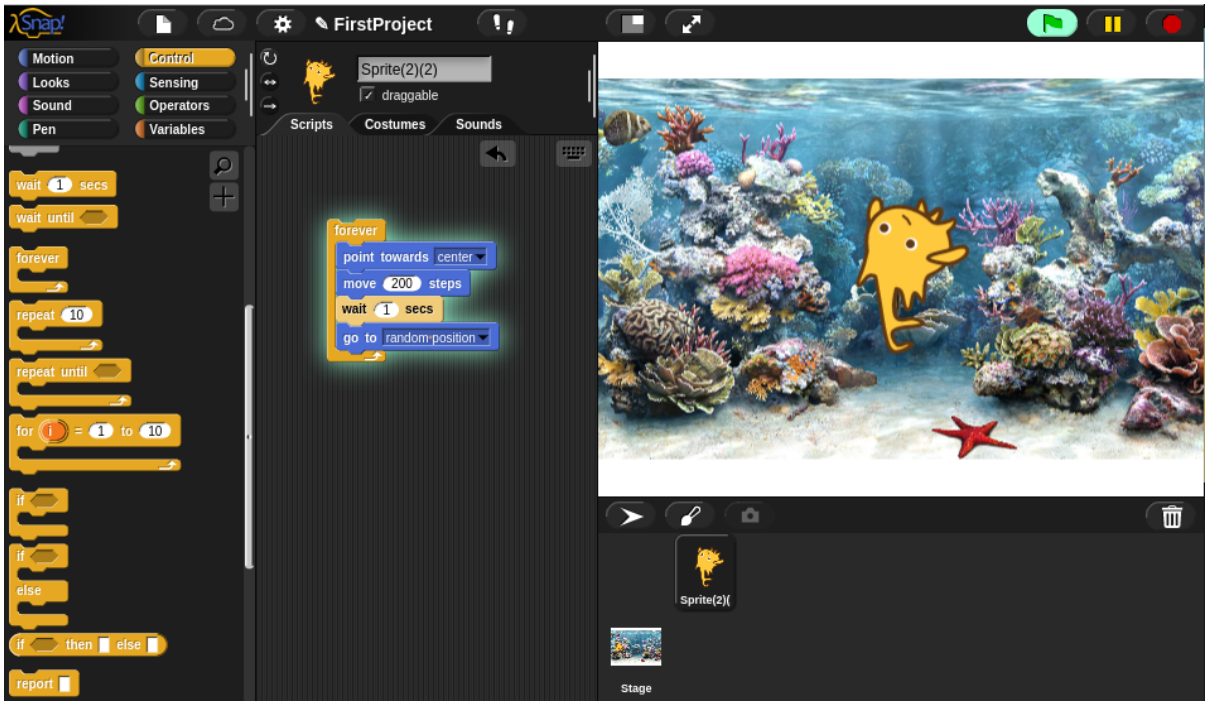
Snap! Scripting

COR100 Snap! Programming Fall 2022



Building a script

- To build a **script**, you drag and drop the blocks from the commands area into the script area and **connect** them like a jigsaw puzzle.
- Scripts are **programs**, sets of instructions for the computer.
- Programs need to be absolutely **flawless**: you need to be 100% diligent and careful when programming. Otherwise, the computer will refuse to cooperate.

Saving a Snap! project

- A Snap! *project* is a collection of scripts for sprites.

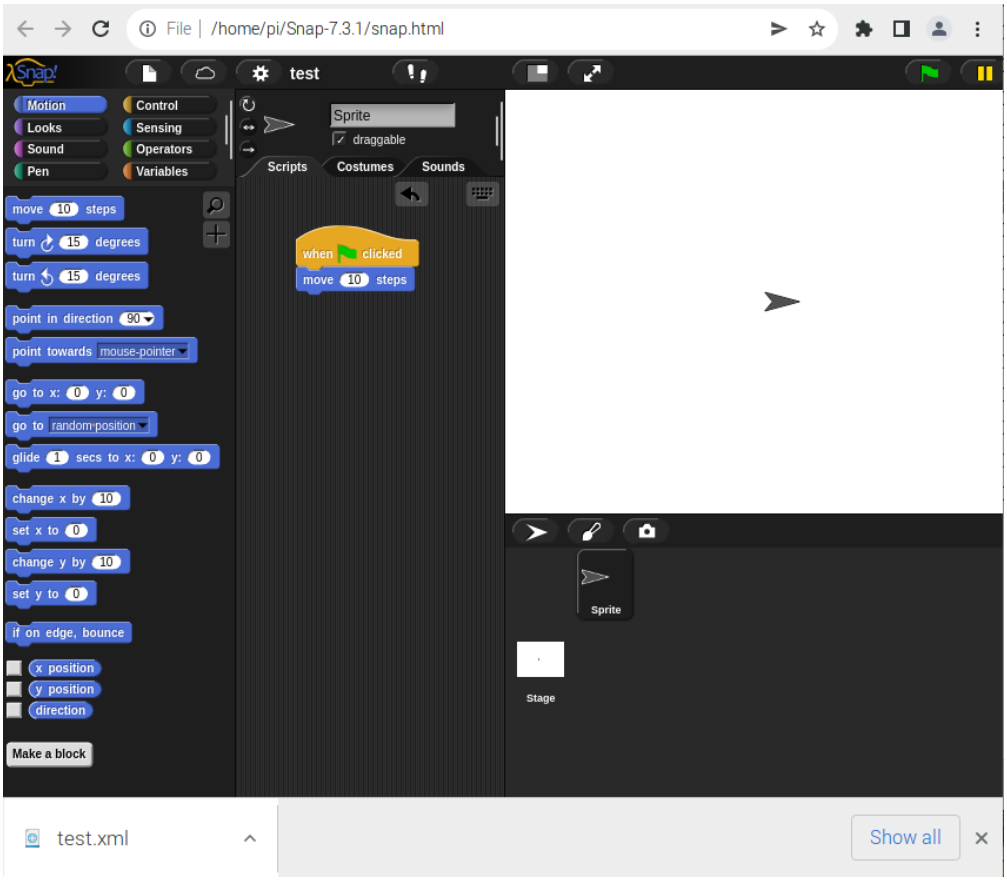


Figure 2: Snap! project example

- You can save your projects in your cloud account (if you are using the cloud version of Snap!), or you can save it locally as an XML file[1].

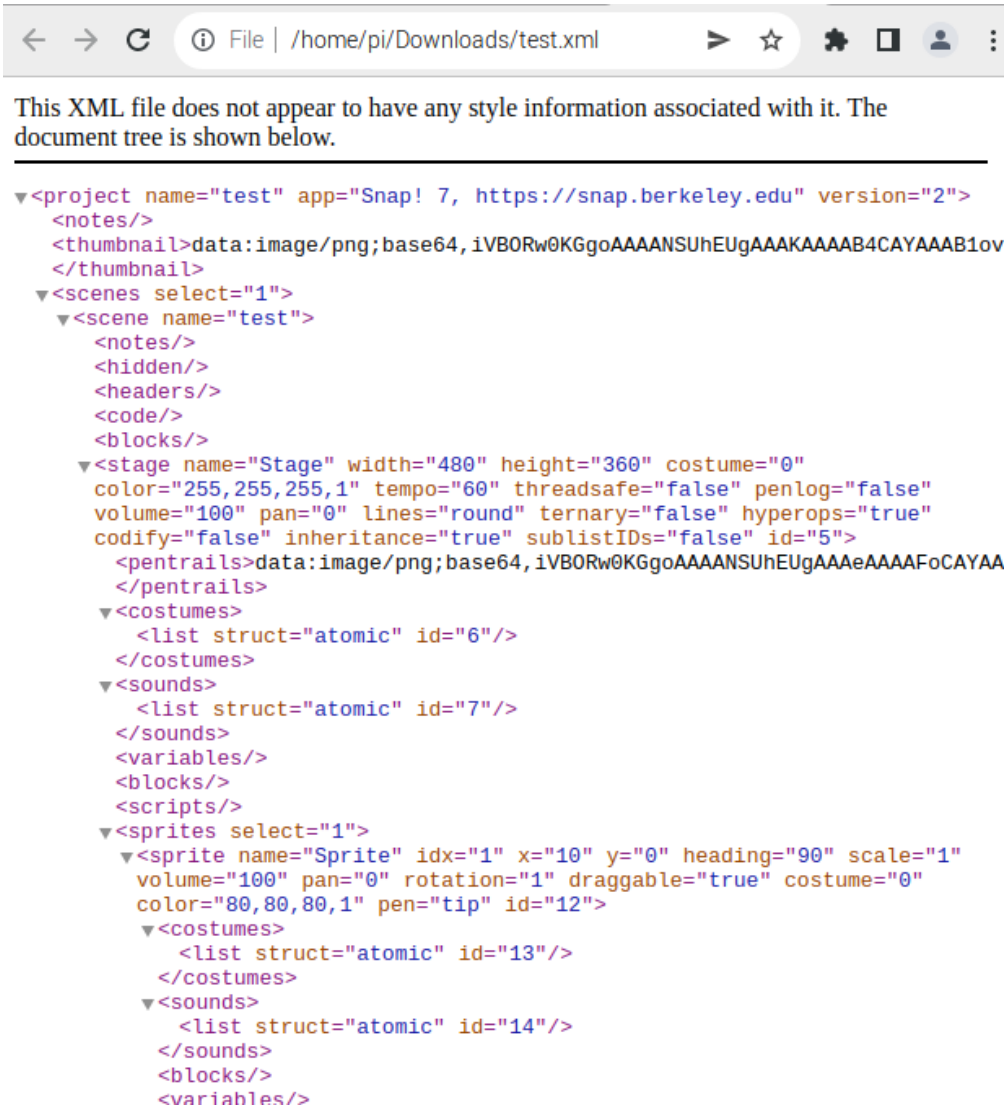


Figure 3: Snap! project example

Sprites and costumes

- When you add a new sprite, it always comes up as a "Turtle", a triangular shape.
- Every new Turtle sprite appears at a random place on the screen, facing a random direction, and has a random color.

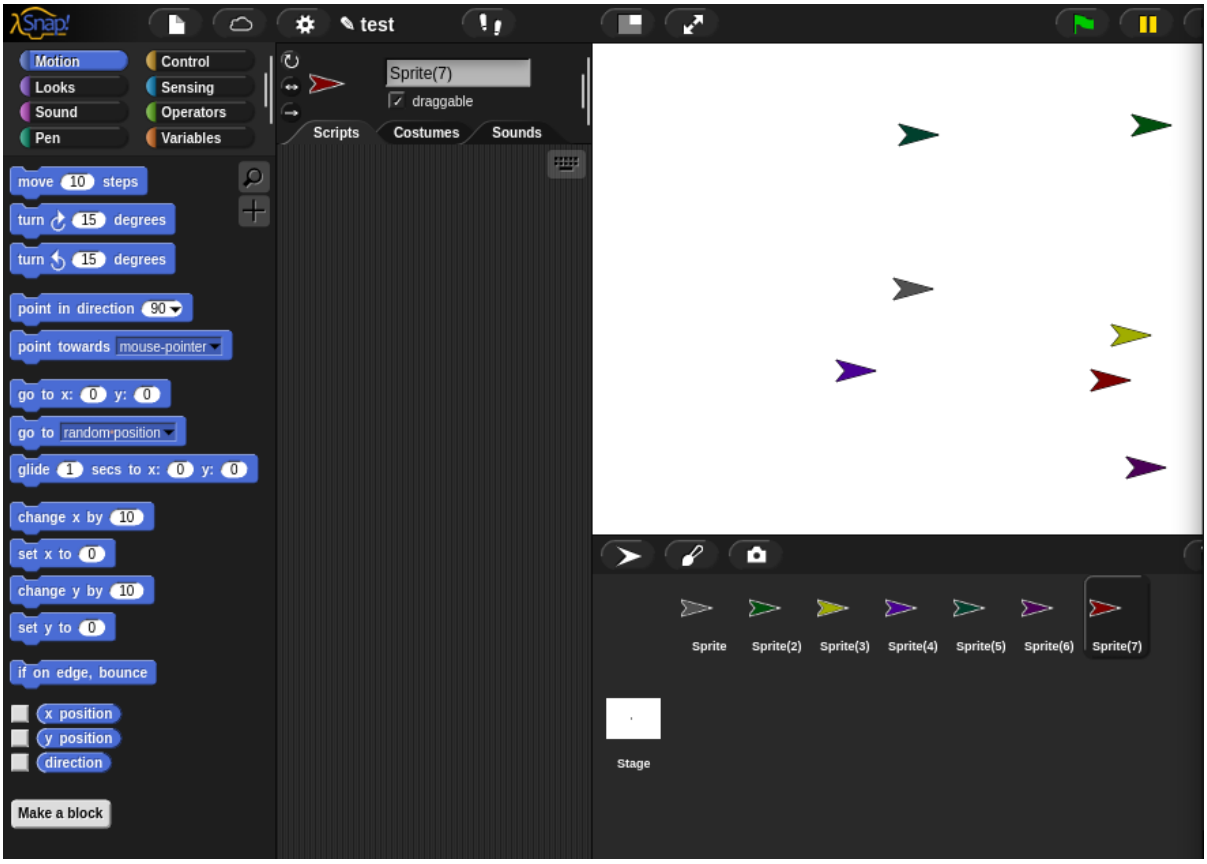


Figure 4: Snap! sprites.

- You can also use your camera to create a sprite.

