

Coding4Peace: a coderdojo course about programming mobile apps for young Ukrainian refugees.

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Abstract

This document defines a course, coderdojo-like, for young Ukrainian refugees. It describes the content of the course, the hardware and software requisites as well as the logistics ones. Finally it summarizes the content of the lessons.

Description of the course

There is always one moment in childhood when the door opens
and lets the future in...
Graham Greene, *The Power and the Glory*

Background

Coding4Peace is a 4 lessons coderdojo course about coding mobile apps.

CoderDojo is a global volunteer-led community of free programming workshops for young people between 7 and 17. The movement is a grassroots organization with individual clubs (called "Dojos") acting independently. A charity called the CoderDojo Foundation operates out of Dublin and supports the various clubs by providing a central website and some other support services. Supporters of CoderDojo believe it is part of the solution to addressing the global shortage of programmers by exposing young people to ICT at a young age. The movement has seen significant growth since its founding. The CoderDojo Foundation estimates more than 2.000 Dojos spread across around 115 countries, with a growth rate of several new Dojos every week. More details at <https://coderdojo.com/>.

Coding4Peace teaches how to develop mobile apps for Android/iOS using MIT App Inventor.

MIT App Inventor (<https://appinventor.mit.edu/>) is a web application integrated development environment originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT). It allows newcomers to computer programming to create application software (apps) for two operating systems (OS): Android, and iOS. It is free and open-source software released under dual licensing: a Creative Commons Attribution ShareAlike 3.0 Unported license, and an Apache License 2.0 for the source code.

It uses a graphical user interface (GUI) very similar to the programming languages Scratch and the StarLogo programming language, which allows users to drag and drop visual objects to create an application that can run on Android devices.

App Inventor and the other projects are based on and informed by constructionist learning theories, which emphasize that programming can be a vehicle for engaging powerful ideas through active learning. As such, it is part of an ongoing movement in computers and education that began with the work of Seymour Papert and the MIT Logo Group in the 1960s, and has also manifested itself with Mitchel Resnick's work on Lego Mindstorms and StarLogo.

App Inventor also supports the use of cloud data via an experimental Firebase#Firebase Realtime Database component.

The target of this course are young Ukrainian refugees moving to the Zuid-Holland region of the Netherlands. *Anyway participants from the Netherlands and other countries, including Russia, are welcome: one, non secondary, goal of the course is to facilitate the integration of the newcomers as well as to create a respectful and peaceful environment.*

Structure of the course

Each installment of the course is divided into 4 lessons aimed to bring the student from an elementary ability to develop apps to an intermediate one.

Each lesson is described in the following paragraphs. Ideally a single instance of a course is made by a group of up to 8 students with 2, 3 or 4 instructors.

The book supporting the course is free and is available at:
<http://www.appinventor.org/book2>

Logistics and IT requirements

No panic. We're strong. We're ready for anything.
Volodymyr Zelensky

This is a list of IT and logistics requirements:

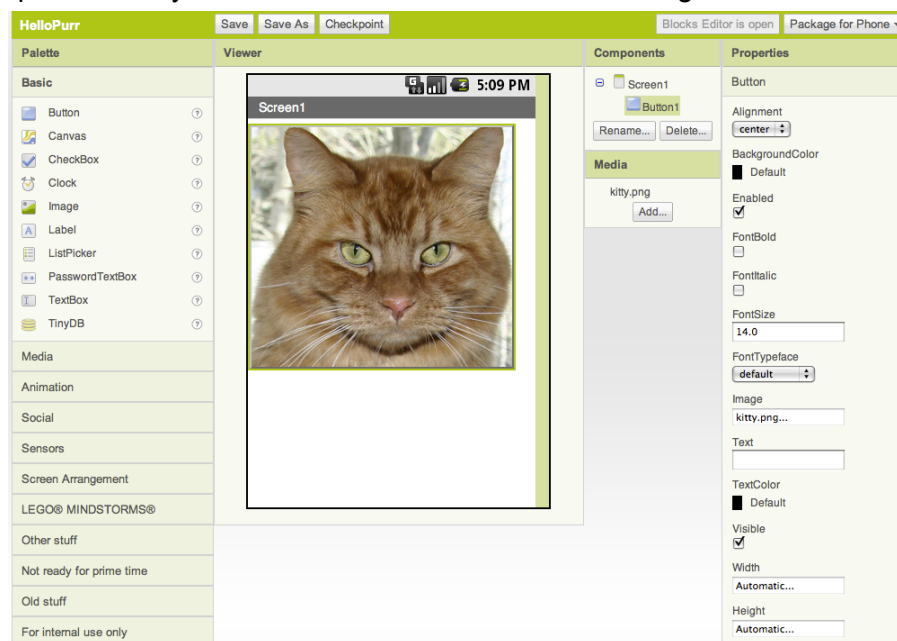
- ☐ The course will be held in an accessible place like a Library, a Buurtcentrum, a School or a similar place.
- ☐ In that place it has to be available a free WIFI connection as well sockets to plug
- ☐ Students must register themselves to the <http://ai2.appinventor.mit.edu/> site before taking the course
- ☐ Students will bring their laptops/tablets as well as their smartphones
- ☐ Students have to install the MIT App Inventor companion app before taking the course
- ☐ The course will be delivered in Saturday mornings, 10:00-12:00 (tentative)

