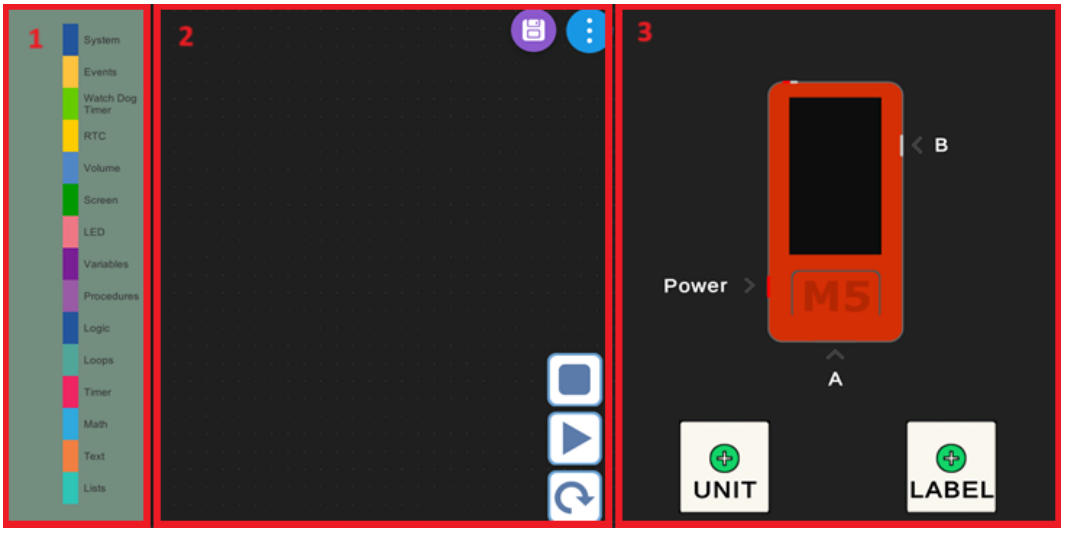
User Manual: Navigating UIFlow IDE Virtual app

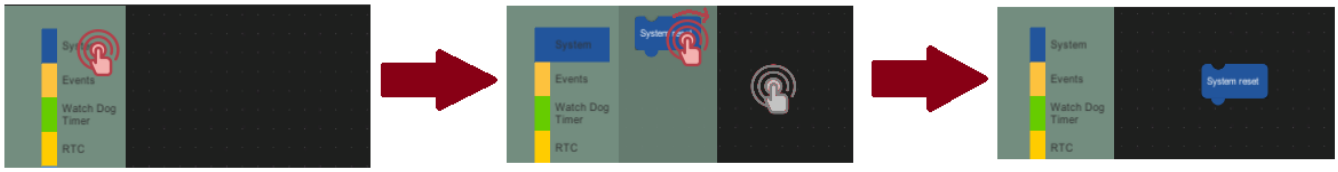
- Download the *".apk"* file called *"UIFlow IDE Virtual"*, on the designated Android tablet or phone, simply by clicking on it.
- After opening the app, the screen should look like this:



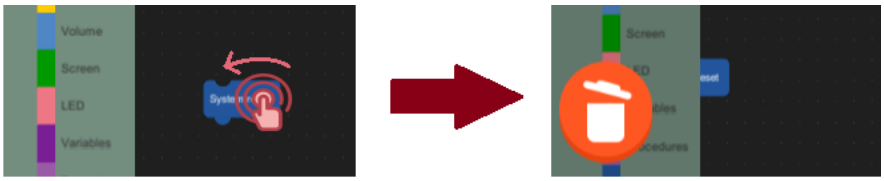
- The app's interface has three main parts (the numbers on the picture align with those listed below):
    1. the toolbox of block commands,
    2. the coding area,
    3. and the microcontroller simulator.
- How to use every part named above will be explained thoroughly, as each one of them is essential for the user's experience.

THE TOOLBOX OF BLOCK COMMANDS

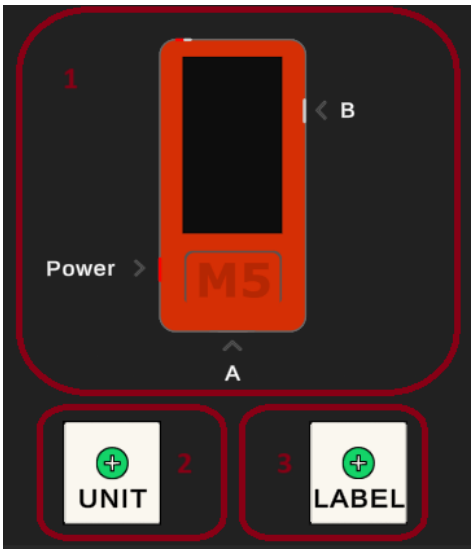
- In subsequent text it will be referred to simply as "the toolbox".
- Here you will find all blocks categorized in the same manner as on "*UIFlow IDE*"
    - All colors match as well as the naming.
    - Most of the commands in the specific category, if not all, are implemented.
- Tapping on the desired category opens a list of command blocks, that can be dragged and dropped onto the coding area, as shown below:



- To see the rest of the category list, simply drag the toolbox up and down.
- Remove a block you do not need from the coding area, simply by dragging and dropping it back to the toolbox, just like in the picture below.



MICROCONTROLLER SIMULATOR

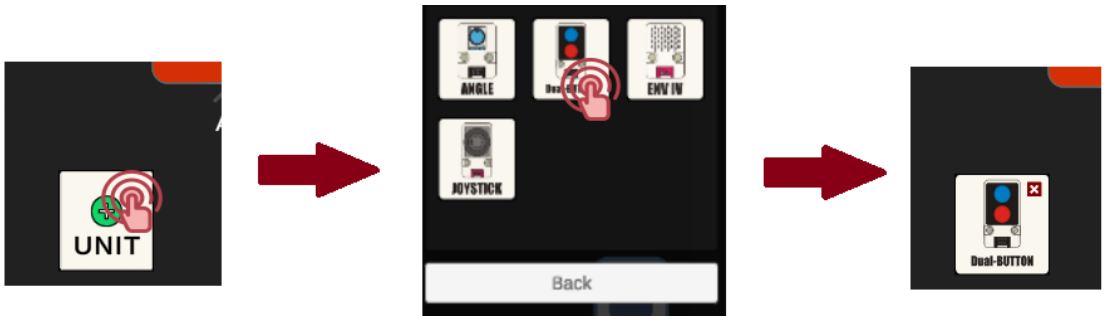


- This section contains three logical parts (the numbers on the picture align with those listed below):
  1. Buttons, screen and LED on the microcontroller simulator
  2. Button *"Unit"*
  3. Button *"Label"*
- Every element in this section is programmable using command blocks.
  - Command blocks for each element are categorized to enhance coding experience.

1) Buttons on the microcontroller are named: *"Power"*, *"A"* and *"B"*.
  - All of them are clickable, but *"Power"* button serves no function for now.
  - To interact with them, you can either tap on their names or their visual representation.
- The screen is more of a visual aspect of the microcontroller.
  - It can be programmed to change color and brightness.
- There is also a LED on the upper left corner of the microcontroller simulation. By default, it is turned off, so it isn't visible.

2) Touching the button *"Unit"* opens a small window where you can choose available units for programming alongside the microcontroller itself.

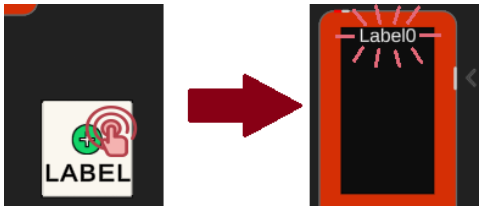
- Only one unit can be added at a time. This prevents cluttering the tablet screen and confusion. Adding the chosen unit results in showing its icon on the button itself. You can see the steps in the picture below.



- When a unit is chosen, a new category appears with the command blocks that are related to it.
- To remove the added unit, simply tap the "*Unit*" button again. You have successfully deleted the unit, if its icon has been removed and you can see the button name again.

3) Button "*Label*" is used to add text on the screen of the microcontroller simulator.

- Like the *"UIFLow IDE"*, it adds labels with according numbering. You can see an example below.