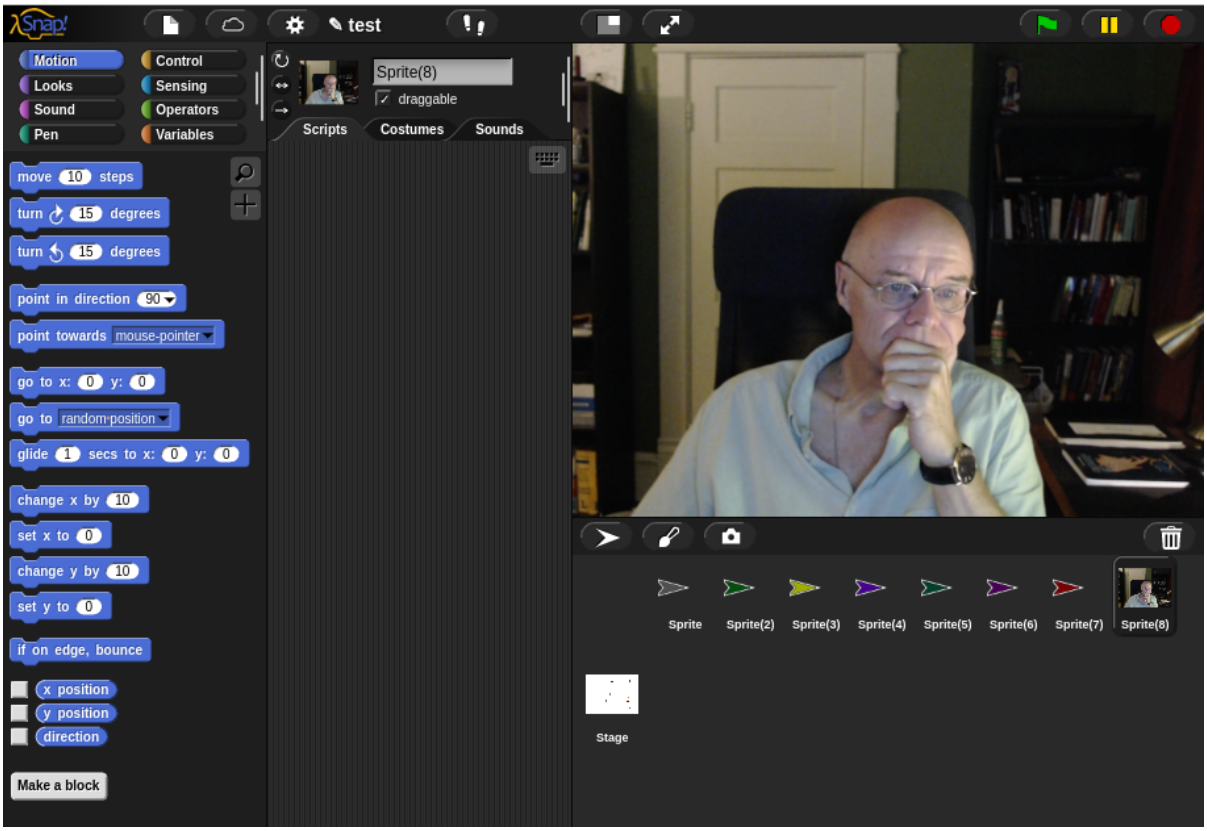


Figure 5: Snap! sprite, created with camera

- To change the appearance of the standard Turtle sprite, load a new costume. There are readymade costumes provided.

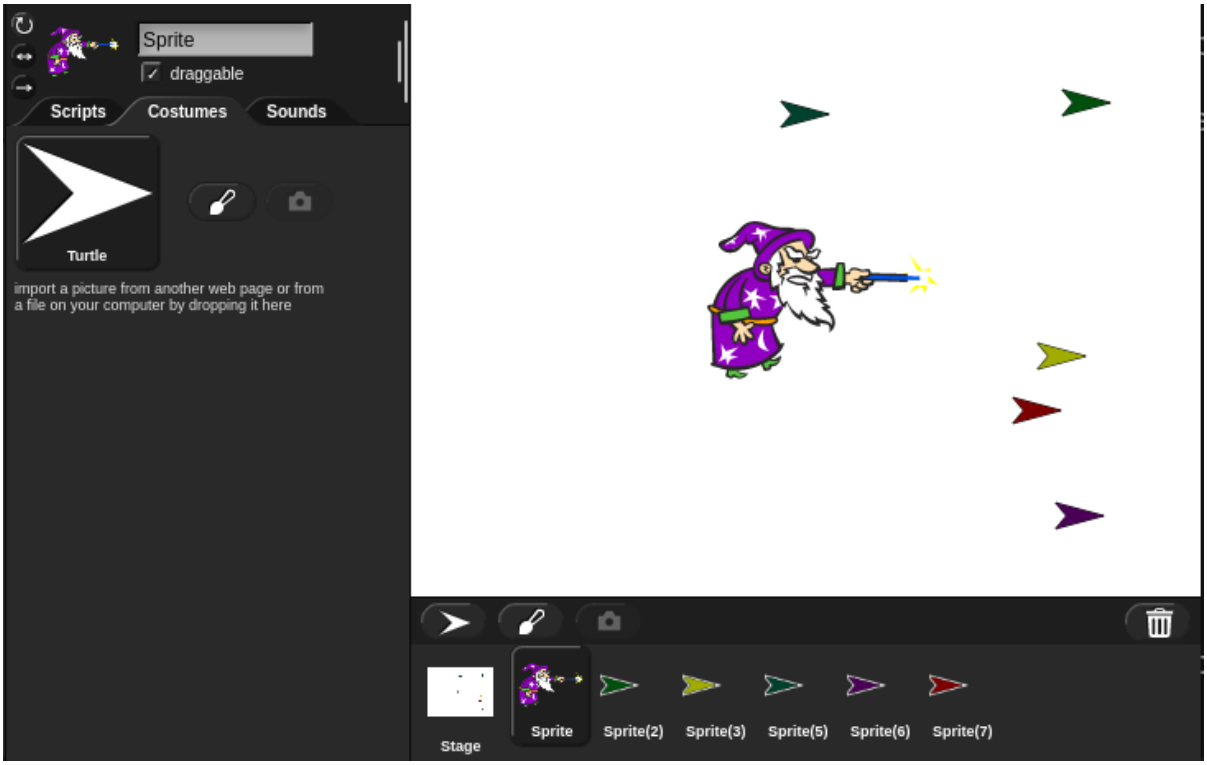


Figure 6: Snap! costume from the media library

- This is where the costumes library resides on my computer at home (because I downloaded the Snap! source code): `/home/pi/Snap-7.3.1/Costumes`[2].

