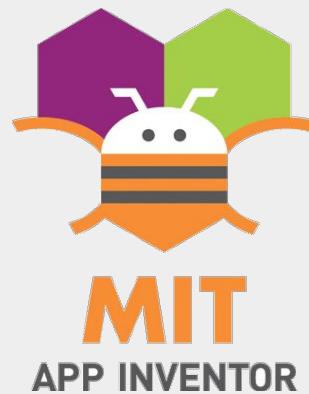




Congreso Internacional en
Computación y Tecnologías
de la Información



android 

Desarrollo rápido de aplicaciones para Android

Dr. Oscar Alberto Chávez Bosquez

<https://chavezbosquez.github.io/cicoti/>

08 - 10 de noviembre 2022

Objetivo

Desarrollar una app para el
registro de asistentes
al CICOTI 2022.

Contenido



1. Diseñando la app
2. *Live testing*
3. Escribiendo código
4. Manejo de archivos
5. Base de datos en la nube

Contenido



- 1. Diseñando la app**
2. *Live testing*
3. Escribiendo código
4. Manejo de archivos
5. Base de datos en la nube

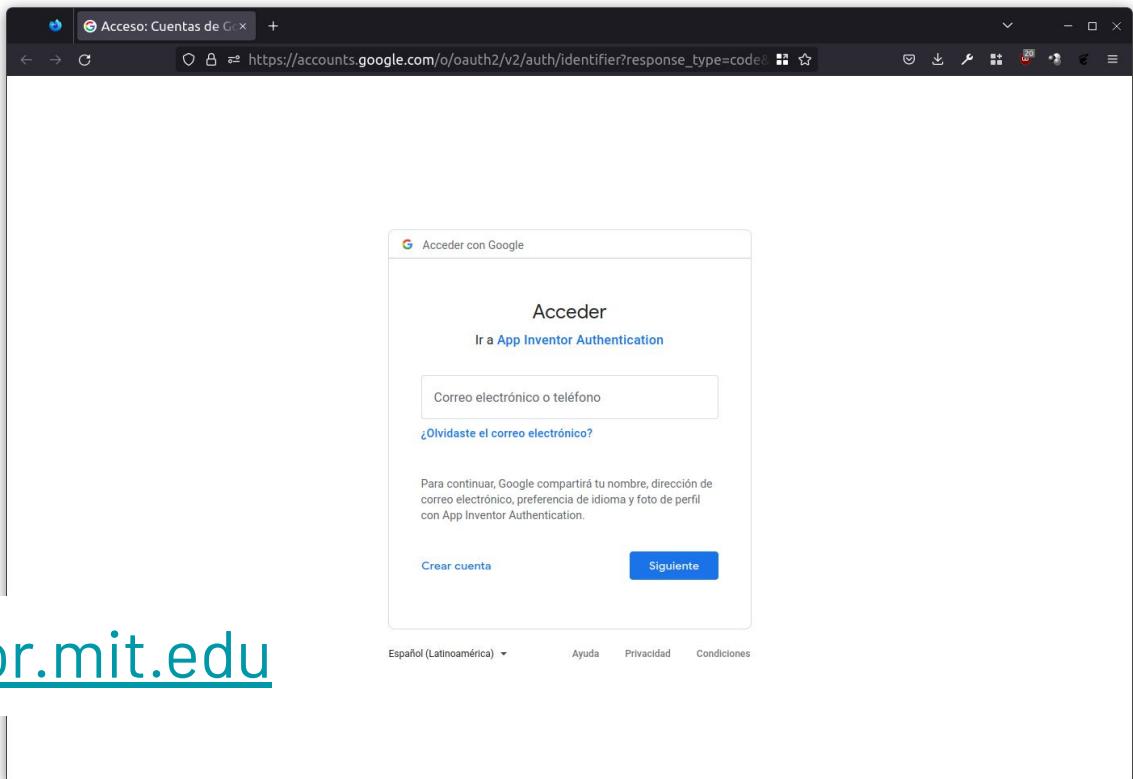
MIT App Inventor 2

Comenzar aquí

The screenshot shows the homepage of the MIT App Inventor 2 website. At the top, there is a navigation bar with links for 'Create Apps!', 'About', 'Educators', 'News', 'Resources', 'Blogs', 'Give', and a 'Give' button. Below the navigation bar, a large banner features the text 'Anyone Can Create iPhone and Android Apps with Global Impact' and a 'Get Started' button. To the right of the banner, there is a photograph of two people working on laptops. The bottom of the page displays four statistics: 'USERS TODAY: 113.2K', 'USERS THIS MONTH: 1.0M', 'ALL-TIME USERS: 14.9M', and 'APPS BUILT: 67.8M'. The overall design is purple and yellow.