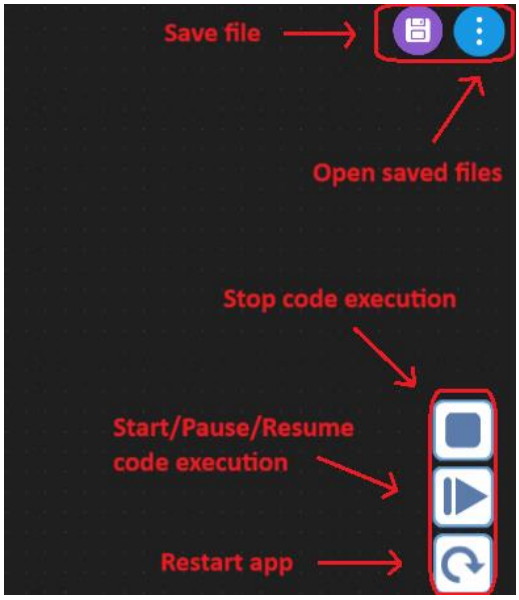
- You can remove them by dragging to the trash can icon that then appears on the right.

- Labels can be used to display certain variables, numbers or strings as text in the color of your choosing.

THE CODING AREA

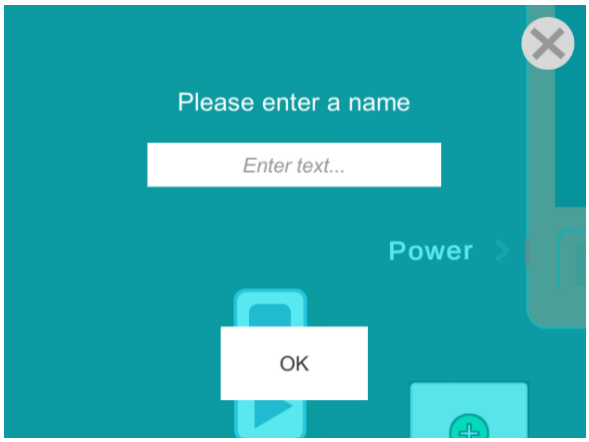
- The coding area is pretty much infinite, so simply tap and drag away the empty part of the area to create space for new blocks.
- You can notice two sections of buttons on the coding area, just like on the picture below:
  - File management buttons (upper right corner)

- Program control buttons (bottom left corner)

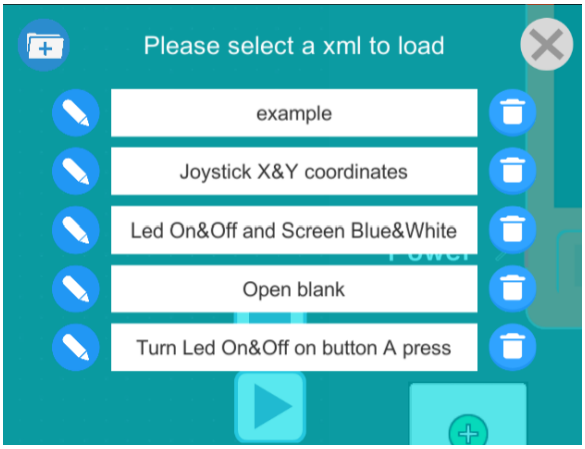


FILE MANAGEMENT BUTTONS

- *"Save file"*: save current code including command blocks, added units and labels, under a specific name. Valid input includes: letters, numbers and sign "&".



- *"Open saved files"*: open saved files stored on the device.



- The type of files used to save code is XML. This makes it more readable to the user.
- In the middle of this section there is a list of saved files that can be opened simply by touching their names.
    - Each file has two buttons on the left and right:
        - File name change button (pencil icon on the left) – opens a window for entering a new file name
        - Delete file button (trash can icon on the right) – opens a window for additional confirmation of the desired action
- Extracting and sending files can be done manually at:
    - *Android:* “FilesApp\InternalStorage\Android\data\com.FER.Blockly\files\XmlSave”
    - *Windows:* “C:\Users\{user}\AppData\LocalLow\FER\UIFlow Virtual\XmlSave”
- In the upper left corner, there is a button that opens a new (empty) file.

PROGRAM CONTROL BUTTONS

- This section of buttons controls code execution and the app itself.

“Start code execution”: starts executing user’s code. In this part, the user can test the code on the microcontroller simulator and unit simulator, if its used. After clicking it, the button changes to *“Pause code execution”*.

“Pause code execution”: pauses current code execution. Some changes can be made during this time, but it is not recommended. After clicking this button, it changes to *“Resume code execution”*.

“Resume code execution”: resumes code execution.

“Stop code execution”: stops code execution entirely. If modifying the code is necessary, it is recommended to use this button to reset the simulation, before the modification.

“Restart app”: restarts the whole application. Use if the app suddenly crashes or if there is a bug.