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# **CS340 Introduction to Databases**

**Group Project**  
**by Jason Rash and Grigori Barbachov**

## **Amateur Hour Racing League (AHRL)**

<http://web.engr.oregonstate.edu/~rashj/index.html>

### ***Project Step 6: Portfolio Assignment***

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**Executive Summary**

The original ER diagram included a many to many relationship between Drivers and Seasons with an extra entity called Teams that had a 1 to many relationship with the intersection table of Drivers and Seasons which we called TeamMembers. This relationship was taken out after step 2 as feedback from our grader helped us realize that it wasn't clear what we were trying to accomplish with the relationship. We decided that Teams don't really play a part in racing at the amateur level and are only really there for sponsorship, so Teams could be cut from the project.

We also originally had a many to many relationship between Licenses and Drivers. Our original idea was for Drivers to have many different Licenses based on the type of race. We changed this to a one to many relationship. Now Drivers can only have one License which is upgradable similar to how CDL licenses work for truck drivers.

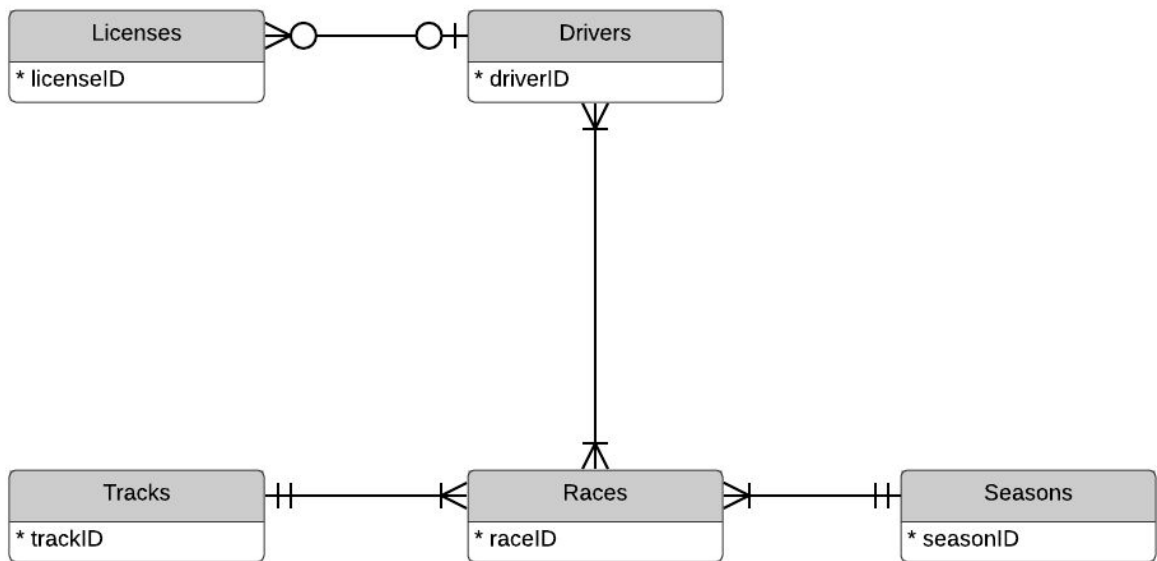
## **Project Outline**

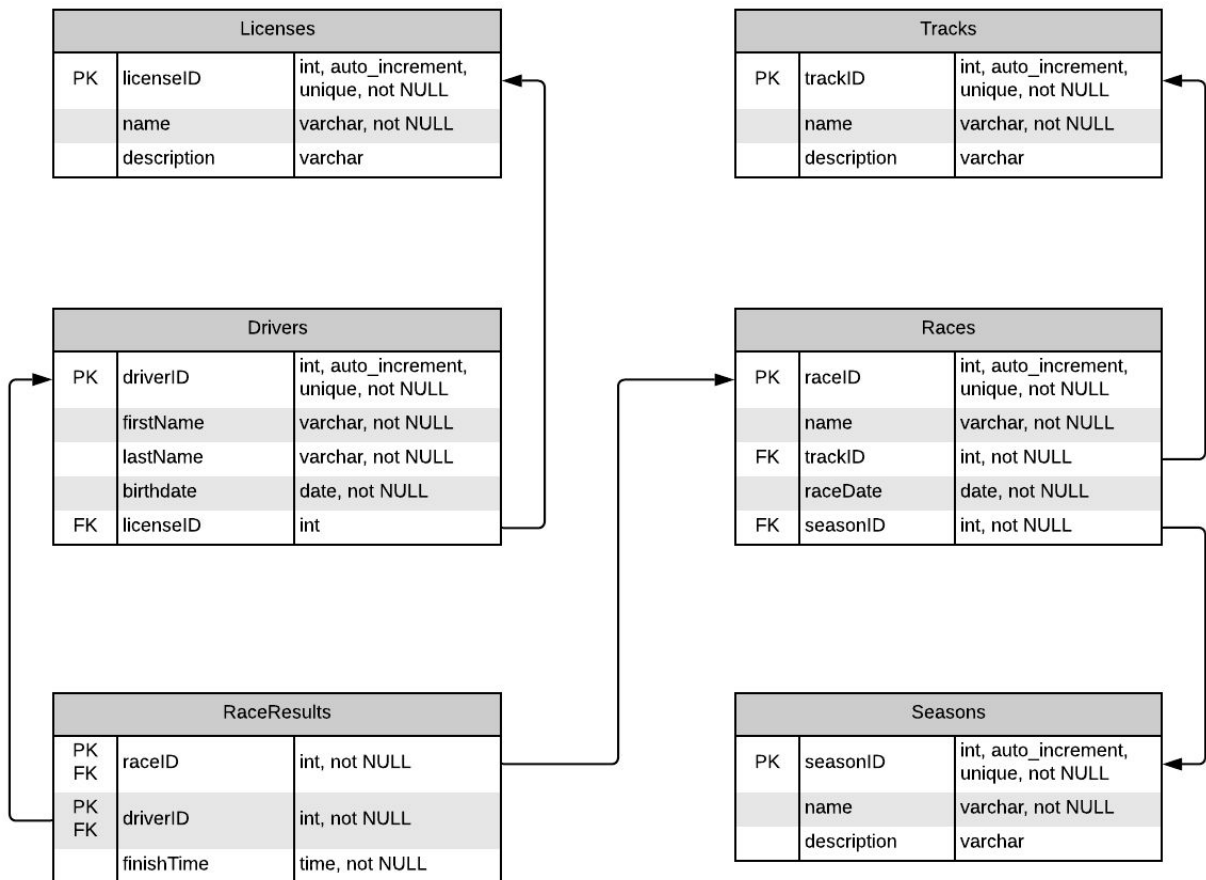
