

Hitch Design

Motivation

Hitch is an app to allow users to easily find people to share rides simply by entering a pickup location, destination, and a date.

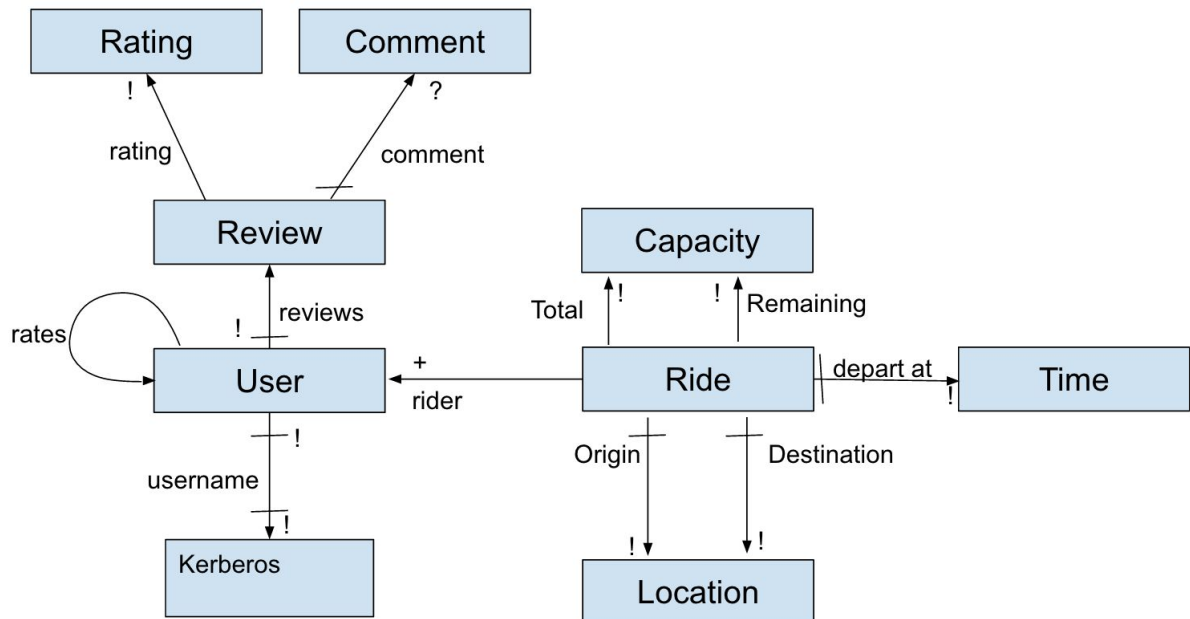
Purposes:

- Save money: Users can split the cost of an expensive ride
- Find reliable users to share rides: Allow users to find other people going to and from the same place to share rides
- Plan rides: Apps like Uber or Lyft allow users to share rides, but don't allow them to plan beforehand. We allow users to find others who are also looking for rides in advance.
- Meet new people: Users can meet other students from MIT that they may not know through planning rides together.
- Currently, people may ask their friends or email out to mailing lists asking if anyone would like to share rides. However, this is not a centralized way to plan and find rides.

Concepts

- Ride
 - Purpose: To save money, to plan rides in advance, and to meet new people
 - Operational principle: A user can input their pickup and destination locations and departure time, and either join an existing ride or create a new one in order to find people going to and from the same place as you to share a ride with.
- Review
 - Purpose: To find reliable users to carpool with
 - Operational principle: For quality assurance, after a user has participated in a ride, they will be prompted to leave reviews for users they have carpooled with, by assigning them a rating on a scale of 1 - 5 and an optional comment. These reviews are then viewable to other Hitch users.
 - Anticipated misfit: We cannot guarantee that users will join overlapping rides. We've decided that it is the user's responsibility to avoid this situation. If they do not, then the other users that they were supposed to share a ride with may give them a bad review for not showing up.

Data Model



Textual constraints:

1. A user can only review another user once after they share a ride together.
2. A ride is deleted if its users all leave.
3. A ride is closed either when it is at capacity or when the current time is past the departure time.
4. A user is automatically approved for a ride, but users can vote to remove a user (for example if he has low ratings).