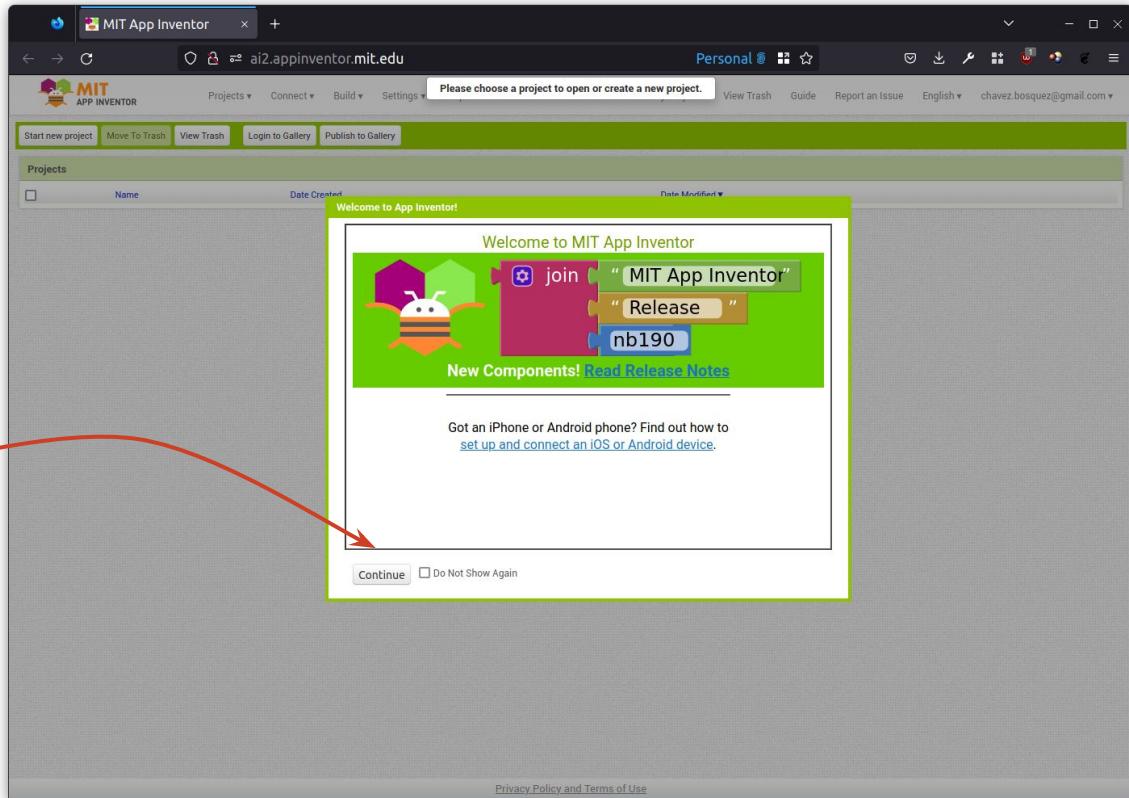
<https://appinventor.mit.edu>

Iniciar sesión con su correo de GMail



<http://ai2.appinventor.mit.edu>

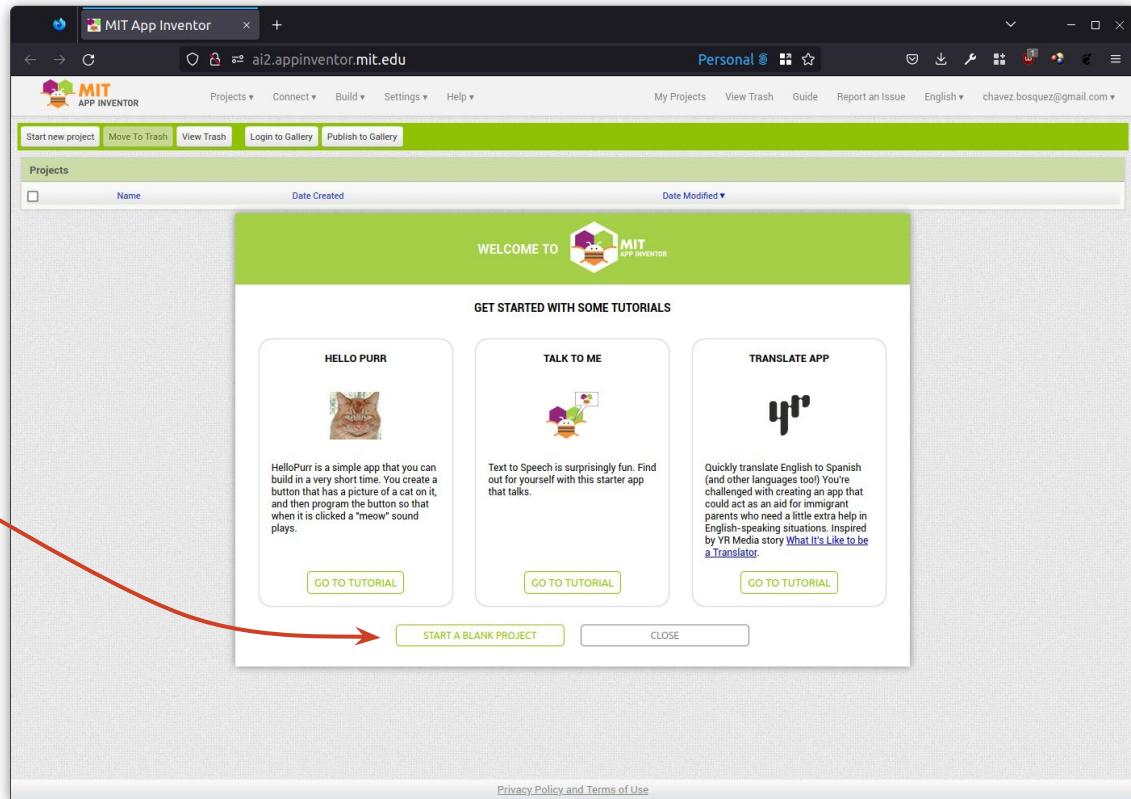
Pantalla de bienvenida



Continuar

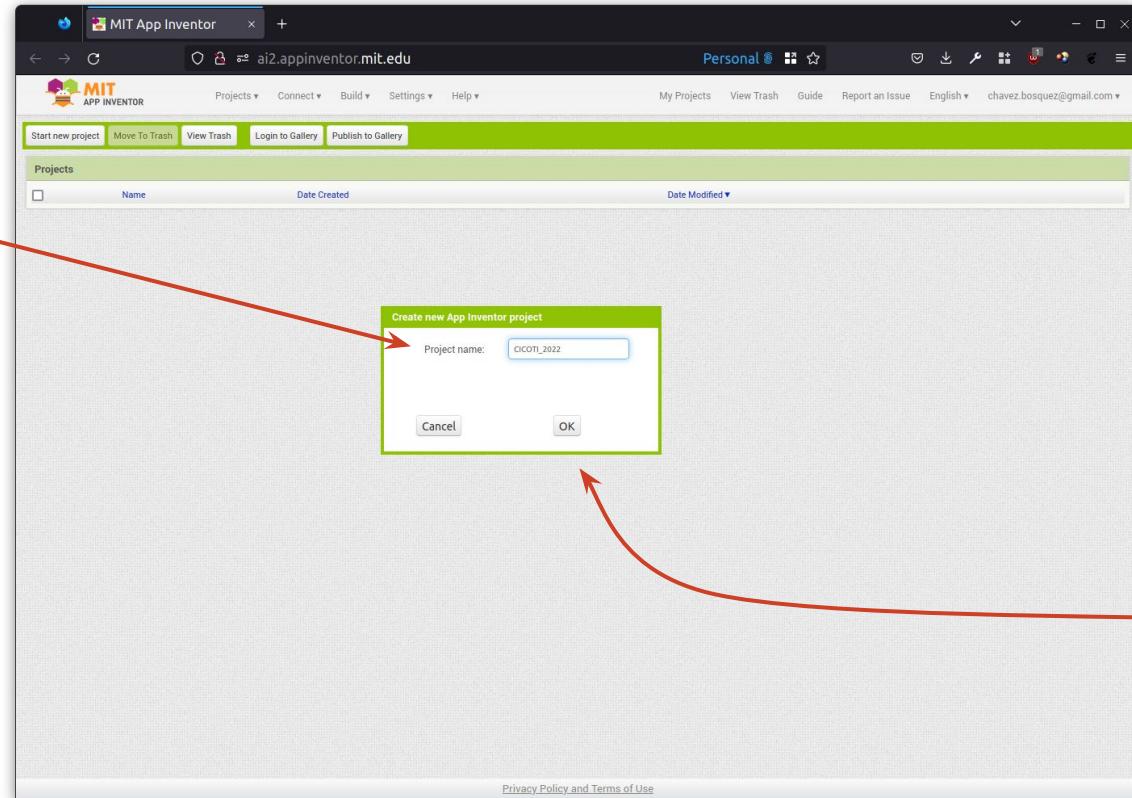
Nuevo proyecto

Iniciar proyecto en blanco



Nombre del proyecto

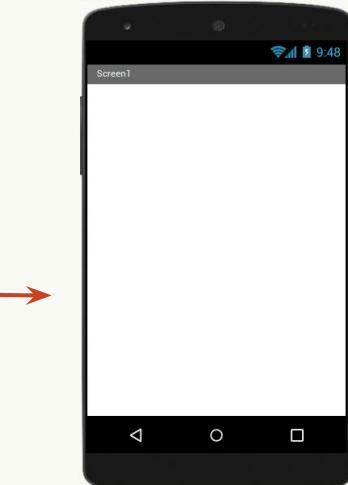
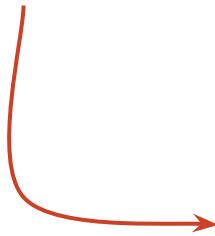
Nombre del
proyecto