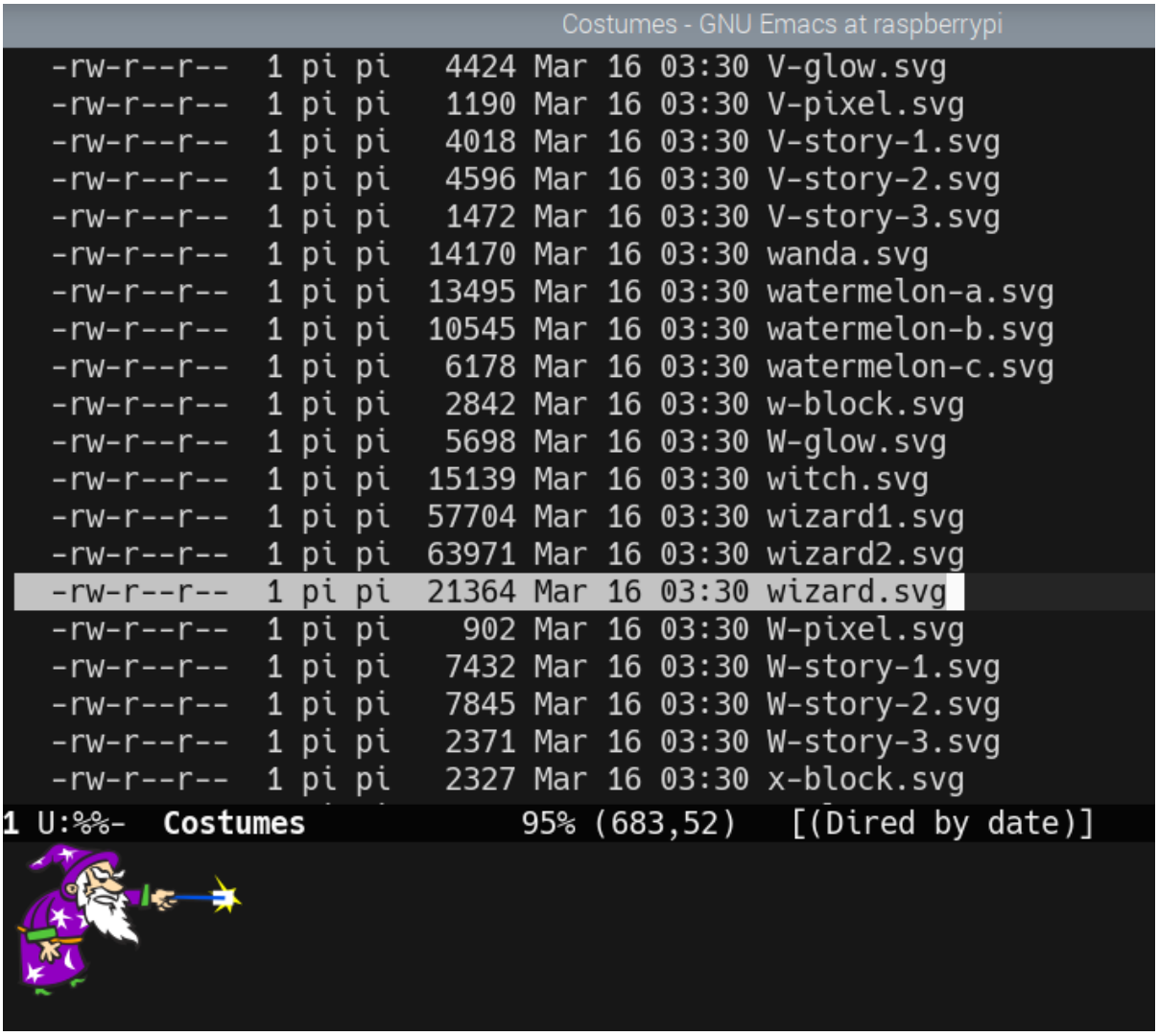


Figure 7: Snap! top menu

- You can also create or modify an existing costume using the paint editor.

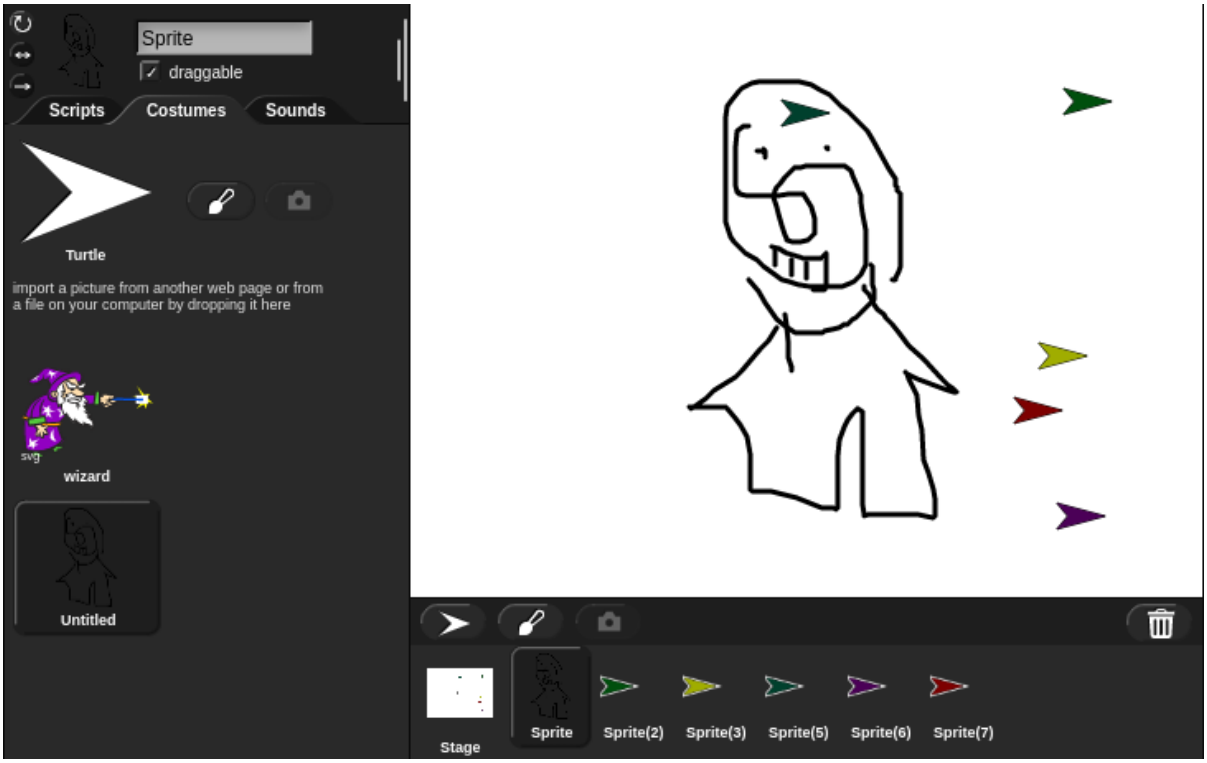


Figure 8: Self-drawn Snap! costume

- To import an image or go to the Costumes library, open the top (or "file") menu next to the Snap! logo, marked by a document symbol.

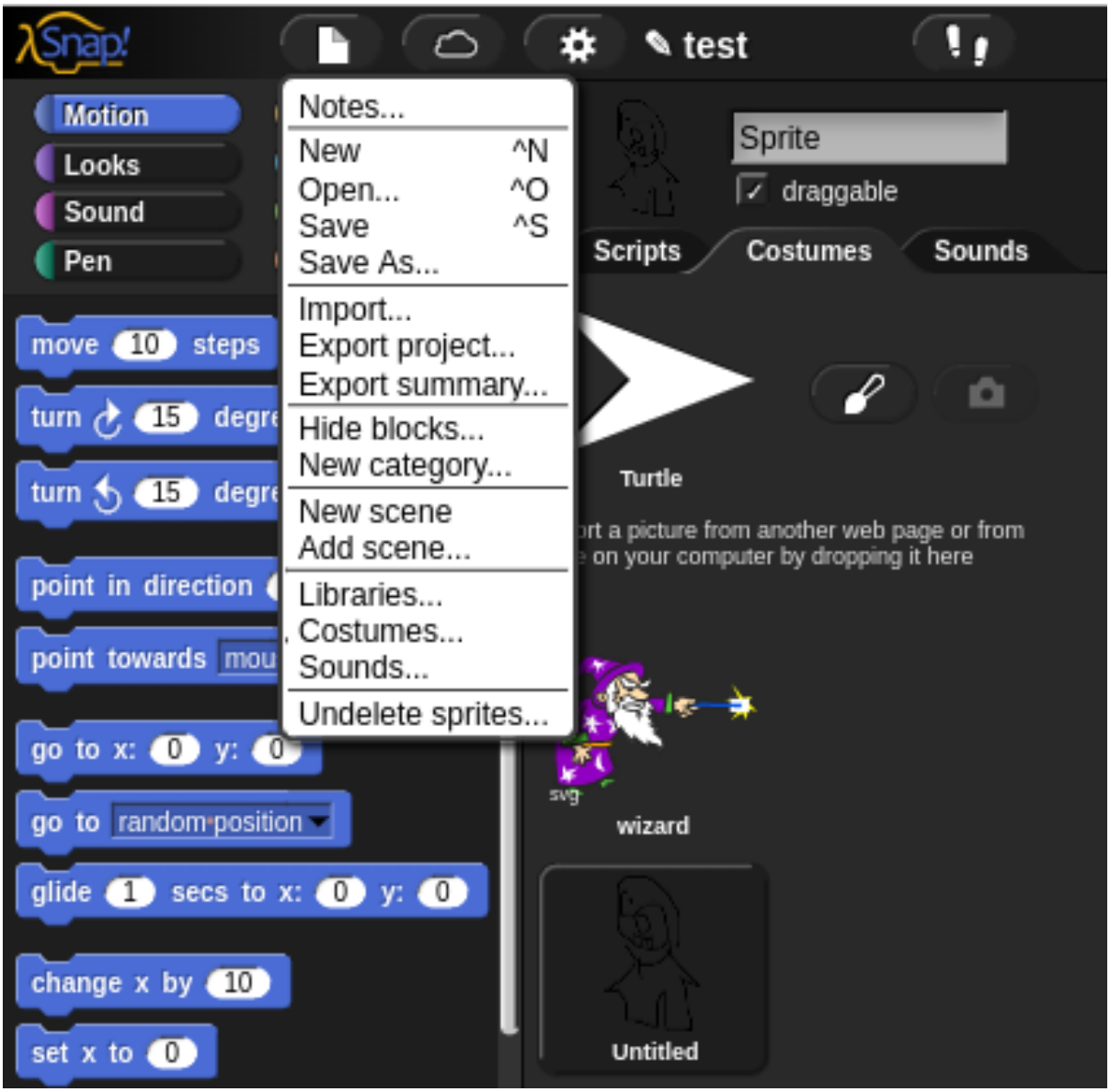


Figure 9: Snap! top menu

Stage or background

- Similar to the costume library, Snap! comes with backgrounds that you can load for your stage.

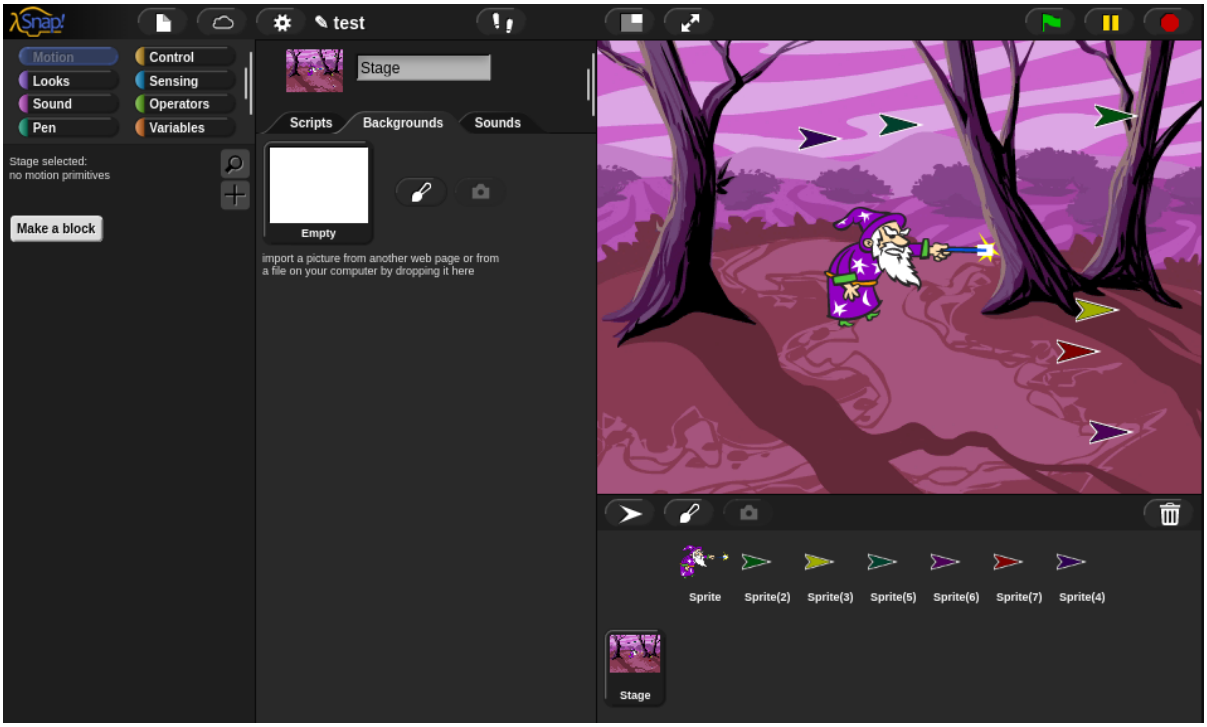


Figure 10: Snap! standard background `woods.gif`

- You can also modify or import backgrounds from your computer.

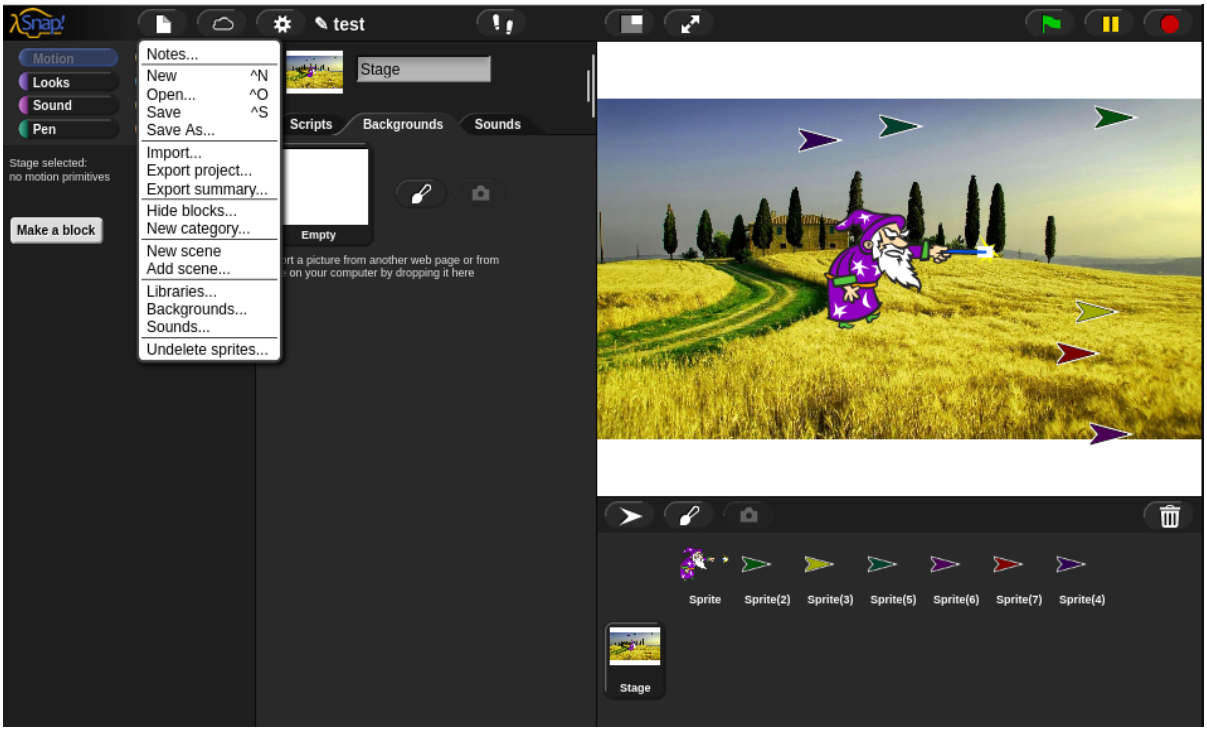


Figure 11: Snap! standard background `woods.gif`

Command blocks and scripts

- Scripts control the action of sprites (characters)
- Scripts are created by dragging command blocks into the script area and snapping them together

- You can run any command block (aka *programming statement*) by clicking on it. This Gif shows that for `"turn 90 degrees"`.

Figure 12: Snap! motion command to turn sprite clockwise by 90 degrees

Figure 13: GIF screenshot

- When a script is running, the command blocks used are glowing. Clicking on a running script again will stop it.

Figure 14: Snap! motion command that runs forever

Practice - first script

1. Register an account with `snap.berkeley.edu`. Use your Lyon College email address and FirstnameLastname as Username, e.g. MarcusBirkenkrahe.

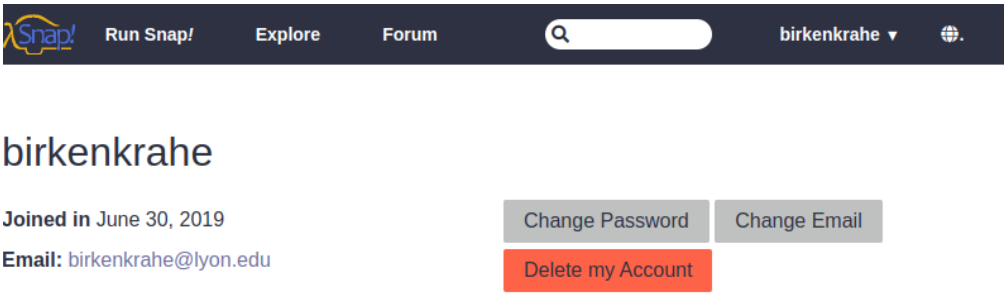


Figure 15: snap.berkeley.edu profile page

2. Create a new named project:

   - Open the main menu at the top
   - Click on `New` (a new project page opens)
   - Click on `Save As ...` and enter the name `FirstProject`
   - Save the project on your computer.
   - Open the file location to see where `FirstProject.xml` was saved

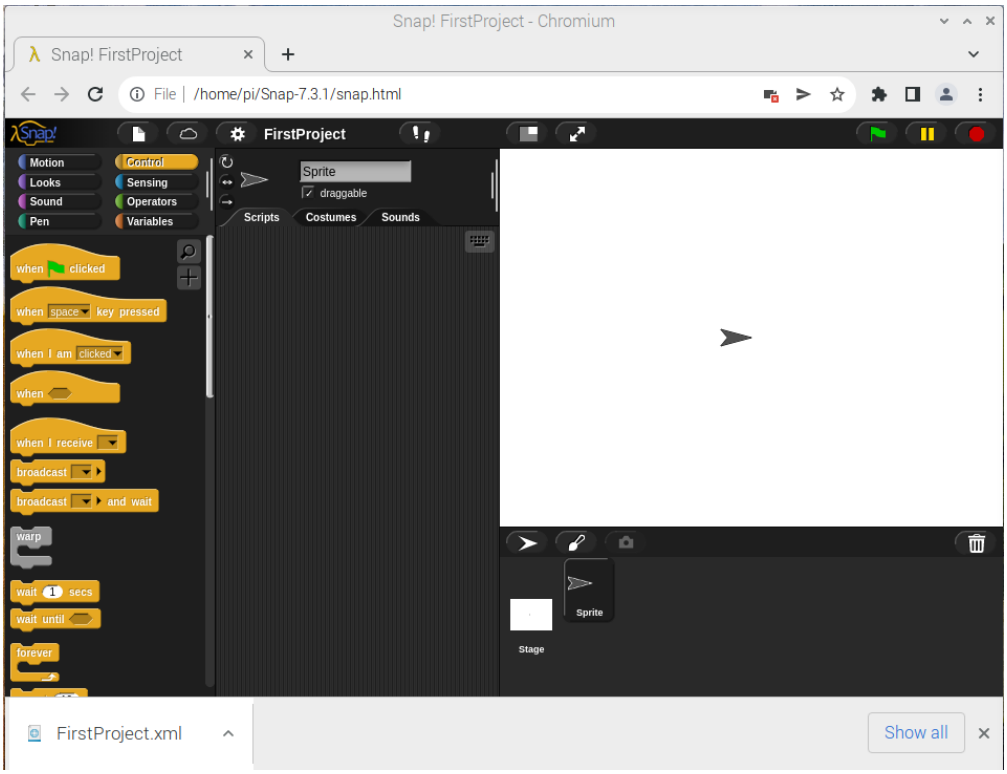


Figure 16: FirstProject in the Snap! desktop app

3. Create a new sprite and stage:

   - Add a new *Turtle* sprite
   - Open the *Costumes* menu from the main menu (at the top)

- Click on the sprite icon and pick an animal or human *costume* for the *sprite* using the Costumes library
- Click on the *stage* icon and pick a background for the *stage* using the Backgrounds library
- Save your project to the cloud using `Save As ...` and then choosing the location `Cloud` instead of `Computer`
- Go to `My Projects` on the Snap! website and find your project

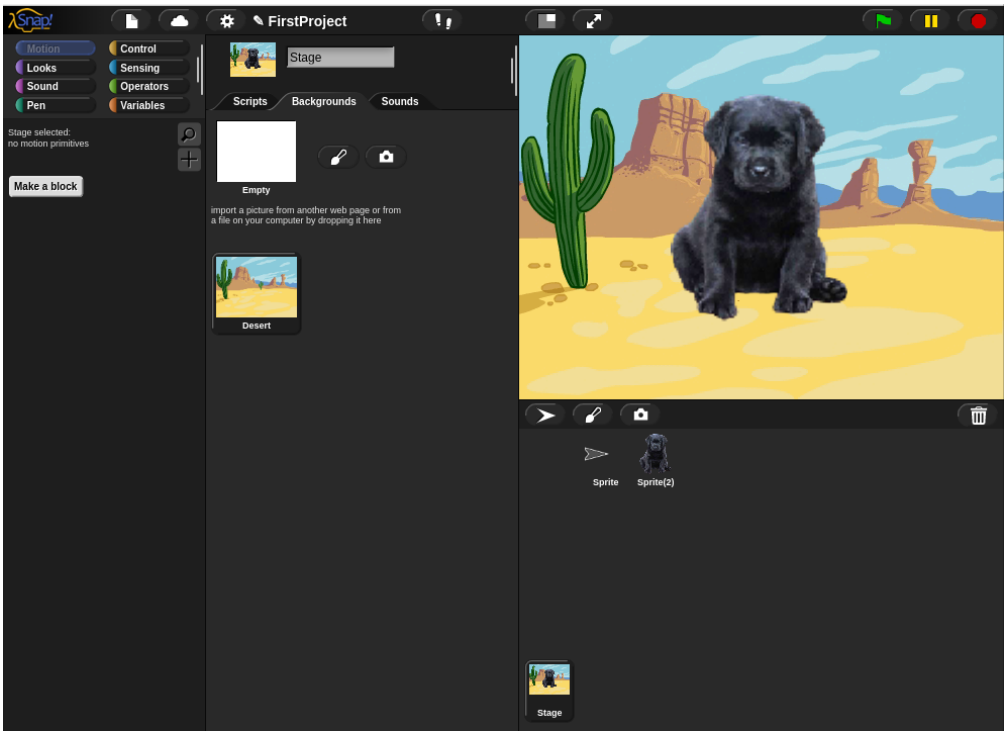


Figure 17: New sprite with new background.

