



School of information engineering



Mobile application development



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## Lecture 018: APP Inventor \_Example

Review the example and introduce some tips and tricks

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Autumn \_2021



江西理工大学 信息工程学院



# MOBILE APPLICATION DEVELOPMENT

LECTURE 018:

**APP Inventor \_Example**

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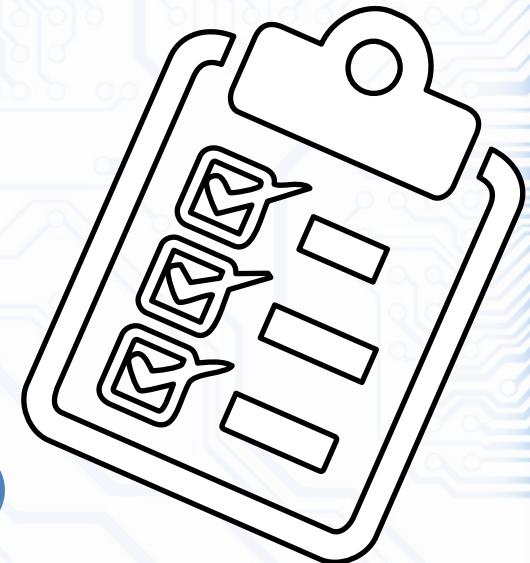
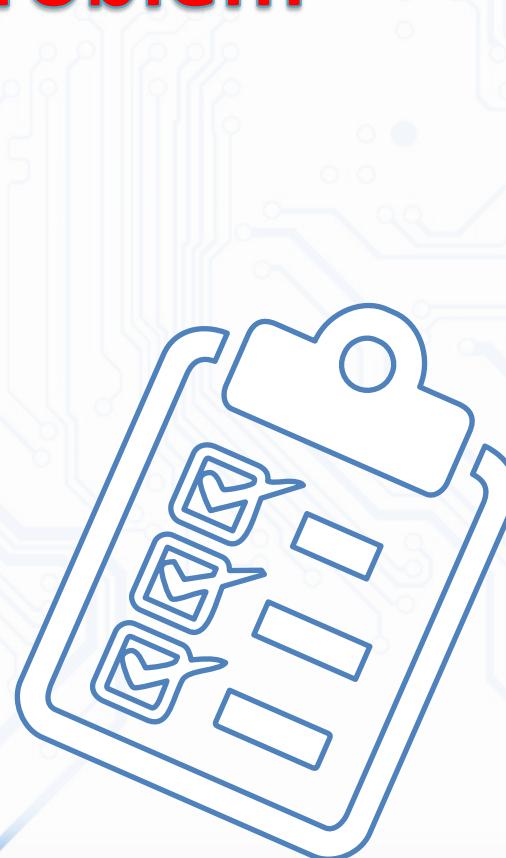
Review the example and introduce some tips and tricks



# Agenda

05 example+2 ( 3 example need your correction)