Continuar

App inventor UI - Modo diseño

Paleta de componentes



Visor



Components

Properties

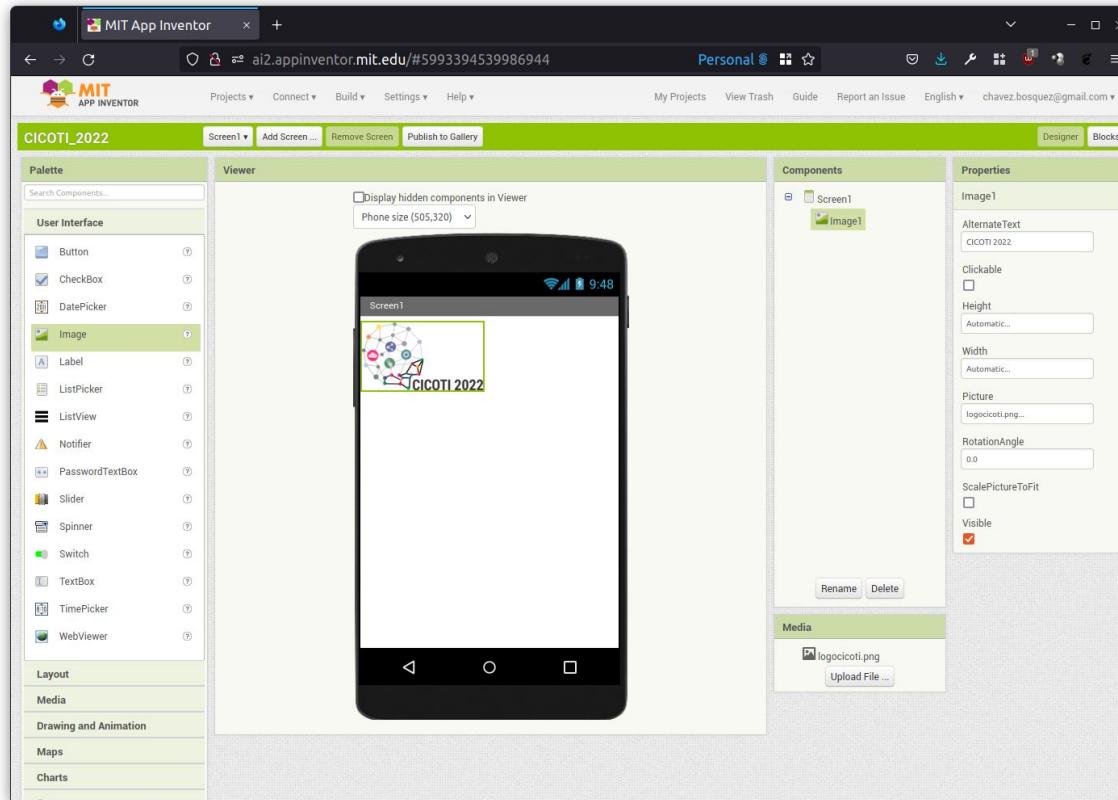
Diseño / Código

Propiedades

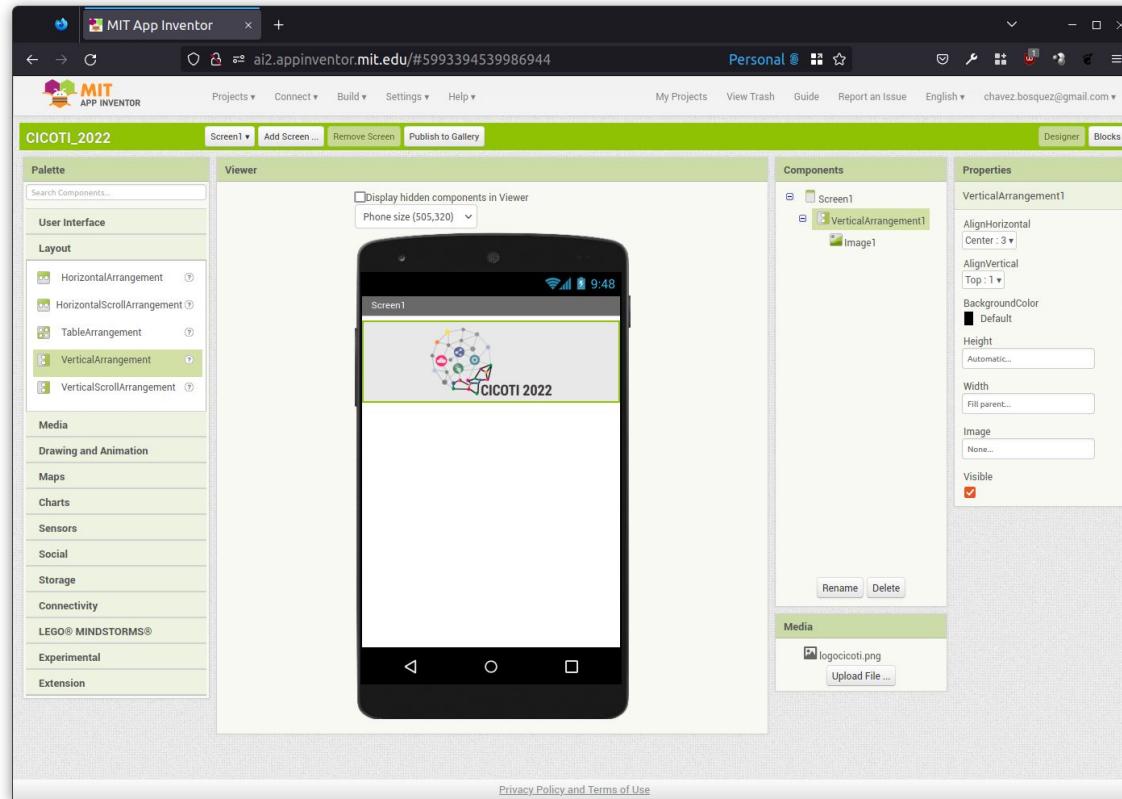
Componentes



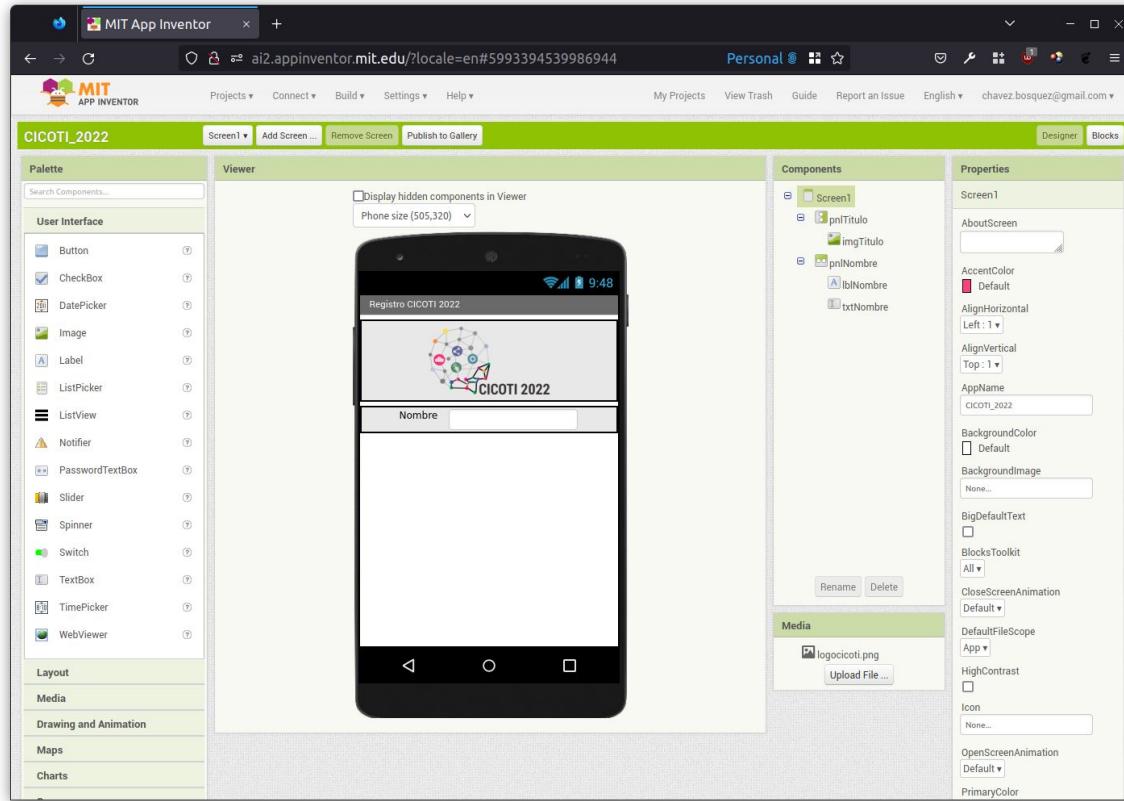
Comenzamos la app agregando una imagen



Centrando la imagen



Agregando componentes



Más componentes

The screenshot shows the MIT App Inventor development environment. On the left is the 'Palette' with categories like User Interface (Button, CheckBox, DatePicker, Image, Label, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox, TimePicker, WebViewer), Layout, Media, Drawing and Animation, Maps, Charts, Sensors, Social, Storage, and Connectivity. In the center is the 'Viewer' showing a smartphone screen with the app's UI. The UI includes a title 'Registro CICOTI 2022' with a logo, a form with fields for Nombre and Apellidos, gender selection (Femenino/Masculino), age (Edad), event (Evento), and a 'Registrarse' button. On the right is the 'Components' and 'Properties' panel for the 'btnRegistro' button. The 'Properties' panel shows settings like BackgroundColor (Default), Enabled (checked), FontBold (unchecked), FontItalic (unchecked), and FontSize (set to 18). A red arrow points from the text 'Asignar nombres adecuados!' to the 'Properties' panel. The URL in the browser bar is ai2.appinventor.mit.edu/#5993394539986944.

iAsignar nombres adecuados!

Contenido



1. Diseñando la app
2. ***Live testing***
3. Escribiendo código
4. Manejo de archivos
5. Base de datos en la nube

Live testing: <https://appinventor.mit.edu/explore/ai2/setup>

Option One - RECOMMENDED

Test your apps with an iPhone or Android phone and a Wi-Fi connection: [Instructions](#)

If you have a computer, a smartphone, and a Wi-Fi connection, this is the easiest way to create and test your apps. Simply install the MIT App Inventor companion app on your phone and test your apps through a Wi-Fi connection.



Option Two

Test your apps with a Chromebook: [Instructions](#)

Many Chromebooks are capable of running Android apps. That lets you create, test, and run the finished app on the same device.



Option Three

Don't have a device? Test apps with an emulator: [Instructions](#)

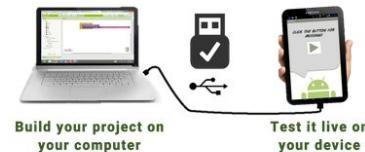
If you don't have a phone or tablet handy, you can still use App Inventor by installing the emulator software on your computer. Have a class of 30 students? Have them work primarily on emulators and share a few devices.



Option Four

No Wi-Fi? Test apps with an Android device and a USB Cable: [Instructions](#)

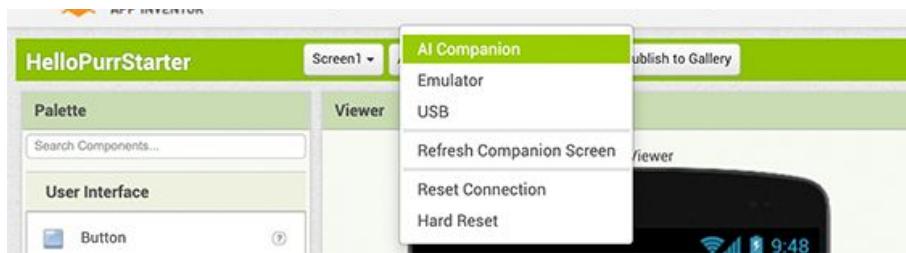
Some firewalls within schools and organizations do not allow the type of Wi-Fi connection required for App Inventor. If Wi-Fi doesn't work for you, try USB (Android only).



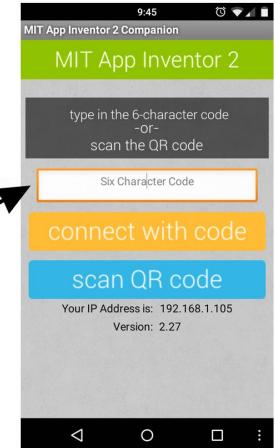
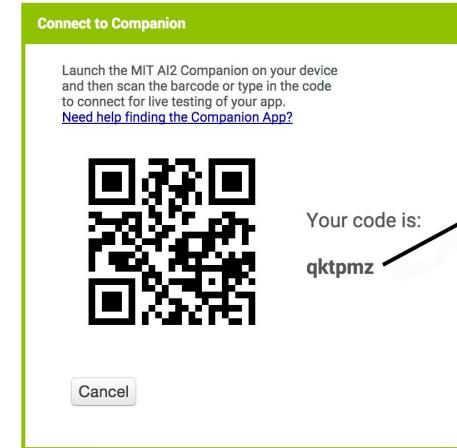
3 maneras de ejecutar la app

AI Companion (<http://appinventor.mit.edu/explore/ai2/setup-device-wifi>):

1. Conectar la PC y el smartphone a la misma WiFi
2. Instalar  MIT AI2 Companion desde la Google Play
3. Desde App Inventor ejecutar en el menú Connect → AI Companion:



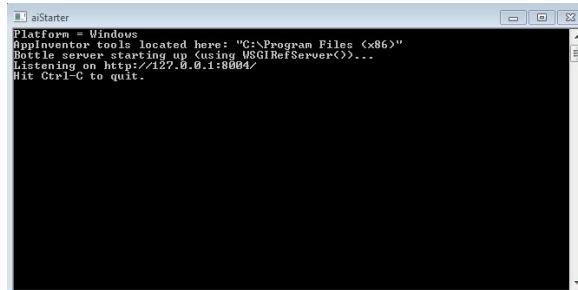
4. Ejecutar la app MIT AI2 Companion y seleccionar Scan QR code:



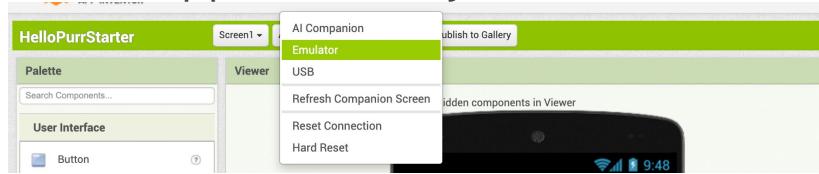
3 maneras de ejecutar la app

Emulator (<https://appinventor.mit.edu/explore/ai2/setup-emulator.html>):

1. Instalar el emulador: https://appinv.us/aisetup_win_30_265.exe (~1.5 GB)
2. Ejecutar *aiStarter*:



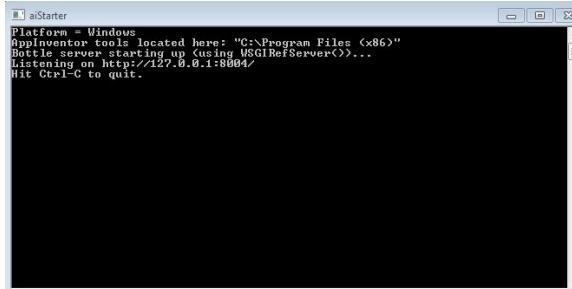
3. ¿Funciona? <http://appinventor.mit.edu/test>
4. Desde App Inventor ejecutar en el menú Connect → AI Companion:



3 maneras de ejecutar la app

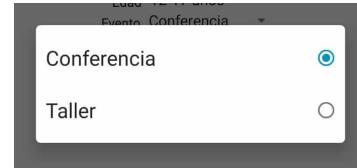
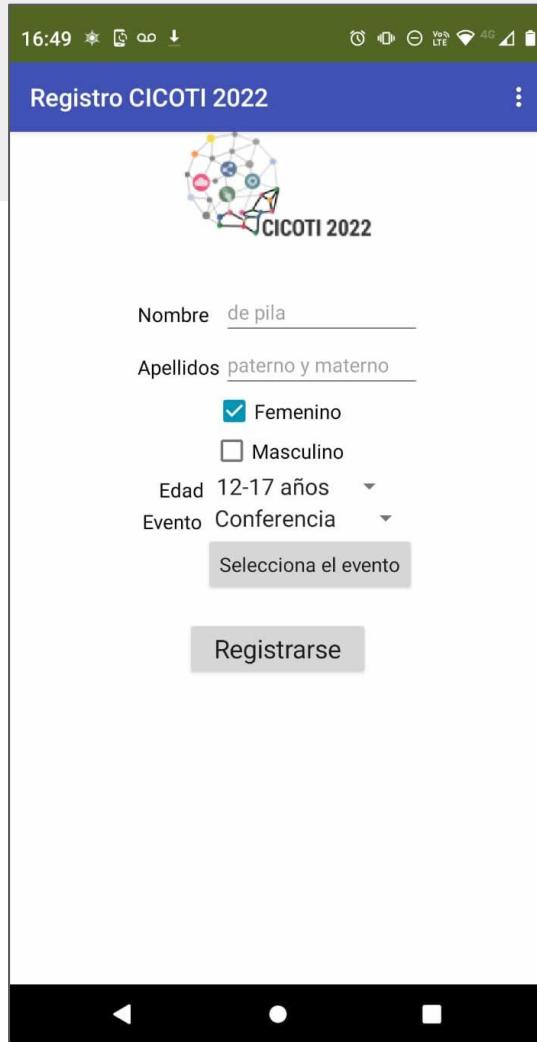
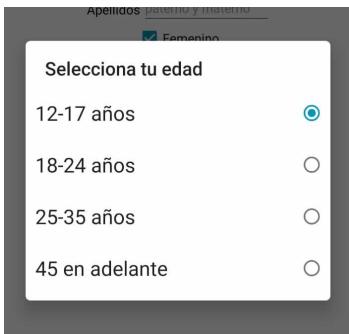
USB (<https://appinventor.mit.edu/explore/ai2/setup-device-usb>):

1. Instalar el emulador: https://appinv.us/aisetup_win_30_265.exe (~1.5 GB)
2. Instalar  [MIT AI2 Companion](#) desde la Google Play
3. Ejecutar aiStarter:



4. Configurar smartphone SB Debugging ON
5. ¿Funciona? <http://appinventor.mit.edu/test>

App en ejecución



Contenido



1. Diseñando la app
2. *Live testing*
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Funcionalidad - Modo bloques

The screenshot shows the MIT App Inventor interface. The top bar displays the URL ai2.appinventor.mit.edu/#5993394539986944. The main area is titled "CICOTI_2022". On the left, the "Blocks" palette is open, showing categories like Text, Lists, Dictionaries, Colors, Variables, Procedures, and Screen1. The "Screen1" category is expanded, showing components: pnITitulo, pnSeparador1, pnNombre, pnGenero, and pnEdad. Inside "pnGenero", there are two checkboxes: chkFemenino and chkMasculino. The "Media" category is also visible. On the right, the "Viewer" pane shows two blocks of code:

```
when chkFemenino .Changed
do if chkFemenino . Checked = true
then set chkMasculino . Checked to false
```

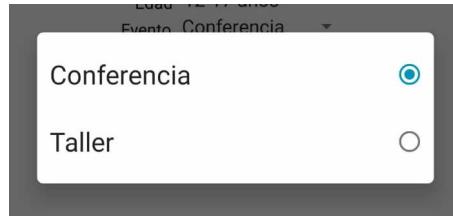
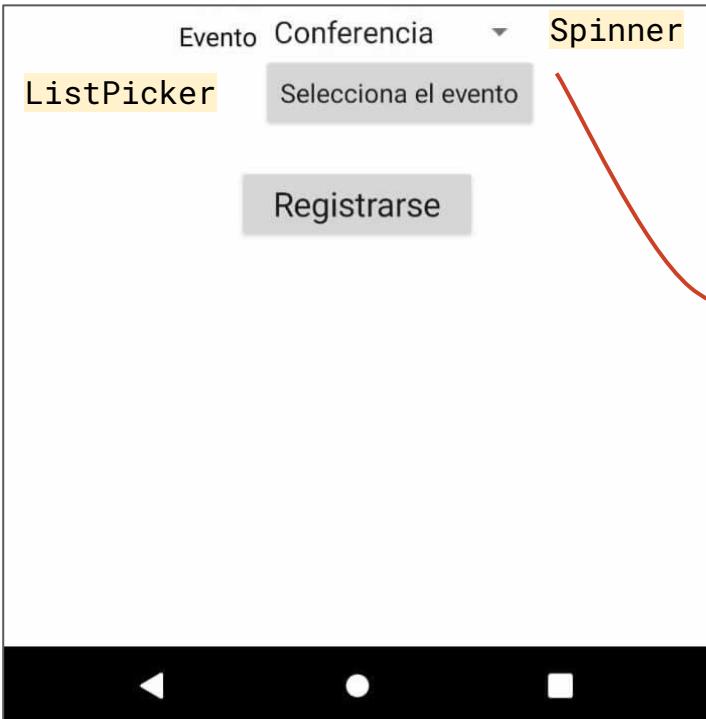
```
when chkMasculino .Changed
do if chkMasculino . Checked = true
then set chkFemenino . Checked to false
```

Below the blocks, there are status indicators for warnings and errors, and a "Show Warnings" button. The bottom of the screen includes links for "Privacy Policy and Terms of Use".

Simulando un *radio button* en App Inventor

Iniciar uno de los 2 *check boxes* como True

Tipos de eventos



Dependiendo el tipo de evento {Conferencia, Taller} seleccionado en el **Spinner**, mostrar la lista correspondiente de eventos en el **ListPicker**

Conferencias	Talleres
Machine Learning y Deep Learning	Desarrollo rápido de aplicaciones para Android
Diseño de juegos para la enseñanza de Ingeniería de Software	...
...	...

Contenido



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Manejo de archivos

Archivo: **conferencias.text**

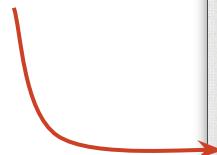
1. Reglas de Asociación para análisis de bacterias coexistentes detonadoras de Vaginosis Bacteriana
2. Plataforma tecnológica para el monitoreo de inundaciones repentinas, calidad del aire y agua utilizando el internet de las cosas (IoT)
3. Machine Learning y Deep Learning
4. Diseño de juegos para la enseñanza de Ingeniería de Software
5. Copernicus, datos abiertos y servicios de teledetección regionales y globales
6. Competitividad Tecnológica en la industria MiPyme en el Sureste Mexicano

Archivo: **talleres.text**

1. Uso de Google Earth Engine e Inteligencia Artificial para el monitoreo ambiental
2. Como entrenar un clasificador de imágenes usando Deep Learning
3. Exploración gráfica de datasets
4. Desarrollo rápido de aplicaciones para Android
5. Visión computacional con NAO
6. Programación de videojuegos
7. ¡Flutter! Crea apps NATIVAS, rápidas y hermosas (y diviértase haciéndolo) para iOS y Android
8. Diseño de juegos serios para la enseñanza de Ingeniería de Software

Manejo de archivos en App Inventor

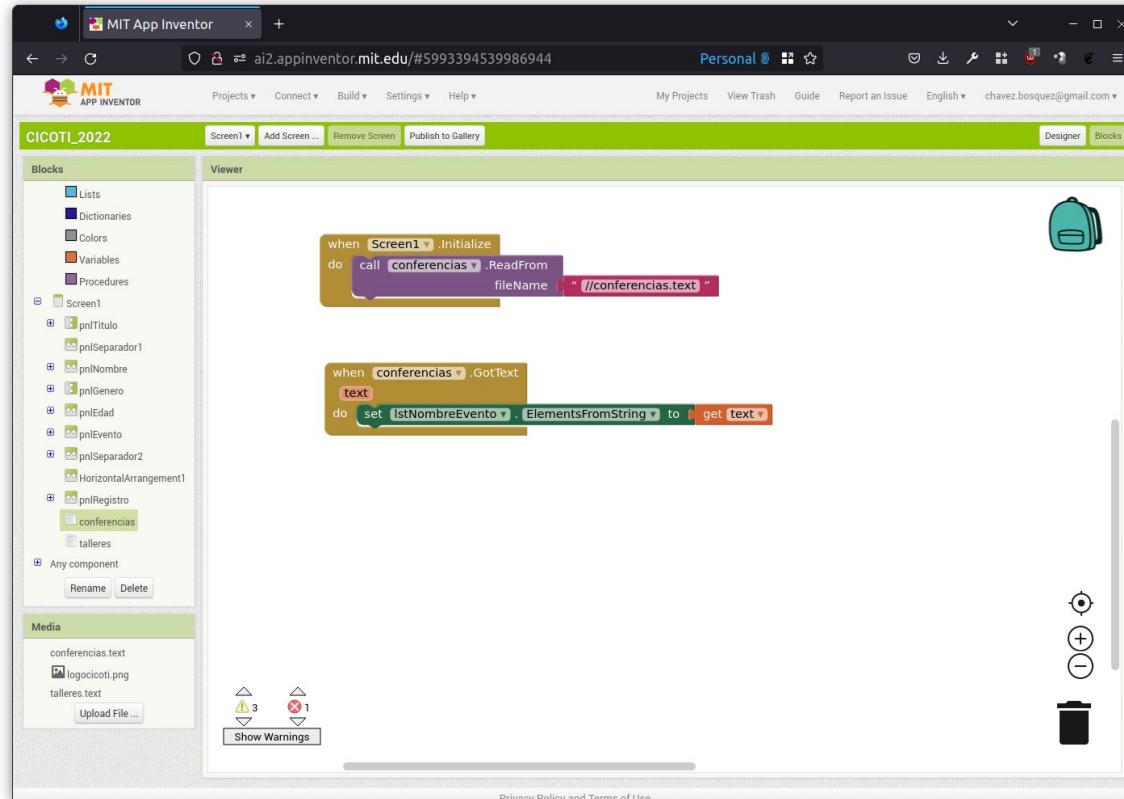
Componente File



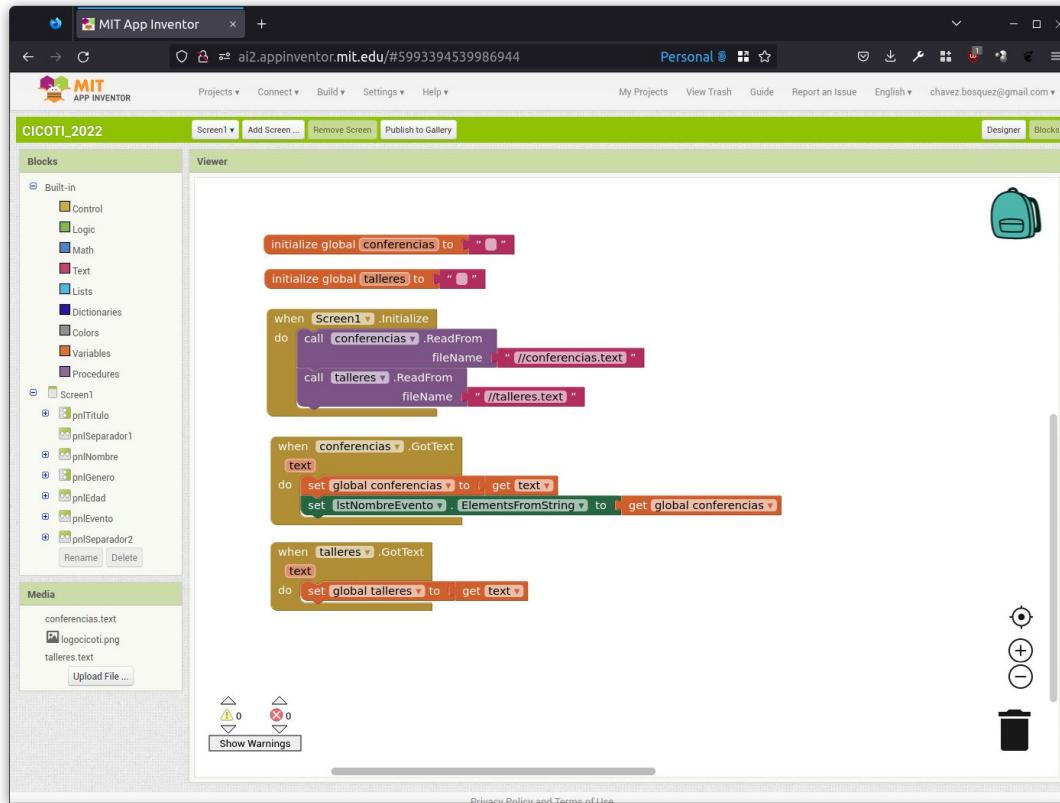
The screenshot illustrates the MIT App Inventor development environment. On the left, the component palette lists various components under categories such as User Interface, Storage, Connectivity, and Extension. A red arrow points from the text "Componente File" to the "File" component in the palette. The central area shows a smartphone screen displaying a registration form titled "Registro CICOTI 2022". The form includes fields for Name (Nombre, Apellidos), Gender (with "Femenino" checked and "Masculino" uncheckable), Age (Edad), Event (Evento), and a registration button (Registrarse). Below the phone screen, the "Non-visible components" section lists "conferencias" and "talleres". The right side of the interface shows the component tree and the media panel, which contains three files: "conferencias.text", "logocicoti.png", and "talleres.text". A red arrow points from the text "Dos archivos" to the media panel.

