Improving the Diamond Card Sorting Web Application

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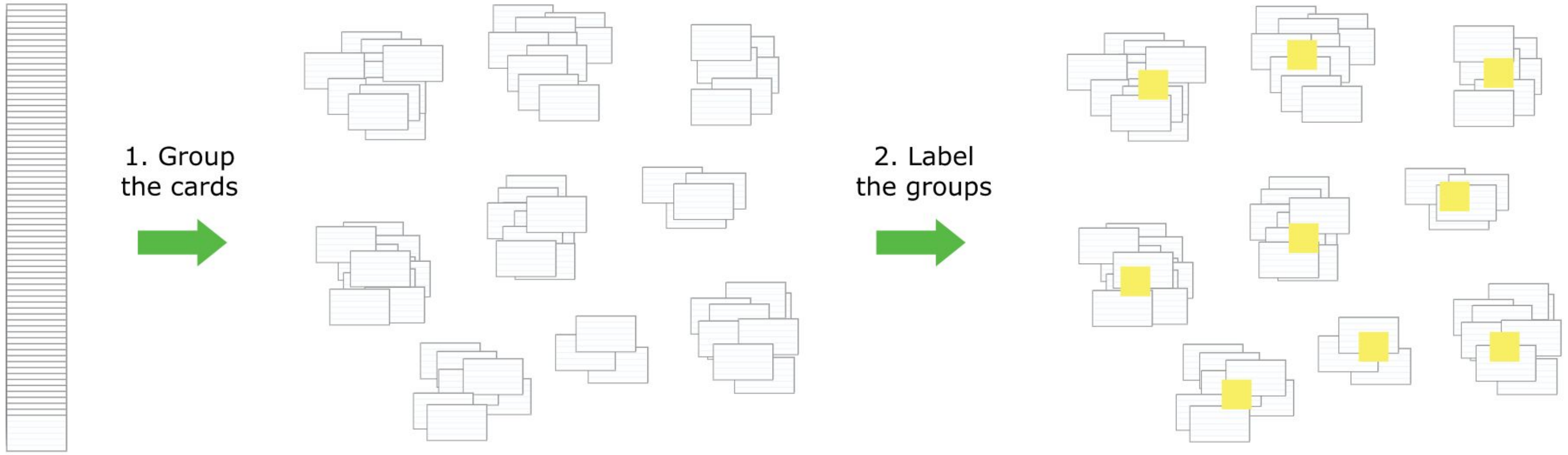
What is CardSorting?