Amateur Hour Racing League (AHRL) is a 17 year old amateur racing league for beginner to intermediate level drivers that currently holds 30 races per year at 8 different tracks with between 40 and 60 drivers per race weekend. Last year 158 different drivers participated in one or more races. Our database driven website will allow users to search and display information on who the Drivers are, what License they hold, and Race Results of any Races they were in.

## **Database Outline**

- Drivers: records details of Drivers who race in our racing league
  - driverID: int, auto\_increment, unique, not NULL, PK
  - firstName: varchar(255), not NULL
  - lastName: varchar(255), not NULL
  - birthdate: date, not NULL
  - licenseID: int, FK Licenses.licenseID
  - Relationship: M:M relationship between Drivers and Races is implemented with intersection table RaceResults (where Drivers has 1:M relationship with RaceResults with driverID as a FK inside RaceResults).
  - Relationship: 1:M relationship between Drivers and Licenses is implemented with licenseID as a FK inside of Drivers.
- Races: records information on Races at our league Tracks
  - raceID: int, auto\_increment, unique, not NULL, PK
  - name: varchar(255), not NULL
  - trackID: int, not NULL, FK Tracks.trackID
  - raceDate: date, not NULL
  - seasonID: int, not NULL, FK Seasons.seasonID
  - Relationship: M:M relationship between Drivers and Races is implemented with intersection table RaceResults (where Races has 1:M relationship with RaceResults with raceID as a FK inside of RaceResults).
  - Relationship: 1:M relationship between Races and Tracks is implemented with trackID as a FK inside of Races.
  - Relationship: 1:M relationship between Races and Seasons is implemented with seasonID as a FK inside of Races.

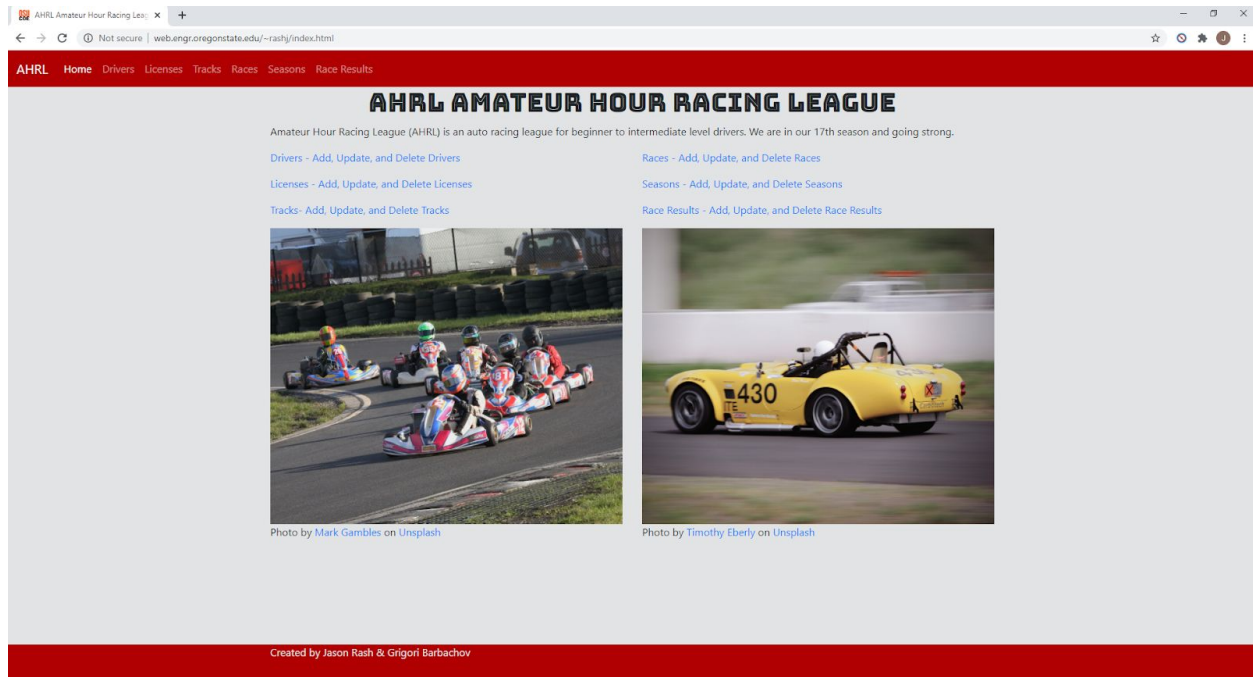
- Tracks: records Tracks where league Races take place
  - trackID: int, auto\_increment, unique, not NULL, PK
  - name: varchar(255), not NULL
  - description: varchar(255)
  - Relationship: 1:M relationship between Races and Tracks is implemented with trackID as a FK inside of Races.
- Seasons: records which Season Race events took place
  - seasonID: int, auto\_increment, unique, not NULL, PK
  - name: varchar(255), not NULL
  - description: varchar(255)
  - Relationship: 1:M relationship between Races and Seasons is implemented with seasonID as a FK inside of Races.
- Licenses: records which Licenses are held by Drivers in the racing league
  - licenseID: int, auto\_increment, unique, not NULL, PK
  - name: varchar(255), not NULL
  - description: varchar(255)
  - Relationship: 1:M relationship between Licenses and Drivers is implemented with licenseID as a FK inside of Drivers.
- RaceResults: intersection table that facilitates M:M relationships between Drivers and Races and records finishing time of a particular driver for a particular race.
  - driverID: int, not NULL, PK, FK Drivers.driverID
  - raceID: int, not NULL, PK, FK Races.raceID
  - finishTime: time, not NULL
  - Relationship: 1:M relationship between Drivers and RaceResults is implemented with driverID as FK inside RaceResults.
  - Relationship: 1:M relationship between Races and RaceResults is implemented with raceID as FK inside RaceResults.