Dos archivos

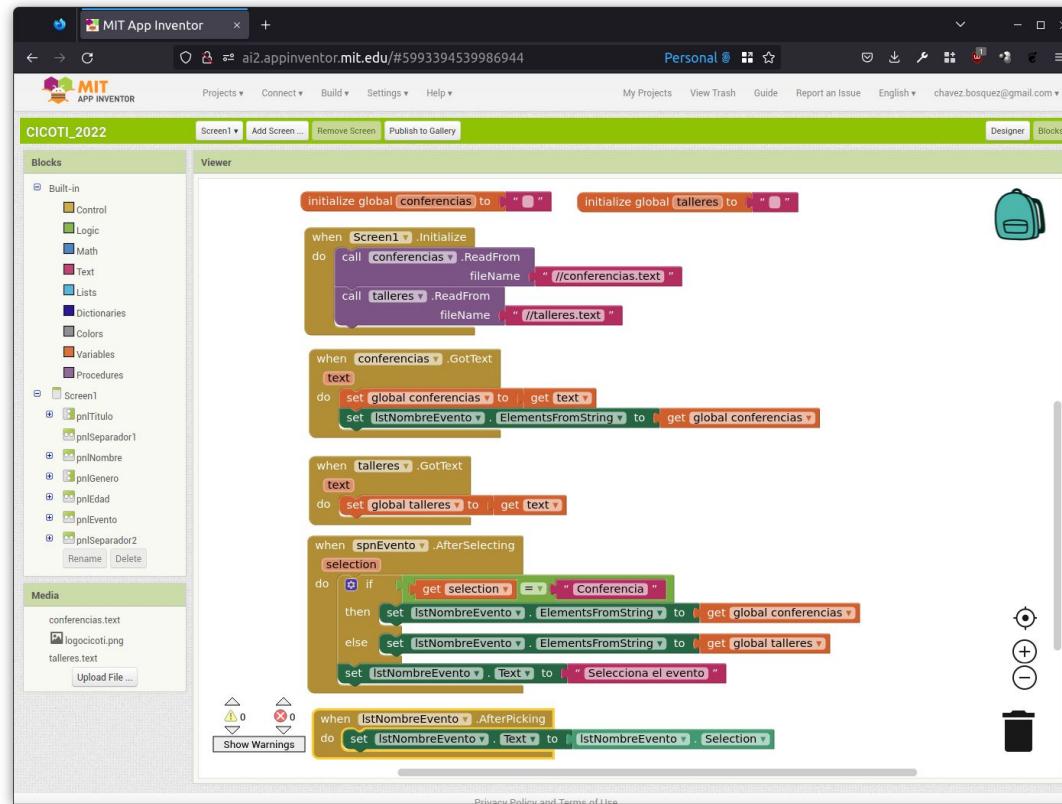
Manejo de archivos en App Inventor



Cargando archivos



Manejo del tipo de evento



Ejecutando la app

Contenido



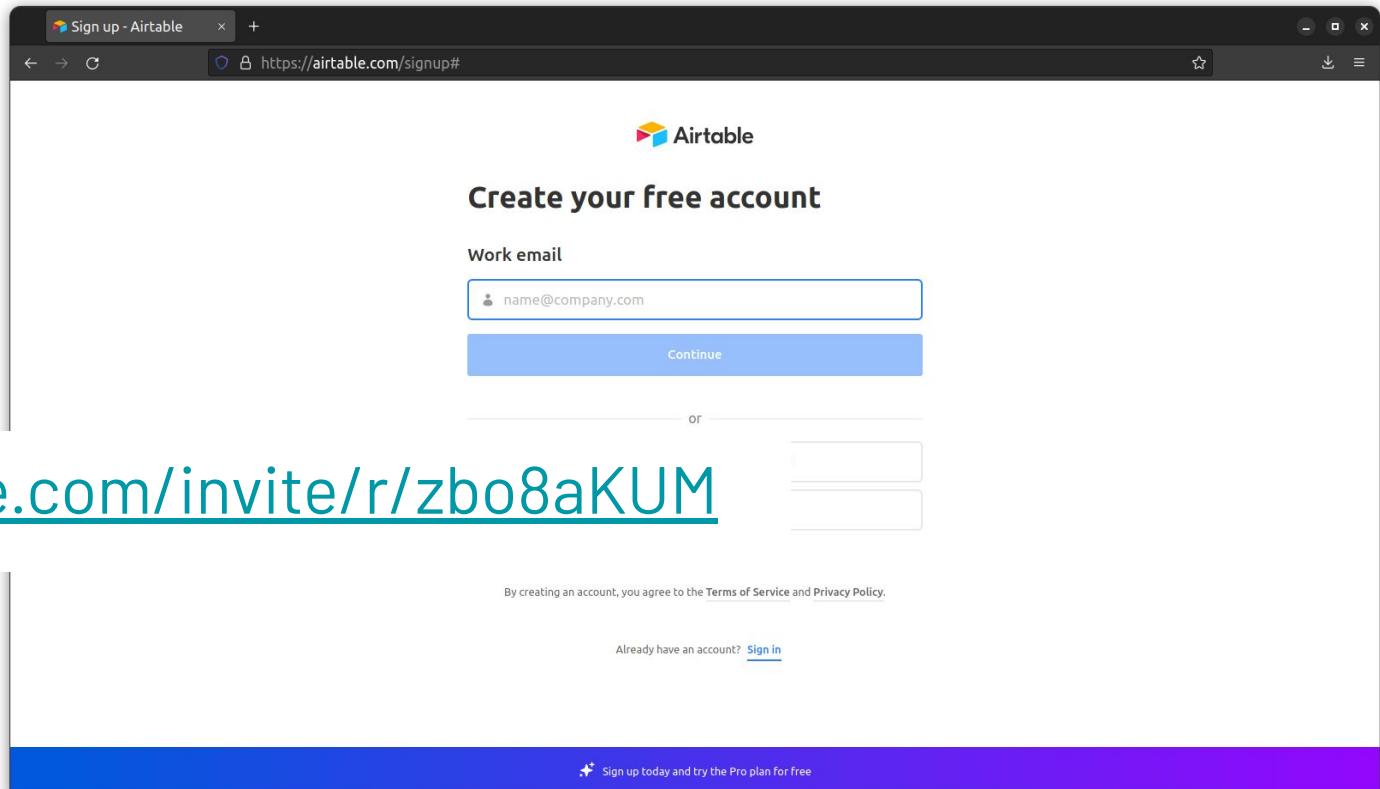
1. Diseñando la app
2. *Live testing*
3. Escribiendo código
4. Manejo de archivos
5. **Base de datos en la nube**

Base de datos en la nube

The screenshot shows the Airtable website (<https://www.airtable.com>) with a focus on its cloud integration features. The main interface displays a "Product Management" base titled "Customer Feedback". The table has columns for "Title", "Priority", "Source", and "Actions". Several rows of feedback are listed, each with a "Create Jira issue" checkbox and a "Open in Jira" button. To the left of the table, there are icons for Microsoft Office 365, Zendesk, Google Drive, and a dotted line indicating integration. To the right, there are icons for GitHub, a blue diamond shape, Salesforce, and Google Sheets, also connected by dotted lines. The top navigation bar includes links for Product, Solutions, Pricing, Enterprise, Resources, Contact sales, Sign up for free, and Sign in.

<https://www.airtable.com>

Registrarse



<https://airtable.com/invite/r/zbo8aKUM>

Crear la base de datos

The screenshot shows the Airtable homepage with the following elements:

- Upgrade to Pro before your trial expires:** A callout box listing features like multiple extensions per base, more sync integrations, and more record limits.
- Bases de datos**: The workspace name, with a "Pro trial 11 days left" badge.
- Verification Message:** "Please verify your email address by clicking the link sent to chavez.bosquez@gmail.com." with a "Resend verification email" button.
- Workspace List:** Shows three databases: "datos_vic" (blue icon), "cicoti" (grey icon), and "Add a base" (grey plus icon).
- Navigation:** Includes a search bar ("Find a base or interface"), a sidebar with "Interfaces", "WORKSPACES" (listing "Bases de datos" and "Add a workspace"), and "LEARNING AND RESOURCES" (listing "Guide to Airtable", "Contact sales", "Webinars", and "Help center").
- Action Buttons:** Three large cards for database creation:
 - Start from scratch**: Green button with a green plus sign.
 - Quickly upload**: Blue button with a blue upward arrow.
 - Start with templates**: Button with four small icons: a rocket, a gear, a rocket, and a thumbs up.

Base de datos cicoti - Tabla asistentes

The screenshot shows the Airtable interface for the 'cicoti' base, specifically the 'asistentes' table. The table has two columns: 'nombre' (primary field) and 'apellidos'. A modal window titled 'Campo clave' is open, showing the configuration for the 'nombre' field. The field type is set to 'Single line text'. The description below the field states: 'This is the table's primary field. It cannot be hidden or moved. The name is meant to be a short, unique representation of each record in your table.' Buttons for '+ Add description', 'Cancel', and 'Save' are visible at the bottom of the modal. The main table view shows three records with placeholder names. The Airtable navigation bar includes 'Data', 'Automations', and 'Interfaces'. The top right corner shows a 'Getting started' sidebar with import options for Google Sheets, Excel, and CSV/Other, and a 'Check out our templates' section for Product Roadmap, Bug Tracker, Product Launch, User Research, and Agile Workflow.

Campo clave

A nombre

A apellidos

This is the table's primary field. It cannot be hidden or moved. The name is meant to be a short, unique representation of each record in your table.

A Single line text

single line of text.