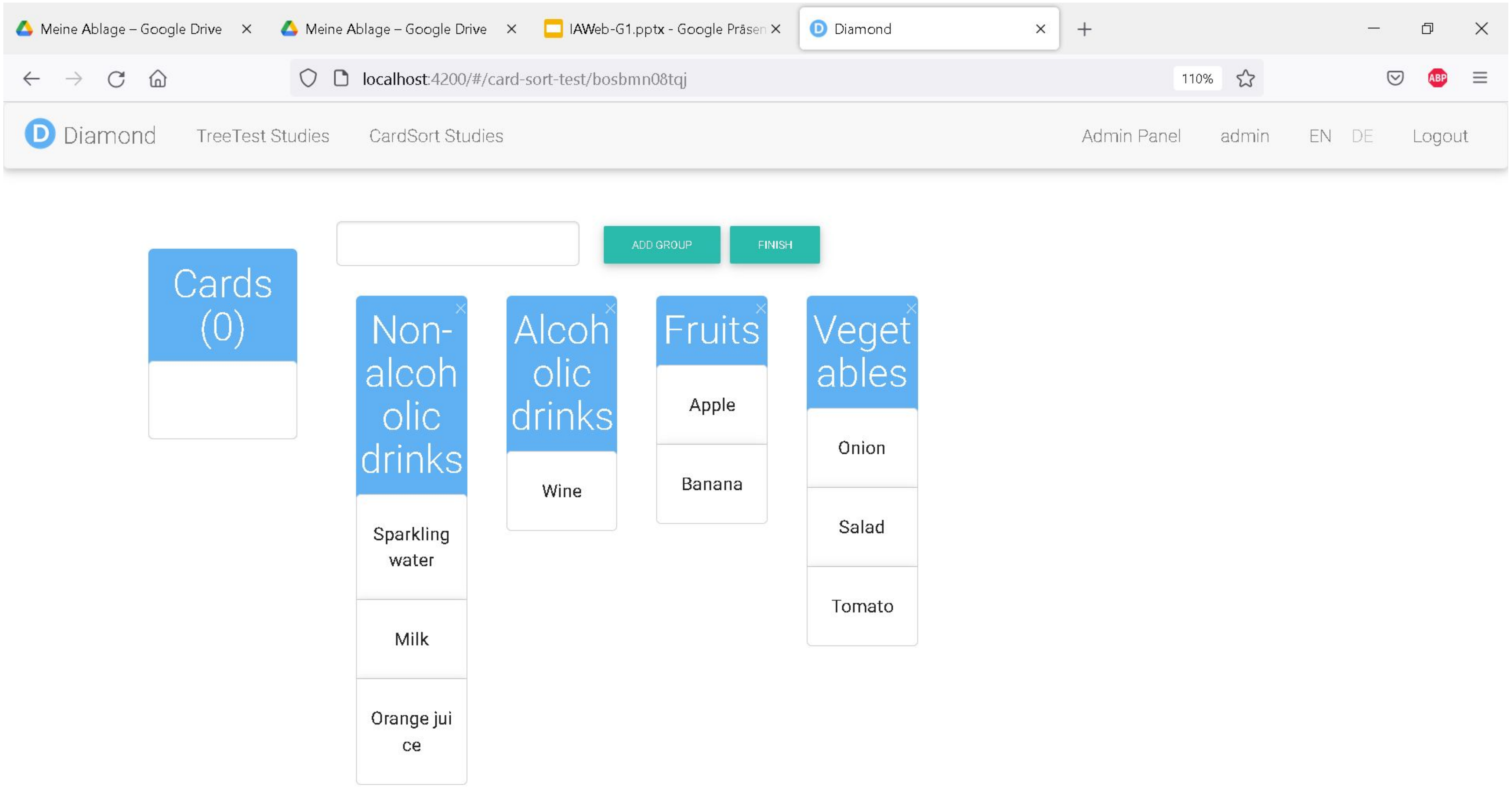
- UX research technique.
- Users organize topics into groups.
- They are asked for their train of thought after/while labelling.
- Covers the target audience domain knowledge.

Source: https://www.nngroup.com/articles/card-sorting-definition/

What is CardSorting?



Diamond CardSorting v 1.0


Meine Ablage – Google Drive
Meine Ablage – Google Drive
IAWeb-G1.pptx - Google Präsen
Diamond
localhost:4200/#/card-sort-test/bosbmn08tqj
110%
Diamond
TreeTest Studies
CardSort Studies
Admin Panel
admin
EN
DE
Logout
ADD GROUP
FINISH

Cards (0)

Non-alcoholic drinks	Alcoholic drinks	Fruits	Vegetables
Sparkling water	Wine	Apple	Onion
Milk		Banana	Salad
Orange juice			Tomato

Basic Project Tasks

Diamond

- Updating of integrated tools
- Improvement of card sorting UI
- Addition of accessible Drag’n’Drop

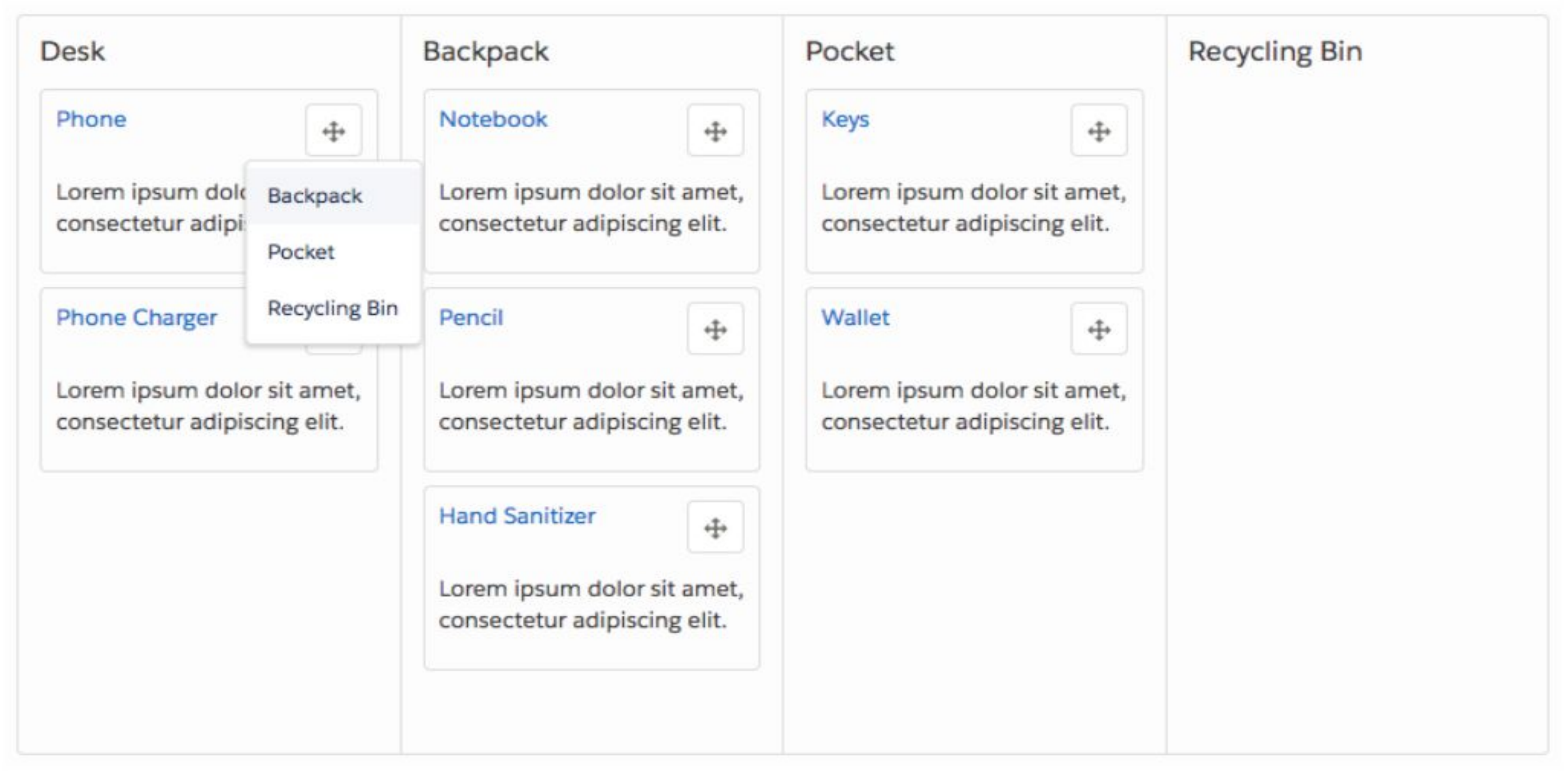
Initial Steps

- Setup project:
  - Creating Repo
  - Installing MongoDB
  - Installing NodeJS
- Angular 11 → updated to Angular 12 LTS.
- Typescript 4.0.5 → updated to Typescript 4.3.5.
- CDK version 11.0.3 → updated to CDK version 11.2.13
- Get to know the programming languages & framework.
- Get to know the initial implementation.
- Gather further improvement ideas.

Accessible Drag and Drop (basic idea)

- A button for the "drag" functionality (onclick-event), which opens a dropdown menu for group selection.
- Move between groups with tab key.
- Last element of the dropdown opens a dialog to add a new group with a given name.
- After creating a new group it can be renamed and deleted if necessary.

Accessible Drag and Drop - salesforce pattern


Desk

Phone

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Phone Charger

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Backpack

Notebook

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Pencil

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Hand Sanitizer

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Pocket

Keys

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Wallet

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Recycling Bin

Image Source: https://medium.com/salesforce-ux/4-major-patterns-for-accessible-drag-and-drop-1d43f64ebf09

Drag'n'Drop Salesforce Pattern - Demo

https://youtu.be/ABI8PxYh0nE

Accessible Dialog (Modal)

- Functionality:
  - Centralized interface.
  - Fully keyboard controlled.
- Tasks in Diamond:
  - Add groups.
  - Create cards.

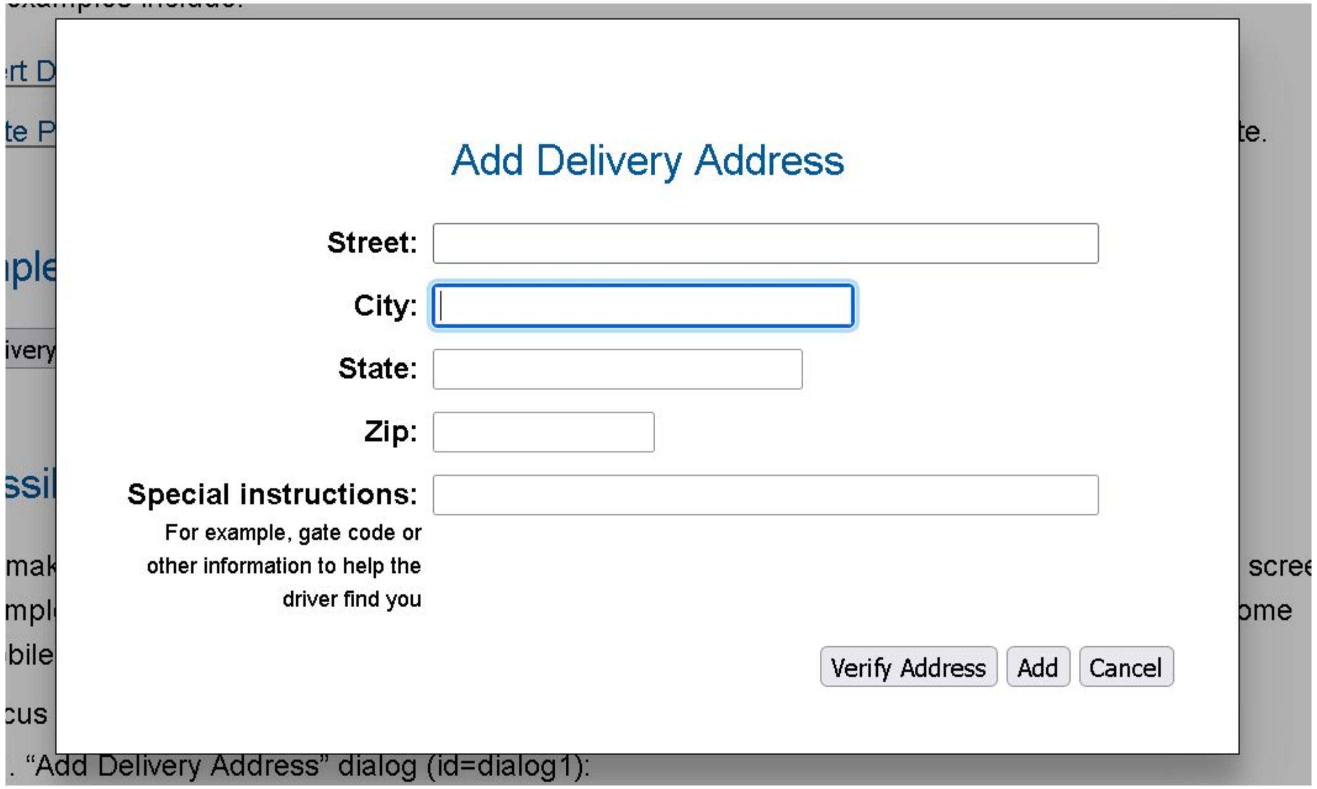
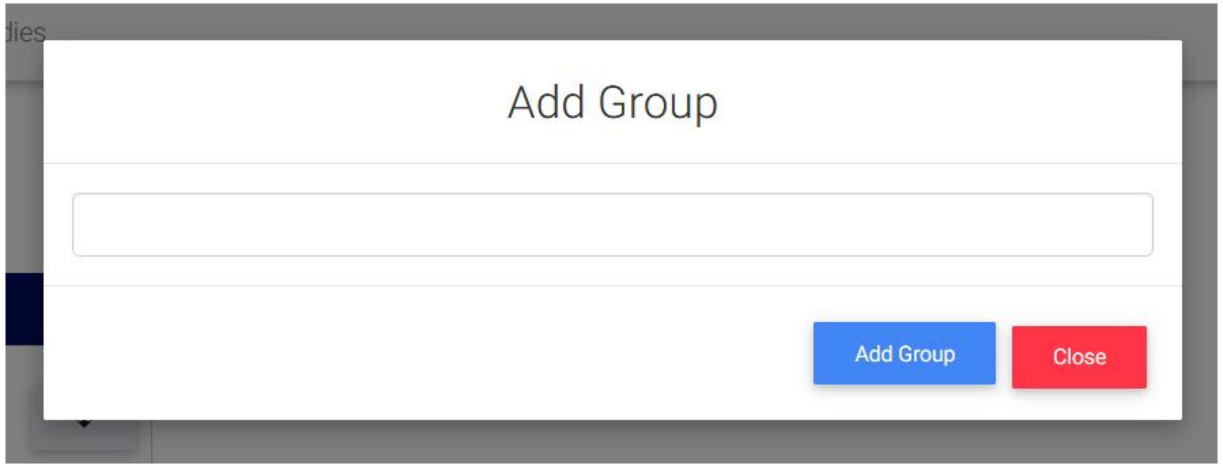