**Entity - Relationship Diagram**

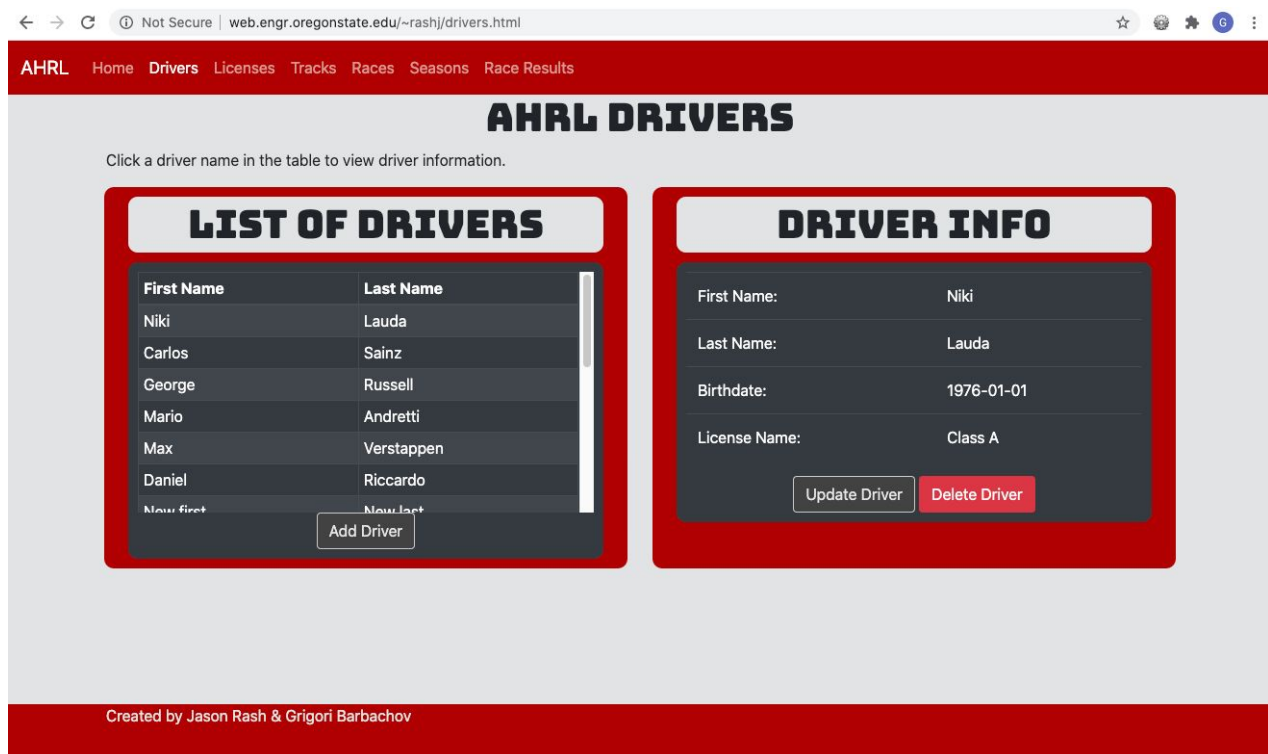
**Schema**

## UI Screenshots

### Main Page



### CREATE / READ / UPDATE / DELETE Driver Page





## CREATE Drivers Form

The screenshot shows the AHRL website with a dark red header and a light gray background. A modal window titled "Add Driver" is open in the center. The modal contains four input fields: "First Name" (text), "Last Name" (text), "Birthdate" (date picker), and "License" (dropdown menu). Below the inputs are two buttons: "Add Driver" (dark gray) and "Close" (red). In the background, a "LIST OF DRIVERS" table is visible, listing drivers like Niki, Carlos, George, Mario, Max, and Daniel. To the right, a "DRIVER INFO" section shows details for Niki Lauda, including his birthdate (1976-01-01) and license (Class A). The footer of the page reads "Created by Jason Rash & Grigori Barbachov".

Click a driver name in the table to view driver info

First Name	Last Name
Niki	Lauda
Carlos	Sainz
George	Russell
Mario	Andretti
Max	Verstappen
Daniel	Ricciardo

Birthdate: mm/dd/yyyy

License: Class A

Add Driver Close

DRIVER INFO

Niki Lauda

1976-01-01

Class A

Update Driver Delete Driver

Created by Jason Rash & Grigori Barbachov

## UPDATE Drivers Form

The screenshot shows the AHRL website with a dark red header and a light gray background. A modal window titled "Update Driver" is open in the center. The modal contains four input fields: "First Name" (text), "Last Name" (text), "Birthdate" (date picker), and "License" (dropdown menu). Below the inputs are two buttons: "Update Driver" (dark gray) and "Close" (red). In the background, a "LIST OF DRIVERS" table is visible, listing drivers like Niki, Carlos, George, Mario, Max, and Daniel. To the right, a "DRIVER INFO" section shows details for Niki Lauda, including his birthdate (1976-01-01) and license (Class A). The footer of the page reads "Created by Jason Rash & Grigori Barbachov".

Click a driver name in the table to view driver info

First Name	Last Name
Niki	Lauda
Carlos	Sainz
George	Russell
Mario	Andretti
Max	Verstappen
Daniel	Ricciardo

Birthdate: 01/01/1976

License: Class A

Update Driver Close

DRIVER INFO

Niki Lauda

1976-01-01

Class A

Update Driver Delete Driver

Created by Jason Rash & Grigori Barbachov

## CREATE / READ / UPDATE / DELETE Licenses Page

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/licenses.html`. The page has a red header with the AHRL logo and navigation links: Home, Drivers, Licenses, Tracks, Races, Seasons, Race Results. The main content area is titled "AHRL LICENSES" and contains two panels. The left panel, "LIST OF LICENSES", displays a table with license names: Class B, Class D, Class A, and Class C. Below the table is an "Add License" button. The right panel, "LICENSE INFO", shows details for "Class B", including a description: "Can drive in Class B, C, D, & E. test". It also features "Update License" and "Delete License" buttons. A footer at the bottom states "Created by Jason Rash & Grigori Barbachov".

License Name
Class B
Class D
Class A
Class C

**License Info:**

Name: Class B

Description: Can drive in Class B, C, D, & E. test

[Update License](#) [Delete License](#)

Created by Jason Rash & Grigori Barbachov

## CREATE Licenses Form

The screenshot shows the same AHRL Licenses page as above, but with an "Add License" modal form open. The modal has a close button (X) and two input fields: "Name" (containing "License Name") and "Description" (containing "License Description"). At the bottom of the modal are "Add License" and "Close" buttons. The background page is dimmed, showing the "LIST OF LICENSES" and "LICENSE INFO" panels. The footer remains "Created by Jason Rash & Grigori Barbachov".

