New Projects Explorer

Design Document

Introduction

This document aims to discuss the fundamental goals that will guide the development of a new projects view and explore feasible implementation pathways. At the end of the Google Summer of Code contest period, it is expected to have a working, modular, and modern explorer for use by student developers.

Contents

Goals

Some of the pillars that outline the design decisions concerning the new projects explorer are:
- Modularity
- Themability
- Mobile support
- Accessibility

Layouts

The new design will incorporate several new shortcuts and ease-of-access features into the projects list. Furthermore, first-class support for UNIX/Windows style folders is one of the key requirements of the project. This section discusses ideal placements for these additions, keeping in mind design affordance[1], usability on smaller screens, and discoverability of features.

All designs can be accessed in this Figma document[2].

Project list items

☐	Name	Date created	Date modified	Published
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Published

A data table is the proposed solution for displaying projects created by developers. Compared to alternative layouts like card lists and grids, a simple data table is able to provide a compact, clutter-free, and clear interface for displaying project metadata. In addition, this layout is able to most accurately represent project folders, mirroring their internal graph/hierarchical representations.

Project actions

Action shortcuts can be placed in different areas of the UI, with each placement having its own pros and cons. Some layouts are discussed below.

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[1] https://www.interaction-design.org/literature/topics/affordances
[2] https://www.figma.com/file/SoBRpXAAbLWaoKYn6FjZwq/App-Inventor-Projects-View

Actions in the header

	Name	Date created	Date modified	Published
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☑	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Published
☑	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
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☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Published
☑	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☑	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Published

(Header: My Projects | New project | Download | Export | Publish | Delete | View Trash)

This layout places project shortcuts in the header of the data table, providing a single access point for all actions a developer can perform on any given project/projects.

Selecting a project using the checkboxes on the left would indicate the developer's intent to apply said project action to it. This would allow for batching the application of shortcuts where possible (the exception being "Publish", which can accept a maximum of one project at a time).

On mobile, text buttons would have to be replaced with icon-only variants for actions whose icons have ubiquitous meaning (like delete projects, move to folder, etc.)
An alternative approach would be to move less used actions to an overflow menu that can be accessed via a drop-down.

The data table itself would shrink in width, consequently hiding some columns or replacing their content with iconography. Alternatively, it would be possible to have the data table scroll horizontally as well,

although the impact of this on usability, especially selecting projects via touch, is yet to be explored.

Actions in-line with each list item

Name	Date created	Date modified	Actions
My Projects	New project ⊼ ⌂		View Trash
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	export/download/delete
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d
Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	e/d/d

With this approach, project shortcuts are laid out inline in each list item. Given the close proximity of action buttons and the project they affect, this layout is more intuitive to use and may aid new developers get started quicker. However, this placement of actions makes it impossible to batch actions together, making it a weak candidate for implementation.

Actions in a drop-down

	Project			
New project				
☐ Name	Import project		Date modified	Published
☐ Project na	Import project from repository	0:00 AM	12 May, 2021, 00:00:00 AM	Published
☐ Project na	Download selected projects	0:00 AM	12 May, 2021, 00:00:00 AM	Published
☐ Project na	Export selected projects as .apk	0:00 AM	12 May, 2021, 00:00:00 AM	Published
☐ Project na	Export selected projects as .aab	0:00 AM	12 May, 2021, 00:00:00 AM	Published
☐ Project name	Trash selected projects		12 May, 2021, 00:00:00 AM	Published
☐ Project name	Publish selected project		12 May, 2021, 00:00:00 AM	Published
☐ Project name	12 May, 2021, 00:00:00 AM		12 May, 2021, 00:00:00 AM	Published
☐ Project name	12 May, 2021, 00:00:00 AM		12 May, 2021, 00:00:00 AM	Published
☐ Project name	12 May, 2021, 00:00:00 AM		12 May, 2021, 00:00:00 AM	Published
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☐ Project name	12 May, 2021, 00:00:00 AM		12 May, 2021, 00:00:00 AM	Published

A third option would be to move all project actions to a drop-down in the top toolbar, thus providing a centralised interface for interacting with projects. Such a layout would offer space savings by eliminating the need for a dedicated header or a column in the table. However, a major downside with this approach is discoverability. Tucking away primary project actions inside a discreet (to a new developer, at least) menu would come at risks of steepening the learning curve. Having to select projects via a checkbox and then apply changes from a different UI region is likely to be unintuitive.

Project folders

The sections below discuss layout options to display nested project folders.

Folders in-place

	Name	Date created	Date modified	Published
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	/Folder			
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Published
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
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☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐	Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished

My Projects   New project   Download   Export   Publish   Delete   View Trash

With this approach, subfolders would be displayed in two states -- collapsed and expanded. Subfolders in the collapsed state would appear similar to a project item, taking up the same height in the list.
On expanding the item by clicking on it, the subfolder widget would expand to display all its children, both projects and its own subfolders. Padding applied on the left to children would be used to indicate this change in the level of hierarchy.

This layout would also enable developers to select projects in different folders without having to reset their selection state as they navigate folders. This would facilitate a more efficient application of project actions in bulk.

However, the padding applied to nested content could push content outside the width of the screen given a sufficient number of nested folders. Enabling horizontal scrolling on the entire table, using padding sparingly, or limiting the depth of the nesting tree are proposed as solutions to this problem.

Full-height folders

☐ Name	Date created	Date modified	Published
My Projects	New project ⊼ ⊕	Download Export Publish	Delete View Trash
Go to parent ^			
/Folder			
☐ Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐ Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐ Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
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☐ Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished
☐ Project name	12 May, 2021, 00:00:00 AM	12 May, 2021, 00:00:00 AM	Unpublished

Full-height folders would work similar to UNIX/Windows file explorers, with each folder being allocated a full data table to itself.

This approach works best for mobile devices, where the issue with padding applied to in-place folders may cause layout issues.

However, because this approach involves moving each folder to its own display area, it is harder for a developer to visualise the folder hierarchy they would be navigating. In addition, it would be impossible to simultaneously select projects in different folders.

Discussion

Some questions regarding finer design decisions still remain, and any feedback is welcome, appreciated, and encouraged!

- **Better display format for project creation/modification dates?**
  Which of these formats would be easier for a developer to interpret, especially when leafing through many such dates at once?

- ○ "X s/min/h/days/weeks/months ago"
- ○ "MM/dd/yy" (subject to locale)
- ○ "MM/dd/yy hh:mm" (subject to locale)
- ○ "MM/dd/yy hh:mm:ss a" (current)
- ○ "MMM-dd-yyyy" (e.g. Jan-01-2021)

- **Horizontal scrolling for projects list?**
  What do you think of enabling horizontal scrolling in the projects list? Doing so would solve issues with padding on nested folders and displaying content on narrow screens, but may hinder the overall scrolling experience (for example, a user who wishes to scroll vertically may end up moving diagonally).

- **Limiting the depth of subfolders nesting**
  Would it be beneficial to limit the level of nesting a developer can go down? While this would solve padding problems with nested folders, it comes at a cost of not providing an experience that can cater to all users. What would be a reasonable depth of nesting?

- **Optimising the projects list for mobile devices**
  When optimising for narrower screens, what do you think should happen to the data table if horizontal scrolling is disabled? Would it be reasonable to hide columns like the date of project creation, or perhaps move this content to a new line?