Add Delivery Address
Street:
City:
State:
Zip:
Special instructions:
For example, gate code or other information to help the driver find you
Verify Address
Add
Cancel
. "Add Delivery Address" dialog (id=dialog1):

Image Source: https://www.w3.org/TR/wai-aria-practices-1.1/examples/dialog-modal/dialog.html

Add Group - Modal HTML

```
<div id="create_group" class="modal" tabindex="-1" role="dialog">
  <div class="modal-dialog" role="document">
    <div class="modal-content">
      <div class="modal-header text-center">
        <h3 class="modal-title">Add Group</h3>
      </div>
      <div class="modal-body">
        <input class="form-control" type="text" [(ngModel)]="groupName"
                 type="text" (keyup.enter)="addGroup()">
      </div>
      <div class="modal-footer">
        <button type="button" class="btn btn-primary btn-control" (click)="addGroup()"
                 data-dismiss="modal">{{ "Add Group" | translate }}</button>
        <button type="button" class="btn btn-danger btn-control" data-dismiss="modal" aria-label="Close">
          {{"Close" | translate}}
        </button>
      </div>
    </div>
  </div>
</div>
```



The highlighted parts add a new group to the study. Either on click or on button press.

Image Source: Diamond Implementation

Card Group HTML

```
<div class="card-group" id="{{ group_i }}">
   <button (click)="deleteGroup(group_i)" (keypress)="deleteGroup(group_i)"
               aria-label="close" class="delete glyphicon glyphicon-remove">
   </button>
   <h2 contenteditable="true" id="group_name_{{group_i}}"
         (blur)="changeGroupName($event.target, group_i)">
      {{ res.group_name }}
   </h2>
   <div cdkDropList class="group" [cdkDropListData]="res.group_list"
         (cdkDropListDropped)="drop($event)">
      <div class="card" id="{{i}}" *ngFor="let card of res.group_list; index as i" cdkDrag>
         <h5 tabindex="0">{{card}}</h5>
         <div class="dropdown">
            ....
         </div>
      </div>
   </div>
</div>
```

The red part adds an HTML object for every saved card of the group.

```
<button class="btn btn-move dropdown-toggle" type="button"
            id="dropdownMenuButton_{{i}}" data-toggle="dropdown"
            aria-haspopup="true" aria-label="move card" aria-expanded="false">
   <i class="glyphicon glyphicon-move"></i>
</button>
<ul class="dropdown-menu" id="dropdow-content">
   <span tabindex="0" role="link" id="{{resgroup_i}}"
            *ngFor="let group of resultGroups; index as resgroup_i"
            (click)="simulateDrop($event.target, card, group_i)"
            (keypress)="simulateDrop($event.target, card, group_i)">
      {{group.group_name}}
   </span>
   <span tabindex="0" role="link" class="add-group-link"
            (click)="addGroup()"  (keypress)="addGroup()">
      {{ "Add Group" | translate }}
   </span>
```

Here, a list of all groups is shown to the user, from which he can choose (simulate) in which group to drop the chosen card.

Drop() vs simulateDrop()

- Drop - function
  - needs mouse event
  - places elements into container
  - create new container if not present

- simulate drop - function
  - simulates drop function
  - move element from one group to another