4. Create a simple script with a standard Turtle:
   - Go back to the *Scripts* tab. If the `Motion` command palette is greyed out, then your chosen sprite costume cannot be moved and you need to pick another.
   - Make your sprite `point towards center` of the stage
   - Make your sprite `move 200 steps`
   - Make your sprite `go to a random position`
   - Make sure that all your statements/commands are attached to one another in the prescribed order
5. Run script:
   - Run the script a few times by clicking on any of the statements in the script
   - Go to the `Control` command palette
   - Make your sprite `wait 1 secs` between moving and going to a random position
   - Run the altered script a few times to make sure it does what it should
   - Execute the script `forever` by including it in a `forever` loop
   - Stop the program by clicking on the script, or by clicking on the red STOP symbol at the top above the stage
   - When running, the final result should look like shown in this video (with your choice of sprite and background, of course)
   - Save your project to the cloud location (with `Save As ...`)
6. Share your project and upload the location
   - Go to your projects and share the project using the `Share` button.
   - You can now publish the project, which means that it will be visible (and searchable) in the Snap! website

- On the project page, you can `Unshare` and `Unpublish` your project.

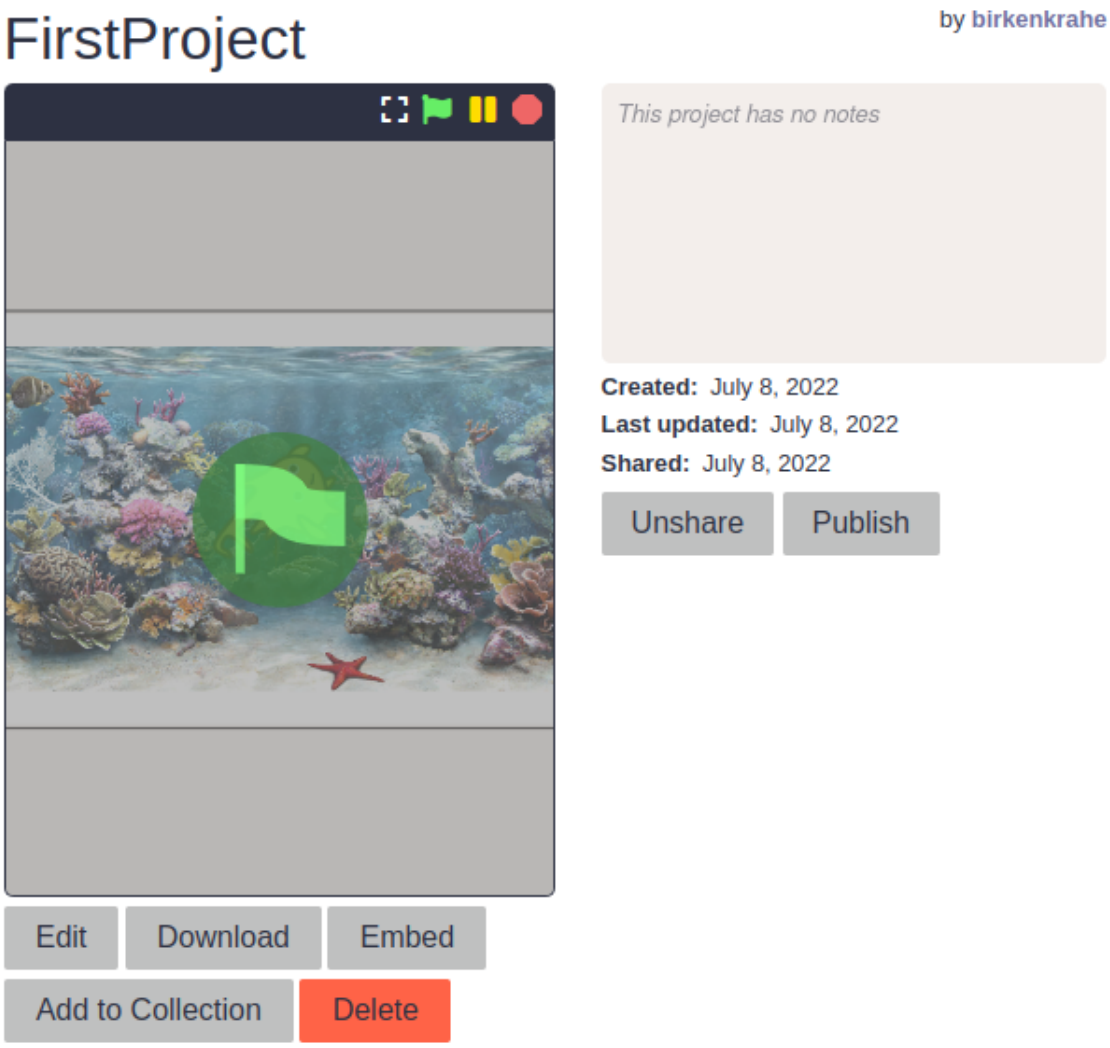


Figure 18: You can share/unshare, and publish/unpublish projects

- On the `My Projects` page, you also see if a project is shared and/or published.

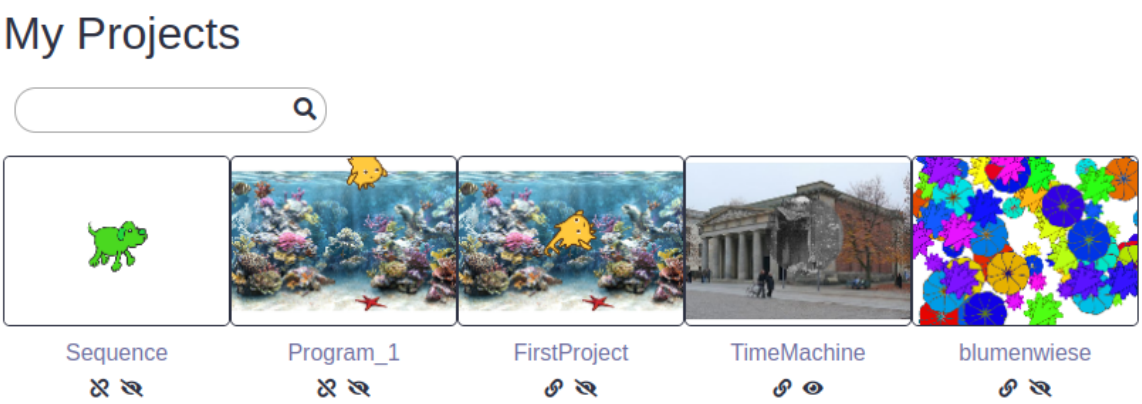


Figure 19: My "My Projects" page

- You can add projects to collections.

Figure 20: My collection of projects for this course

- Published projects and collections are displayed on your public page.