**Find the problem**





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Find the  
problem

# MOBILE APPLICATION DEVELOPMENT



Example 01:  
**TextToSpeech.**  
**SpeechRecognizer.**



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App Inventor

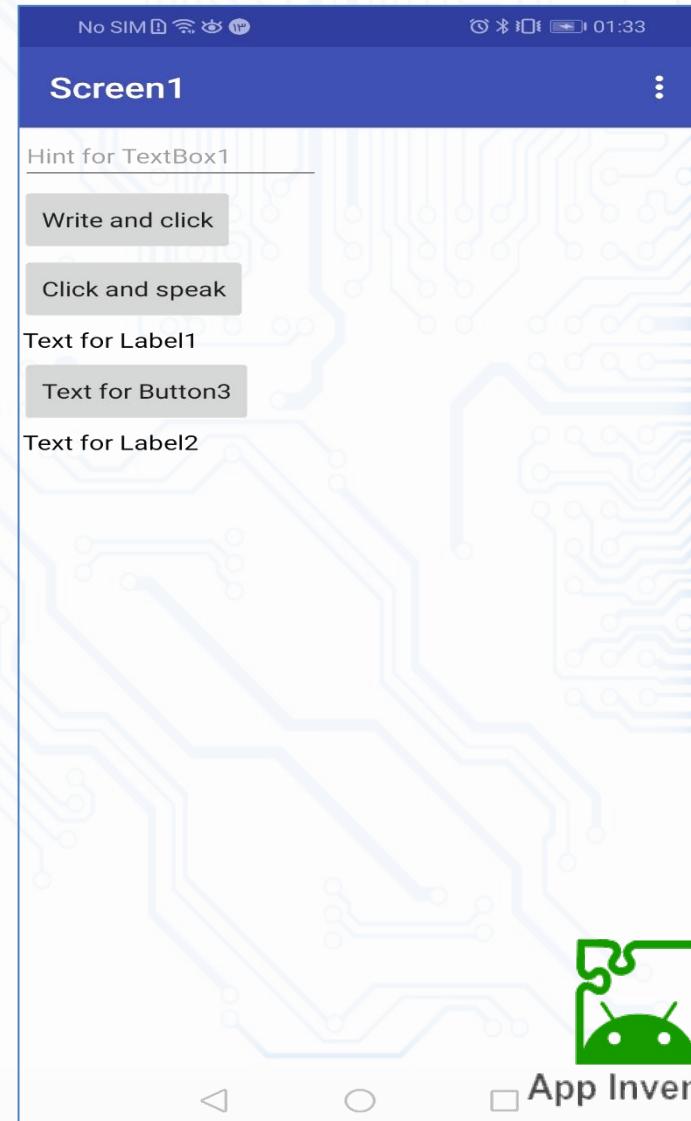


# Example 01: TextToSpeech. SpeechRecognizer.



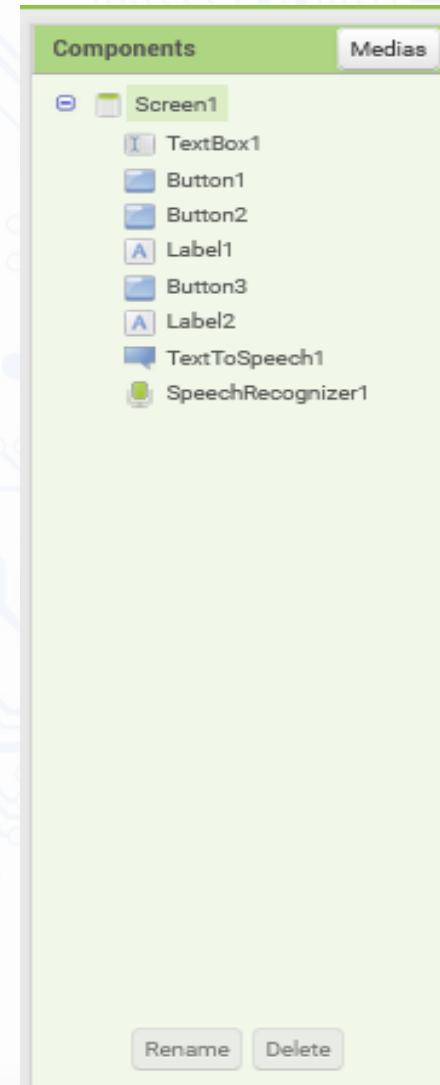
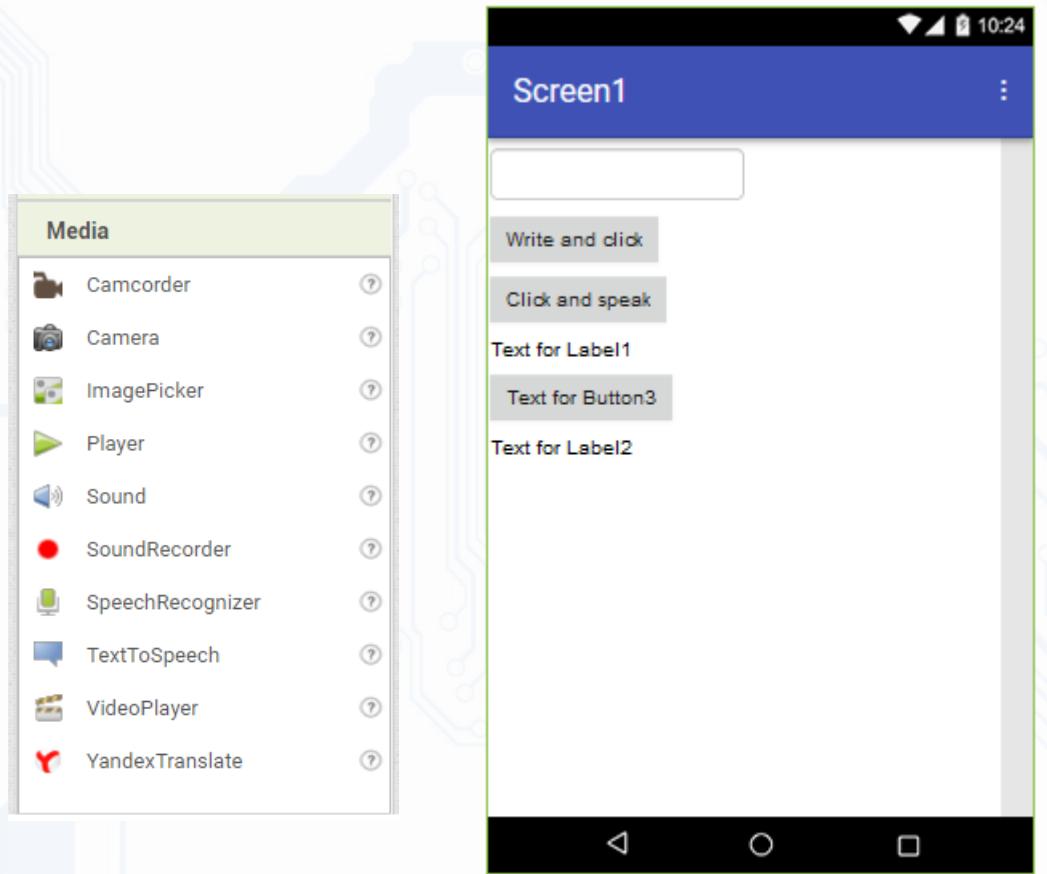
## Example Aim

- You write a short text in the box and press the Button.
- The program will deliver written.
- You press the Button and speak in front mobile or tablet. The steepness be written on the Label.
- In the **TextToSpeech** they are Properties **Pitch** and **SpeedPronunciación** with which we can set the tone and speed of pronunciation.





# Example 01: TextToSpeech. SpeechRecognizer.



App Inventor



## Example 01:

# TextToSpeech. SpeechRecognizer.



```
initialize global speak to " " 

when Button1 .Click
do set global speak to TextBox1 .Text
set TextToSpeech1 .Country to "eng"
call TextToSpeech1 .Speak
message get global speak

when Button2 .Click
do call SpeechRecognizer1 .GetText

when Button3 .Click
do call SpeechRecognizer1 .GetText

when SpeechRecognizer1 .AfterGettingText
result partial
do set Label1 .Text to get result
call TextToSpeech1 .Speak
message get result
```



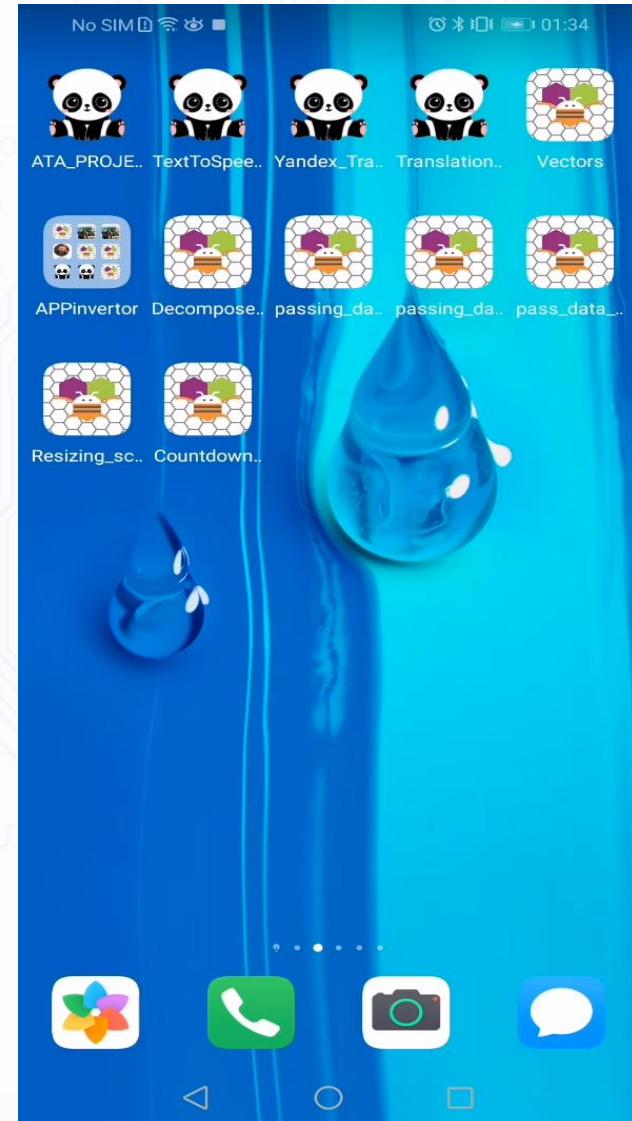


# Example 01:

## TextToSpeech. SpeechRecognizer



Demo APP



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App Inventor



# Example 01:

## TextToSpeech. SpeechRecognizer.



App Inventor

The screenshot shows the MIT App Inventor development environment. The interface includes a toolbar at the top with tabs like 'Getting Started', 'PID', and 'Basic functions related...'. Below the toolbar is a palette on the left containing categories like 'User Interface' (with components like Button, CheckBox, Label, etc.) and 'Layout'. The central area is the 'Viewer' which displays a smartphone screen titled 'Screen1' with a blank white background. To the right of the viewer is the 'Components' panel showing a single component named 'Screen1'. The 'Properties' panel on the far right contains settings for 'Screen1', including 'AppName' set to 'TextToSpeech\_SpeechRec', 'BackgroundColor' set to 'Default', and 'PrimaryColor' set to 'Default'. The bottom of the screen shows the Windows taskbar with various application icons and the system tray.



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App Inventor



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Find the  
problem

# MOBILE APPLICATION DEVELOPMENT



Example 02:  
TextToSpeech.  
SpeechRecognizer



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App Inventor



## Example 02:

# TextToSpeech. SpeechRecognizer

### Example Aim

You write anything in the box, then click the button and translated (in the chosen language) text showing it on the Label.

- In **languageToTranslate**, we put the language you want to translate (**es, eng, fra, ita, por**).
- Other form: **eng-es, es-eng eng-fra es-por**.
- Languages that can be used: [Yandex](#)
- For operation it is necessary for the mobile or tablet is connected to the Internet, since the translation is done on the web Yandex.



App Inventor



## Example 02:

# TextToSpeech. SpeechRecognizer



Screen1

Write and click

Label1

Media

- Camcorder
- Camera
- ImagePicker
- Player
- Sound
- SoundRecorder
- SpeechRecognizer
- TextToSpeech
- VideoPlayer
- YandexTranslate

Non-visible components

YandexTranslate1

Components

Screen1

- TextBox1
- Button1
- Label1
- YandexTranslate1

Rename Delete



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## Example 02:

# TextToSpeech. SpeechRecognizer



```
initialize global my_text to [ ]  
when [Button1].Click  
do set global my_text to [TextBox1].Text  
call [YandexTranslate1].RequestTranslation  
languageToTranslateTo [en]  
textToTranslate [get global my_text]  
  
when [YandexTranslate1].GotTranslation  
responseCode translation  
do set [Label1].Text to [get responseCode]
```





## Example 02:

# TextToSpeech. SpeechRecognizer



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App Inventor 2

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Projects Connect Build Help

My Projects Gallery Supports English Ata Jahangir

Yandex\_Translate Screen1 Imp / Exp Add Screen Copy Screen Remove Screen Designer Blocks

Palette Search Components...

User Interface

- Button
- Switch
- Label
- Image
- AnimationImage
- TextBox
- PasswordTextBox
- RadioButton
- CheckBox
- Spinner
- HorizontalSlider
- VerticalSlider
- Notifier
- LayoutDialog
- ListPicker
- ListView
- File Picker
- Color Picker

Viewer

Display hidden components Phone size (505,320)

Screen1

Components

Properties

Screen1

- PackageName wxbit.
- AppName Yandex\_Translate
- Icon None...
- Title Screen1
- AboutScreen
- AlignHorizontal Left : 1
- AlignVertical Top : 1
- Sizing Responsive
- Scrollable
- KeepScreenOn
- ScreenOrientation Unspecified : unspecified

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Theme Color Dark Mode

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Windows taskbar icons: File Explorer, Edge, Powerpoint, Word, Excel, Mozilla Firefox, Camera, Task View, Task Manager, Start button.



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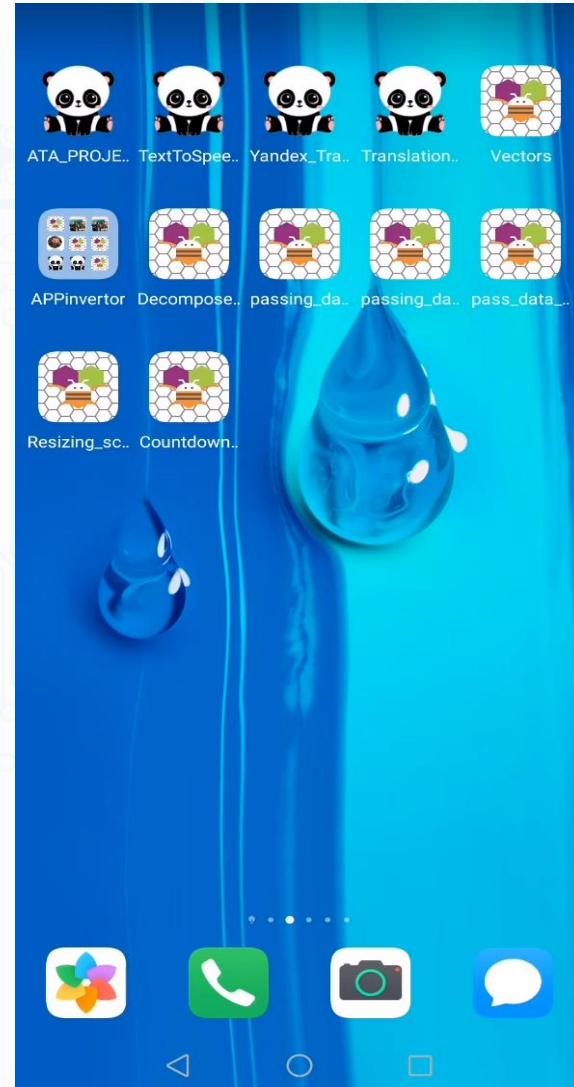
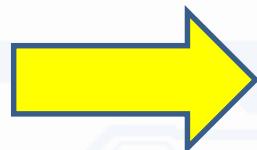
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## Example 02:

# TextToSpeech. SpeechRecognizer

Demo APP



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**Find the  
problem**

# **MOBILE APPLICATION DEVELOPMENT**

**Example 03:**

**Translation Exercise.**





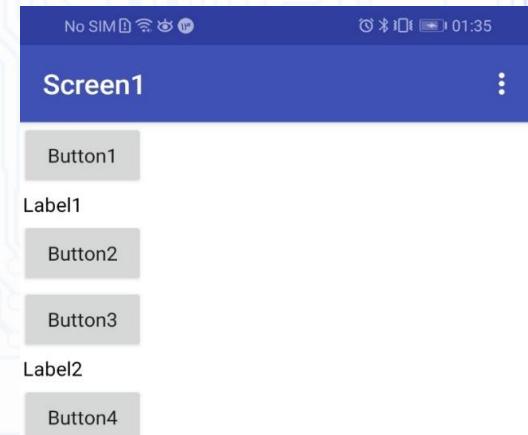
## Example Aim

With the controls seen so far, performed a program where:

- When press **Button1**. You speak a phrase.  
The phrase is written in Label1 (SpeechRecognizer).
- When press **Button2**. The phrase found in the Label1 Speech
- When press **Button3**. The phrase found in the Label1 be translated into Spanish and written to the Label2 (YandexTranslate).
- When press **Button4**. The phrase in the Label2 is write in English (TextToSpeech).

# Example 03:

## Translation Exercise.





# Example 03:

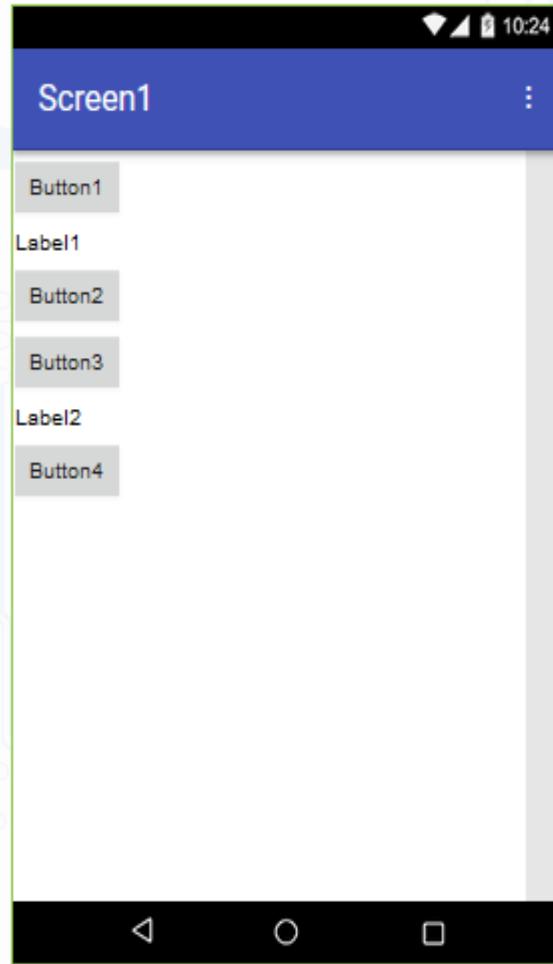
## Translation Exercise.



App Inventor

Media

- Camcorder
- Camera
- ImagePicker
- Player
- Sound
- SoundRecorder
- SpeechRecognizer
- TextToSpeech
- VideoPlayer
- YandexTranslate



Components

- Screen1
  - Button1
  - Label1
  - Button2
  - Button3
  - Label2
  - Button4
  - SpeechRecognizer1
  - TextToSpeech1
  - YandexTranslate1
  - TextToSpeech2

Rename Delete



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# Example 03:

## Translation Exercise.

when Button1 .Click

do call SpeechRecognizer1 .GetText

when SpeechRecognizer1 .AfterGettingText

result partial

do set Label1 .Text to get result

when Button2 .Click

do set TextToSpeech2 .Country to "GBR"

set TextToSpeech1 .Country to "en"

call TextToSpeech1 .Speak

message Label1 .Text

when Button3 .Click

do call YandexTranslate1 .RequestTranslation

languageToTranslateTo "es"

textToTranslate Label1 .Text

when YandexTranslate1 .GotTranslation

responseCode translation

do set Label2 .Text to get translation

when Button4 .Click

do set TextToSpeech2 .Country to "ESP"

set TextToSpeech2 .Country to "spa"

call TextToSpeech1 .Speak

message Label2 .Text





# List of country codes and language for TextToSpeech

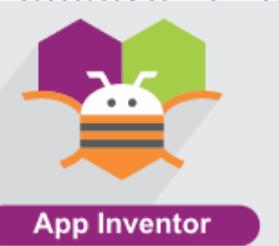
- **ces (Czech Republic)**
  - CZE
- **spa (Spain)**
  - ESP
  - USA
- **deu (Germany)**
  - AUT
  - BEL
  - CHE
  - DEU
  - LIE
  - LUX
- **fra (France)**
  - BEL
  - DOG
  - CHE
  - FRA
  - LUX
- **NLD (Netherlands)**
  - BEL
  - NLD
- **ita (Italy)**
  - CHE
  - ITA
- **pol (Poland)**
  - POL
- **eng (English)**
  - AUS
  - BEL
  - BWA
  - BLZ
  - DOG
  - GBR
  - HKG
  - IRL
  - IND
  - JAM
  - MHL
  - MLT
  - NAM
  - NZL
  - PHL
  - PAK
  - SGP
  - TTO
  - USA
  - VIR
  - ZAF
  - ZWE





# Example 03:

# Translation Exercise.



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Translation\_Exercise Screen1 Imp / Exp Add Screen Copy Screen Remove Screen Designer Blocks

Palette

User Interface

- Button
- Switch
- Label
- Image
- AnimationImage
- TextBox
- PasswordTextBox
- RadioButton
- CheckBox
- Spinner
- HorizontalSlider
- VerticalSlider
- Notifier
- LayoutDialog
- ListPicker
- ListView
- File Picker
- Color Picker
- DataPicker

Viewer

Screen1

Display hidden components Phone size (505,320)

Components

Properties

Screen1

PackageName wxbit.

AppName Translation\_Exercise

Icon None...

Title Screen1

AboutScreen

AlignHorizontal Left : 1

AlignVertical Top : 1

Sizing Responsive

Scrollable

KeepScreenOn

ScreenOrientation Unspecified : unspecified

Rename Delete

Theme Color Dark Mode

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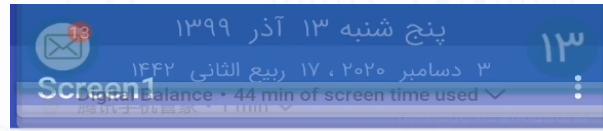
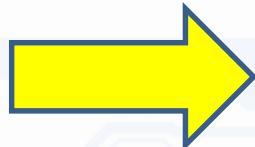
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# Example 03:

## Translation Exercise.

Demo APP



Button1  
Late late too late.  
Button2  
Button3  
Label2  
Button4





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# MOBILE APPLICATION DEVELOPMENT

Example 04:  
Vectors.



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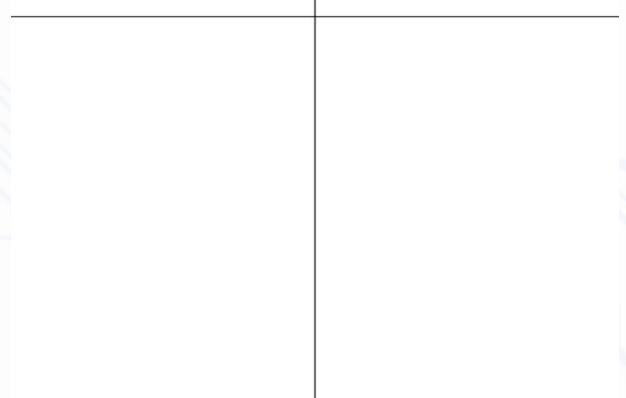


# Example 04: Vectors.



## Example Aim

- We click anywhere on the screen
- we draw a vector and shows the horizontal and vertical component and its angle

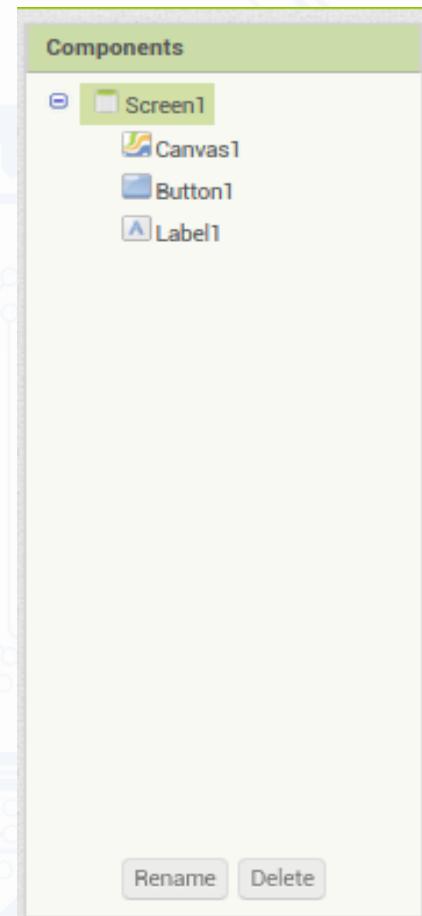
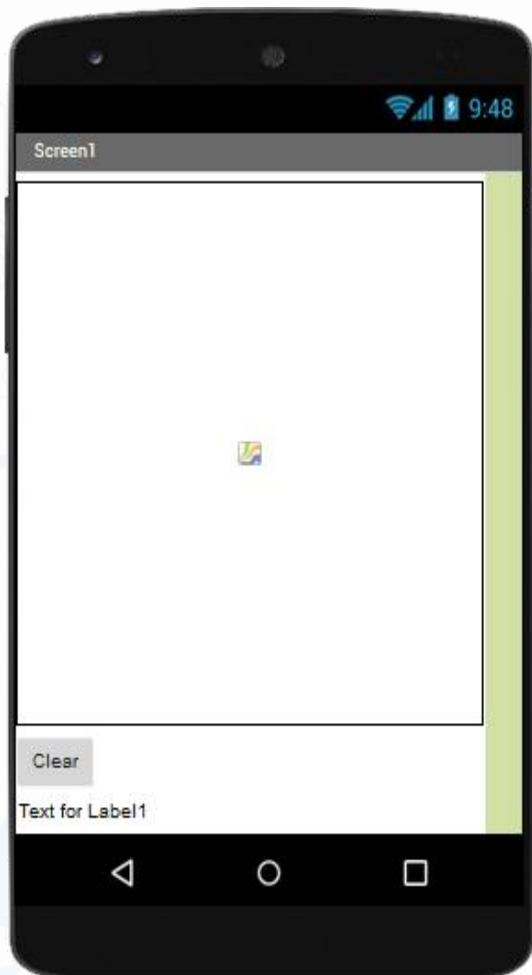


Clear





# Example 04: Vectors.



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# Example 04: Vectors.

```
initialize global h to 0  
initialize global v to 0  
initialize global grados to 0  
  
when Screen1.Initialize  
do call draw_axis  
  
when Canvas1.Touched  
x y touchedAnySprite  
do call Canvas1.DrawLine  
    x1 [Screen1.Width / 2]  
    y1 [Screen1.Height / 2]  
    x2 get x  
    y2 get y  
  
    set global h to -1 * [Screen1.Width / 2] - get x  
    set global v to [Screen1.Height / 2] - get y  
  
    set global grados to atan2  
        y get global v  
        x get global h  
  
    if get global grados < 0  
    then set global grados to 360 + get global grados  
  
set Label1.Text to join "H = " get global h  
                "V = " get global v  
                "α = " get global grados  
                format as decimal number places 2
```

```
when Button1.Click  
do call Canvas1.Clear  
call draw_axis  
set Label1.Text to 0
```

```
to draw_axis  
do call Canvas1.DrawLine  
    x1 [Screen1.Width / 2]  
    y1 0  
    x2 [Screen1.Width / 2]  
    y2 [Screen1.Height / 2]  
  
    call Canvas1.DrawLine  
        x1 0  
        y1 [Screen1.Height / 2]  
        x2 [Screen1.Width / 2]  
        y2 [Screen1.Height / 2]
```





# Example 04: Vectors.



App Inventor

The screenshot shows the MIT App Inventor 2 environment. At the top, there's a browser window displaying the MIT App Inventor website. Below it, the main workspace has a green header bar with tabs for "Vectors", "Screen1", "Add Screen...", "Remove Screen", and "Publish to Gallery". The central area is the "Viewer" which shows a smartphone screen with the title "Screen1". To the left is the "Palette" containing categories like "User Interface" (with components like Button, CheckBox, DatePicker, etc.) and "Layout". To the right are the "Components" and "Properties" panels. The "Components" panel lists "Screen1" with a small icon. The "Properties" panel is expanded for "Screen1", showing settings for "AccentColor" (Default), "AlignmentHorizontal" (Left : 1), "AlignmentVertical" (Top : 1), "AppName" (Vectors), "BackgroundColor" (Default), and "BackgroundImage" (None...). Other properties shown include "BlocksToolkit" (All), "CloseScreenAnimation" (Default), "Icon" (None...), "OpenScreenAnimation" (Default), "PrimaryColor" (Default), "PrimaryColorDark" (Default), "ScreenOrientation" (Unspecified), and "Scalable". The bottom of the screen shows the Windows taskbar with various icons and the system tray indicating the date and time as 02/12/2020 at 19:33.



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# Example 04: Vectors.



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**Vectors**    Screen1   Add Screen...   Remove Screen   Publish to gallery    Designer   Blocks

**Blocks**

**Built-in**

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- Procedures

**Screen1**

- Canvas1
- Button1
- Label1

**Any component**

**Viewer**

```
initialize global [h] to [0]
initialize global [v] to [0]
initialize global [grados] to [0]

when [Screen1] .Initialize
do
    when [Canvas1] .Touched
    do
        call [Canvas1] .DrawLine
            x1: [Screen1] .Width / 2
            y1: [Screen1] .Height / 2
            x2: [get x]
            y2: [get y]
            set [global h] to [-1 * (Screen1) .Width / 2 - get x]
            set [global v] to [(Screen1) .Width / 2 - get y]
            set [global grados] to [atan2(y, x)]
        end
    end
end

if [get [global v]] < [0]
then
    set [global grados] to [360 + get [global grados]]
end

set [Label1] .Text to [join ["H=", [get [global h]], " V=", [get [global v]]]]
```

**Media**

Upload File...

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# Example 04: Vectors.



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Vectors Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- Procedures

Screen1

Canvas1

Button1

Label1

Any component

Viewer

to procedure do initialize global [m] to [0] initialize global [v] to [0] initialize global [grados] to [0]

to procedure result [Screen1 Initialize do when [Canvas1 Touched] do call [Canvas1 DrawLine] x1 [Screen1 Width / 2] y1 [Screen1 Height / 2] x2 [get x] y2 [get y] set [global h] to [-1 \* [Screen1 Width / 2] - [get x]] set [global v] to [Screen1 Width / 2 - [get y]] set [global grados] to [atan2 [y - get global v] [x - get global h]] if [get global v < 0] then set [global grados] to [360 + [get global grados]] end show [Text to [join [H= [get global h] V= [get global grados]]]]

when [Button1 Click] do call [Canvas1 Clear] set [Label1 Text] to [0]

Rename Delete

Media Upload File...

Show Warnings

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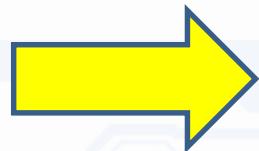




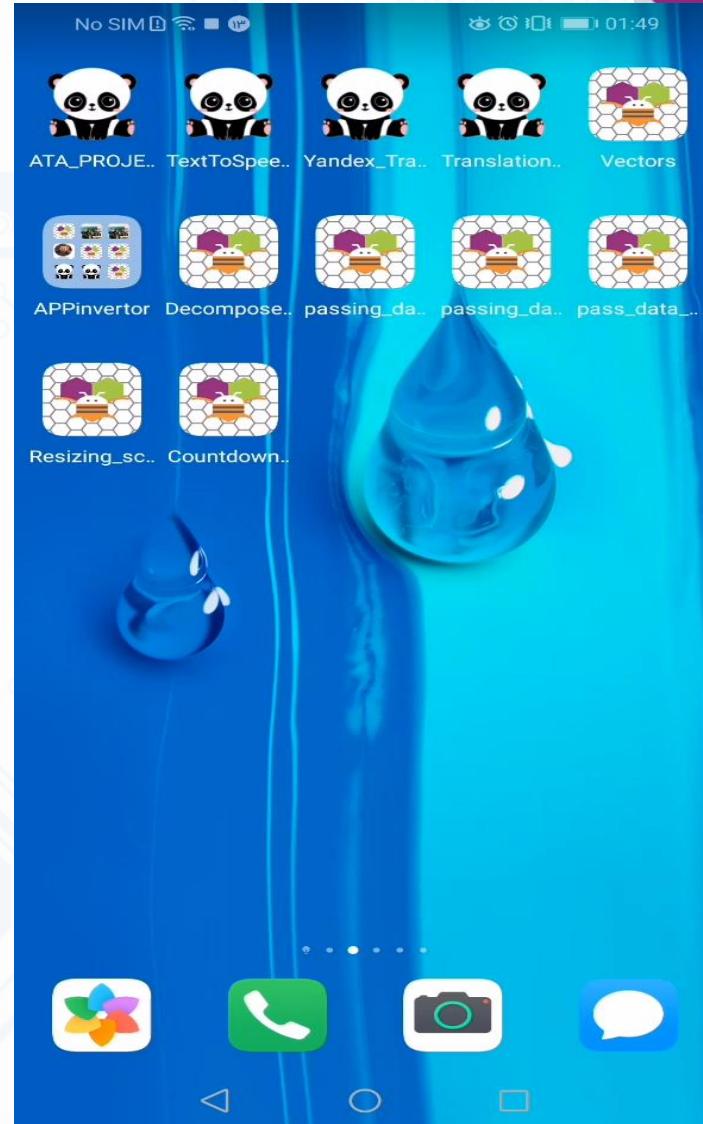
# Example 04: Vectors.



Demo APP



If the angle is greater than 180 is negative,  
so we add 360 to make it positive.  
- On the screen coordinates increase from  
top to bottom and left to right.





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# MOBILE APPLICATION DEVELOPMENT



**Example 05:**  
**Decompose vector**



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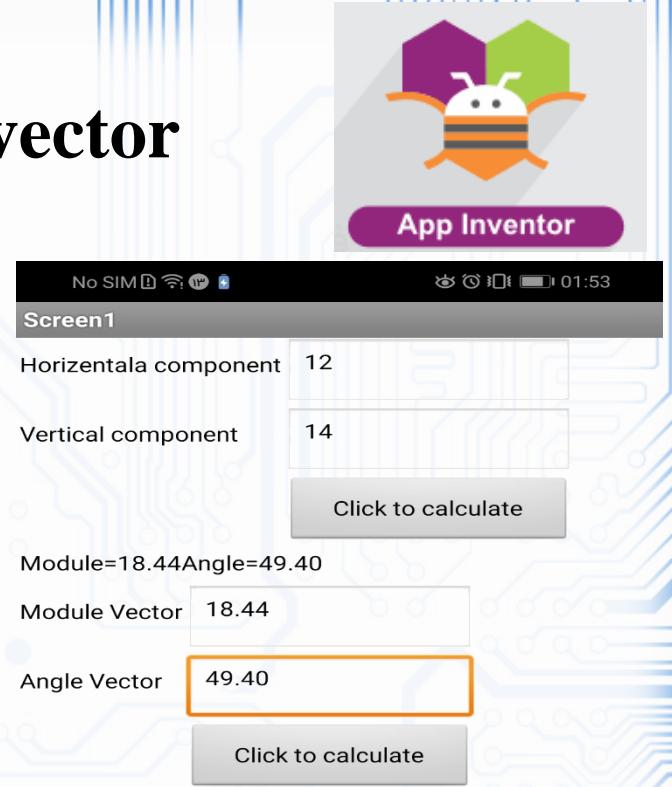


App Inventor



# Example 05: Decompose vector

- Example Aim
- The application consists of two parts, one we write the vertical and horizontal component of a vector, when we press the button calculates module and angle.
- If we introduce the module and angle and click the second button, we will calculate the horizontal and vertical component.

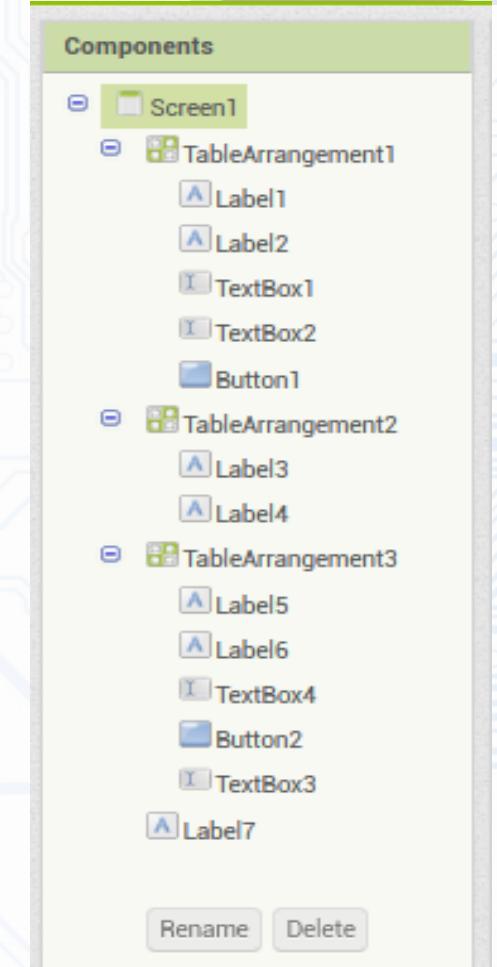
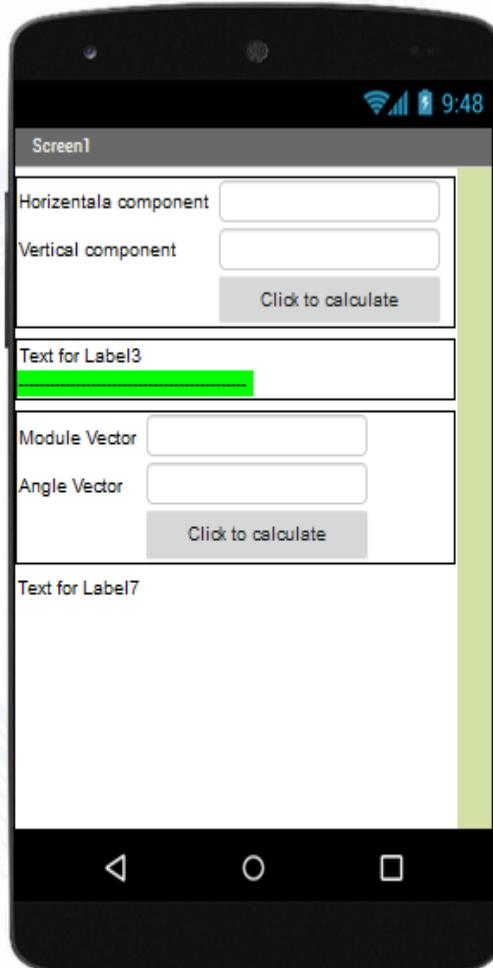




# Example 05: Decompose vector

## Design

- We put the items in Bold.
- At **TextBox** you delete the contents of the Property Hints.
- In the **TextBox** mark the box NumberOnly.



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# Example 05: Decompose vector

```
initialize global V to 0    initialize global Modulo to 0  
initialize global H to 0    initialize global Angle to 0  
  
when Button1 .Click  
do  set global H to TextBox1 .Text  
    set global V to TextBox2 .Text  
    set global Modulo to square root [ get global H ^ 2 + get global V ^ 2 ]  
    set global Angle to atan2 [ y get global V ; x get global H ]  
    set (Label3 .Text) to join [ "Module=" format as decimal number [ get global Modulo ] places 2  
                                ; "Angle=" format as decimal number [ get global Angle ] places 2 ]
```





# Example 05: Decompose vector

```
when Button2 .Click
do
  set global Modulo to (sqrt (global H * global H + global V * global V))
  set global angle to (acos (global H / Modulo))
  set global H to (Modulo * cos (angle))
  set global V to (Modulo * sin (angle))
  set Label7 .Text to (join ("H = ", (format as decimal number (get global H) places 2), "V = ", (format as decimal number (get global V) places 2)))
end
```

The image shows two Scratch scripts side-by-side. Both scripts begin with a 'when Button2 Click' hat block. The first script contains a single 'do' loop with five blocks: 'set global Modulo to (sqrt (global H \* global H + global V \* global V))', 'set global angle to (acos (global H / Modulo))', 'set global H to (Modulo \* cos (angle))', 'set global V to (Modulo \* sin (angle))', and 'set Label7 .Text to (join ("H = ", (format as decimal number (get global H) places 2), "V = ", (format as decimal number (get global V) places 2)))'. The second script also begins with a 'when Button2 Click' hat block and contains a similar 'do' loop with the same four decomposition blocks. The difference is that it includes a 'set Label7 .Text to (join ("H = ", (format as decimal number (get global H) places 2), "V = ", (format as decimal number (get global V) places 2)))' block at the end, which is likely a copy-paste error from the first script.





# Example 05: Decompose vector



The screenshot shows the MIT App Inventor 2 environment. The top bar displays the URL [www.BANDICAM.com](http://ai2.appinventor.mit.edu/#6250084309532672). The main workspace is titled "Decompose\_vector" and contains a single screen named "Screen1". The "Components" panel on the right lists "Screen1" with various properties like "AccentColor", "AppName", and "BackgroundImage". The "Properties" panel shows settings for "Screen1" such as "PrimaryColor" and "ScreenOrientation". The "Blocks" tab is selected in the top right. The bottom status bar shows system icons and the date/time: 20:05 02/12/2020.





# Example 05: Decompose vector



App Inventor

MIT App Inventor

Documento sin título

www.BANDICAM.com

Getting Started PID Basic functions related... بورش زبان JRM | Fuji Technology ... (36) YouTube

My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

Decompose\_\_ector Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- procedures

Screen1

TableArrangement1

- Label1
- Label2
- TextBox1
- TextBox2
- Button1

TableArrangement2

Media

Upload File ...

Show Warnings

Viewer

70%

Downloads

My Projects

View Trash

Guide

Report an Issue

English

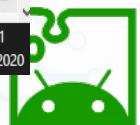
moshaydi@gmail.com

20:11 02/12/2020

Windows Taskbar



江西理工大学信息工程学院  
JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



App Inventor



# Example 05: Decompose vector



App Inventor

The screenshot shows the MIT App Inventor interface with the following details:

- Title Bar:** MIT App Inventor, Document sin título, www.BANDICAM.com
- Toolbar:** Back, Forward, Refresh, Home, Address bar (ai2.appinventor.mit.edu/#6250084309532672), Zoom (70%), More, Save, Publish to Gallery.
- Header:** Getting Started, PID, Basic functions related..., C, بورش زبان, JRM | Fuji Technology ..., YouTube.
- Project Area:** My Projects, View Trash, Guide, Report an Issue, English, moshaydi@gmail.com.
- Sidebar:** MIT APP INVENTOR, Projects, Connect, Build, Settings, Help.
- Project Title:** Decompose\_vector
- Blocks Area:** Shows a script for Button1.Click:

```
when [Button1] .Click
do
    set global H to [TextBox1].Text
    set global V to [TextBox2].Text
    set global Modulo to [square root vof] [get global H ^ 2 + get global V ^ 2]
    set global Angle to [atan2 y [get global V] x [get global H]]
    set [Label3].Text to [join "Module=" [format as decimal number get global Modulo places 2]
                           "Angle=" [format as decimal number get global Angle places 2]]
```
- Components Area:** Screen1, TableArrangement1, Label1, Label2, TextBox1, TextBox2, Button1.
- Media Area:** Upload File ...
- Bottom Bar:** Show Warnings, Windows Taskbar with various icons, and a status bar showing 20:19, ENG, 02/12/2020.



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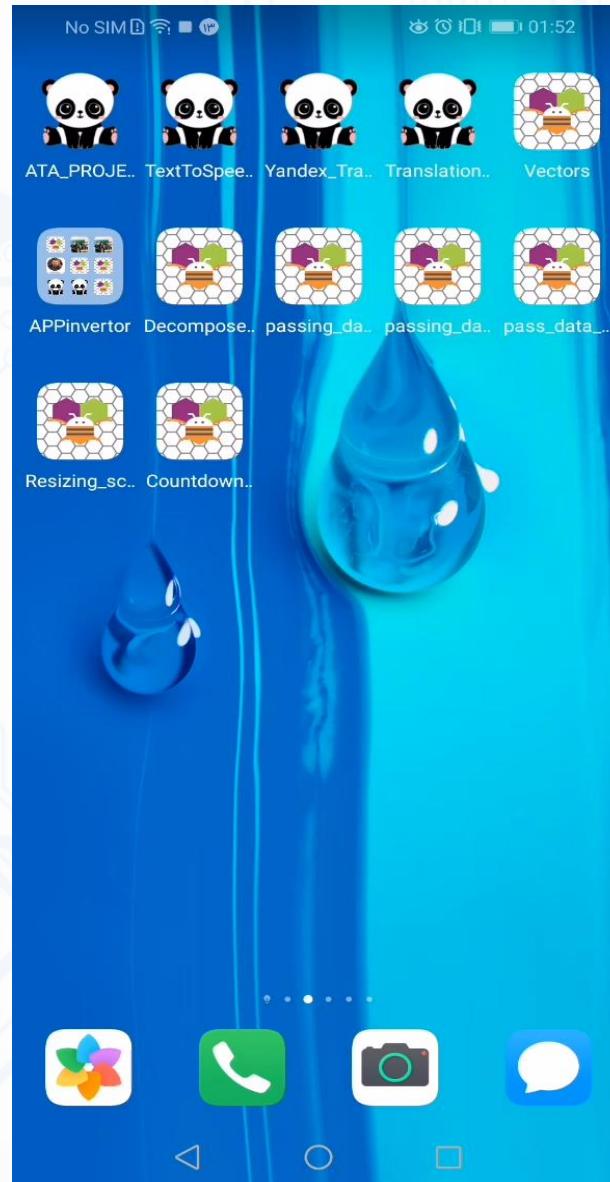


App Inventor



# Example 05: Decompose vector

Demo APP

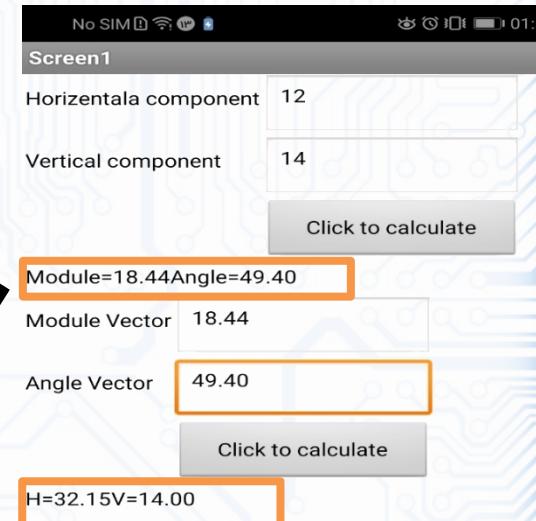




# Example 05: check this part

```
when Button2 .Click
do
  set global Modulo to TextBox3 .Text
  set global Angle to TextBox4 .Text
  set global H to (get global Angle × cos get global Angle)
  set global V to (get global Modulo × sin get global Angle)
  set Label7 .Text to (H + "V=" + V)
  format as decimal number get global H
  places 2
  "V="
  format as decimal number get global V
  places 2
```

```
when Button2 .Click
do
  set global Modulo to TextBox3 .Text
  set global angle to TextBox4 .Text
  set global H to (get global Modulo × cos get global angle)
  set global V to (get global Modulo × sin get global angle)
  set Label7 .Text to (H + "V=" + V)
  format as decimal number get global H
  places 2
  "V="
  format as decimal number get global V
  places 2
```





# Student Task\_13



- Repeat this examples and make based on our task format
- For example 04 and example 05 : first find the logic and mathematical formula then start the work on APP in your PPT you should enter the mathematical formula
- Solve the extension version as the separate example
- Find the problem in the mentioned task first report what was the problem then solve it and report

- **Just MOOC**
- **Your file should have this format of name**  
**<Task number><student name><Student ID>.ppt**





# Reference

- <http://kio4.com/appinventori/23datasbetweenscreen.htm>
- <http://kio4.com/appinventori/7canvas.htm>
- <http://ai2.appinventor.mit.edu/reference/blocks/lists.html#selectlistitem>
- **<https://appinventor.mit.edu/explore/content/alertme.html>**
- **Teaching with AppInventor** <http://appinventor.mit.edu/explore/teach.html>  
**AppInventor Tutorials:**  
<http://appinventor.mit.edu/explore/ai2/tutorials.html>
- **Sounds** <http://www.soundbible.com>
- **App Inventor:** <http://appinventor.googlelabs.com/>
- **Appinventor.org:** <http://www.appinventor.org/>
- **Wolber, Abelson et al. text:** <http://www.appinventor.org/text2011>
- **Group:** <http://groups.google.com/group/app-inventor-instructors>
- **Wolber course:** <http://appinventor.org/course-in-a-box>
- **Morelli course:** <http://turing.cs.trincoll.edu/~ram/cpsc110/>

“We are one  
society. We are  
one globe.”

STEVEN CHU  
Nobel Prize in Physics 1997



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Jiangxi University of Science and Technology

信息工程学院

School of information engineering

## Digital Image Processing

THANK YOU





**"BE HUMBLE. BE HUNGRY.  
AND ALWAYS BE THE  
HARDEST WORKER  
IN THE ROOM."**