Drop( ) vs. simulateDrop( ) - TypeScript

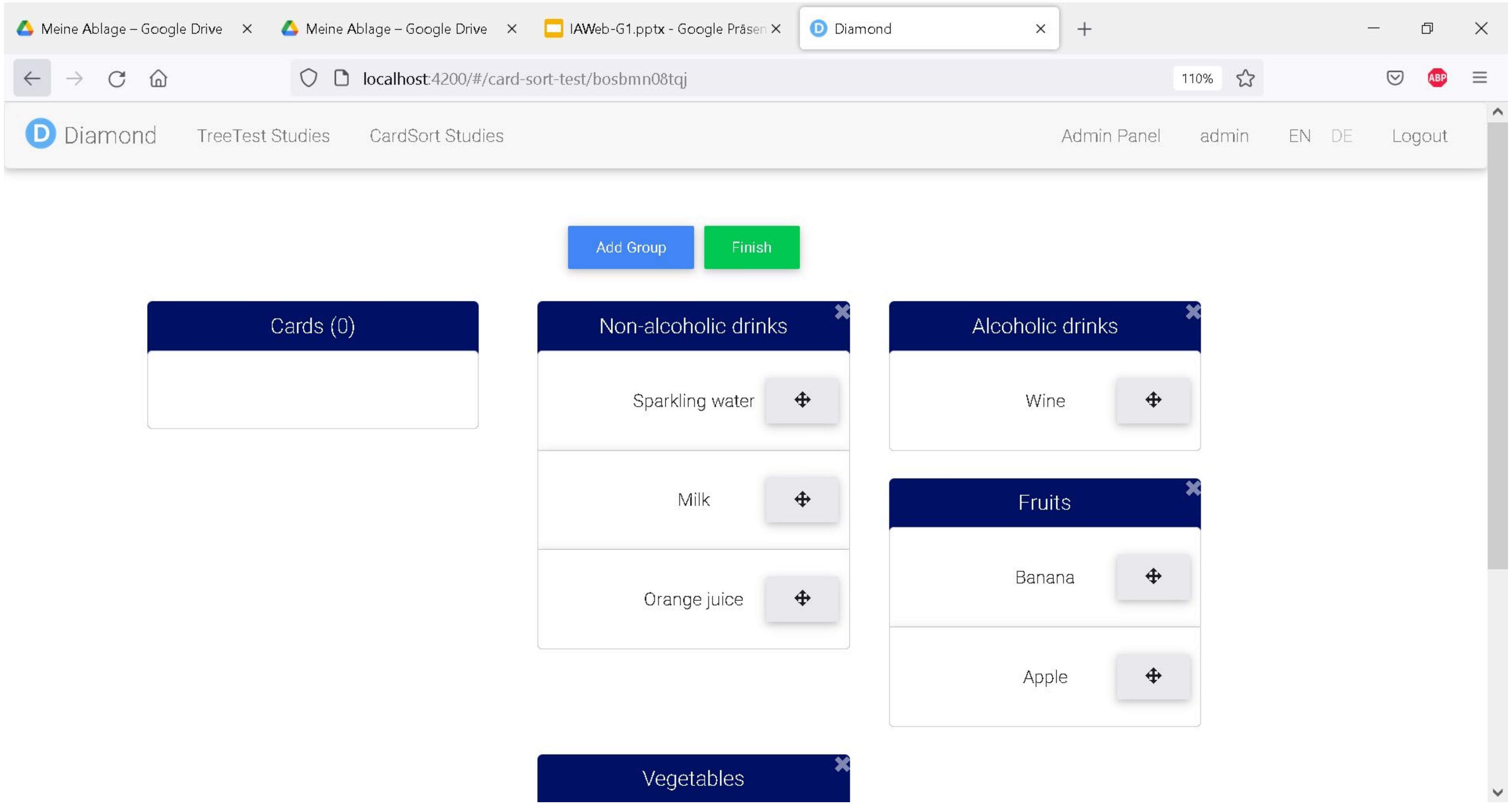
```
drop(event: CdkDragDrop<string[]>) {
   if (!event.isPointerOverContainer) {
      this.addGroup();
      transferArrayItem(event.previousContainer.data,
         this.resultGroups[this.resultGroups.length - 1].group_list,
         event.previousIndex,
         0);
   }
   else if (event.previousContainer === event.container) {
      moveItemInArray(event.container.data, event.previousIndex,
                              event.currentIndex);
      console.log(event.currentIndex);
   } else {
      transferArrayItem(event.previousContainer.data, event.container.data,
                              event.previousIndex, event.currentIndex);
   }
}
```

```
simulateDrop(target, card: any, oldgroupID){
   const cardID = this.resultGroups[oldgroupID].group_list.find(x => x === card);
   this.resultGroups[oldgroupID].group_list.splice(cardID, 1);
   this.resultGroups[target.id].group_list.push(card);
}
```

Code on the left checks, if the mouse is above the container for all card groups, when manual drag and dropping to create a new group.

On the right is the functionality to simulate a drop into a chosen group.

Diamond CardSorting v 2.0



Live Demo - Card Sorting in Diamond

https://www.youtube.com/watch?v=EcD1Ym4_hdU

Achievements

- Update basic functionality.
- Several bugfixes.
- UI Improvements:
  - Larger, accessible fonts.
  - Resizing of cards.
  - Accessibility through keyboard.
  - Creation dialog for new groups.
  - Dropdown for card movement.

Sources

- https://medium.com/salesforce-ux/4-major-patterns-for-accessible-drag-and-drop-1d43f64ebf09
- https://medium.com/salesforce-ux/4-major-patterns-for-accessible-drag-and-drop-1d43f64ebf09
- https://www.w3.org/TR/wai-aria-practices-1.1/examples/dialog-modal/dialog.html