+ Add description Cancel Save

Share view

evento

nombre_evento

Getting started

Import your work

Get started with Airtable right where you left off, with one of the following tools:

- Google Sheets
- Excel
- Paste data
- CSV / Other

or

Check out our templates

Looking for a head start? Our recommended templates will help build your base quickly.

Find another template

Recommended based on your team

- Product Roadmap
- Bug Tracker
- Product Launch
- User Research
- Agile Workflow

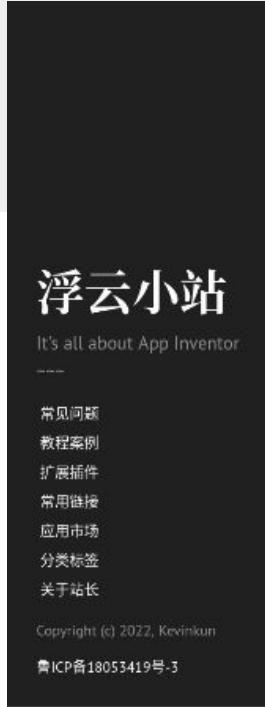
Restart from scratch

Need help? Check out our helpful resources.

Agregar los demás campos

The screenshot shows the Airtable interface for a base named "cicoti: asistentes". A modal window titled "Campo con valores limitados" (Limited value field) is open, displaying a "Single select" configuration. The field name is "genero". The modal lists two options: "Femenino" and "Masculino", both with small dropdown arrows next to them. Below the options are buttons for "+ Add an option", "+ Add description", "Cancel", and "Save". A note at the bottom of the modal says "+ Add a Kanban view organized by this field". The background shows a grid view with three records labeled 1, 2, and 3. The top navigation bar includes "Data", "Automations", and "Interfaces". On the right side, there's a "Getting started" sidebar with sections for "Import your work", "Check out our templates", and "Recommended based on your team".

Extensión App Inventor



<https://kevinkun.cn/airtable/>

Airtable extension

2022-09-16 15:21 | 阅读量: 47 | 标签: extension, database, airtable

Why another extension about Airtable? Because this one is different. This one can select/ insert/ update/ delete according to your filter/condition.

V2 Update history 2020/12/24

- fix bug of 'can not update value with space'; now in the formula, use " and " to quote the value with space.
- add property of FetchAndTime. if set to true, in the SelectFinished event you will get 'id' and 'createdTime' for each record.

set `KevinkunAirtable1` .FetchAndTime to `(true)`

- add method 'UpdateById' and 'DeleteById' for update or delete one record, which is faster than by filter.

call `KevinkunAirtable1` .UpdateById
 `id` `data`

call `KevinkunAirtable1` .DeleteById
 `id`

V1:

Add a picture of all the blocks

Initialize the extension

```
when Screen1.Initialize
do
    set KevinkunAirtable1 . API Key to "Your API Key"
    set KevinkunAirtable1 . BaseID to "Your Base ID"
    set KevinkunAirtable1 . TableName to "Your Table name"
```

Same like other Airtable component, get your API Key, BaseId, TableName from the airtable website.

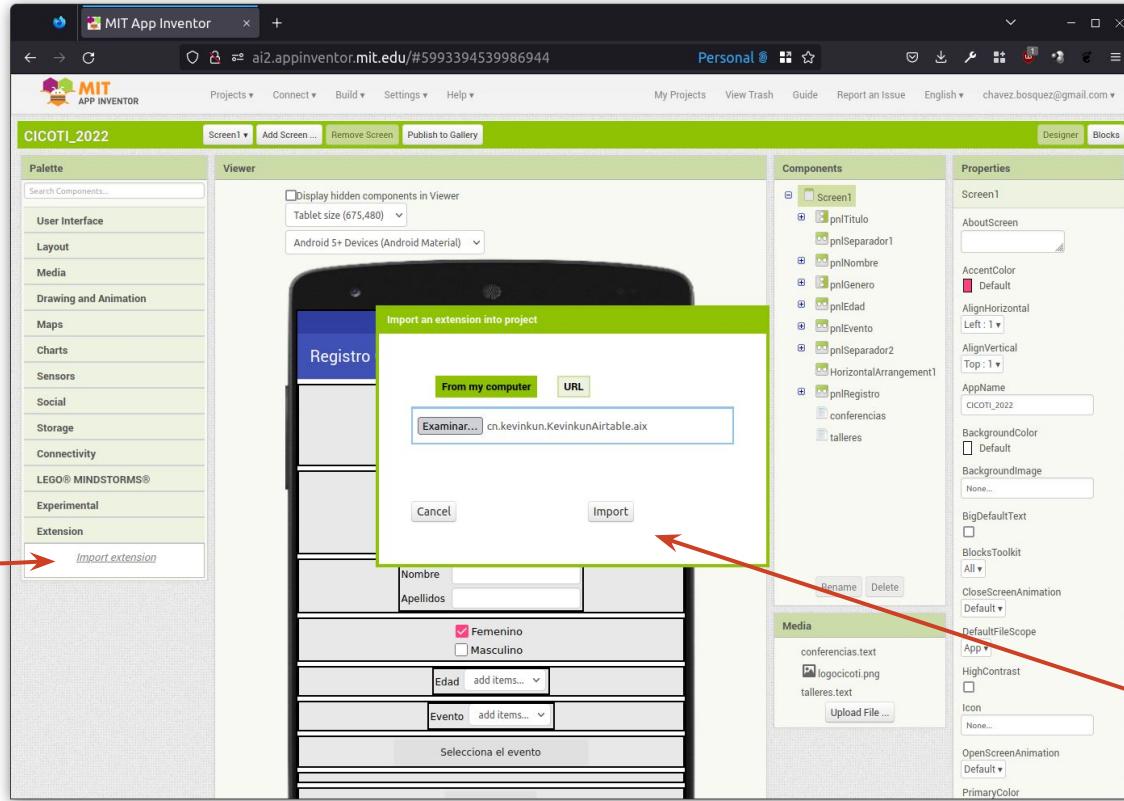
Select records

```
call KevinkunAirtable1 .Select
    fields
    filter
    pageSize
    offset
    sort
```

when `KevinkunAirtable1` .SelectFinished

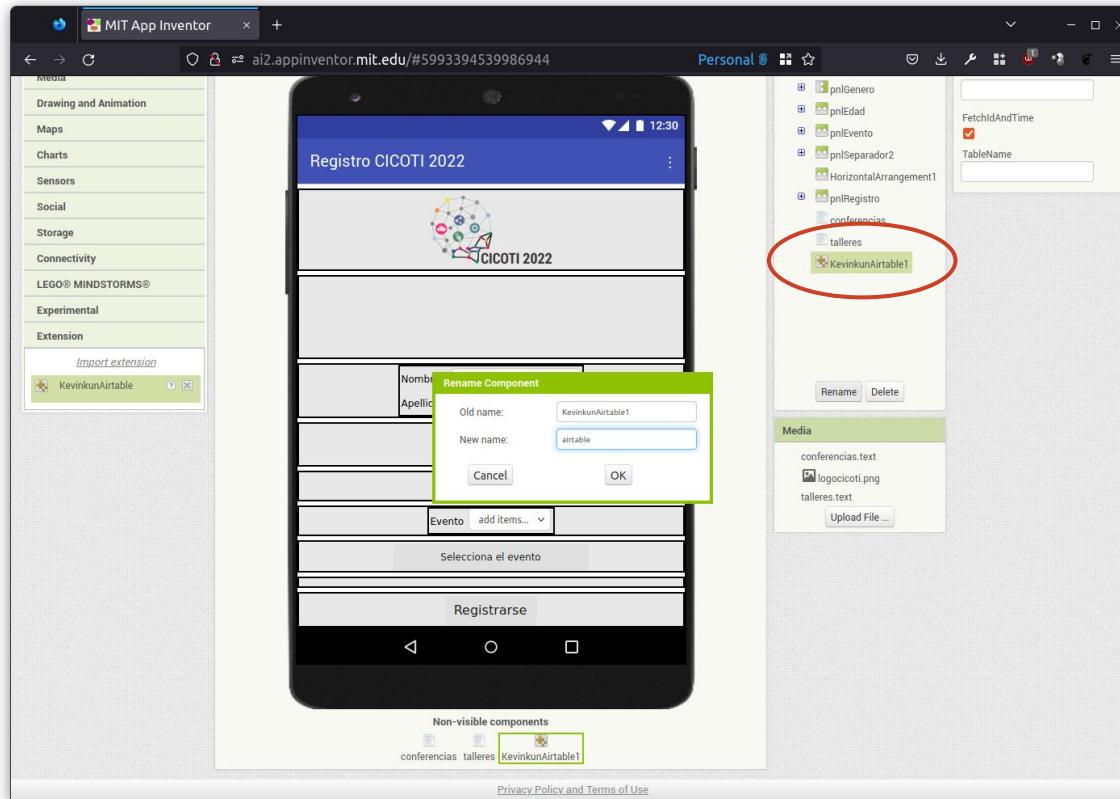
Instalando la extensión en App Inventor

Paso 1



Paso 2

Configurando el componente en App Inventor



Configurando la API de Airtable

A screenshot of the Airtable mobile application interface. At the top, there's a header bar with icons for Help, Notifications (showing 14 days left on Pro), Share, and a user profile. Below the header is a search bar with the email address "chavez.bosquez@gmail.com". A red circle highlights the "Account" option in the navigation menu, which is currently selected. Other menu items include "Notification preferences", "Contact sales", "Upgrade", "Tell a friend", "Connected accounts", and "Log out". At the bottom of the screen, there's a "Getting started" button.

A screenshot of the Airtable account overview page. The URL in the browser is https://airtable.com/account. The page features a sidebar on the left with sections for ACCOUNT (Overview, Referrals and credits, Recent activity), WORKSPACES (Bases de datos), and CREDITS (You have \$0 in credit). The main content area is titled "Account overview" and shows the user's profile picture and name, Oscar Chávez-Bosquez, along with links to edit name and email, and to update password and set up two-factor authentication. A red circle highlights the "Generate API key" button under the API section. Below the API section, there's a "GOOGLE CONTACTS INTEGRATION" section with a toggle switch for "Allow Airtable to import your Google Contacts." and a "GOOGLE DRIVE INTEGRATION" section with a toggle switch for "Link your Airtable account to Google Drive."

Copiar la API key

The screenshot shows the 'Account overview' page in Airtable. On the left, there's a sidebar with 'ACCOUNT' and 'WORKSPACES' sections. Under 'ACCOUNT', there are links for 'Overview', 'Referrals and credits', and 'Recent activity'. Under 'WORKSPACES', there's a link for 'Bases de datos' which is currently selected, indicated by a yellow PRO PLAN badge.

The main content area is titled 'Account overview'. It displays the user's profile picture, name (Oscar Chávez-Bosquez), email (chavez.bosquez@gmail.com), and options to 'Edit name', 'Edit email', 'Update password', and 'Set up two-factor authentication'.

