
Coordinate

Release 4.0

Trevor Rife

Jul 26, 2023

CONTENTS

1	Coordinate	1
1.1	Introduction	1
1.2	Download	1
1.3	Layout	1
2	Storage	3
2.1	Storage Location Definer	3
2.2	Subdirectories	4
3	Settings	5
3.1	Collection	5
3.2	Layout	5
3.3	Export	5
3.4	Storage	6
4	Templates	7
4.1	List Item Layout	8
4.2	New Templates	8
4.3	Editing Templates	9
4.4	Deleting Templates	9
5	Grids	11
5.1	List Item Layout	12
5.2	New Grids	12
5.3	Deleting Grids	13
6	Projects	15
6.1	List Item Layout	16
6.2	New Projects	16
6.3	Deleting Projects	16
7	Collecting data	17
7.1	Data Input	17
7.2	Metadata	18
7.3	Project	18
8	Exporting data	19
9	Funding	21
9.1	Current	21
9.2	Previous	21

COORDINATE

1.1 Introduction

Coordinate is a flexible, open-source Android app that is used to collect and organize samples. Coordinate functions by defining templates and then collecting data in grids created from those templates.

1.2 Download

Coordinate can be downloaded from [Google Play](#). Source code for Coordinate is hosted on [GitHub](#).

1.3 Layout

Coordinate utilizes a bottom navigation toolbar that allows you to quickly switch between *Grids*, *Templates*, *Projects*, and *Settings*. The top toolbar is reserved for actions relevant to each section of the app.

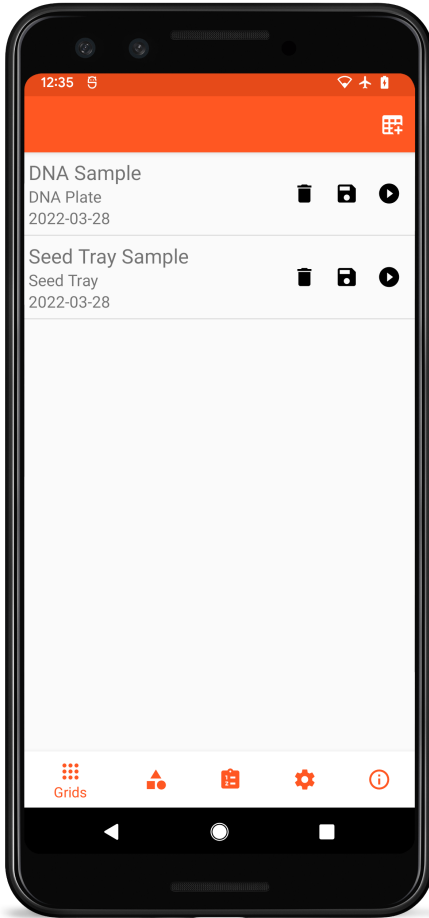


Fig. 1: Coordinate layout

2.1 Storage Location Definer

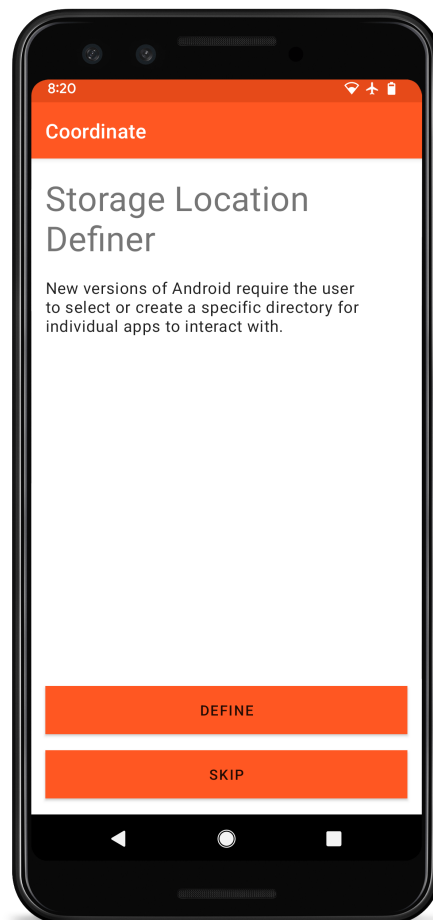


Fig. 1: Storage location definer layout

After installing and opening the app, you will be asked to define a 'Storage location' on the device. Although this is an optional step, selecting this directory will greatly simplify the export process by keeping all exported files organized.

If you skip defining the 'Storage location' directory, you will be required to select an export location and name for each file that is exported from Coordinate. The selected 'Storage location' can be changed in the [Settings](#).

2.2 Subdirectories

There are three subdirectories within the ‘Storage location’ directory: **Exports**, **Templates**, and **Database**.

- **Exports:** contains the grid files that are exported after collecting data
- **Templates:** contains the template files that can be exported and shared between devices
- **Database:** contains the database files that can be exported and used to help with debugging or moving to a new device

SETTINGS

3.1 Collection

3.1.1 Direction ()

By default, Coordinate moves down each column when *Collecting data*. This setting allows users to move across rows (left to right).

3.1.2 Notification sounds ()

Enabling this setting adds a sound both when finishing a column and once the last cell in the grid has been filled.

3.1.3 Unique values (and)

This setting allows the user to disallow duplicated values on a per grid basis, per project basis, or entirely within the app.

3.2 Layout

3.2.1 Scaling ()

The user can use this setting adjust how large the grid UI is in the Collect Data screen.

3.3 Export

3.3.1 Project export ()

Projects can be exported with each grid being a single file (all contained within in a zipped file) or all grids appended to a single CSV file.

3.3.2 Share exports (↪)

This setting will utilize the Android share system, allowing the exported file to be sent using different apps already installed on the device.

3.4 Storage

3.4.1 Define storage location (📁)

This setting allows for the modification of the default Storage Location.

3.4.2 Database (🗄)

The internal database can be exported, imported, or deleted. Deleting the database will entirely erase all data that was collected and any other customizations that have been made within Coordinate.

TEMPLATES

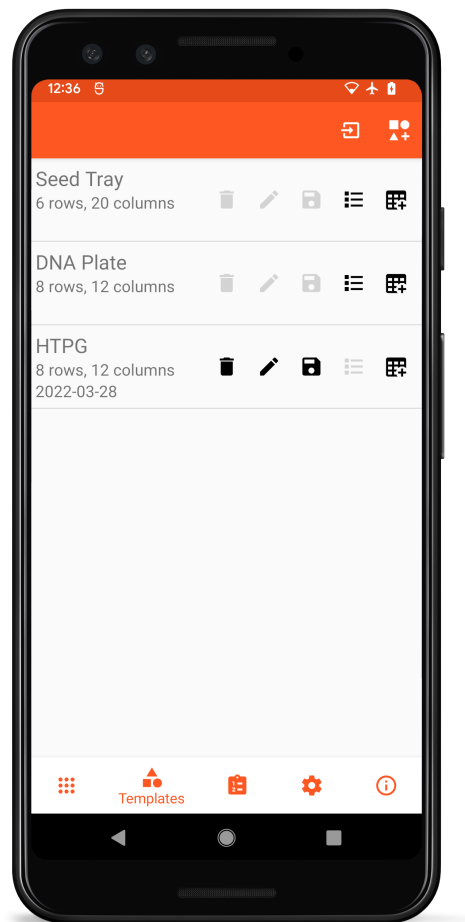


Fig. 1: Template list layout

Templates allow defined structure and metadata across different grids that might be collected. Two templates are included by default, a 6x20 Seed Tray Template and a 8x12 DNA Plate template.

4.1 List Item Layout



Fig. 2: Individual template list item

Each template in the list contains the template name, size, and date created on the left.

Action buttons on the right of each template list item allow non-default templates to be deleted (🗑️), edited (✎️), exported (📄), grids created from that template to be viewed (☰), or new grids to be created from that template (🔲).

4.2 New Templates

Templates can be created by selecting the New Template icon (📄+) or imported by selecting the Import icon (📄) on the top toolbar. Creating a new template opens a step-wise process that allows for additional customization.

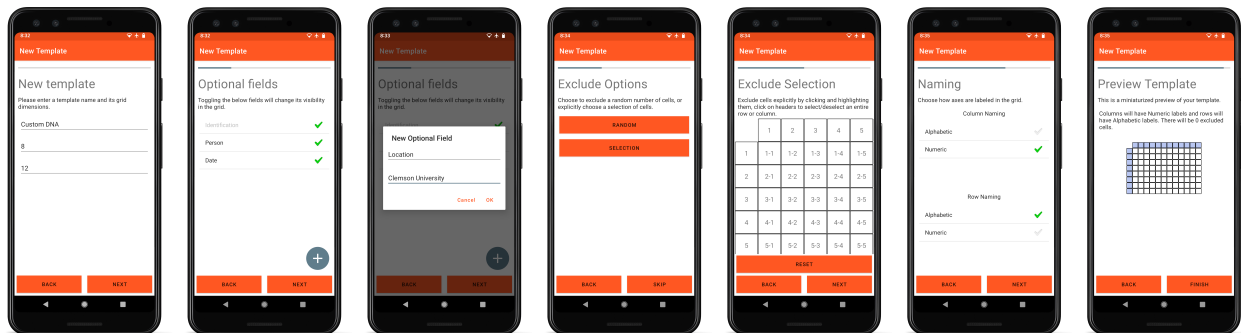


Fig. 3: Template creation process

1. The name and dimensions of the template are defined
2. Metadata fields are selected or created
3. Metadata fields can optionally have default values (e.g. “Clemson University”)
4. Random or specific cells can be excluded
5. Specific cells to be excluded are selected
6. Row and column names can increment numerically or alphabetically
7. A preview of the template is created for the user to inspect

4.3 Editing Templates

Templates can only be edited if no grids have been created using that template.

4.4 Deleting Templates

Deleting a template will delete all of the grids created using that template. Default templates cannot be deleted.

GRIDS

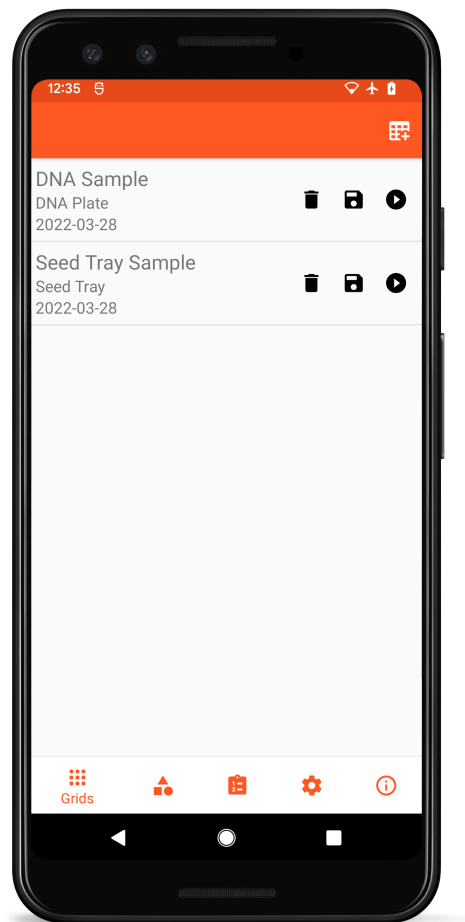


Fig. 1: Grid list layout

Grids are the basic unit through which data is collected within Coordinate. Each grid inherits its structure from its parent template. Grids can exist by themselves or as a group within a project.

5.1 List Item Layout

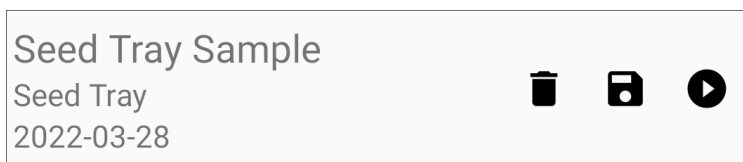


Fig. 2: Individual grid list item

Each grid in the list contains the grid name or identifier, parent template, and date created on the left.

Action buttons on the right of each list item allow a grid to be deleted (🗑️), exported (📄), or data to be collected (▶️).

5.2 New Grids

Grids can be created by selecting the New Grid icon (📊+) from the top toolbar, a template list item, or a project list item. Creating a new grid opens a step-wise process.

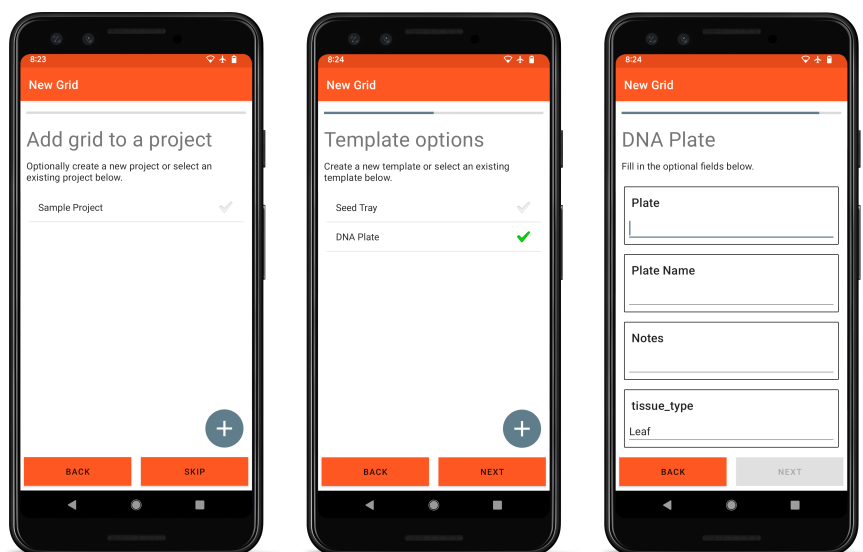


Fig. 3: Grid creation process

1. New grids can optionally be added to an existing project. A new project can also be created from this screen.
2. The template that will be used to define the grid is selected. A new template can also be created from this screen.
3. Metadata specific to the grid that will be collected is input.