License Name
Class B
Class D
Class A
Class C

**License Info:**

Name: Class B

Description: Can drive in Class B, C, D, & E. test

[Update License](#) [Delete License](#)

Created by Jason Rash & Grigori Barbachov

## UPDATE Licenses Form

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/licenses.html`. The page has a red header with navigation links: AHRL, Home, Drivers, Licenses, Tracks, Races, Seasons, and Race Results. The main content area is divided into two panels. The left panel, titled 'LIST OF LI', contains a table with license names: Class B, Class D, Class A, New License, and New License with Description. An 'Add License' button is at the bottom. The right panel, titled 'ENSE INFO', shows details for a selected license, including a description 'Can drive in Class B, C, D, & E. test' and buttons for 'Update License' and 'Delete License'. An 'Update License' modal is open in the center, with 'Name' set to 'Class B' and 'Description' set to 'Can drive in Class B, C, D, & E. test'. The modal has 'Update License' and 'Close' buttons. The footer says 'Created by Jason Rash & Grigori Barbachov'.

License Name
Class B
Class D
Class A
New License
New License with Description

Update License

Name: Class B

Description: Can drive in Class B, C, D, & E. test

Update License Close

## CREATE / READ / UPDATE / DELETE Tracks Page

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/tracks.html`. The page has a red header with navigation links: AHRL, Home, Drivers, Licenses, Tracks, Races, Seasons, and Race Results. The main content area is divided into two panels. The left panel, titled 'LIST OF TRACKS', contains a table with track names: Watkins Glen, Sebring, Road Atlanta, Laguna Seca, Circuit of the Americas, New Track, and Test. An 'Add Track' button is at the bottom. The right panel, titled 'TRACK INFO', shows details for a selected track, including a name 'Watkins Glen' and a description 'A 3.4mi Road course in Watkins Glen, New York.' Buttons for 'Update Track' and 'Delete Tracks' are at the bottom. The footer says 'Created by Jason Rash & Grigori Barbachov'.

Track Name
Watkins Glen
Sebring
Road Atlanta
Laguna Seca
Circuit of the Americas
New Track
Test

Watkins Glen

A 3.4mi Road course in Watkins Glen, New York.

Update Track Delete Tracks

## CREATE Tracks Form

The screenshot shows the AHRL website with a dark red header and navigation bar. A modal window titled "Add Track" is centered on the screen. The modal contains two input fields: "Name" with the placeholder text "Track Name" and "Description" with the placeholder text "Track Description". Below the fields are two buttons: "Add Track" (dark grey) and "Close" (red). The background of the website is dimmed, showing a "LIST OF TRACKS" section with a table of track names and a "TRACK INFO" section with a description and "Update Track" and "Delete Tracks" buttons. The footer of the website reads "Created by Jason Rash & Grigori Barbachov".

Track Name
Watkins Glen
Sebring
Road Atlanta
Laguna Seca
Circuit of the Americas
New Track

## UPDATE Tracks Form

The screenshot shows the AHRL website with a dark red header and navigation bar. A modal window titled "Update Track" is centered on the screen. The modal contains two input fields: "Name" with the value "Watkins Glen" and "Description" with the value "A 3.4mi Road course in Watkins Glen, New York.". Below the fields are two buttons: "Update Track" (dark grey) and "Close" (red). The background of the website is dimmed, showing a "LIST OF TRACKS" section with a table of track names and a "TRACK INFO" section with a description and "Update Track" and "Delete Tracks" buttons. The footer of the website reads "Created by Jason Rash & Grigori Barbachov".

Track Name
Watkins Glen
Sebring
Road Atlanta
Laguna Seca
Circuit of the Americas
New Track

## CREATE / READ / UPDATE / DELETE Races Page

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**AHRL** Home Drivers Licenses Tracks **Races** Seasons Race Results

### AHRL RACES

Click a race name in the table to view race information.

#### LIST OF RACES

Race Name
Watkins Glen Formula Mazda 2018
Laguna Seca Spec Racer Ford 2019
Road Atlanta Formula Mazda 2019
Sebring Amateur Cup 2019
Watkins Mazda 2018

Add Race

#### RACE INFO

Race Name:	Watkins Glen Formula Mazda 2018
Track Name:	Watkins Glen
Date:	2018-05-04
Season Name:	2019 Amateur Cup

Update Race Delete Race

Created by Jason Rash & Grigori Barbachov

## CREATE Races Form

AHRL Amateur Hour Racing League x +

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**AHRL** Home Drivers Licenses Tracks **Races** Seasons Race Results

Click a race name in the table to view race information.

#### LIST OF RACES

Race Name
Watkins Glen Formula Mazda 2018
Laguna Seca Spec Racer Ford 2019
Road Atlanta Formula Mazda 2019
Sebring Amateur Cup 2019
Watkins Mazda 2018
test

Add Race

#### RACE INFO

Race Name:	Watkins Glen Formula Mazda 2018
Track Name:	Watkins Glen
Date:	2018-05-04
Season Name:	2019 Amateur Cup

Update Race Delete Race

#### Add Race

Race:

Track:

Date:

Season:

Add Race Close

Created by Jason Rash & Grigori Barbachov

## UPDATE Races Form

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/races.html`. The page has a navigation bar with links: AHRL, Home, Drivers, Licenses, Tracks, Races, Seasons, Race Results. The main content area is titled "LIST OF RACES" and contains a table of race information. An "Update Race" modal form is open, displaying the following data:

Field	Value
Race	Watkins Glen Formula Mazda 2018
Track	Watkins Glen
Date	05/04/2018
Season	2019 Amateur Cup

The modal form includes "Update Race" and "Close" buttons. The background page shows a table with columns "Race Name" and "Season Name". The "Race Name" column lists: Watkins Glen Formula Mazda 2018, Laguna Seca Spec Racer Ford 2019, Road Atlanta Formula Mazda 2019, Sebring Amateur Cup 2019, Watkins Mazda 2018, and test. The "Season Name" column lists: 2019 Amateur Cup. An "Add Race" button is at the bottom of the table.

## CREATE / READ / UPDATE / DELETE Seasons Page

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/seasons.html`. The page has a navigation bar with links: AHRL, Home, Drivers, Licenses, Tracks, Races, Seasons, Race Results. The main content area is titled "AHRL SEASONS" and contains two panels: "LIST OF SEASONS" and "SEASON INFO".

The "LIST OF SEASONS" panel contains a table with the following data:

Season Name
2019 Group GT3
2018 Spec Miata
2017 Spec Racer Ford
2018 Formula Mazda
2019 Amateur Cup

An "Add Season" button is at the bottom of the table.

The "SEASON INFO" panel displays the following information:

Name: 2019 Group GT3

Description: 500 hp to 600 hp cars requiring a Class A license.

Buttons: "Update Season" and "Delete Season".

Created by Jason Rash & Grigori Barbachov

## CREATE Seasons Form

The screenshot shows the AHRL website with a dark red header and a light gray background. A modal form titled "Add Season" is centered on the screen. The form has two input fields: "Name" with the placeholder text "Season Name" and "Description" with the placeholder text "Season Description". Below the fields are two buttons: "Add Season" (dark gray) and "Close" (red). In the background, a "LIST OF SEASONS" table is visible, listing various racing seasons. The footer of the page reads "Created by Jason Rash & Grigori Barbachov".

Season Name
2019 Group GT3
2018 Spec Miata
2017 Spec Racer Ford
2018 Formula Mazda
2019 Amateur Cup
season no descrip
season with descrip

## UPDATE Season Form

The screenshot shows the AHRL website with a dark red header and a light gray background. A modal form titled "Update Season" is centered on the screen. The form has two input fields: "Name" with the value "2019 Group GT3" and "Description" with the value "500 hp to 600 hp cars requiring a Class A license.". Below the fields are two buttons: "Update Season" (dark gray) and "Close" (red). In the background, a "LIST OF SEASONS" table is visible, listing various racing seasons. The footer of the page reads "Created by Jason Rash & Grigori Barbachov".

Season Name
2019 Group GT3
2018 Spec Miata
2017 Spec Racer Ford
2018 Formula Mazda
2019 Amateur Cup
season no descrip
season with descrip

## CREATE / READ / UPDATE / DELETE / FILTER Race Results Page

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**AHRL** Home Drivers Licenses Tracks Races Seasons **Race Results**

### LIST OF RACE RESULTS

Driver Name: 
  
☐ Filter Results By Driver

Race Name: 
  
☐ Filter Results By Race

Race Name	First Name	Last Name	Finish Time	Update	Delete
Watkins Glen Formula Mazda 2018	George	Russell	01:06:22.97	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Watkins Glen Formula Mazda 2018	Mr.	Stig	00:00:00.00	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Road Atlanta Formula Mazda 2019	Max	Verstappen	01:32:21.54	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

Created by Jason Rash & Grigori Barbachov

## CREATE Race Results Form

AHRL Amateur Hour Racing League x +

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**AHRL** Home Drivers Licenses Tracks Races Seasons **Race Results**

Driver Name: 
  
☐ Filter Results By Driver

Race Name: 
  
☐ Filter Results By Race

Race Name:

Race Name	First Name	Last Name	Finish Time	Update	Delete
Watkins Glen Formula Mazda 2018	George	Russell	01:06:22.97	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Watkins Glen Formula Mazda 2018	Mr.	Stig	00:00:00.00	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Watkins Glen Formula Mazda 2018	Max	Verstappen	02:56:45.23	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Laguna Seca Spec Racer Ford 2019	New	Driver	01:56:45.98	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
Road Atlanta Formula Mazda 2019	Max	Verstappen	01:32:21.54	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

Created by Jason Rash & Grigori Barbachov



## UPDATE Race Results Form

The screenshot shows a web browser window with the URL `web.engr.oregonstate.edu/~rashj/raceresults.html`. The page title is "AHRL Amateur Hour Racing League". The main content area is titled "UPDATE Race Result" and contains a form with the following fields:

- Race Name:
- Driver Name:
- Finish Time:

Below the form are two buttons: "Update Race Result" and "Close".

The background of the page shows a table of race results. The table has the following columns: Race Name, Driver, and Time. The data rows are:

Race Name	Driver	Time
Watkins Glen Formula Mazda 2018	Max Verstappen	02:56:45.23
Laguna Seca Spec Racer Ford 2019	New Driver	01:56:45.98
Road Atlanta Formula Mazda 2019	Max Verstappen	01:32:21.54

At the bottom of the page, it says "Created by Jason Rash & Grigori Barbachov".

## **Backend API Documentation**

All backend API calls are made via a POST request to a single endpoint <api URL>/api. Each call expects a JSON object with three parameters - action, table and params, described below. API returns a JSON object with requested rows from the database.

<b>action</b>	<b>table</b>	<b>params[] * important to be in the the order listed</b>
actionUpdate	Licenses	name, description, *licenseID
actionUpdate	Seasons	name, description, *seasonID
actionUpdate	Tracks	name, description, *trackID
actionUpdate	Drivers	firstName, lastName, birthdate, licenseID, *driverID
actionUpdate	Races	name, trackID, raceDate, seasonID, *raceID
actionUpdate	RaceResults	finishTime, *raceID, *driverID
actionInsert	Licenses	name, description
actionInsert	Seasons	name, description
actionInsert	Tracks	name, description
actionInsert	Drivers	firstName, lastName, birthdate, licenseID
actionInsert	Races	name, trackID, raceDate, seasonID
actionInsert	RaceResults	finishTime, *raceID, *driverID
actionDelete	Licenses	*licenseID
actionDelete	Seasons	*seasonID
actionDelete	Tracks	*trackID
actionDelete	Drivers	*driverID
actionDelete	Races	*raceID
actionDelete	RaceResults	*raceID, *driverID
actionSelect	Licenses	*licenseID, 'APPLY_FILTER'
actionSelect	Seasons	*seasonID, 'APPLY_FILTER'
actionSelect	Tracks	*trackID, 'APPLY_FILTER'
actionSelect	Drivers	*driverID, 'APPLY_FILTER'
actionSelect	Races	*raceID, 'APPLY_FILTER'
actionSelect	RaceResults	*raceID, 'APPLY_FILTER', *driverID, 'APPLY_FILTER'