Below the profile, there's a section for 'CREDITS' with a note that the user has '\$0 in credit'. It offers incentives for inviting people and installing the mobile app.

The 'API' section is highlighted with a red oval. It explains that this is the personal API key required for using the Airtable API. It states that the key has access to all data in the user's bases and should only be shared with trusted third-party services. It also provides instructions for creating a read-only API key.

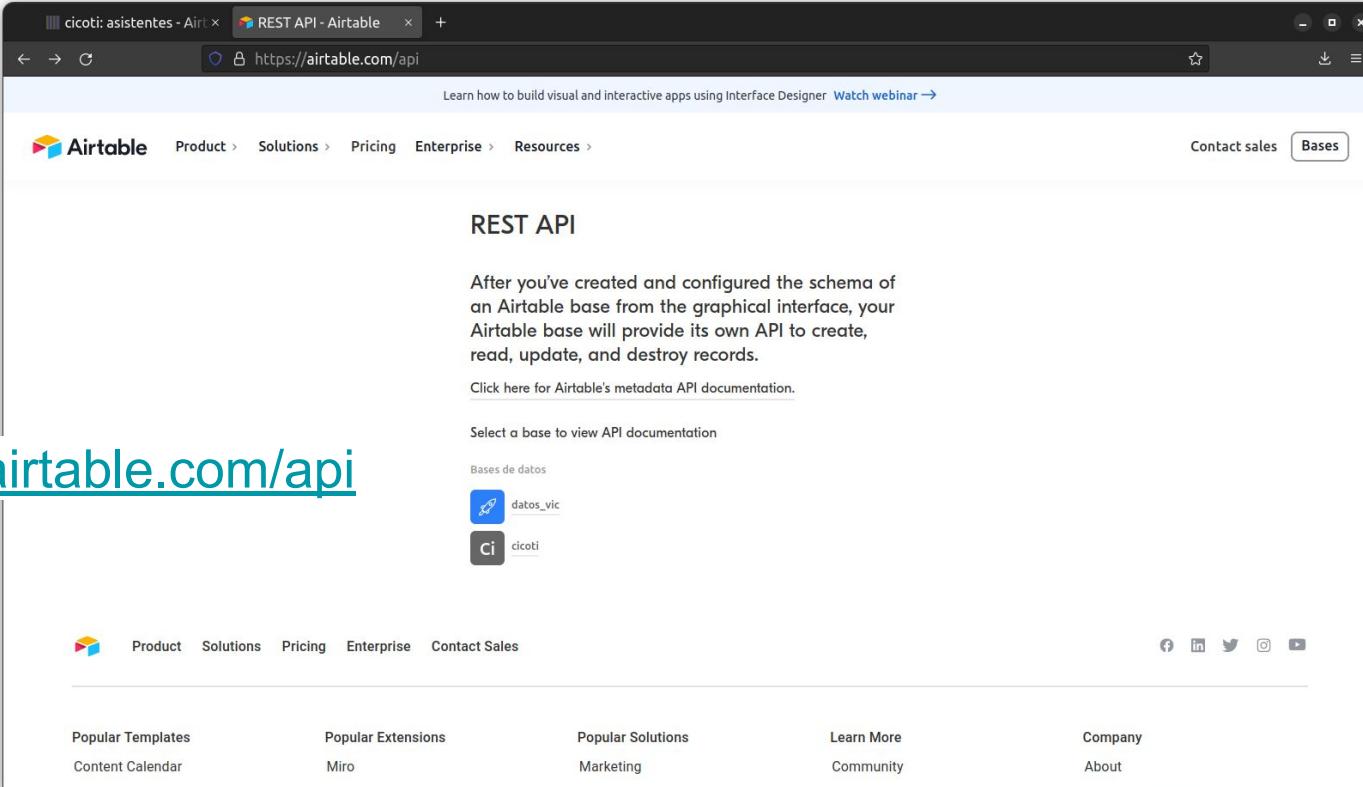
At the bottom of the API section, there's a button with a redacted API key value followed by 'Regenerate API key' and 'Delete key' buttons.

At the very bottom, there's a 'GOOGLE CONTACTS INTEGRATION' section with a checkbox for 'Allow Airtable to import your Google Contacts.' and a note about making it easy to invite contacts.

A large red oval highlights the redacted API key value.

Copiar la llave

Id de la base de datos



The screenshot shows a web browser window displaying the Airtable REST API documentation at <https://airtable.com/api>. The page header includes the Airtable logo and navigation links for Product, Solutions, Pricing, Enterprise, Resources, Contact sales, and Bases. A banner at the top right encourages users to "Watch webinar →". The main content area is titled "REST API" and explains that after creating and configuring a base schema, the Airtable base provides its own API for CRUD operations. It links to Airtable's metadata API documentation. Below this, a section titled "Select a base to view API documentation" lists two bases: "datos_vic" and "cicoti". At the bottom, there is a footer with links to Popular Templates (Content Calendar), Popular Extensions (Miro), Popular Solutions (Marketing), Learn More (Community), Company (About), and social media icons for Facebook, LinkedIn, Twitter, and YouTube.

<https://airtable.com/api>

REST API

After you've created and configured the schema of an Airtable base from the graphical interface, your Airtable base will provide its own API to create, read, update, and destroy records.

[Click here for Airtable's metadata API documentation.](#)

Select a base to view API documentation

Bases de datos

 [datos_vic](#)

 [cicoti](#)

Product Solutions Pricing Enterprise Contact Sales

Popular Templates Popular Extensions Popular Solutions Learn More Company

Content Calendar Miro Marketing Community About

Id de la base de datos

Copiar el id

The screenshot shows a web browser window with two tabs: 'cicoti: asistentes - Airtable' and 'Airtable API - cicoti'. The main content is the 'Airtable API for "cicoti"' documentation. On the left, there's a sidebar with navigation links: INTRODUCTION, METADATA, RATE LIMITS, AUTHENTICATION, ASISTENTES TABLE, and ERRORS. The 'INTRODUCTION' section contains text about integrating data and a note that the ID of the base is `appBEYDuOWPH0Jihq`. This ID is circled in red. Below it, there's a note about schema changes and a list of official and community-built API clients. The right side of the page has tabs for 'curl', 'JavaScript' (which is selected), and 'show API key'. At the bottom, there's a 'METADATA' section and a note about listing bases, tables, fields, and views.

The ID of this base is `appBEYDuOWPH0Jihq`.

Please note: if you make changes to a field's (column) name or type, the API interface for those fields will change correspondingly. Therefore, please make sure to update your API implementation accordingly whenever you make changes to your Airtable schema from the graphical interface.

Official API client:

- JavaScript: [airtable.js](#) (Node.js + browser)

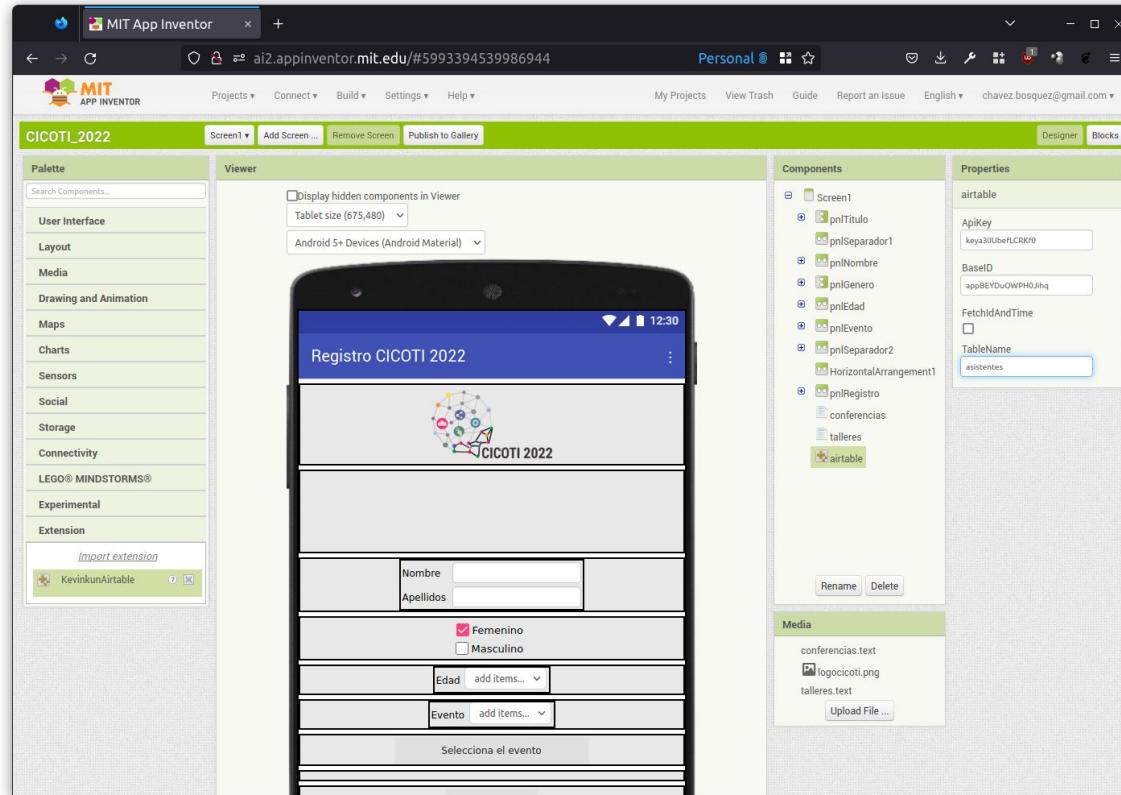
Community-built API clients:

- Ruby: [airrecord](#)
- .NET: [airtable.net](#)
- Python 3: [pyairtable](#)
- Python 2/3: [airtable.py](#)

METADATA

This API gives you the ability to list all of your bases, tables, fields, and views. You can [register](#) for access

Configuración de Airtable en App Inventor



¿Cómo se guardan los datos en Airtable?