Insights:

1. A user can leave a ride he has created.
2. A user can sign up for multiple rides at the same departure time .

Security Concerns

Security Policy (goals for what behavior we intend to support):

- Only MIT students can register for an account using MIT certificates.
- Users can only join rides with their own accounts
- Only users who have joined a ride can access the secret passphrase.
- Users can only rate other users once after each time they share a ride (if they are still part of a ride after the departure time)

Threat Model (assumptions about the capabilities of attackers):

- There isn't much sensitive information on Hitch, so we don't have to worry as much about attackers.
- Users can construct requests (curl, Postman) to join or delete other users' rides

User Interface

Error handling shown, for validation errors and anticipated failures

- Wireframes

Home page where you can view all rides

A Web Page

http://hitch.com

Rides

ComboBox

Leave by	Proximity (mi)	Start Location	Destination	Avg Hitcher Rating	Seats Open
4:45PM	0.0	Airport	77 Mass Ave	4	3
5:00PM	3.4	230 Vassar Street	58 Manchester	1	2
5:01PM	4.4	405 Memorial Drive	123 Sesame Street	2	1
6:30PM	5.0	99 Rainbow Road	666 Satan Street	1	2

Tomorrow (11/13)

Leave by	Proximity (mi)	Start Location	Destination	Avg Hitcher Rating	Seats Open
4:45PM	0.0	Airport	77 Mass Ave	4	3
5:00PM	3.4	230 Vassar Street	58 Manchester	1	2
5:01PM	4.4	405 Memorial Drive	123 Sesame Street	2	1
6:30PM	5.0	99 Rainbow Road	666 Satan Street	1	2

[New Ride](#)

Creating a ride

A Web Page

http://hitch.com/newride

New Ride

Date	<input type="text" value="/ /"/>
Leave By	<input type="text" value="3"/> <input type="text" value="PM"/>
Start Location	<input type="text"/>
Destination	<input type="text"/>
Number of Riders	<input type="text" value="3"/>

[Start Hitching](#)

Hitching a ride

A Web Page

http://hitch.com

Rides

ComboBox ▼ search

Hitch a ride?
Riding with [Alice](#)

Leave by	Proximity (mi)	Start Location	No	Yes	Avg Hitcher Rating	Seats Open
4:45PM	0.0	Airport			4	3
5:00PM	3.4	230 Vassar Street	58 Manchester		1	2
5:01PM	4.4	405 Memorial Drive	123 Sesame Street		2	1
6:30PM	5.0	99 Rainbow Road	666 Satan Street		1	2

Tomorrow (11/13)

Leave by	Proximity (mi)	Start Location	Destination	Avg Hitcher Rating	Seats Open
4:45PM	0.0	Airport	77 Mass Ave	4	3
5:00PM	3.4	230 Vassar Street	58 Manchester	1	2
5:01PM	4.4	405 Memorial Drive	123 Sesame Street	2	1
6:30PM	5.0	99 Rainbow Road	666 Satan Street	1	2

New Ride

Leaving a ride

A Web Page

http://hitch.com/myrides

My Planned Rides

ComboBox ▼ search

Leave ride?
No Yes

Date	Leaves at	Start Location	Destination	Avg Hitcher Rating	Hitchers
Nov 4 2015	4:45PM	Airport	77 Mass Ave	4	BDB Jeff Chan Eric
Nov 5 2015	5:00PM	230 Vassar Street	58 Manchester	1	Rider rides rides
Nov 10 2015	5:01PM	405 Memorial Drive	123 Sesame Street	2	T.Tai Eric
Nov 11 2015	6:30PM	99 Rainbow Road	666 Satan Street	1	the Devil and me

My Past Rides

ComboBox ▼ search

Date	Left at	Start Location	Destination	Avg Hitcher Rating	Hitchers	Reviewed
Nov 4 2015	4:45PM	Airport	77 Mass Ave	4	BDB Jeff Chan Eric	<input checked="" type="checkbox"/>
Nov 5 2015	5:00PM	230 Vassar Street	58 Manchester	1	Rider rides rides	
Nov 10 2015	5:01PM	405 Memorial Drive	123 Sesame Street	2	T.Tai Eric	<input checked="" type="checkbox"/>
Nov 11 2015	6:30PM	99 Rainbow Road	666 Satan Street	1	the Devil and me	

Review page for a user in a ride

Alice A.
35 rides
★★★★☆

30 ratings

★★★★★
Alice was very nice and prompt. So glad we didn't have to pay for that ride separately!