5.3 Deleting Grids

Deleting a grid will delete all of the entries and data that was collected within that grid.

PROJECTS



Fig. 1: Project list layout

Groups of grids can be organized into a single project, simplifying data collection for larger experiments. Projects can be exported as a single file or multiple files, adjustable in the [Settings](#). Grids can be added to Projects when they're created or from the [Collecting data](#) screen.

6.1 List Item Layout

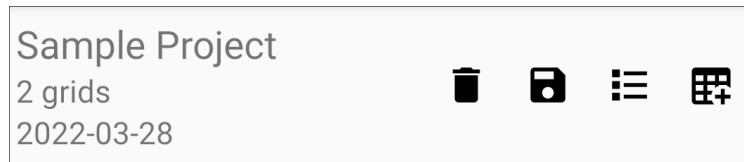


Fig. 2: Individual project list item

Each project in the list contains the project name, number of grids, and date created on the left.

Action buttons on the right of each list item allow a project to be deleted (🗑️), exported (💾), grids in the project to be viewed (☰), or new grids to be created from that project (📊+).

6.2 New Projects

New projects can be created by clicking the New Project icon (📁+) on the top toolbar. New projects only require a name to be created.

6.3 Deleting Projects

Deleting a project will delete all of the grids within that project.

COLLECTING DATA

7.1 Data Input

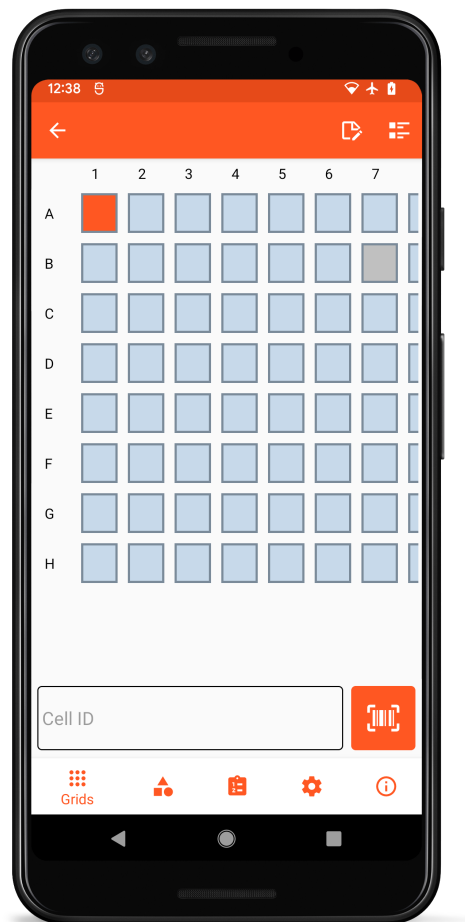


Fig. 1: Data collection screen

Each cell within a grid can hold a single string of data (such as a plant barcode). Data can be input via the text box below the grid. Sample barcodes can be rapidly scanned to increase data throughput using the barcode button next to data textbox (📷).

The current cell is highlighted in orange. Cells containing saved data turn dark blue. Cells that have been excluded from holding data in a given grid are grey.

7.2 Metadata

Metadata specific to the active grid can be viewed by selecting the Metadata icon () on the top toolbar.

7.3 Project

The active grid can be added to an existing or new project via the Project Editor icon () on the top toolbar.

EXPORTING DATA

Once you are finished collecting data, grids can be exported by selecting the ‘Export’ () option from either the grid list item or, if they are a part of a project, the project list item.

A default filename containing the grid name and current date is prefilled and can be edited prior to export. Exported grids are saved in CSV format and are located in the “Exports” directory.

FUNDING

Note: This project is under active development.

9.1 Current

USDA NIFA No. 2019-67021-29931

US Agency for International Development (USAID) No. 7200AA-19LE-00005

9.2 Previous

McKnight Foundation

National Science Foundation No. 1543958