Getting tag values indicated by

the "list" tag denotes an array that has 40 elements

1st

③ "temp": -5.88,
"temp_min": -5.88,
"temp_max": -4.6,
"pressure": 1020,
"sea_level": 1020,
"grnd_level": 1011,
"humidity": 68,
"temp_kf": -1.28

1st

④ "description": "light snow",
"icon": "13n"

② "dt_txt": "2019-12-05 12:00:00"

40th

① "name": "Sapporo-shi",
"coord": {
"lat": 43.0642,
"lon": 141.3469
},
"country": "JP",
"timezone": 32400,
"sunrise": 1575496191,
"sunset": 1575529220

```
{
  "cod": "200",
  "message": 0,
  "cnt": 40,
  "list": [
    {
      "dt": 1575547200,
      "main": {
        "temp": -5.88,
        "temp_min": -5.88,
        "temp_max": -4.6,
        "pressure": 1020,
        "sea_level": 1020,
        "grnd_level": 1011,
        "humidity": 68,
        "temp_kf": -1.28
      },
      "weather": [
        {
          "id": 600,
          "main": "Snow",
          "description": "light snow",
          "icon": "13n"
        }
      ],
      "clouds": {},
      "wind": {},
      "snow": {},
      "sys": {},
      "dt_txt": "2019-12-05 12:00:00"
    },
    ...
    {
      "dt": 1575968400,
      "main": {},
      "weather": [],
      "clouds": {},
      "wind": {},
      "sys": {},
      "dt_txt": "2019-12-10 09:00:00"
    }
  ]
}
```

Fig.1 Weather forecast JSON file from the OpenWeather

Formato JSON == Diccionario:

[http://ai2.appinventor.mit.edu/reference\(blocks/dictionaries.html](http://ai2.appinventor.mit.edu/reference(blocks/dictionaries.html)

Guardar datos del asistente

Componente
airtable

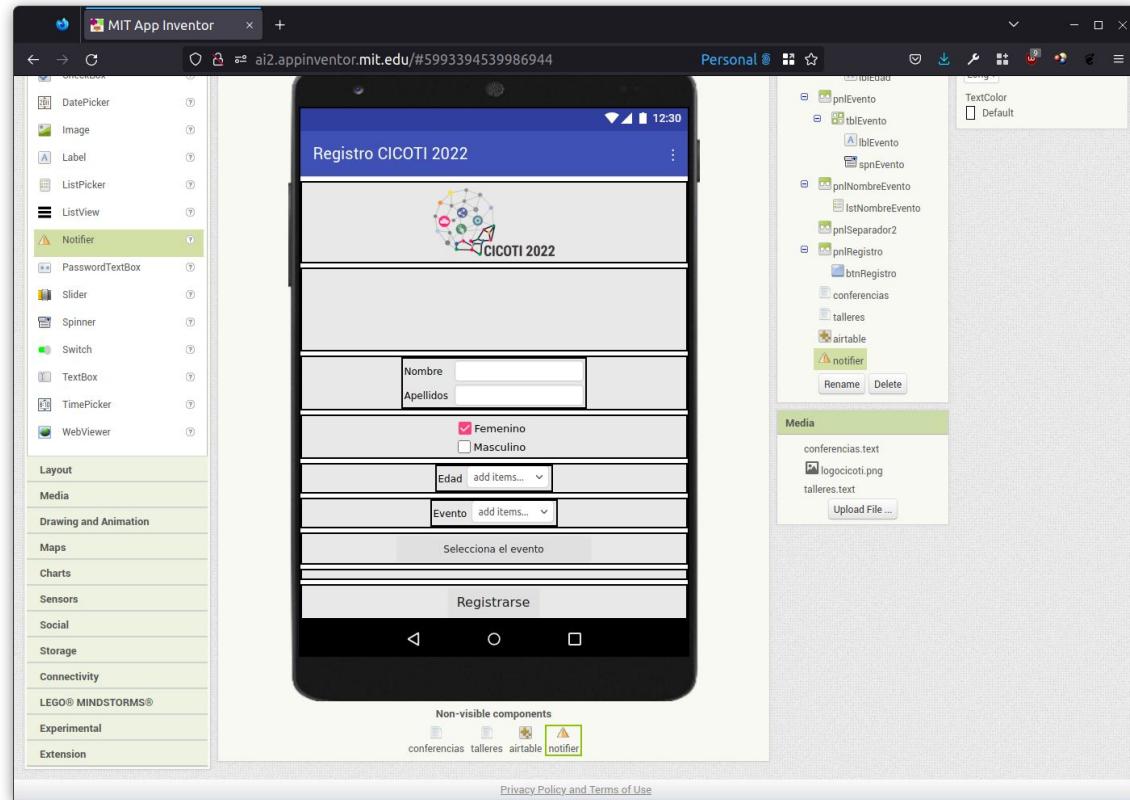


The screenshot shows the MIT App Inventor interface with the project 'CICOTI_2022'. In the Designer view, a script is attached to the 'btnRegistro.Click' event. The script starts with a 'when' block, followed by a 'do' block, which contains a 'call airtable .Insert' block. This call block has a parameter 'records' and a nested 'make a dictionary' block. The 'make a dictionary' block contains six key-value pairs:

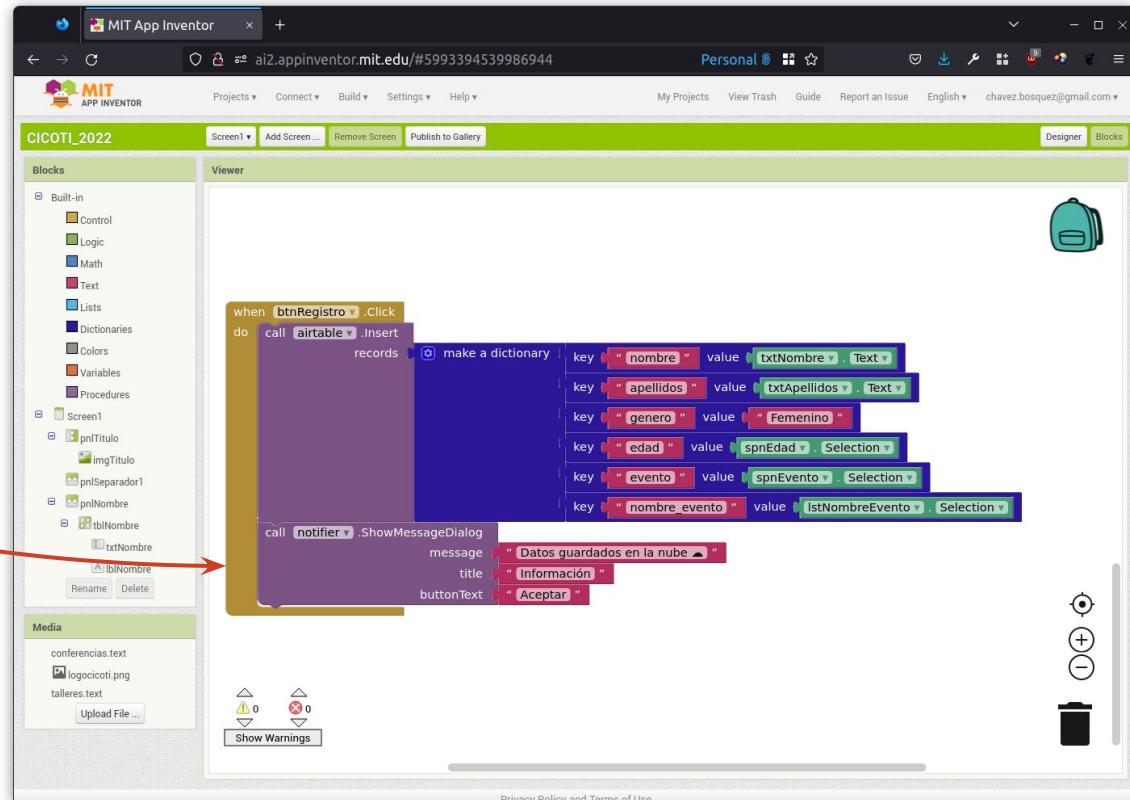
- key "nombre" value txtNombre . Text
- key "apellidos" value txtApellidos . Text
- key "genero" value "Femenino"
- key "edad" value spnEdad . Selection
- key "evento" value spnEvento . Selection
- key "nombre_evento" value lstNombreEvento . Selection

Componente
diccionario

Notificación del resultado



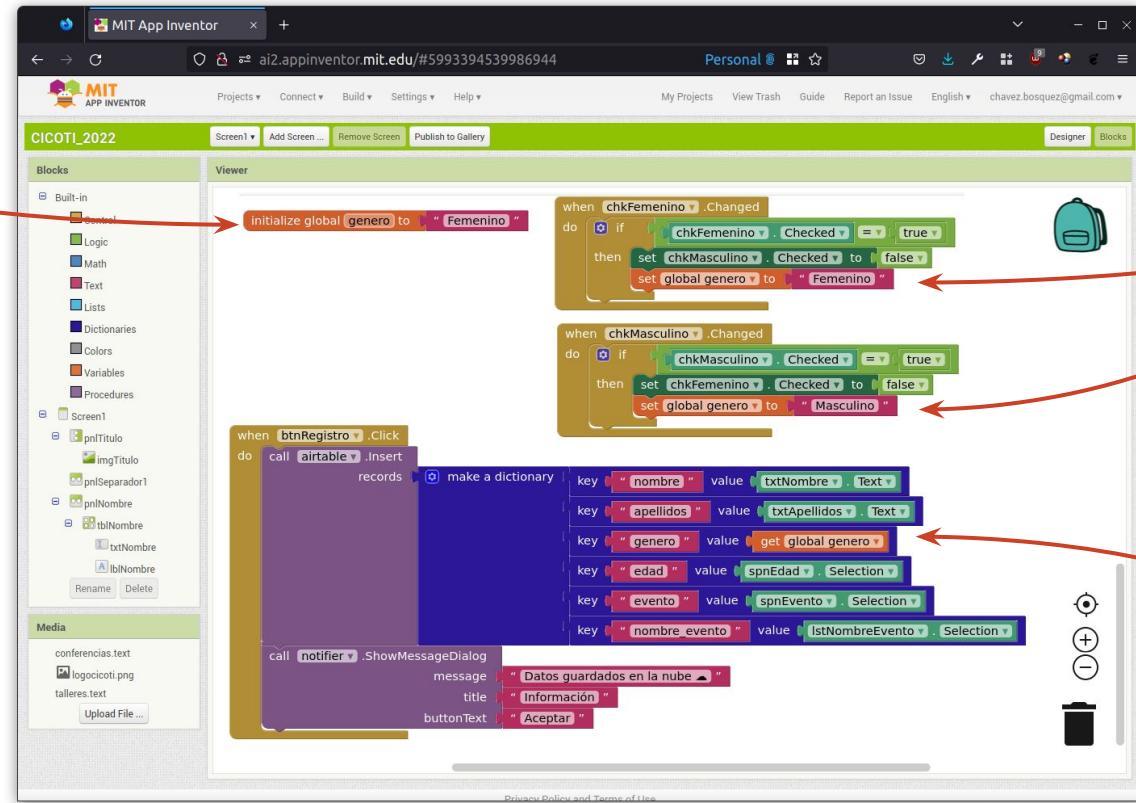
Notificación del resultado



Método
showMessageDialog

Guardar el registro completo

Variable genero



Actualizando la
variable

Guardando la
variable

¡Listo!

1. Desarrollamos la app en App Inventor
2. Usamos archivos de texto
3. Base de datos en Airtable
4. App CICOTI en el móvil 