★★★☆☆
Alice was late, so I almost missed my flight! She was very nice and apologetic about it though.

★★★★★
Alice was a great ride companion!

Leaving a review for a user after carpooling

A Web Page

http://hitch.com/review/?ride=12341234

Hitchers to Review

Eric

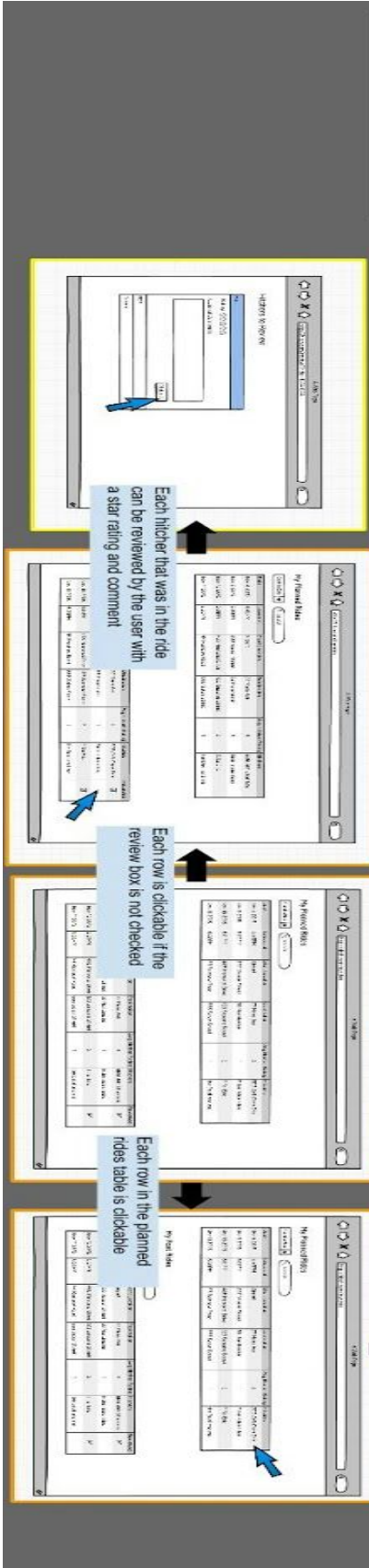
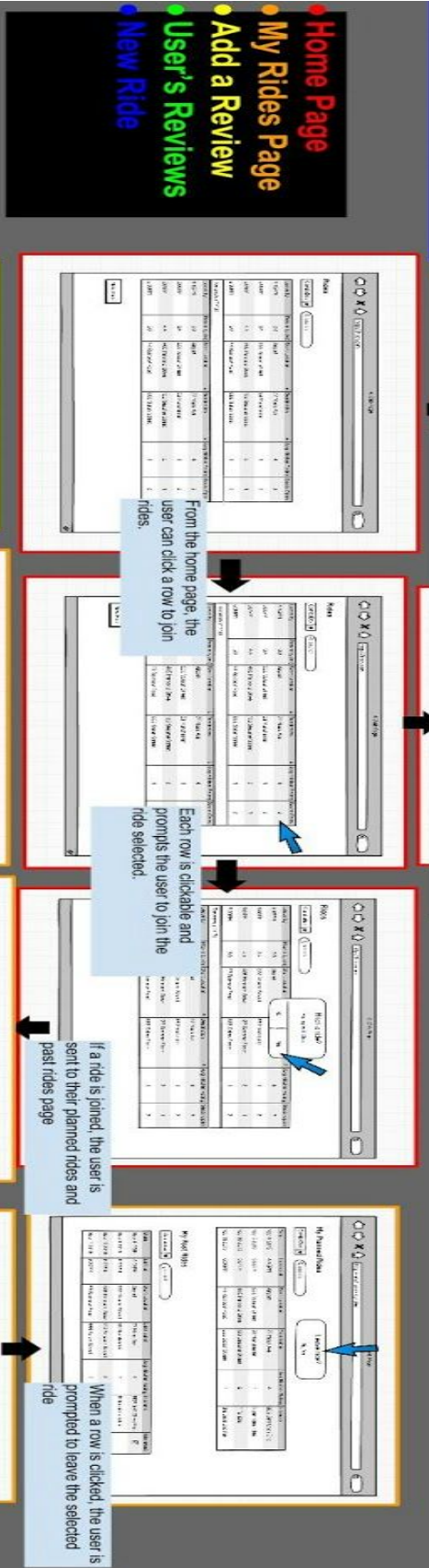
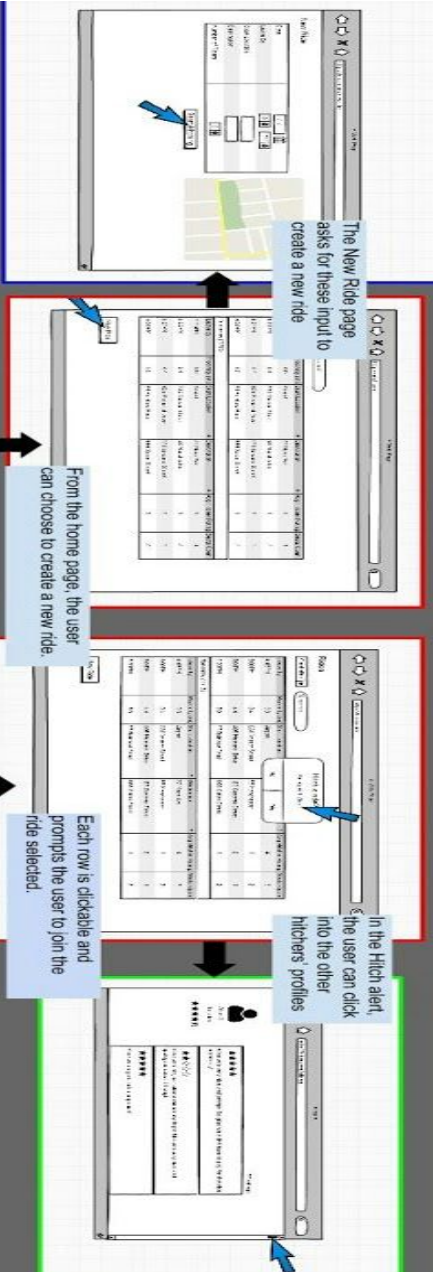
Rating: ★★★★★

Optional Comments

Submit

BDB

Teresa



- Error Handling

Error on review page

A Web Page

http://hitch.com/review/?ride=12341234

Hitchers to Review

Eric

Rating: ☆☆☆☆☆

Optional Comments

Submit

BDB

Teresa

Error: Rating must be 1 through 5 stars

Error on creating ride page

A Web Page

http://hitch.com/newride

New Ride

Date	1/1
Leave By	3 PM
Start Location	
Destination	
Number of Riders	3

Start Hitching

Error: Time must be in the future

Design Challenges

List of problems to resolve in concepts, data model or user interface

For each problem: options available, evaluation, which chosen

Data design choices and their justifications

- We could either have users who join a ride be approved by the creator. We decided that it would be more fair to allow users to vote if they think a user should leave a ride. Note that this removed the need for a “creator,” who is now just a regular user.
- We decided pickup or destination locations or pickup time cannot be changed once the ride has been created, since that may affect other users on the same ride who are relying on those locations and time.
- When a user searches for a ride, we could either sort the results by departure time or by proximity to start location, but we felt that the default departure time sorting would make it easier for users to browse. They would have the option to sort by proximity if they wish.