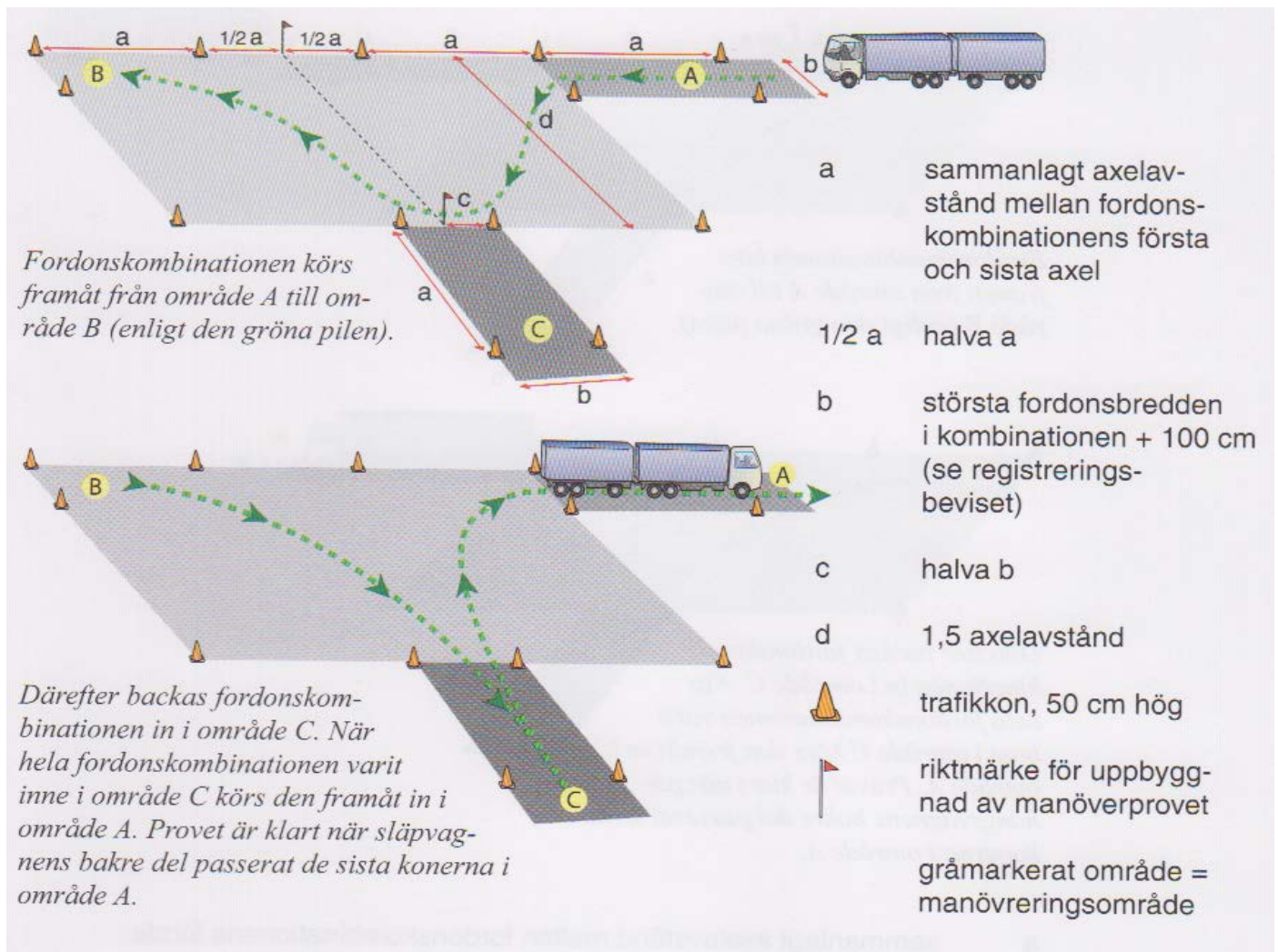
b: Minimum two times the total length of the vehicle with wagon. (Will be for example 50 meters.)

c: This is some free space in front of the first object, will be for example 30 meters.

d: The length of the vehicle with wagon, plus 1.5 meters.

e: The angle will be for example 40 degrees.

Level 12:



a: The length between the first axle of the truck to the last axle of the wagon.

b: Width of the vehicle plus 1 meter

c: The half of b

d: 1.5 times the distance between the front wheel axle of the truck to the second (or last) axle of the truck

More levels:

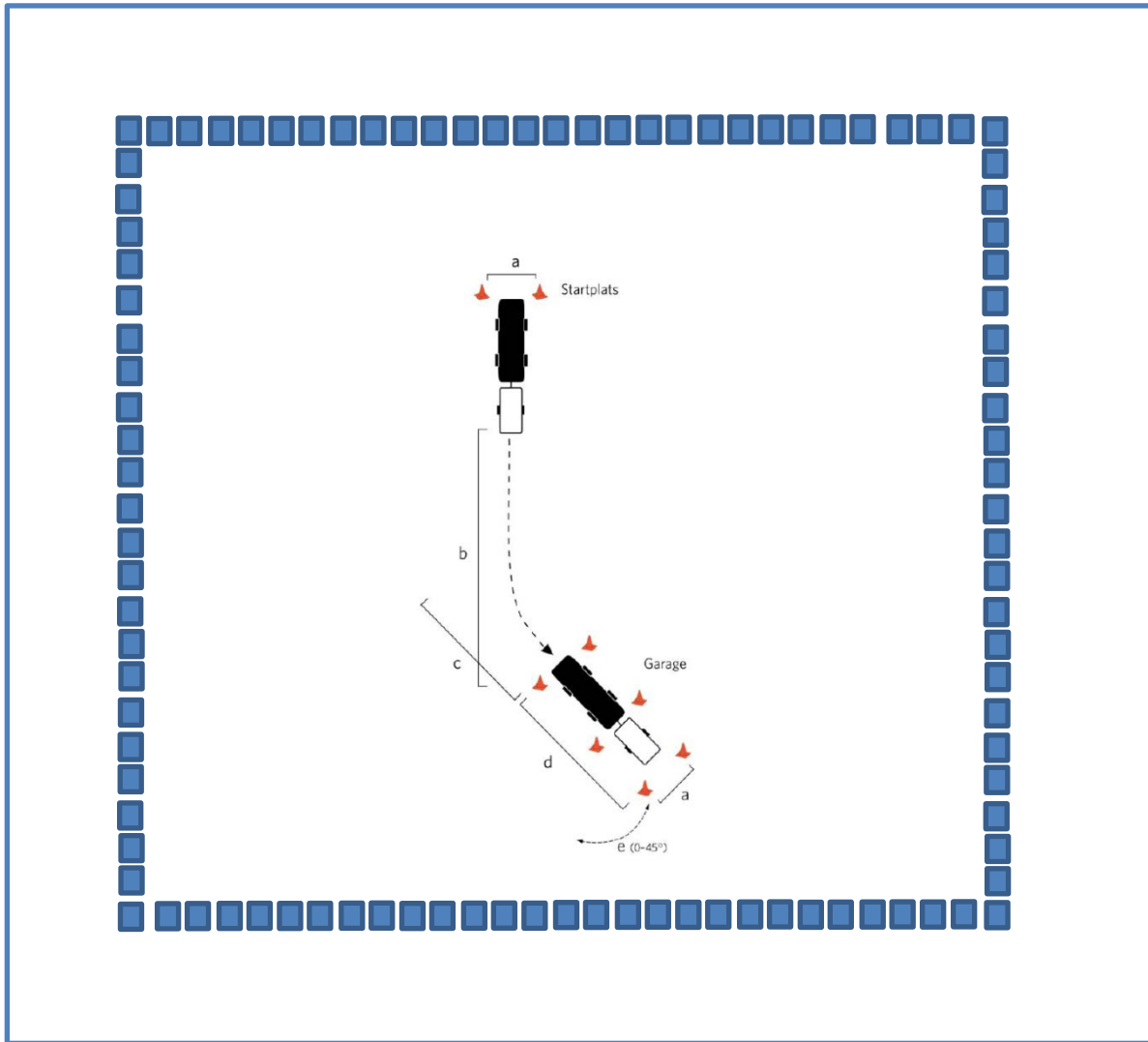
Each vehicle will also have one big parking lot without any objects and without time limit. This parking lot will allow the player to practice without any goal. [=4 levels]

Each vehicle will also have one parking lot with the objects set out as a long road. The goal for the player here will be to drive the vehicle backwards for a long time. The start position of the vehicle should not be set out in such a way that the player only has to press one button on the keyboard to complete successfully. Instead the vehicle will have some small angle as start position, just enough to make the player have to adjust the position while driving backwards. [=4 levels]

This makes 20 levels in total

Parking lot edges:

The parking lot has big boundaries, or if it is possible programmatically, it will have no boundaries. But there are objects placed around the parking lot, which shows the user where he may drive without losing the game. The goal of the game will not be reached if the vehicle has touched any of the objects placed around the parking lot. But when they are touched, the user will have to end the game manually by pressing a button called “end”, or by pressing the “back” key on the Android smartphone. This way a player will be able to ignore the fact that he has touched the boundary objects.



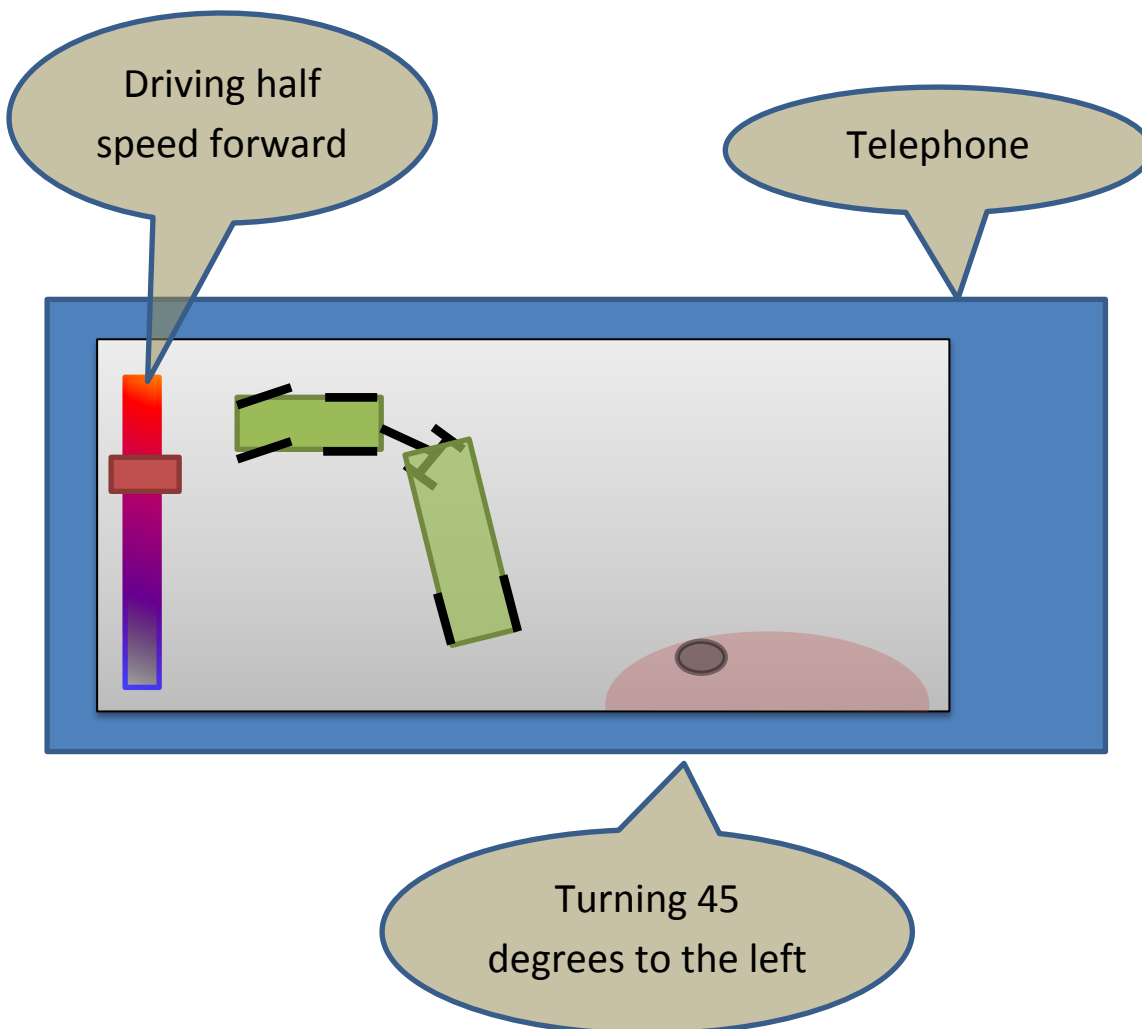
These are the steering controls for the application:

Put the phone on the side, and the steering wheel will be controlled using the right hand thumb. The gas will be controlled with the left hand thumb.

Dragging the right thumb to the left will turn the steering wheel to the left. Dragging the right thumb to the right will turn the steering wheel to the right. Releasing the right thumb from the screen will leave the steering wheel as it was before releasing. (It will not turn straight ahead automatically.)

Dragging the left thumb forward will make the vehicle drive faster forward. Dragging the left thumb backward will make the vehicle drive faster backward. Releasing the left thumb from the screen will make the vehicle stop. There is a “knob” indicating the current speed.

The current speed forward or backward will be indicated with a control which looks much the same as a scrolling bar. The current angle of the steering wheel will be indicated in two ways. The front wheels of the vehicle will be angled, and there will also be some sort of steering wheel shown on the screen that will also be angled. The steering wheel has an indicator which shows the current steering angle.



This picture shows the steering controls for a Smartphone. On the web, the application is controlled using the arrow keys on the keyboard. Pressing and holding the right and left arrows will change the steering wheel angle. Pressing and holding the arrow up and down will increase and decrease the speed. Releasing all keys will leave the controls as they are. Pressing the space bar will make the vehicle stop very fast, but leave the steering wheel as it was.