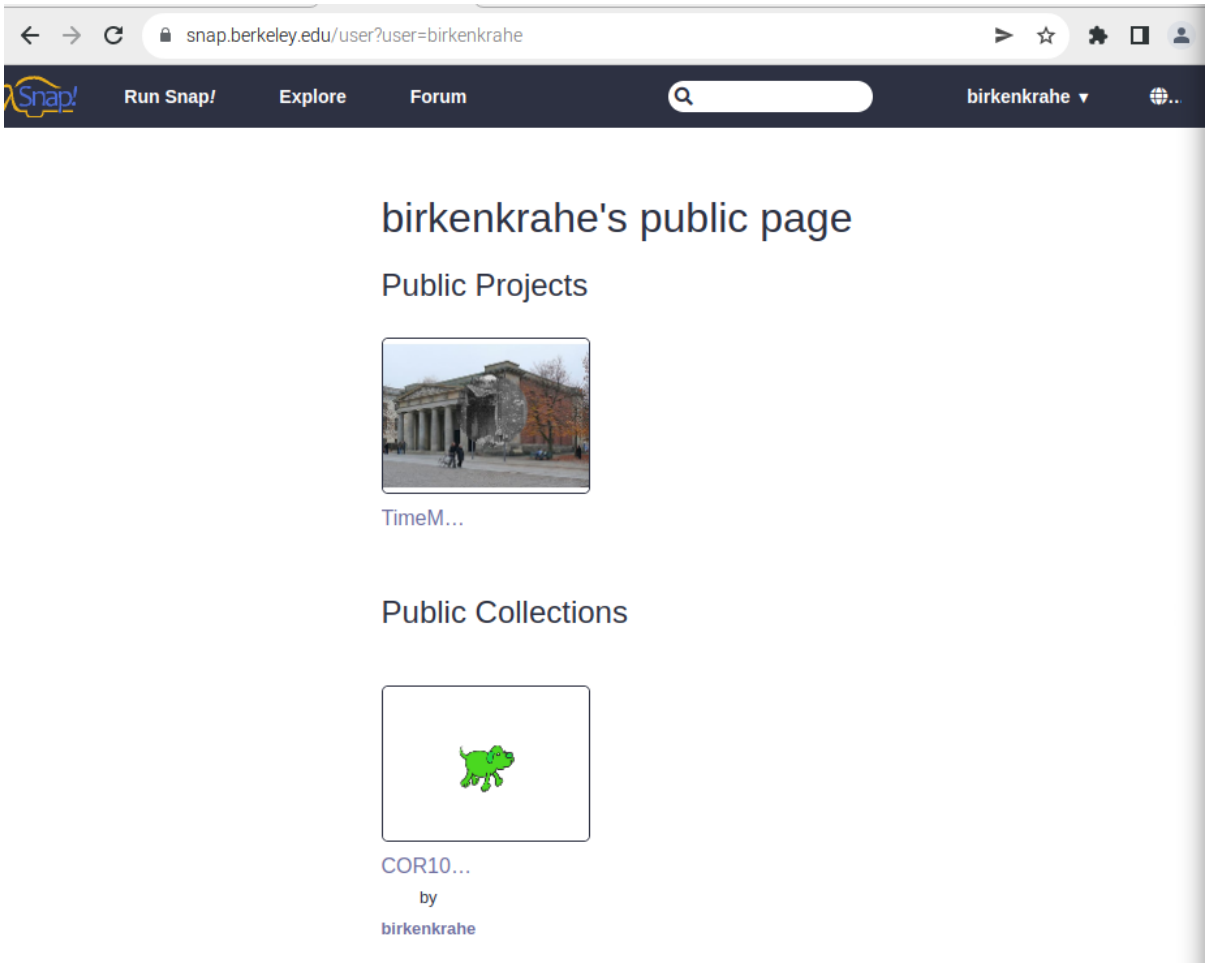
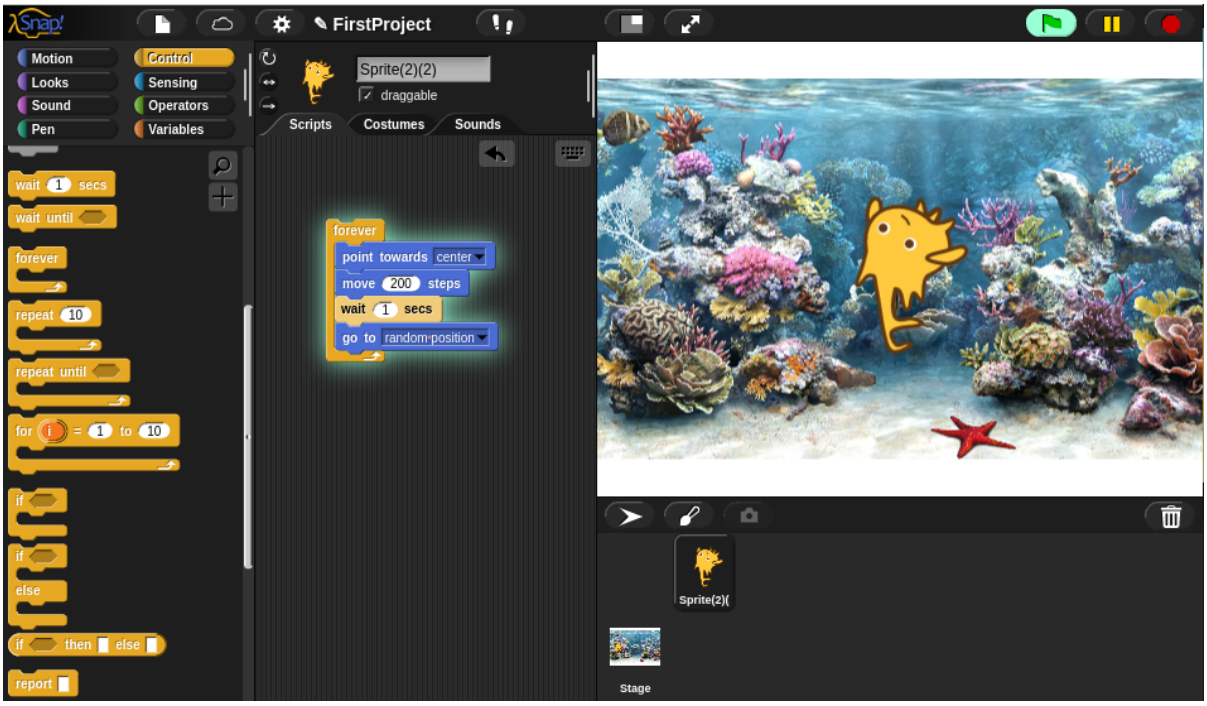


Figure 21: My collection of projects for this course

Practice solution - first script

- Screenshot:



- YouTube video
- GDrive video
- Project URL

Footnotes:

[1] XML, or eXtensible Markup Language is a layout language that looks a lot like HTML, but instead of web page display its focus is on wrapping layout information in text-based, tagged files.

[2] This is a file address: the computer needs to keep track of all its files. To do this, it uses a hierarchy, like a tree turned upside down, with the *root* at the top. This particular address, `/home/pi/Snap-7.3.1/Costumes` means that the costumes files are located in a directory `/Snap-7.3.1` (which contains all files for the Snap! version 7.3.1), which is contained in a directory `/pi` (that's my username on this computer), which is contained in the directory `/home` right below the root directory `/`.

Created: 2022-10-11 Tue 07:00