Lessons

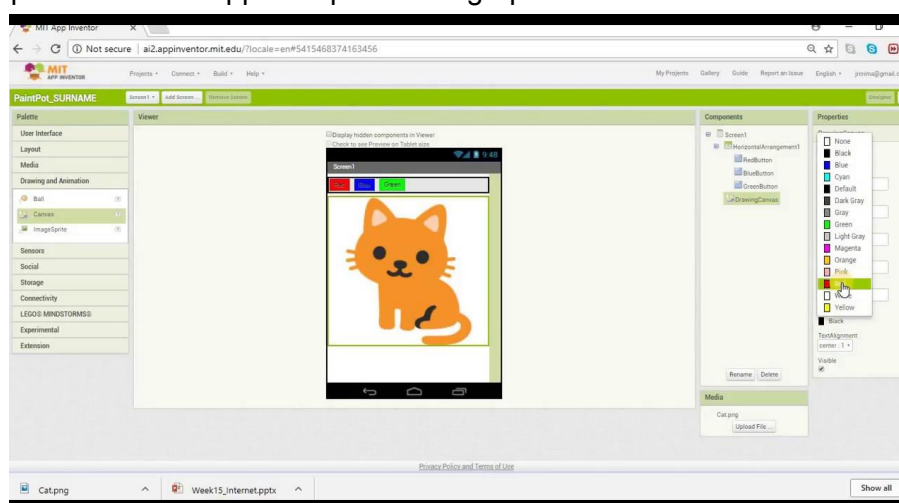
Even the smallest person can change the course of the future.
J.R.R. Tolkien, *The Lord of the Rings*

Lesson 1: Elementary apps

The first lesson will introduce the student to the development of apps through App Inventor. The first app the students will develop is “HelloPurr,” a picture of a cat that meows when you touch it and purrs when you shake the device on which it’s being viewed.

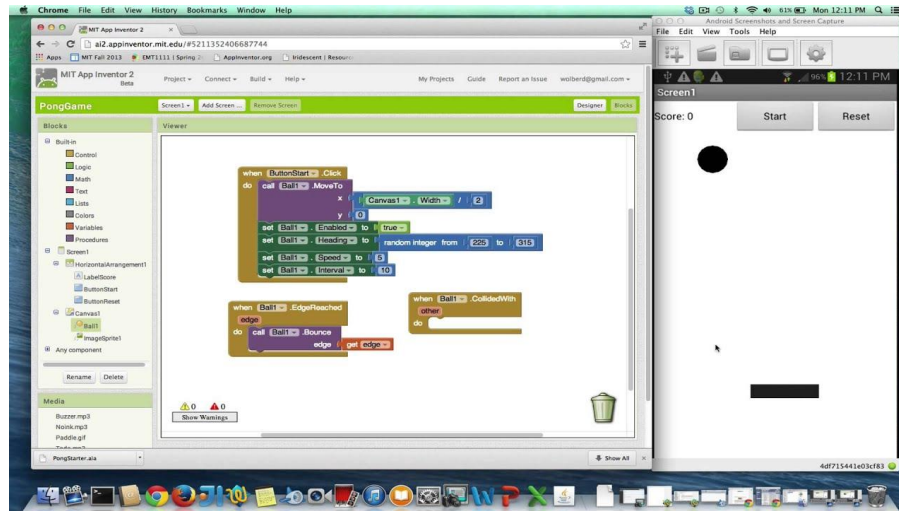


For the students that quickly build it a second app will be proposed for development, PaintPot, a paintbrush-like app to implement a graphical editor:

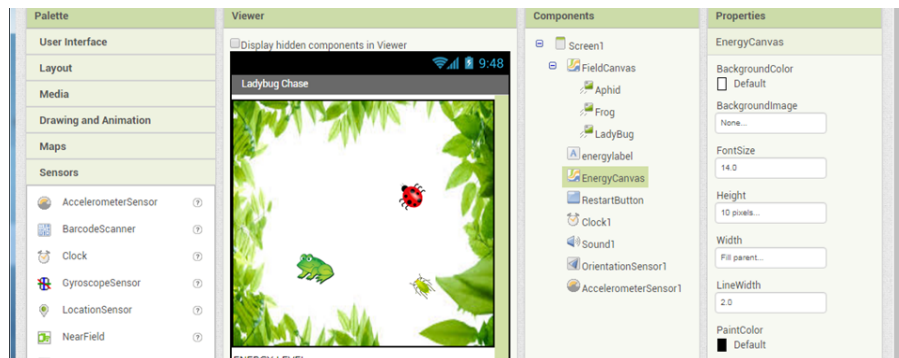


Lesson 2: Pong and other games

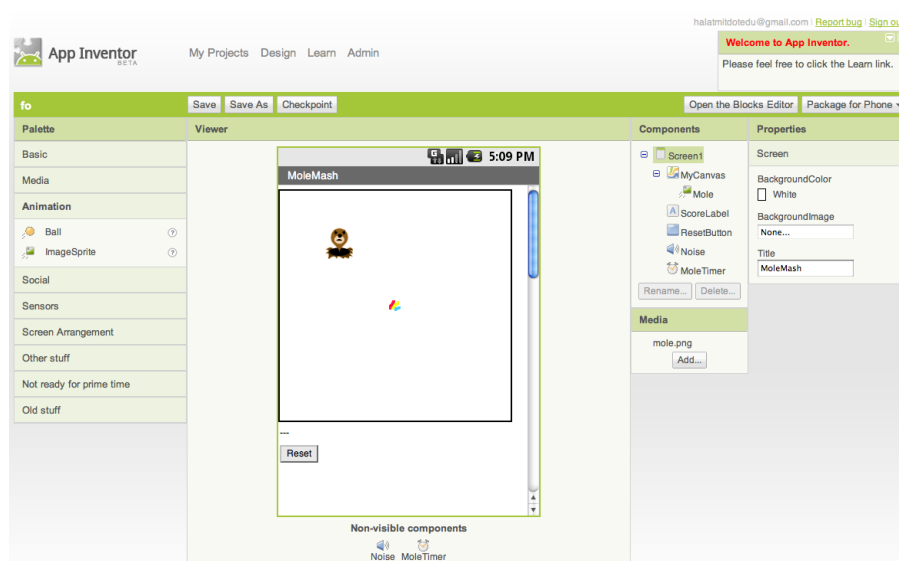
The second lesson will focus on gaming. We will start recreating the classic Pong video game:



For the students that quickly build it a second game will be proposed for development, LadyBug Chase:



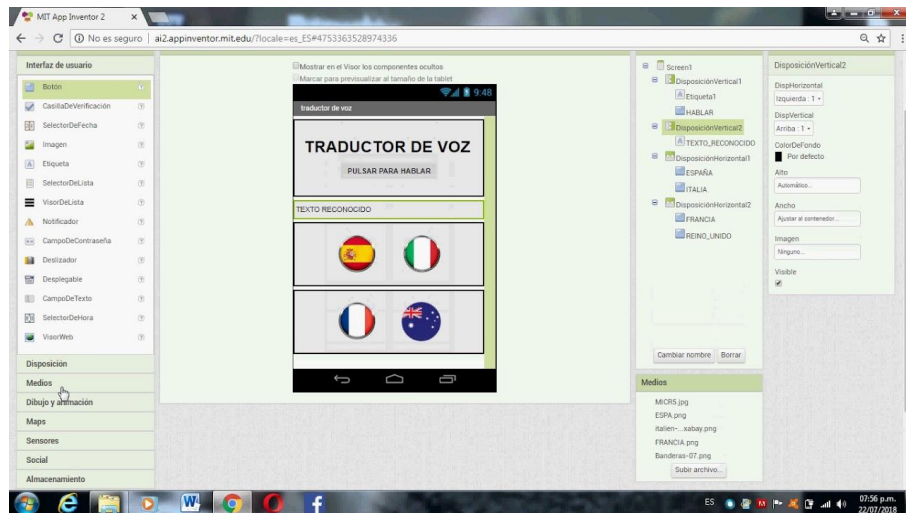
or even a MoleMash remake:



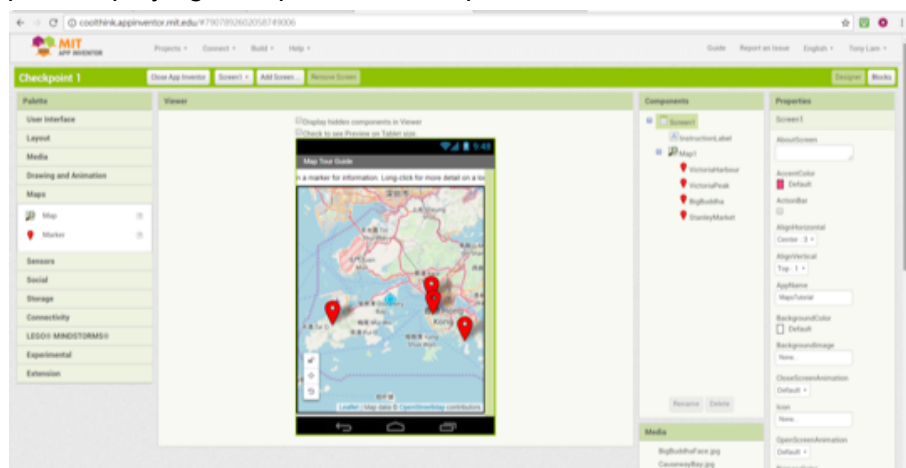
Lesson 3: Language translation and other refugee oriented apps

The third lesson will focus on apps that can be useful for student life.

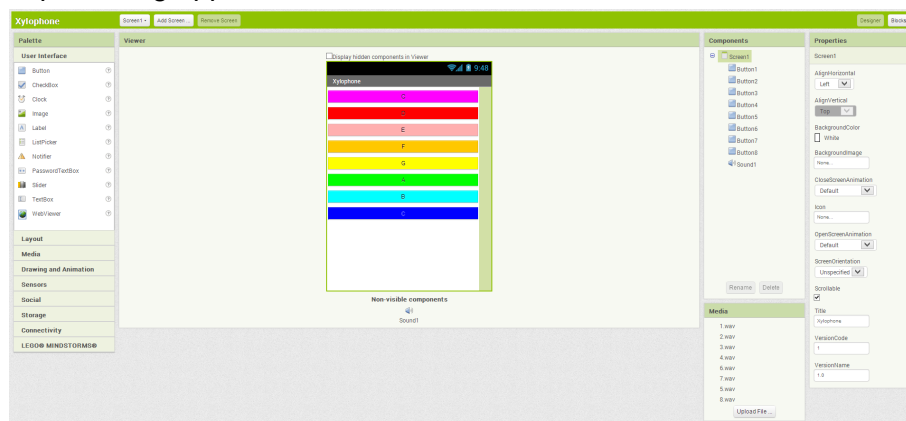
First an app able to translate the voice of the student and then output of the translated audio:



Then an app for displaying a map on the smartphone:



Last, a music producing app:



Lesson 4: Artificial Intelligence

The last lesson is about creating artificial intelligence powered apps, like image recognition:

