



江西理工大学 信息工程学院

JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



Mobile application development

移动应用开发



## Lecture 024: APP Inventor \_Example

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## MOBILE APPLICATION DEVELOPMENT

### LECTURE 024: APP Inventor Example

Plotter, selection,... example





# Agenda

- Example01: **Line Plotter: Coordinate Geometry**
- Example02: **Selection**
- Example03: **ListPicker(2).**
- Example 04: **Line graph**
- Example 05: **Extra example self study**





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# MOBILE APPLICATION DEVELOPMENT

Example01:

**Line Plotter: Coordinate Geometry**



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App Inventor

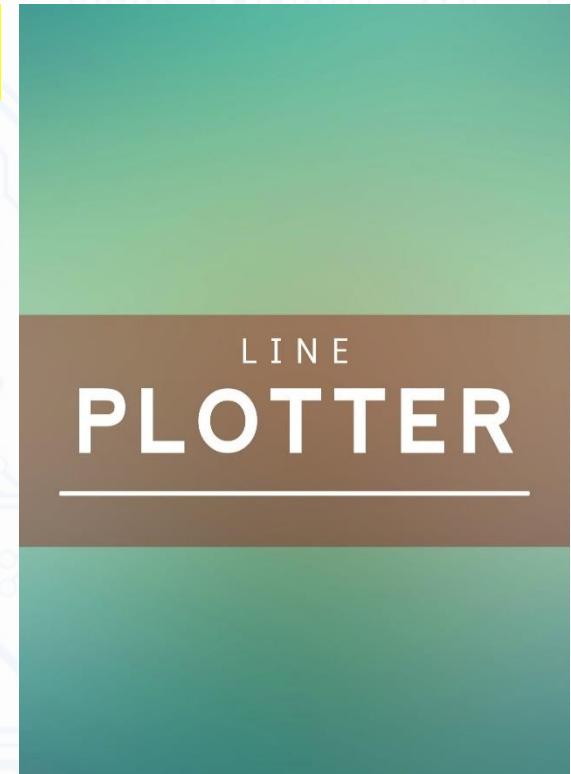


# Example01: Line Plotter: Coordinate Geometry

## Example Aim

- *Plot a line and even quadratic equation in this easy-to-use math educational app.*
- **Line Plotter** is a math educational app that plots a quadratic function on the screen. It is a useful app for students learning Coordinate geometry as it helps them to visualize the graph and better understand the concepts.
- This app also provides the facility to save the graphs for future reference. It provides options to change the scale and even the color of the graph.
- Clearly, the apps **educational benefit** comes from the ease and simplicity with which it plots the graph.

**Note.** *Creation of graphs by the computer using the algorithm used by this app is a fairly iterative process and requires numerous computations on the behalf of the computer.*





# Example01: Line Plotter: Coordinate Geometry

*This app exceeds the project's minimum technical requirements.*

- The whole app has been divided into three additional screens.

- **Data Abstraction:**

App has 12 global variables, 3 lists and a database.

- **Procedural Abstraction:**

5 functions have been defined.

- **Algorithms and Control:**

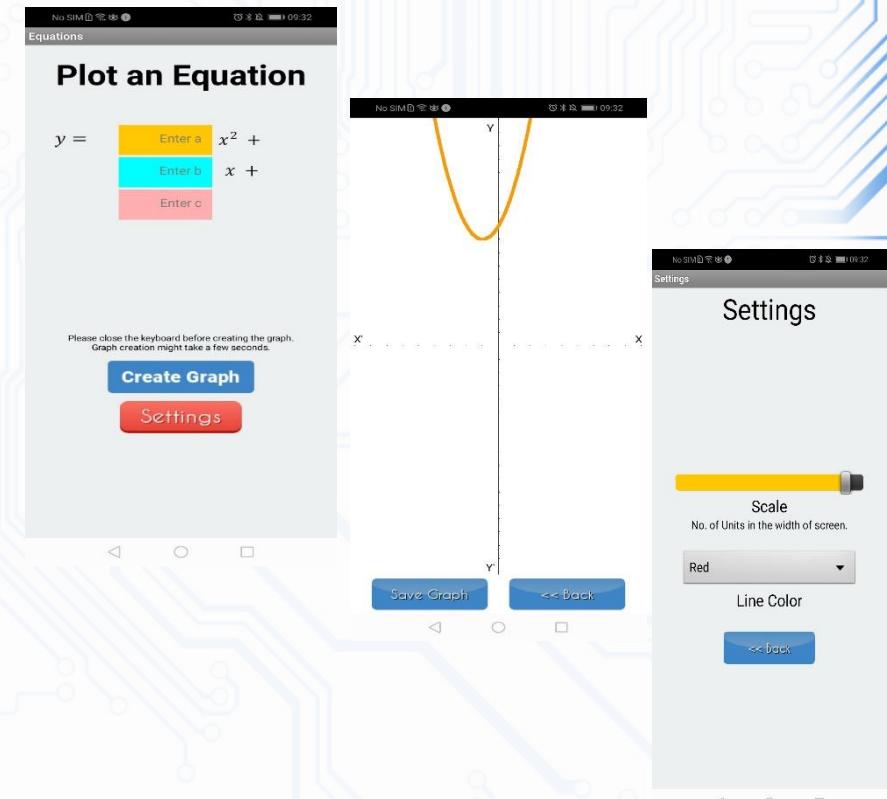
App has 3 If-then conditionals and 2 loops.

- We need three Screen part :

- Equation:

- Graph:

- Settings:





# Screen 1: Design/ Block

- Initial Page

The screenshot shows a mobile application titled "LINE PLOTTER" with a subtitle "App by Utsav Munendra". The background has a green gradient. Below the title, there is some small text.

**Components Panel:**

- Screen1
- Button1

**Properties Panel (for Button1):**

- BackgroundColor: Default
- Enabled:
- FontBold:
- FontItalic:
- FontSize: 14.0
- FontTypeface: default
- Height: Fill parent
- Width: Fill parent
- Image: FotorCreated.jpg
- Shape: default
- ShowFeedback:
- Text: (empty)

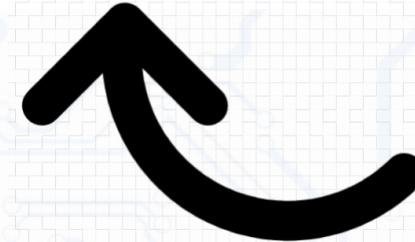
**Media Panel:**

- FotorCreated.jpg
- button.png

**Buttons:**

- Rename
- Delete

```
when Button1.Click
do open another screen screenName "Equation"
```

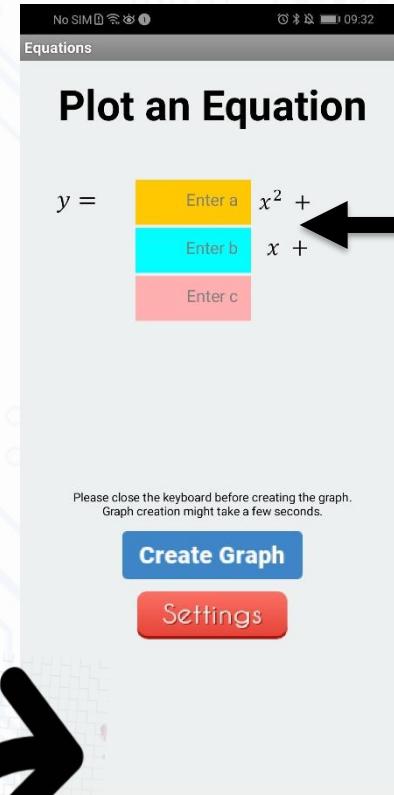
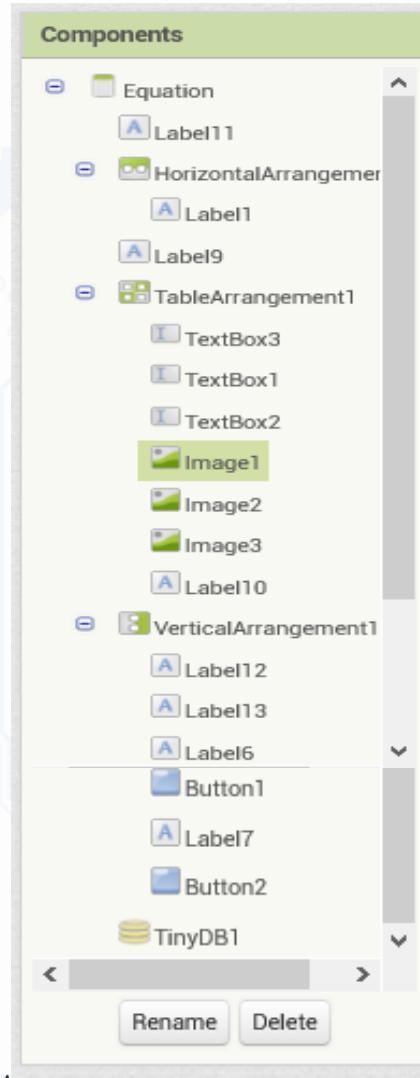
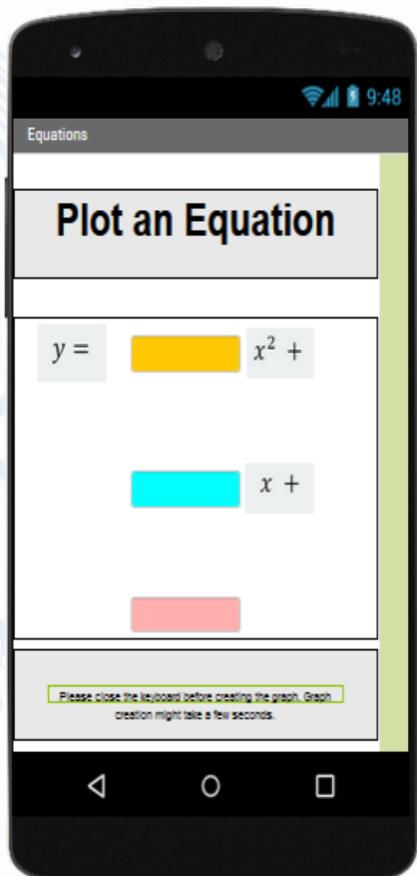


Block @ Screen1





# Screen 2: Equation

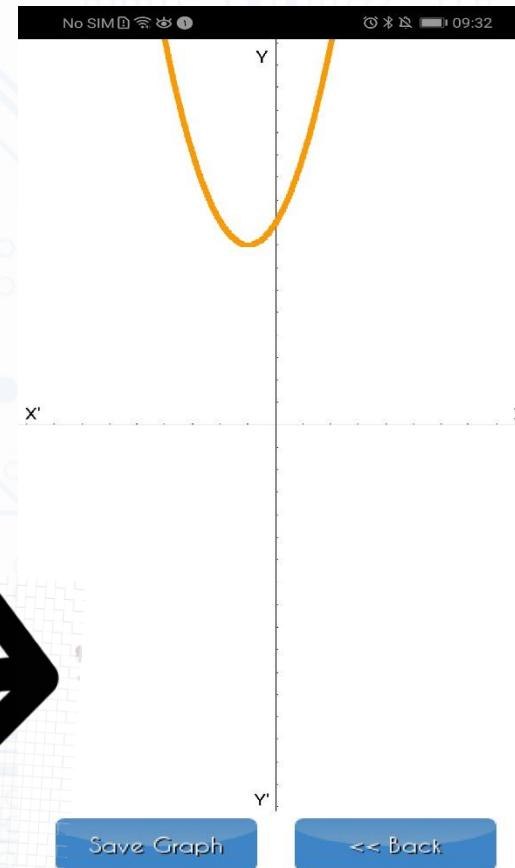
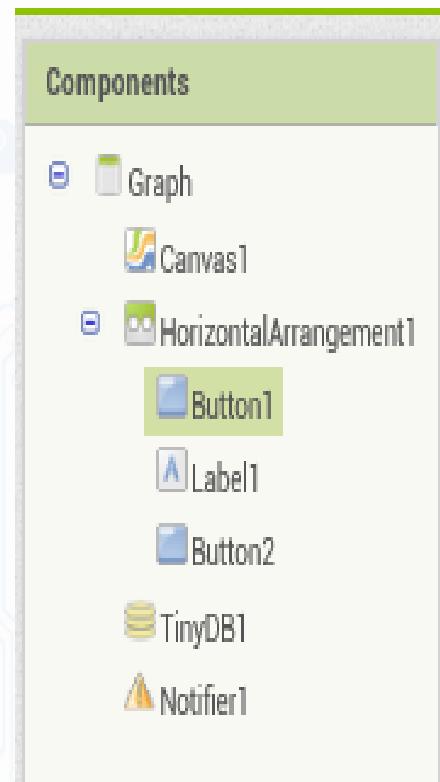
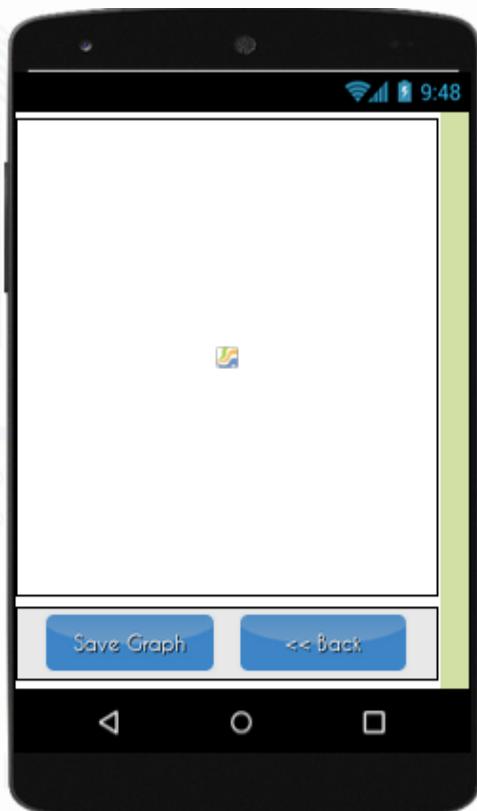


Equation

The Equation :  $y=A x^2 +Bx +C$



# Screen 3: Graph screen



Graph



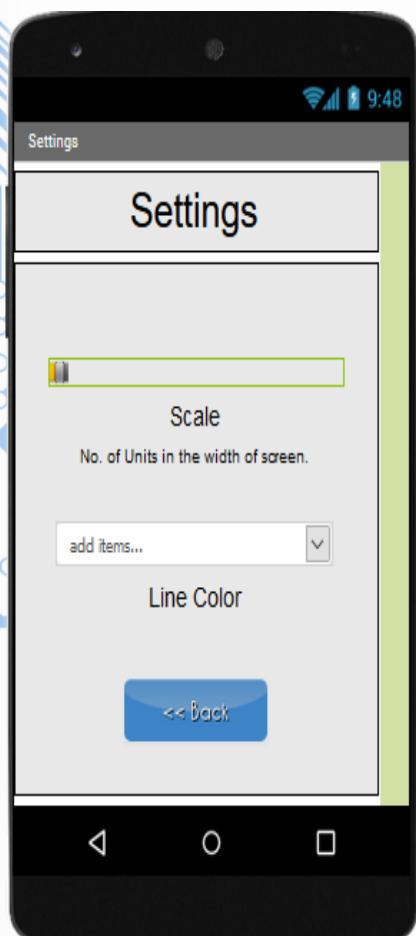
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App Inventor



# Screen 3: Settings Screen



Components

- Settings
  - HorizontalArrangement1
    - Label1
  - VerticalArrangement1
    - Label2
    - Slider1
    - Label3
    - Label4
    - Label5
    - Spinner1
    - Label6
    - Label7
    - Button1
- TinyDB1

Properties

Slider1

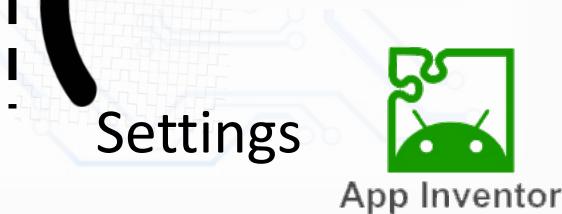
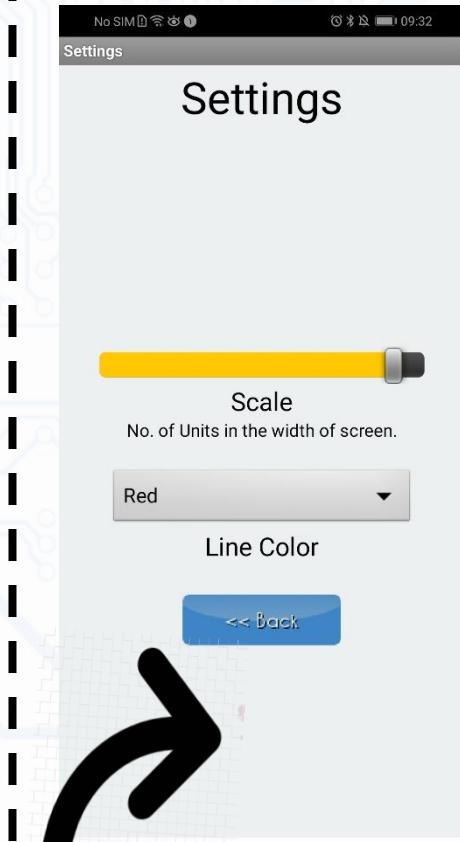
- ColorLeft: Default
- ColorRight: Default
- Width: 80 percent...
- MaxValue: 20
- MinValue: 1
- ThumbEnabled:
- ThumbPosition: 10
- Visible:

Properties

Spinner1

- ElementsFromString:
- Width: 75 percent...
- Prompt:
- Selection:
- Visible:

Rename Delete



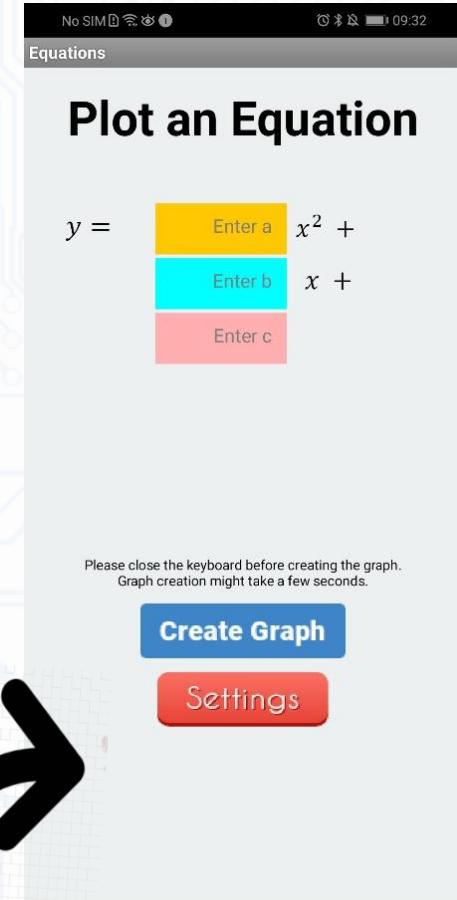


# Equation Screen ( Block)

- 1)change the background
- 2)go to graph page
- 3)After getting the parameters check the value is number or no ?

4)Send to Database

- The blocks consists of three part
  - List
  - If/Then conditional
  - Database



Equation



App Inventor



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# Equation Screen ( Block)

```
when Equation .Initialize  
do set Equation .BackgroundColor to make color
```



List

```
when Button1 .Click
```

```
do  
  if [length TextBox1 .Text = 0 or is number? TextBox1 .Text = false]  
    then set TextBox1 .Text to 0  
  
  if [length TextBox2 .Text = 0 or is number? TextBox2 .Text = false]  
    then set TextBox2 .Text to 0  
  
  if [length TextBox3 .Text = 0 or is number? TextBox3 .Text = false]  
    then set TextBox3 .Text to 0
```

```
call TinyDB1 .StoreValue  
  tag "m"  
  valueToStore TextBox1 .Text  
  
call TinyDB1 .StoreValue  
  tag "c"  
  valueToStore TextBox2 .Text  
  
call TinyDB1 .StoreValue  
  tag "x2"  
  valueToStore TextBox3 .Text  
  
open another screen screenName "Graph"
```

If/Then conditional  
Database

```
when Button2 .Click  
do open another screen screenName "Settings"
```



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App Inventor



# Equation Screen ( Block)

```
when [Equation v].Initialize
do
  set [Equation v].BackgroundColor to [make color [make a list [238
  [240
  [241]]]]
when [Button1 v].Click
do
  if [length [TextBox1 v].Text = 0] or [is number? [TextBox1 v].Text] = false
  then set [TextBox1 v].Text to 0
  if [length [TextBox2 v].Text = 0] or [is number? [TextBox2 v].Text] = false
  then set [TextBox2 v].Text to 0
  if [length [TextBox3 v].Text = 0] or [is number? [TextBox3 v].Text] = false
  then set [TextBox3 v].Text to 0
  call [TinyDB1 v].StoreValue
    tag [m]
    valueToStore [TextBox1 v].Text
  call [TinyDB1 v].StoreValue
    tag [c]
    valueToStore [TextBox2 v].Text
  call [TinyDB1 v].StoreValue
    tag [x2]
    valueToStore [TextBox3 v].Text
open another screen [screenName Graph]
```



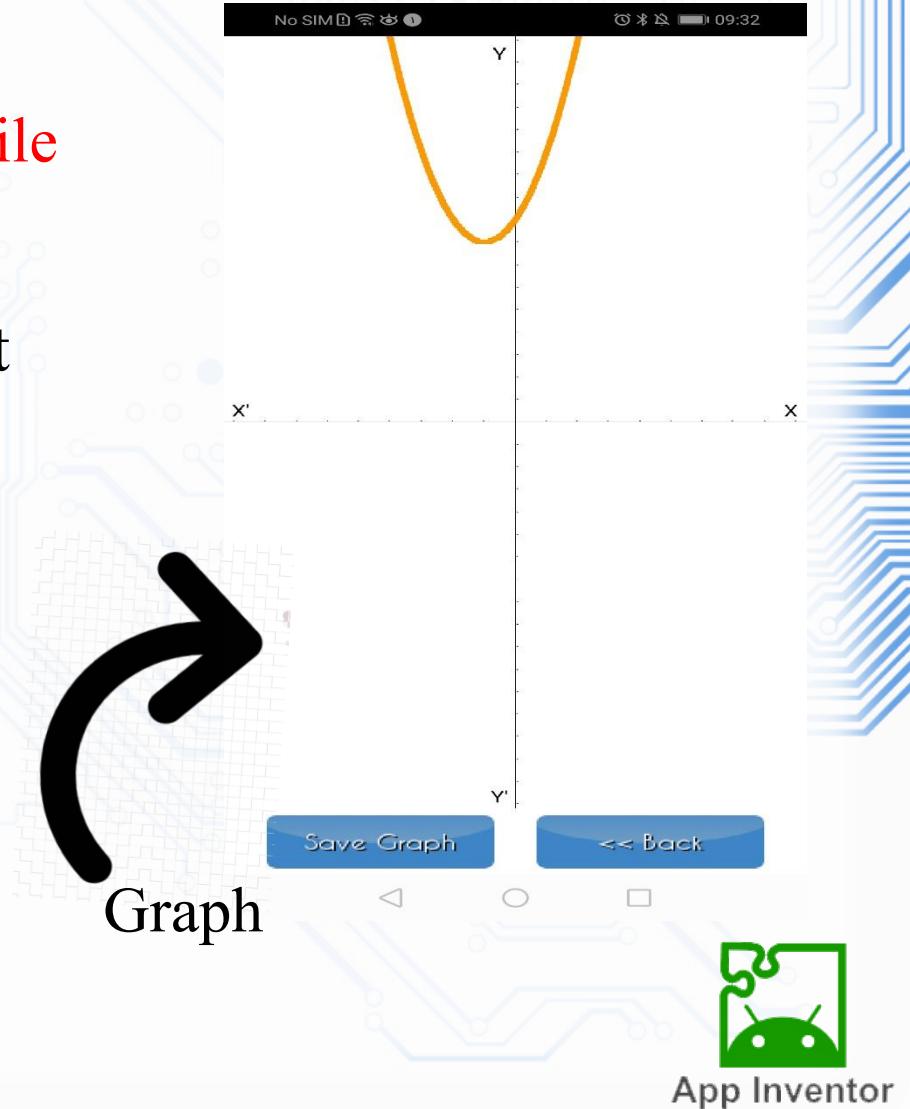


# Graph Screen ( Block)

- 1) Show the Graph,
- 2) save the Graph picture on mobile
- 3) Back

The blocks consists of three part

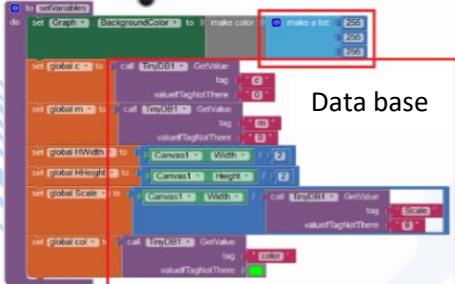
- List
- Variables
- Database
- LOOPS
- Functions
- Loop
- If/Then block
- Data base





# Graph Screen ( Block)

List



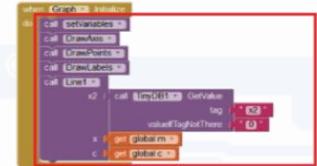
Loop



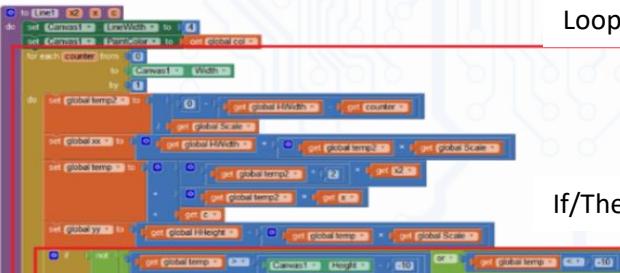
Variables



Functions



Loop



If/Then block



Data  
base





# Graph Screen ( Block) (Function)

- Used functions
  - **Graph page\_DrawAxis**
  - **Graph page\_Drawlabels**
  - **SetVariables**
  - **DrawPoints**



# Graph page\_DrawAxis (Function)

The image shows a Scratch script for the `Graph page_DrawAxis` function. The script starts with a `to [DrawAxis]` hat block, followed by a `do` loop. Inside the loop, there are two `call [Canvas1 v].DrawLine` blocks. The first call has parameters: `x1` set to 0, `y1` set to `get [global HHeight v]`, `x2` set to `Canvas1 v. Width`, and `y2` set to `get [global HHeight v]`. The second call has parameters: `x1` set to `get [global HWidth v]`, `y1` set to 0, `x2` set to `get [global HWidth v]`, and `y2` set to `Canvas1 v. Height`.



# Graph page\_ Drawlabels (Function)

```
to [DrawLabels]
do
    call [Canvas1 :: DrawText]
        text [X]
        x [10]
        y [get [global HHeight] - 5]
    call [Canvas1 :: DrawText]
        text [X]
        x [Canvas1 :: Width - 10]
        y [get [global HHeight] - 5]
    call [Canvas1 :: DrawText]
        text [Y]
        x [get [global HWidth] - 10]
        y [20]
    call [Canvas1 :: DrawText]
        text [Y]
        x [get [global HWidth] - 10]
        y [Canvas1 :: Height - 5]
```





# Graph page\_ SetVariables(Function)

```
to setVariables
do
  set [Graph v] .BackgroundColor to make color
  make a list [255]
  make a list [255]
  make a list [255]

  set [global c v] to call [TinyDB1 v] .GetValue
    tag ["c"]
    valueIfTagNotThere ["0"]

  set [global m v] to call [TinyDB1 v] .GetValue
    tag ["m"]
    valueIfTagNotThere ["0"]

  set [global HWidth v] to [Canvas1 v] .Width / [2]
  set [global HHeight v] to [Canvas1 v] .Height / [2]

  set [global Scale v] to [Canvas1 v] .Width / call [TinyDB1 v] .GetValue
    tag ["Scale"]
    valueIfTagNotThere ["8"]

  set [global col v] to call [TinyDB1 v] .GetValue
    tag ["color"]
    valueIfTagNotThere [green]
```





# Graph page\_ DrawPoints(Function)

```
to DrawPoints
do for each number from get global HWidth
    to 0
    by neg get global Scale
do call Canvas1 .DrawPoint
    x get number
    y get global HHeight - [1]
if get number < 0
then set number to 0
for each number from get global HWidth
    to Canvas1 . Width
    by get global Scale
do call Canvas1 .DrawPoint
    x get number
    y get global HHeight - [1]
if get number > Canvas1 . Width
then set number to Canvas1 . Width
```



```
for each number from get global HHeight
    to Canvas1 . Height
    by get global Scale
do call Canvas1 .DrawPoint
    x get global HWidth - [-1]
    y get number
if get number > Canvas1 . Width
then set number to Canvas1 . Width
for each number from get global HHeight
    to 0
    by neg get global Scale
do call Canvas1 .DrawPoint
    x get global HWidth - [-1]
    y get number
if get number > get global HHeight
then set number to get global HHeight
```





# Graph page \_Line1(Function)

This Scratch script starts by setting the line width to 4 and the paint color to a global variable. It then loops through a counter from 0 to the canvas width, incrementing by 1. Inside the loop, it calculates the x and y coordinates for each segment of the line. The x coordinate is calculated as  $(get \text{ global HWidth} - get \text{ counter}) / get \text{ global Scale}$ . The y coordinate is calculated as  $(get \text{ global HHeight} - get \text{ temp} \times get \text{ global Scale})$ . An if condition checks if the current x coordinate is greater than the canvas height minus 10 or less than -10; if so, it calls `Canvas1 .DrawPoint` at the current coordinates. Finally, it sets the global `starter` to false.

```
to Line1 [x2 x c]
do [set Canvas1 .LineWidth to 4
set Canvas1 .PaintColor to (get global col)
for (1) [counter] from 0 to (Canvas1 .Width) by 1
do [set global temp2 to (0 - (get global HWidth - (get counter)) / (get global Scale))
set global xx to ((get global HWidth - (get temp2 * (get global Scale))) + (get global temp2 * x (get x2)))
set global temp to ((get global temp2 ^ 2) * (get x2) + (get global temp2 * x (get x)) + (get c))
set global yy to ((get global HHeight - (get temp * (get global Scale))) + (get global temp * y (get global yy)))
if (not [((get global temp > (Canvas1 .Height) - 10) or ((get global temp < -10))]) then
call [Canvas1 .DrawPoint v: (get global xx) y: (get global yy)]]
end]
end]
```

This Scratch script starts with an if condition checking if the global `starter` is true. If true, it calls `Canvas1 .DrawLine` with x1 and y1 set to global variables, and x2 and y2 set to values from `TinyDB1 .GetValue` with tag "prevx" and "prevy". It then calls `TinyDB1 .StoreValue` with tag "prevx" and valueToStore set to global xx, and `TinyDB1 .StoreValue` with tag "prevy" and valueToStore set to global yy. Finally, it initializes global variables to 0 and sets `global starter` to false.

```
if [get global starter = true] then
call [Canvas1 .DrawLine v: (get global xx) v: (get global yy) v: (call [TinyDB1 .GetValue v: (prevx)]) v: (call [TinyDB1 .GetValue v: (prevy)])]
call [TinyDB1 .StoreValue v: (prevx) v: (get global xx)]
call [TinyDB1 .StoreValue v: (prevy) v: (get global yy)]
set global yy to 0
set global xx to 0
set global temp to 0
set global temp to 0
set global starter to false
```





# Graph Screen(Block)

initialize global Scale to 10   initialize global m to 1   initialize global xx to 0  
initialize global c to 0   initialize global yy to 0   initialize global col to green  
initialize global HHeight to 0   initialize global temp to 0   initialize global starter to false  
initialize global HWidth to 0   initialize global temp2 to 0   initialize global name1 to 0

```
to setVariables
do
  set [Graph v].BackgroundColor to make color [make a list [255
  [255
  [255
  set global c to call [TinyDB1 v].GetValue
    tag [c]
    valueIfTagNotThere [0]
  set global m to call [TinyDB1 v].GetValue
    tag [m]
    valueIfTagNotThere [0]
  set global HWidth to [Canvas1 v].Width / [2]
  set global HHeight to [Canvas1 v].Height / [2]
  set global Scale to [Canvas1 v].Width / call [TinyDB1 v].GetValue
    tag [Scale]
    valueIfTagNotThere [8]
  set global col to call [TinyDB1 v].GetValue
    tag [color]
    valueIfTagNotThere [green]
```



# Graph Screen (Block)

```

to DrawPoints
do for each number from get global HWidth
    to 0
    by neg get global Scale
do call Canvas1 .DrawPoint
    x get number
    y get global HHeight - 1
    if get number < 0
        then set number to 0
for each number from get global HWidth
    to Canvas1 . Width
    by get global Scale
do call Canvas1 .DrawPoint
    x get number
    y get global HHeight - 1
    if get number > Canvas1 . Width
        then set number to Canvas1 . Width
for each number from get global HHeight
    to Canvas1 . Height
    by get global Scale
do call Canvas1 .DrawPoint
    x get global HWidth - 1
    y get number
    if get number > Canvas1 . Width
        then set number to Canvas1 . Width
for each number from get global HHeight
    to 0
    by neg get global Scale
do call Canvas1 .DrawPoint
    x get global HWidth - 1
    y get number
    if get number > get global HHeight
        then set number to get global HHeight

```

```

when Graph .Initialize
do call setVariables
call DrawAxis
call DrawPoints
call DrawLabels
call Line1
    x2 call TinyDB1 .GetValue
        tag "x2"
        valueIfTagNotThere "0"
    x get global m
    c get global c

```

```

to DrawLabels
do call Canvas1 .DrawText
    text "X"
    x 10
    y get global HHeight - 5
call Canvas1 .DrawText
    text "X"
    x Canvas1 . Width - 10
    y get global HHeight - 5
call Canvas1 .DrawText
    text "Y"
    x get global HWidth - 10
    y 20
call Canvas1 .DrawText
    text "Y"
    x get global HWidth - 10
    y Canvas1 . Height - 5

```



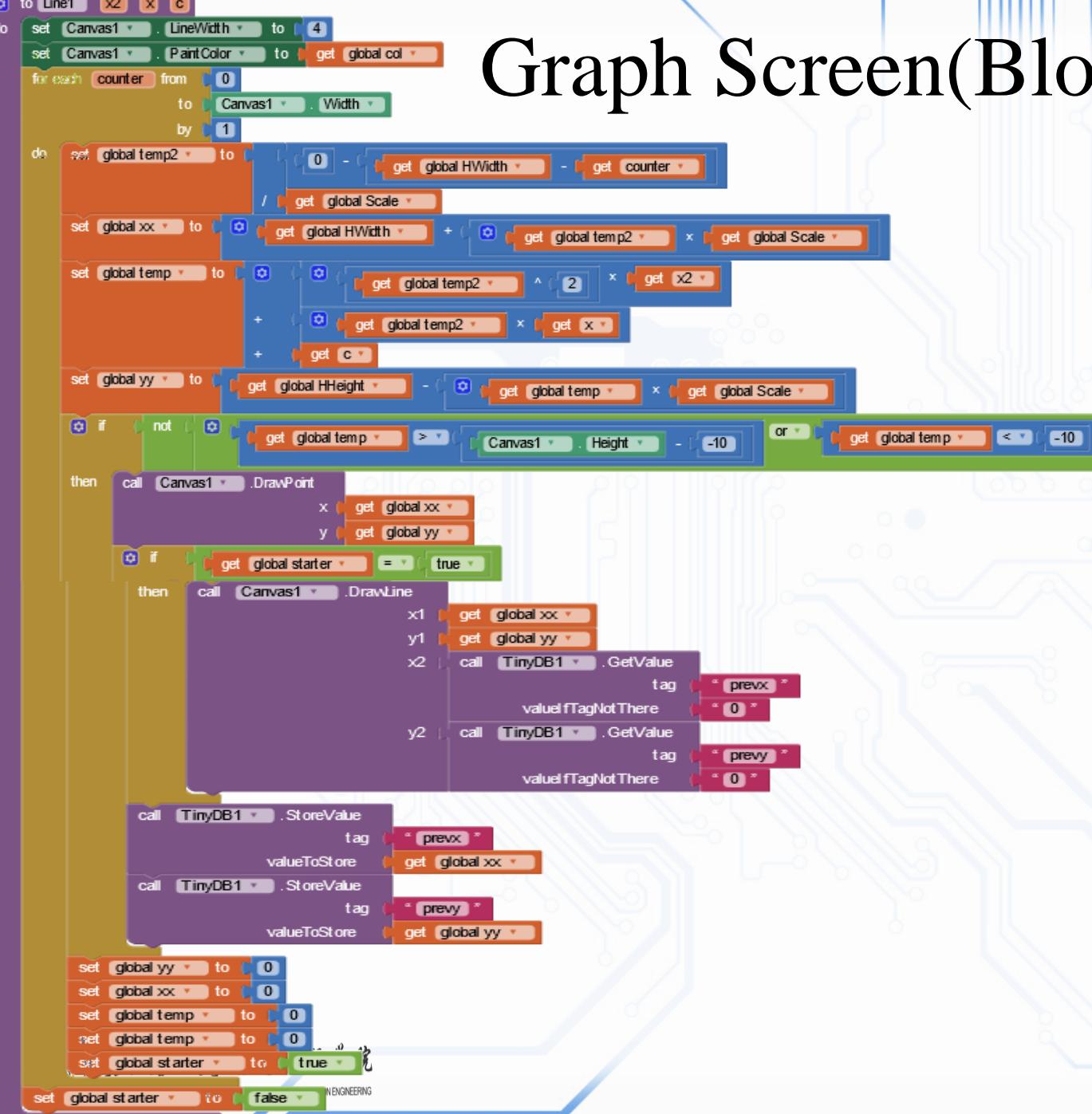


# Graph Screen (Block)

```
when Graph.Initialize
do
  call setVariables
  call DrawAxis
  call DrawPoints
  call DrawLabels
  call Line1
    x2: call TinyDB1.GetValue
      tag: "x2"
      valueIfNotThere: "0"
      x: get global m
      c: get global c
```

```
to DrawAxis
do
  call Canvas1.DrawLine
    x1: 0
    y1: get global HHeight
    x2: Canvas1.Width
    y2: get global HHeight
  call Canvas1.DrawLine
    x1: get global HWidth
    y1: 0
    x2: get global HWidth
    y2: Canvas1.Height
```

# Graph Screen(Block)



App Inventor



# Graph Screen(Block)

The image shows a Scratch-like visual programming environment with a blue circuit board background. A script is displayed for a 'Graph' screen:

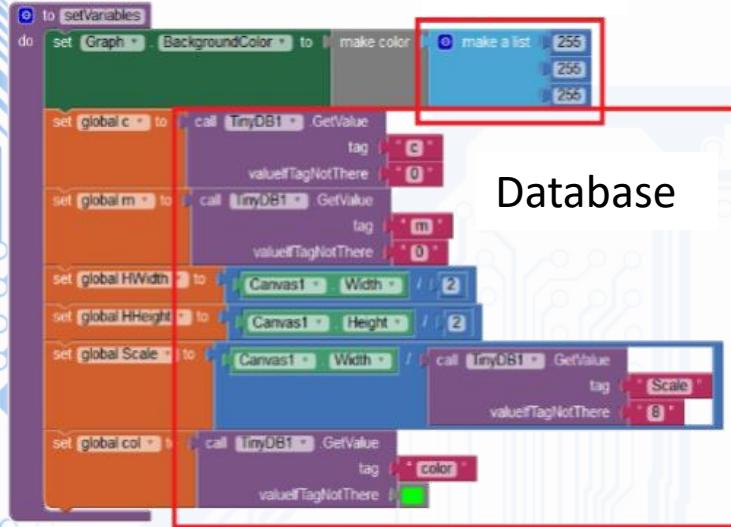
- when Button2 .Click**:
  - do **open another screen screenName "Equation"**
- when Button1 .Click**:
  - do **set global name1 to [get global name1 + (1)]**
  - evaluate but ignore result**
  - call Canvas1 .SaveAs fileName**
  - join "Graph"**
    - get global name1**
    - :y =**
    - call TinyDB1 .GetValue tag "x2"**
    - valuelfTagNotThere "0"**
    - x^2 +**
    - get global m**
    - x +**
    - get global c**
    - .png**
  - call Notifier1 .ShowMessageDialog**
    - message "The picture of the graph has been saved in the p..."**
    - title "Saved"**
    - buttonText "OK"**





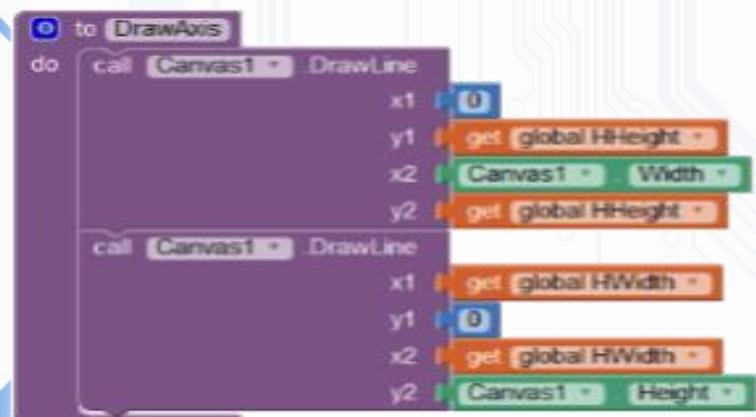
# Setting Screen(Block)

List



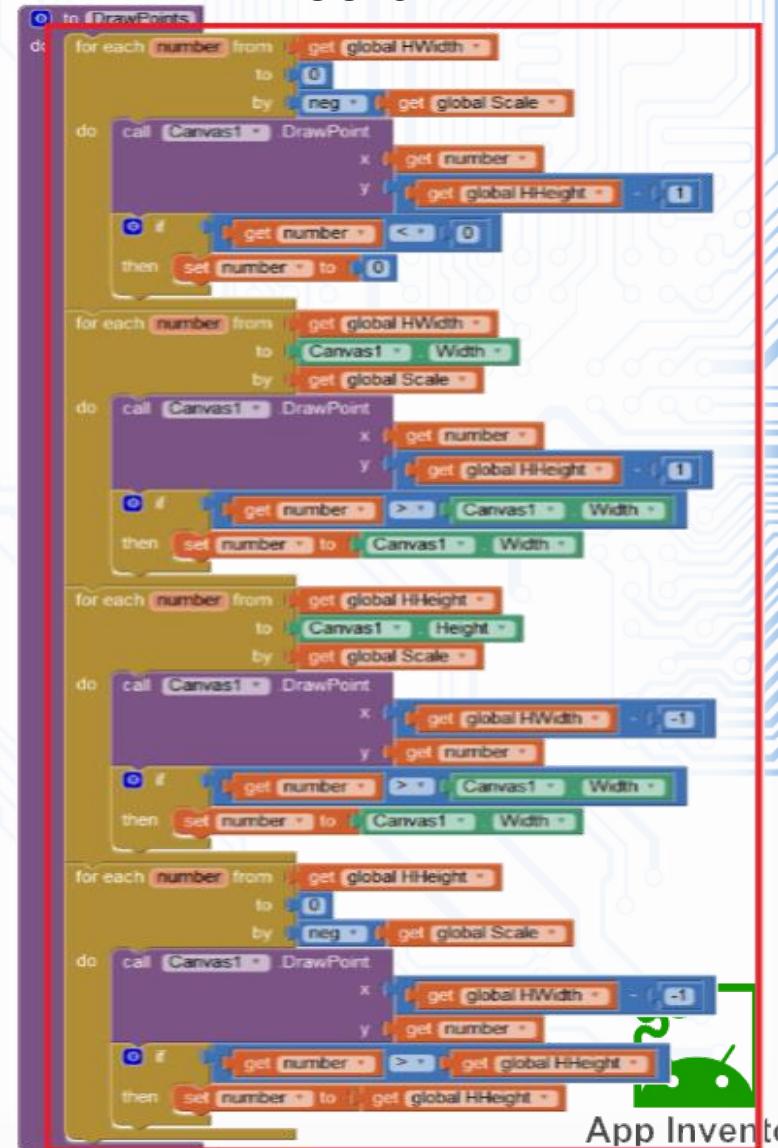
```
to setvariables
do
set Graph [BackgroundColor v] to [make color [make a list [255
255
255]]]
set global c [to call [TinyDB1] . GetValue tag [c] valueIfTagNotThere [0]]
set global m [to call [TinyDB1] . GetValue tag [m] valueIfTagNotThere [0]]
set global HWidth [to [Canvas1] . Width v] to [2]
set global HHeight [to [Canvas1] . Height v] to [2]
set global Scale [to [Canvas1] . Width v / call [TinyDB1] . GetValue tag [Scale] valueIfTagNotThere [8]]
set global col [call [TinyDB1] . GetValue tag [color] valueIfTagNotThere [green]]
```

Database



```
to DrawAxis
do
call [Canvas1] . DrawLine [x1 v] [y1 v] [x2 v] [y2 v]
call [Canvas1] . DrawLine [x1 v] [y1 v] [x2 v] [y2 v]
```

LOOPS



```
to [DrawPoints]
do
for each number from [get global HWidth] to [0] by [neg [get global Scale]]
do
call [Canvas1] . DrawPoint [x v] [y v]
if [get number < v] then
set number [to 0]
for each number from [get global HWidth] to [Canvas1] . Width by [get global Scale]
do
call [Canvas1] . DrawPoint [x v] [y v]
if [get number > v] then
set number [to [Canvas1] . Width]
for each number from [get global HHeight] to [Canvas1] . Height by [get global Scale]
do
call [Canvas1] . DrawPoint [x v] [y v]
if [get number > v] then
set number [to [Canvas1] . Width]
for each number from [get global HHeight] to [0] by [neg [get global Scale]]
do
call [Canvas1] . DrawPoint [x v] [y v]
if [get number > v] then
set number [to [get global HHeight]]
```





# Graph Screen

## Variables

```
initialize global Scale to 10    initialize global m to 1    initialize global xx to 0  
initialize global c to 0        initialize global yy to 0    initialize global col to green  
initialize global HHeight to 0   initialize global temp to 0  initialize global name1 to 0  
initialize global HWwidth to 0   initialize global starter to false  
initialize global temp2 to 0
```

```
when Graph.Initialize  
do  
  call setVariables  
  call DrawAxis  
  call DrawPoints  
  call DrawLabels  
  call Line1  
    x2 | call TinyDB1.GetValue  
    tag | "x2"  
    valueIfTagNotThere | 0  
    x | get global m  
    c | get global c
```

## Functions

```
to DrawLabels  
do  
  call Canvas1.DrawText  
    text | "X"  
    x | 10  
    y | get global HHeight - 5  
  call Canvas1.DrawText  
    text | "X"  
    x | Canvas1.Width - 10  
    y | get global HHeight - 5  
  call Canvas1.DrawText  
    text | "Y"  
    x | 0  
    y | get global HWwidth - 10  
  call Canvas1.DrawText  
    text | "Y"  
    x | 0  
    y | Canvas1.Height - 5
```

```
when Button2.Click  
do open another screen screenName Equation
```

```
when Button1.Click  
do  
  set global name1 to 1  
  evaluate but ignore result  
  call Canvas1.SaveAs  
    fileName | join Graph, get global name1, ".png"  
  call Notifier1.ShowMessageDialog  
    message | The picture of the graph has been saved in the phone  
    title | Saved  
    buttonText | OK
```



App Inventor



# Graph Screen

LOOPS

The script starts with a loop:

- Set Line1 x2 to 4
- Set Canvas1 LineWidth to 4
- Set Canvas1 PaintColor to get global col

For each (counter) from 0 to Canvas1 Width by 1:

- Set global temp2 to (get global HWidth \* get counter)
- Set global xx to (get global HWidth + (get global temp2 \* get global Scale))
- Set global temp to ((get global temp2 \* 2) + get x2)
- Set global temp to ((get global temp2 \* x) + get c)
- Set global yy to (get global Hheight + (get global temp \* get global Scale))

If (not (get global temp >= Canvas1 Height - 10 or get global temp <= -10)):

- Call Canvas1 DrawPoint with x: get global xx and y: get global yy
- If (get global starter = true):
  - Call Canvas1 DrawLine with x1: get global xx, y1: get global yy, x2: (call TinyDB1 GetValue with tag: prevx), y2: (call TinyDB1 GetValue with tag: prevy)
  - Call TinyDB1 StoreValue with tag: prevx and valueToStore: get global xx
  - Call TinyDB1 StoreValue with tag: prevy and valueToStore: get global yy

Set global yy to 0  
Set global xx to 0  
Set global temp to 0  
Set global temp to 0  
Set global starter to true  
Set global starter to false

If/Then Block

Database

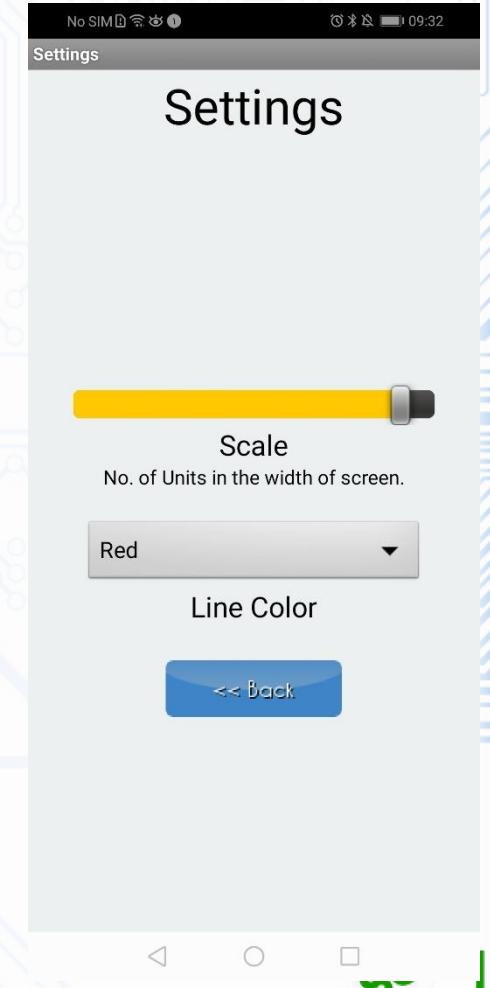


# Setting Screen(Block)

- 1) Setting about Color line and axis scale
- 2) Back button

The blocks consists of three part

- Database
- Lists
- If/Then else

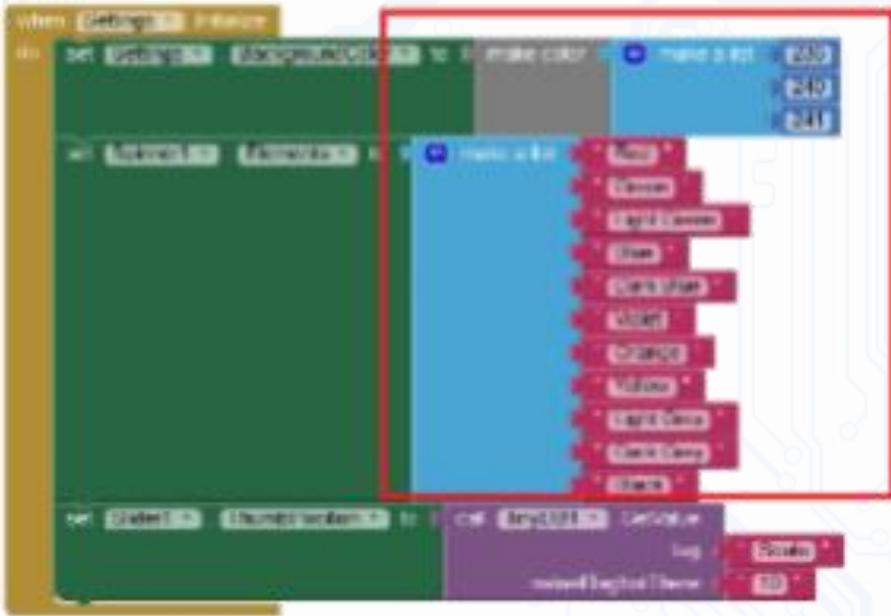




# Setting Screen(Block)



Database



Lists



If/Then else





# Setting Screen(Block)

```
when Slider1 .PositionChanged
  thumbPosition
  do
    call TinyDB1 .StoreValue
      tag "Scale"
      valueToStore get thumbPosition
when Settings .Initialize
  do
    set Settings .BackgroundColor to make color [make a list v: 236 c: 240 r: 241]
    set Spinner1 .Elements to [make a list v: Red c: Green r: Light Green]
      [v: Blue c: Dark Blue r: Violet]
      [v: Orange c: Yellow r: Light Grey]
      [v: Dark Grey c: Black r: None]
    set Slider1 .ThumbPosition to call TinyDB1 .GetValue
      tag "Scale"
      valueIfTagNotThere 10
when Button1 .Click
  do
    open another screen screenName Equation
```



# Setting Screen(Block)

```
when Spinner1 .AfterSelecting
  selection
    do
      if get selection = "Red" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [red]
      else if get selection = "Green" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [green]
      else if get selection = "Light Green" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [light green]
      else if get selection = "Blue" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [blue]
      else if get selection = "Dark Blue" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [dark blue]
      else if get selection = "Violet" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [violet]
      else if get selection = "Orange" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [orange]
      else if get selection = "Yellow" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [yellow]
      else if get selection = "Light Grey" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [light grey]
      else if get selection = "Dark Grey" then
        call TinyDB1 .StoreValue
          tag "color"
          valueToStore [dark grey]
```



```
then call TinyDB1 .StoreValue
  tag "color"
  valueToStore [red]
else if get selection = "Black" then
  call TinyDB1 .StoreValue
    tag "color"
    valueToStore [black]
else
  call TinyDB1 .StoreValue
    tag "color"
    valueToStore [white]
```



App Inventor



# Example01: Line Plotter: Coordinate Geometry

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

- Header:** File, Edit, View, History, Bookmarks, Tools, Help.
- Address Bar:** www.BANDICAM.com, ai2.appinventor.mit.edu/#6283127162273792
- Toolbar:** Back, Forward, Refresh, Home, 80%, More, Bookmarks, Download, Stop, New Tab.
- Navigation:** Getting Started, PID, Basic functions related..., C, JRM | Fuji Technology ..., YouTube, New Tab.
- App Inventor Navigation:** Projects, Connect, Build, Settings, Help.
- Project Area:** My Projects, View Trash, Guide, Report an Issue, English, moshaydi@gmail.com.
- Project Title:** Plotter
- Screen:** Screen1
- Components:** Screen1
- Properties:** Screen1, AboutScreen, AccentColor, Default, AlignHorizontal, Left: 1, AlignVertical, Top: 1, AppName, Plotter, BackgroundColor, Default, BackgroundImage, None..., BlocksToolkit, All, CloseScreenAnimation, Default, Icon, FotorCreated.jpg, OpenScreenAnimation, Default, PrimaryColor.
- Media:** FotorCreated.jpg
- Viewer:** Shows a smartphone screen with "Screen1" title and a blank white area. Options: Display hidden components in Viewer, Phone size (505x320).
- Palette:** Image, ImagePicker, ImageSprite, Button, CheckBox, DatePicker, Image (selected), Label, ListPicker, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox.
- Bottom:** Windows taskbar with various icons.



# Process Clip

## Example01: Line Plotter: Coordinate Geometry

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

- File Edit View History Bookmarks Tools Help** (top menu bar)
- www.BANDICAM.com** (page title)
- MIT App Inventor** (tab)
- Projects Connect Build Settings Help** (navigation bar)
- My Projects View Trash Guide Report an Issue English moshaydi@gmail.com** (user account)
- Plotter** (project name)
- Screen1 Add Screen ... Remove Screen Publish to Gallery** (screen management)
- Palette** (left sidebar):
  - Text**: PasswordTextBox, TextBox, TextToSpeech, Texting
  - User Interface**: Button, CheckBox, DatePicker, Image, Label, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch
- Viewer**: Shows a smartphone screen with the app's UI titled "Plot an Equation". The UI contains:
  - A text input field with placeholder "y = " followed by three colored boxes: yellow (containing  $x^2 +$ ), cyan (containing  $x +$ ), and pink.
  - A large empty white area below the input field.
- Components** (right sidebar):
  - equation**: Label1
  - TableArrangement1**:
    - Image1
    - TextBox1
    - Image2
    - TextBox2
    - Image3
    - TextBox3
- Properties** (right sidebar):
  - TextBox1**:
    - BackgroundColor: Orange
    - Enabled: checked
    - FontBold: unchecked
    - FontItalic: unchecked
    - FontSize: 14.0
    - FontTypeface: default
    - Height: Automatic...
    - Width: Automatic...
    - Hint: Hint for TextBox1
    - MultiLine: unchecked
    - NumbersOnly: unchecked
    - ReadOnly: unchecked
- Media** (right sidebar): FotorCreated.jpg, un.jpg





# Process Clip

## Example01: Line Plotter: Coordinate Geometry

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

- File Edit View History Bookmarks Tools Help** (top menu bar)
- www.BANDICAM.com** (watermark)
- MIT App Inventor** (tab)
- Getting Started PID Basic functions related... C بوزش زبان JRM | Fuji Technology ... (36) YouTube New Tab** (browser tabs)
- MIT APP INVENTOR** (header)
- Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com** (header)
- Plotter** (project name)
- Screen1 Add Screen ... Remove Screen Publish to Gallery** (screen management buttons)
- Components** (list of components used in the app):
  - equation
  - Label1
  - Label2
  - TableArrangement1
    - Image1
    - TextBox1
    - Image2
    - TextBox2
    - Image3
    - TextBox3
  - TableArrangement2
    - Create\_Graph
    - Setting
    - Label3
- Properties** (properties for selected component: Label2)
  - Label2
  - BackgroundColor  None
  - FontBold
  - FontItalic
  - FontSize 20
  - FontTypeface default
  - HTMLFormat
  - HasMargins
  - Height Automatic...
  - Width Fill parent...
  - Text  $y = ax^2 + bx + c$
  - TextAlignment center : 1
  - TextColor
- Designer** (design view)
- Blocks** (block editor view)
- Viewer** (preview of the app's user interface on a smartphone screen):
  - Display hidden components in Viewer
  - Phone size (505,320)
  - Plot an Equation** title
  - $Y=ax^2+BX+C$**  equation
  - enter A**, **enter B**, **enter C** text boxes
  - Calculate** and **Setting** buttons
  - Close the keyboard before creatin the graph, the process of drawing the graph will take time.** note
- Layout** (component palette)
- User Interface** (component palette):
  - Button
  - CheckBox
  - DatePicker
  - Image
  - Label**
  - ListPicker
  - ListView
  - Notifier
  - PasswordTextBox
  - Slider
  - Spinner
  - Switch
  - TextBox
  - TimePicker
  - WebViewer
- Layout** (component palette)
- Windows Taskbar**: Icons for File Explorer, Edge, Firefox, File Manager, and others.
- System Tray**: Date (10:23), Date (20/12/2020), ENG, Battery, Signal, and a small Android icon.





# Example01: Line Plotter: Coordinate Geometry

The screenshot shows the MIT App Inventor development environment. The top bar includes the menu (File, Edit, View, History, Bookmarks, Tools, Help), the website address (www.BANDICAM.com), and browser controls. The main workspace is divided into several panels:

- Palette:** On the left, it lists categories like User Interface, Layout, Media, Drawing and Animation, etc., with various components like Notifier, HorizontalArrangement, and Graph.
- Viewer:** In the center, it displays a smartphone screen showing a graph with two blue points and a line connecting them. Below the phone are labels: "Text for Button1", "Text for Button2", and "Text for Label1". A note at the bottom says "Non-visible components".
- Components:** On the right, it lists the components used in the project: Graph, Canvas1, TableArrangement1, Savegraph, BACK, Label1, TinyDB1, and Notifier1.
- Properties:** This panel shows settings for the selected component (Savegraph). It includes fields for Savegraph, BackgroundColor (set to Default), Enabled (checked), FontBold (unchecked), FontItalic (unchecked), FontSize (14.0), FontTypeface (default), Height (15 percent...), Width (50 percent...), Image (CreateGraph.jpg...), Shape (default), ShowFeedback (checked), Text (Text for Button1), TextAlignment (center : 1), and TextColor.



# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor

Getting Started PID Basic functions related... C بوزش زبان JRM | Fuji Technology ... YouTube New Tab

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

Plotter Setting Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Palette

- but
- Button

User Interface

Layout

- HorizontalArrangement
- HorizontalScrollViewArrangement
- TableArrangement
- VerticalArrangement
- VerticalScrollViewArrangement

Media

Drawing and Animation

Maps

Sensors

Social

Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Viewer

Display hidden components in Viewer  
Phone size (505,320)

Setting

Scale

add items...  
No of units in the width of screen

Line color

<<Back

Components

- Setting
- Label1
- TableArrangement1
- Label2
- Spinner1
- Label3
- Label4
- Button1
- TinyDB1

Properties

- Spinner1
- ElementsFromString
- Width Automatic...
- Prompt
- Selection
- Visible checked

Rename Delete

Media

- FotorCreated.jpg
- Y.png

10:37 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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

- File Edit View History Bookmarks Tools Help** (top menu bar)
- www.BANDICAM.com** (page title)
- MIT App Inventor** (tab)
- Getting Started PID Basic functions related... بوزش زبان JRM | Fuji Technology ... (36) YouTube New Tab** (navigation bar)
- Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com** (user account)
- Plotter** (project name)
- Setting Add Screen ... Remove Screen Publish to Gallery** (project tabs)
- Designer Blocks** (view mode)
- Palette**: slider (selected), Slider, User Interface, Layout, Media, Drawing and Animation, Maps, Sensors, Social, Storage, Connectivity, LEGO® MINDSTORMS®, Experimental.
- Viewer**: Shows a smartphone screen with the app's user interface titled "Setting". The screen has sections for "Scale" and "Line color". A "Slider" component is visible in the palette.
- Components**: Setting (Label1, Label2, Label3, Label4, Button1, Spinner1, Slider1, TinyDB1), Media (FotorCreated.jpg, y.png).
- Properties**: Slider1 properties include:
  - ColorLeft: Default
  - ColorRight: Default
  - Width: Automatic...
  - MaxValue: 50.0
  - MinValue: 10.0
  - ThumbEnabled: checked
  - ThumbPosition: 30.0
  - Visible: checked
- System Bar**: Shows taskbar icons, system status (10:38, ENG, 20/12/2020), and a green Android icon.





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor

Getting Started PID Basic functions related... C بوزش زبان JRM | Fuji Technology ... YouTube New Tab

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Plotter Setting Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Palette

User Interface

- Button
- CheckBox
- DatePicker
- Image
- Label
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider
- Spinner
- Switch
- TextBox
- TimePicker
- WebViewer

Viewer

Display hidden components in Viewer  
Phone size (505,320)

Plot an Equation

$Y=ax^2+BX+C$

y = enter A  $x^2$  +  
enter B x +  
enter C

Graph Graph

Close the keyboard before creating the graph, the process of drawing the graph will take time

Components

- equation
  - Label1
  - Label2
- TableArrangement1
  - Image1
  - TextBox1
  - Image2
  - TextBox2
  - Image3
  - TextBox3
- TableArrangement2
  - Creat\_Graph
  - Setting\_b
  - Label3

Properties

Image1

- Clickable
- Height 10 percent...
- Width 10 percent...
- Picture y.png...
- RotationAngle 0.0
- ScalePictureToFit
- Visible

Media

- FotorCreated.jpg
- un.png

Rename Delete

10:41 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor MIT App Inventor Text Blocks ai2.appinventor.mit.edu/#6283127162273792 80% Back Forward Home Stop Refresh Reload Download Print Copy Paste New Tab

Getting Started PID Basic functions related... C بورش زبان JRM | Fuji Technology ... YouTube New Tab

MIT APP INVENTOR Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

**Plotter** equation Add Screen ... Remove Screen Publish to Gallery Designer Blocks

**Blocks**

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- equation
  - Label1
  - Label2
- TableArrangement1
  - Image1
  - TextBox1
  - Image2
  - TextBox2

Rename Delete

**Viewer**

```
when equation [ ].initialize
do set equation [ ].BackgroundColor to make color [ 235, 240, 241 ]
when Creat_Graph [ ].Click
do
if
then
or
when Setting_b [ ].Click
do open another screen screenName [ "Setting" ]
```

Show Warnings

2 0

Media

FotorCreated.jpg

Windows taskbar icons: File Explorer, Edge, Word, Excel, Powerpoint, OneDrive, Mail, Firefox, Control Panel, Task View, Start button, Search, Volume, Battery, Network, Language, Date/Time.



# Example01: Line Plotter: Coordinate Geometry

www.BANDICAM.com

MIT App Inventor Text Blocks

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Plotter equation Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

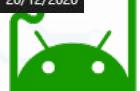
```
when equation.Initialize
do set equation.BackgroundColor to make color [235, 240, 241]
when Creat_Graph.Click
do
when Setting_b.Click
do open another screen screenName "Setting"
length TextBox1.Text to 0
is number? TextBox1.Text
false
set TextBox1.Text to 0
```

Show Warnings

Media

FotorCreated.jpg

Windows taskbar: File Explorer, Edge, Firefox, OneDrive, Task View, Start, Taskbar icons, Volume, ENG, 10:49, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

www.BANDICAM.com

File Edit View History Bookmarks Tools Help

MIT App Inventor MIT App Inventor Text Blocks ai2.appinventor.mit.edu/#6283127162273792 80% ... New Tab

Getting Started PID Basic functions related... C بوزش زبان JRM | Fuji Technology ... YouTube New Tab

MIT APP INVENTOR Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

Plotter Graph Add Screen Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Graph
  - Canvas1
- TableArrangement1
  - Savegraph
  - BACK
  - Label1
  - TinyDB1
  - Notifier1

Rename Delete Show Warnings

Viewer

Media

FotorCreated.jpg

Windows taskbar icons: File Explorer, Edge, Firefox, OneDrive, Task View, Start, Search, Taskbar settings, Volume, Battery, ENG, 10:55, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

www.BANDICAM.com

MIT App Inventor Text Blocks

Getting Started PID Basic functions related... C بوزن جان JRM | Fuji Technology ... YouTube New Tab

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Plotter Graph Add Screen Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

```
initialize global temp2 to 0
initialize global c to 0
initialize global HHeight to 0
initialize global HWWidth to 0
initialize global m to 1
initialize global yy to 0
initialize global temp to 0
setVariables
set Graph . BackgroundColor to make color [255, 255, 255]
set [global c to call TinyDB1 . GetValue tag c valueIfTagNotThere 0]
set [global m to call TinyDB1 . GetValue tag m valueIfTagNotThere 0]
set [global HWWidth to Canvas1 . Width / 2]
```

FotorCreated.jpg

Windows taskbar: File Explorer, Edge, Firefox, Notepad, Control Panel, Task View, Start, Taskbar icons.

System tray: Battery, Volume, ENG, 11:06, 20/12/2020, Android icon.





# Example01: Line Plotter: Coordinate Geometry

The screenshot shows the MIT App Inventor 2 environment with the following details:

- File Bar:** File, Edit, View, History, Bookmarks, Tools, Help.
- Title Bar:** www.BANDICAM.com, MIT App Inventor Text Blocks.
- Toolbar:** Back, Forward, Home, Refresh, Stop, Reload, Zoom (80%), More, Save, Build, Publish, New Tab.
- Header:** Getting Started, PID, Basic functions related..., C, JRM | Fuji Technology ..., YouTube, New Tab.
- App Inventor Header:** MIT APP INVENTOR, Projects, Connect, Build, Settings, Help, My Projects, View Trash, Guide, Report an Issue, English, moshaydi@gmail.com.
- Project Title:** Plotter.
- Blocks Editor:** Designer (selected), Blocks tab. The code uses the Graph blocks library to draw a line on a canvas.

```
for each [number] from [get global HWwidth] to [0] by [neg [get global Scale]] do
    call [Canvas1 v].DrawPoint [x] [get number]
    if [get number] < [0] then
        set [number] to [0]
for each [number] from [get global HWidth] to [Canvas1 v].Width by [get global Scale] do
    Show Warnings
```
- Viewer:** Shows a blue backpack icon on the canvas.
- Media:** FotorCreated.jpg, V.jpg.
- System Bar:** Windows logo, Task View, File Explorer, Edge, Firefox, File, Run, Taskbar settings, ENG, 11:17, 20/12/2020.





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor MIT App Inventor Text Blocks ai2.appinventor.mit.edu/#6283127162273792 80% Getting Started PID Basic functions related... C JRM | Fuji Technology ... YouTube New Tab

MIT APP INVENTOR Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Graph
  - Canvas1
- TableArrangement1
  - Savegraph
  - BACK
  - Label1
  - TinyDB1
  - Notifier1

Viewer

initialize global Scale to 10  
initialize global c to 0  
initialize global HHeight to 0  
initialize global HWidth to 0  
initialize global m to 1  
initialize global yy to 0  
initialize global temp to 0  
to setVariables  
do set Graph . BackgroundColor to make color make a list 255 255 255  
set (global c) to call TinyDB1 .GetValue tag c

initialize global temp2 to 0  
initialize global xx to 0  
initialize global col to green  
initialize global starter to false  
initialize global namw1 to 0  
for each number from to by do call Canvas1 .Draw if then set number  
for each number do call Canvas

This screenshot shows the MIT App Inventor environment. The top bar includes standard browser-like tabs for 'File', 'Edit', 'View', etc., and a URL 'www.BANDICAM.com'. Below the tabs is the MIT App Inventor header with 'Getting Started' and various project-related links. The main workspace is titled 'Plotter' and contains a 'Blocks' panel on the left and a 'Viewer' panel on the right. The 'Blocks' panel lists categories like 'Built-in', 'Graph', and 'TableArrangement1'. The 'Viewer' panel displays the Scratch-style code blocks for the project. A large orange block at the bottom sets the graph's background color to white and initializes variable 'c' to 1. Above it, a purple 'repeat' loop initializes variables for scale, height, width, and more. To the right, another 'repeat' loop handles drawing lines on a canvas. The bottom of the screen shows the Windows taskbar with various icons and the system tray indicating the date and time.





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor

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

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com

Plotter Graph Add Screen Remove Screen Publish to Gallery Designer Blocks

**Blocks**

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Graph
  - Canvas1
  - TableArrangement1
    - Savegraph
    - BACK
    - Label1
- TinyDB1
- Notifier1

**Viewer**

```
to procedure [m1 DrawText]
do [m1 DrawText
  text [Y] - 5]
end

to procedure [result]
res result
end

call [DrawAxes]
DrawAxes1

call [DrawLabels]
DrawLabels1
x1 [0]
x2 [get global HHeight]
y1 [Canvas1 . Width]
y2 [get global HHeight]

call [setVariables]
setVariables1
x1 [0]
x2 [get global HWidt]
y1 [0]
y2 [get global HWidt]
Canvas1 DrawLine
x1 [0]
y1 [0]
x2 [get global HWidt]
y2 [Canvas1 . Height]

setVariables
Color to [make color [make a list [255
  255
  255]]]
tiny DB1 . GetValue
tag [c]
valueif TagNotThere
```

initialize global Scale to [10]
initialize global c to [0]
initialize global HHeight to [0]
initialize global HWidt to [0]
initialize global m to [1]
initialize global yy to [0]
initialize global temp to [0]

initialize global temp2 to [0]
initialize global xx to [0]
initialize global col to [green]
initialize global start to [false]
initialize global namw1 to [0]

Designer Blocks

BACK.jpg CreateGraph.jpg

Windows taskbar: File Explorer, Edge, Notepad, Task View, Firefox, Taskbar icons, Date/Time: 15:10, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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

- File Menu:** File, Edit, View, History, Bookmarks, Tools, Help.
- Toolbar:** MIT App Inventor, Back, Forward, Home, Address bar (ai2.appinventor.mit.edu/#6283127162273792), Zoom (80%), More options, Print, Save, Download, Refresh, New Tab.
- Project Structure:** Getting Started, PID, Basic functions related..., C, Amozesh Zبان, JRM | Fuji Technology ..., YouTube, New Tab.
- Sidebar:** Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, Procedures, Graph, Canvas1, TableArrangement1, Savegraph, BACK, Label1, TinyDB1, Notifier1, Rename, Delete.
- Media:** BACK.jpg, CreateGraph.jpg, FotorCreated.jpg, Setting.jpg, x.png, x2.png, y.png.
- Code Editor:** The main area contains three sets of Scratch-style blocks for initializing global variables and plotting points on a canvas.
  - Initializations:
    - initialize glob:Scale to 10
    - initialize glob:c to 0
    - initialize glob:HHeight to 0
    - initialize glob:HWidth to 0
    - initialize glob:m to 1
    - initialize glob:yy to 0
    - initialize glob:temp to 0
    - initialize glob:temp2 to 0
    - initialize glob:xx to 0
    - initialize glob:col to 0
    - initialize glob:starter to false
    - initialize glob:namw1 to 0
  - Plotting loop:
    - do [DrawPoints]
      - for each number from get global HWidth to 0 by neg get global Scale
      - do [call [Canvas1] .DrawPoint]
        - x get number
        - y get global HHeight - 1
      - if [get number < 0]
        - then set number to 0
  - Final loop:
    - for each number from get global HWidth to Canvas1 . Width by get global Scale
    - do [call [Canvas1] .DrawPoint]
      - x get number
      - y get global HHeight - 1
    - if [get number >= Canvas1 . Width]
      - then set number to Canvas1 . Width
  - Final loop:
    - for each number from get global HHeight to Canvas1 . Height by get global Scale
    - do [call [Canvas1] .DrawPoint]
      - x global HWidth
      - y get number





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Graph
  - Canvas1
  - TableArrangement1
    - Savegraph
    - BACK
    - Label1
    - TinyDB1
    - Notifier1
- Media
  - BACK.jpg
  - CreateGraph.jpg

Viewer

make color [255, 255, 255]  
make a list [255, 255, 255]  
Set value  
tag  
ifThen  
elseValue  
ifElse  
ifNotElse  
Width [2]  
Height [2]  
Width [call TinyDB1 GetValue tag Scale]  
GetValue tag color1  
NotThere  
From [get global RWidth] To [0] By [neg get global Scale]  
Canvas1 DrawPoint  
x [get number]  
y [get number]  
Show Warnings  
x [get number]  
y [get number]  
From [get global RWidth]

initialize global Scale to 10  
initialize global x to 0  
initialize global yHeight to 0  
initialize global co to 0  
initialize global HWWidth to 0  
initialize global m to 0  
initialize global y to 0  
initialize global temp to 0  
initialize global temp2 to +  
initialize global o to 0  
initialize global co to 0  
initialize global HWHeight to 0  
initialize global starter to false  
initialize global hemw1 to 0

16:22 ENG 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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← → C H ai2.appinventor.mit.edu/#6283127162273792 80% ... G S D T Y New Tab

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

```
set global temp2 to (get global HWidth - get global Scale) / 2
set global xx to (get global HWidth + get global temp2) * get global Scale
set global temp to (get global temp2 ^ 2 + get x2 ^ 2) ^ 0.5
set global yy to (get global HHeight - get global temp) * get global Scale
```

Canvas1 Width

Show Warnings

16:35 20/12/2020

The screenshot shows the MIT App Inventor environment with the project titled "Plotter". The code in the blocks editor calculates coordinates for a line segment. It starts by setting `global temp2` to  $(\text{global HWidth} - \text{global Scale}) / 2$ . Then it sets `global xx` to  $(\text{global HWidth} + \text{global temp2}) * \text{global Scale}$ . Next, it calculates the hypotenuse `global temp` using the formula  $\sqrt{\text{global temp2}^2 + \text{x2}^2}$ . Finally, it sets `global yy` to  $(\text{global HHeight} - \text{global temp}) * \text{global Scale}$ . The blocks editor also shows a `get` block and a `Show Warnings` button.





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

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

Graph Canvas1

TableArrangement1 Savegraph BACK Label1 TinyDB1 Notifier1

Rename Delete

Media BACK.jpg CreateGraph.jpg

Viewer

if not get global temp > Canvas1 Height - 10 or get global temp = 10  
then call Canvas1 .DrawPoint x get global xx y get global yy  
if = true then call Canvas1 .DrawPoint x get global xx y get global yy  
get global temp  
initialize global Scale to 10  
initialize global c to 0  
initialize global HHeight to 0  
initialize global HWidth to 0  
initialize global m to 1  
initialize global yy to 0  
initialize global temp to 0

8 11 Show Warnings





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

```
do [to Line1 x x2 c]
  do [set (Canvas1 v LineWidth v) to 4]
    set (Canvas1 v PaintColor v) to [get global col]
    for each [number] from [0] to [Canvas1 v Width] by [1]
      do [if [not [get global temp < > Canvas1 v Height - -10]] or [get global temp < > 10]
        then [call [Canvas1 v DrawPoint x [get global xx] y [get global yy]]
          if [get global starter = true]
            then [call [Canvas1 v DrawLine x1 [get global xx] y1 [get global yy] x2 [call [TinyDB1 v GetValue tag "prevx"] valueIfTagNotThere "0"]
              call [TinyDB1 v GetValue tag "prevy" valueIfTagNotThere "0"]
              set global temp2 to [get global HWidth / get global Scale]
              set global xx to [get global HWidth + get global temp2 * x2]
              set global temp to [get global temp2 * 2 * x2]
              set global yy to [get global HHeight - get global temp * get global Scale]
              initialize global Scale to 10
              initialize global c to 0
              initialize global HHeight to 0]
            end if
          end if
        end if
      end do
    end for each
  end do
end do
```

Media

BACK.jpg CreateGraph.ing

Windows taskbar: File Explorer, Edge, Notepad, Task View, Start, Taskbar icons, 16:49, ENG, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

call setVariables  
call DrawAxis

when Graph.Initialize do call setVariables

initialize globe.temp2 to 0  
initialize globe.xx to 0  
initialize globe.col to green  
initialize globe.starter to false  
initialize globe.namw1 to 0

for each number from get global HWidth to 0 by neg get global Scale do call Canvas1.DrawPoint x get number y get global HHeight - 1  
if get number < 0 then set number to 0

for each number from get global HWidth to Canvas1.Width by get global Scale do call Canvas1.DrawPoint x get number y get global HHeight - 1  
if get number >= Canvas1.Width then

Show Warnings

3 8

BACK.jpg CreateGraph.jpg

16:51 ENG 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

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

Graph Canvas1

TableArrangement1 Savegraph BACK Label1 TinyDB1 Notifier1

Rename Delete

Viewer

to DrawPoints  
for each number from get global HWidth to 0 by neg get global Scale  
do call Canvas1 .DrawPoint x get number y get global HHeight - 1  
if get number < 0 then set number to 0  
for each number from get global HWidth to Canvas1 . Width by get global Scale  
do call Canvas1 .DrawPoint x get number y get global HHeight - 1  
if > 0 get number > Canvas1 . Width Show Warnings number to Canvas1 . Width  
call setVariables  
call DrawAxis  
when Graph Initialize do call setVariables

Designer Blocks

BACK.jpg CreateGraph.jpg FotorCreated.jpg Setting.jpg

16:55 ENG 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

The screenshot shows the MIT App Inventor 2 environment. The title bar indicates the project is titled "Plotter". The interface includes a "Blocks" palette on the left containing categories like Built-in, Setting, and Media, along with a "Viewer" window on the right displaying a graphical interface with a blue backpack icon and some control buttons. The status bar at the bottom shows system icons and the date/time (17:24, 20/12/2020).





# Example01: Line Plotter: Coordinate Geometry

File Edit View History Bookmarks Tools Help

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Plotter Setting Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

```
when [Setting] .Initialize
  (0) set [Setting] .BackgroundColor to make color [make a list [255, 240, 241]]
  (1) set [Spinner1] .Elements to make a list [Red, Green, Light Green, Blue, Dark Blue, Violet, Orange, Yellow, Light Gray, Dark Gray, Black]
  (2) set [Slider1] .ThumbPosition to call [TinyDB1] .GetValue tag [Scale]
    valueIfTagNotThere [10]
```

Label1

TableArrangement1

Label2

Label3

Label4

Button1

Spinner1

Slider1

TinyDB1

Rename Delete

Show Warnings

Media

BACK.jpg CreateGraph.jpg

Windows taskbar: File Explorer, Edge, Firefox, Task View, Start, Taskbar icons, Date/Time: 17:33, 20/12/2020, ENG





# Example01: Line Plotter: Coordinate Geometry

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Plotter Setting Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

z41

make a list [Red, Green, Light Green, Blue, Dark Blue, Violet, Orange, Yellow, Light Gray, Dark Gray, Balck]

if [get selection = Red] then call [TinyDB1 .StoreValue tag color valueToStore]

else if [get selection = Violet] then call [TinyDB1 .StoreValue tag color valueToStore]

else if [get selection = Dark Blue] then call [TinyDB1 .StoreValue tag color valueToStore]

else if [get selection = Green] then call [TinyDB1 .StoreValue tag color valueToStore]

else if [get selection = Light Green]

TinyDB1 .GetValue tag Scale valueIfTagNotThere 10

Equation Show Warnings

Orange, Light Gray, Dark Gray, Balck

Label1 TableArrangement1 Label2 Label3 Label4 Button1 Spinner1

Rename Delete

Media BACK.jpg CreateGraph.jpg

Windows taskbar: File Explorer, Edge, Firefox, Task View, Start, Taskbar settings, Volume, ENG, 17:40, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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Plotter Graph Add Screen Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

```
do set [Canvas1 :: LineWidth] to 4
set [Canvas1 :: PaintColor] to [get global col]
for each [counter] from 0 to [Canvas1 :: Width] by 1
do set global temp2 to [get global HWidth] - [get counter] / [get global Scale]
set global xx to [get global HWidth] + [get global temp2] * [get global Scale]
set global temp to [get global temp2] ^ 2 + [get x2] + [get global temp2] * [get x] + [get c]
set global yy to [get global HHeight] - [get global temp] * [Canvas1 :: Height] - 10
if [not [get global temp] <= [Canvas1 :: Height] - 10] or [get global temp] > 10
then call [Canvas1 :: DrawPoint] x [get global xx] y [get global yy]
if [get global starter] = true
then call [Canvas1 :: DrawLine] x1 [get global xx] y1 [get global yy] x2 [call [TinyDB1 :: GetValue] tag [prevx] valueIfTagNotThere 0]
call [TinyDB1 :: SetValue] tag [prevx] value [get global yy]
end if
end do
end do
```

Graph

TableArrangement1

Media

BACK.jpg CreateGraph.jpg

Windows taskbar: File Explorer, Edge, Firefox, File, Power, Task View, Start, Taskbar settings, ENG, 18:39, 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

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Plotter Graph Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks

Viewer

Labels

Canvas1 • DrawText  
text "X"  
x 10  
y get global HHeight - 5

Canvas1 • DrawText  
text "X"  
x Canvas1 • Width - 10  
y get global HHeight - 5

Canvas1 • DrawText  
text "Y"  
x get global HWidth - 10  
y Canvas1 • Height - 5

Axis

Canvas1 • DrawLine  
x 0  
y 0  
x2 get global HHeight  
y2 get global HHeight

Show Warnings

do to Line1 x x2 o  
do set Canvas1 • . LineWidth 1 to 4  
set Canvas1 • . PaintColor to get global col  
for each counter from 0 to Canvas1 • . Width by 1  
do set global temp2 to 0 + get global HWidth + get counter / get global Scale  
set global xx to get global HWidth + get global temp2 \* get global Scale  
set global temp to 0 + get global temp2 \* 2 \* get x2 + get global temp2 \* get x + get c  
set global yy to get global HHeight - get global temp \* get global Scale  
if not get global temp > 0 then call Canvas1 • . DrawPoint  
x get global xx  
y get global yy  
if get global starter = true then call Canvas1 • . DrawLine  
x1 get global xx

Designer Blocks

18:43 20/12/2020





# Example01: Line Plotter: Coordinate Geometry

Demo APP



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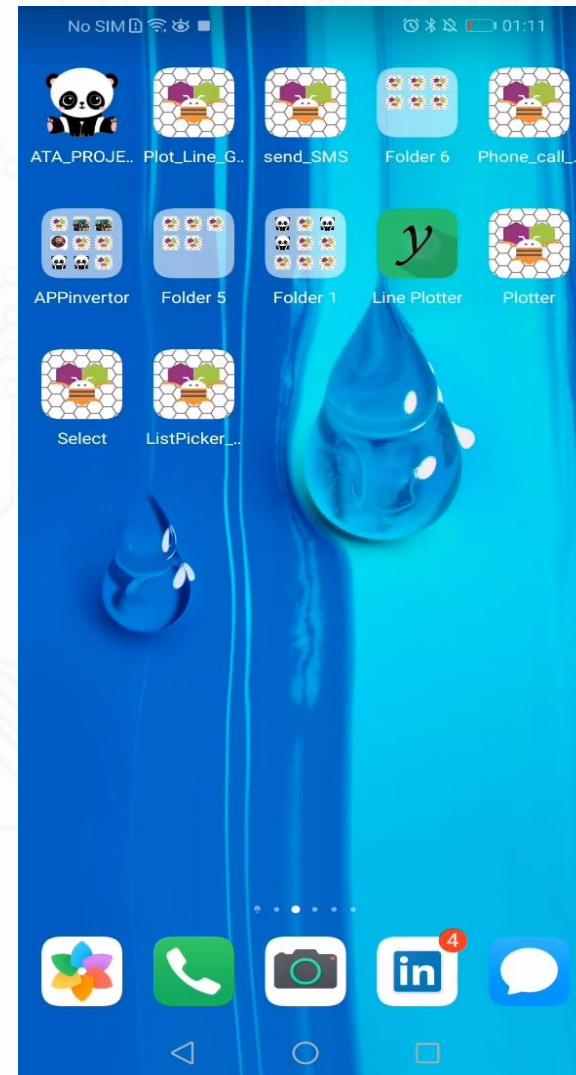


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# Example01: Line Plotter: Coordinate Geometry

Demo APP



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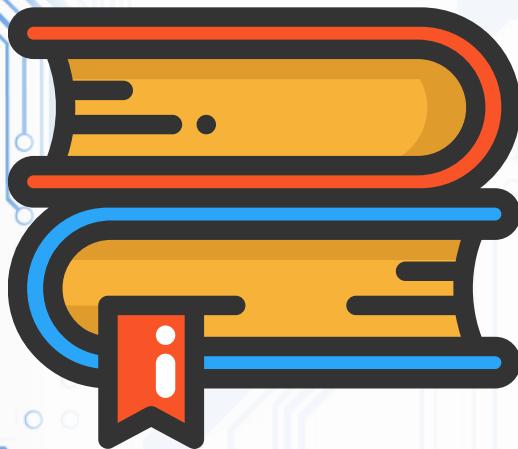


App Inventor



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# MOBILE APPLICATION DEVELOPMENT

Example02: Selection



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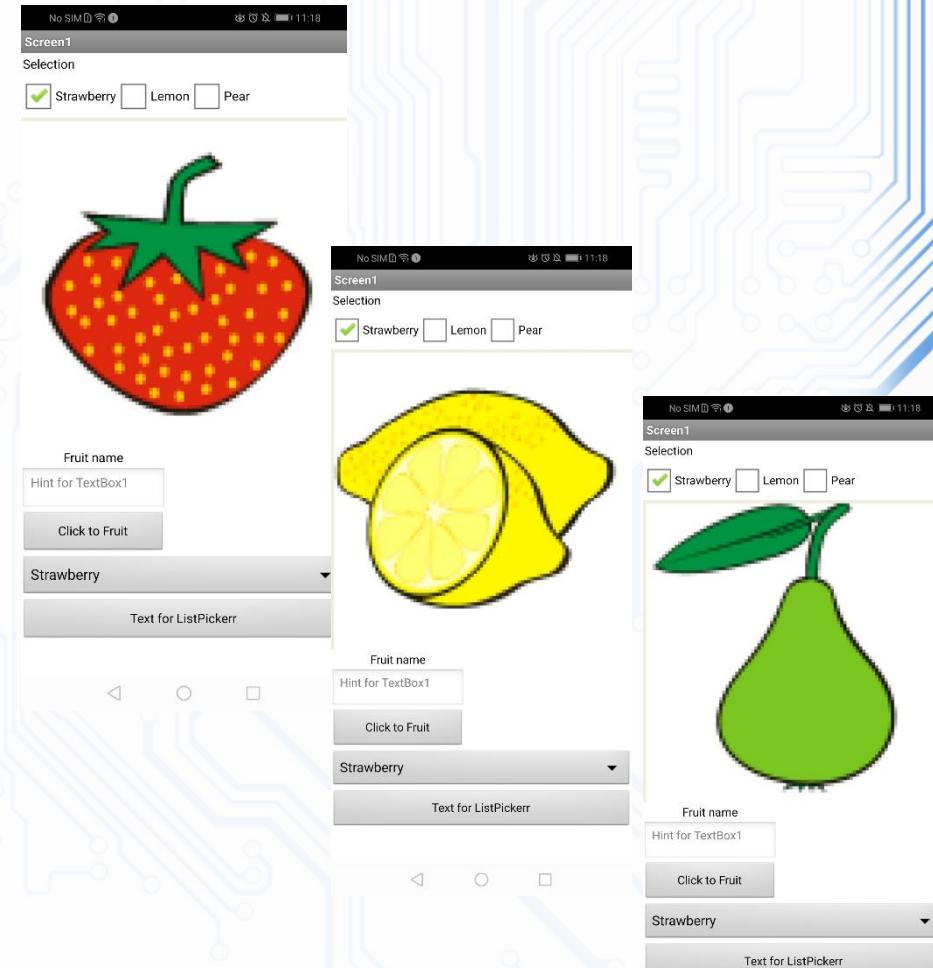
App Inventor



# Example02:Selection

## Example Aim

- Let's look at different ways to choose, select ... with **CheckBox**, **Spinner**, **ListView** and **TextBox**.
- Create a new project and add the controls to the next image ...





# Example02:Selection

Display hidden components in Viewer  
Check to see Preview on Tablet size.

9:48

Selection - (© Juan A. Villalpando)

Strawberry

Lemon

Pear

Fruit name:

Click to fruit

add items... ▾

Text to ListPicker

Components

- Screen1
  - CheckBox1 (checked)
  - CheckBox2 (checked)
  - CheckBox3 (checked)
- HorizontalArrangement1
  - Image1 (fresa.gif)
- VerticalArrangement1
  - Label1
  - TextBox1
  - Button1
- Spinner1
- ListPicker1

Properties

CheckBox1

BackgroundColor: None

Checked:

Enabled:

FontBold:

FontItalic:

FontSize: 14.0

FontTypeface: default

Height: Automatic...

Width: Fill parent...

Text: Strawberry

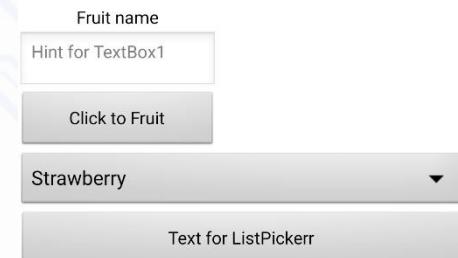
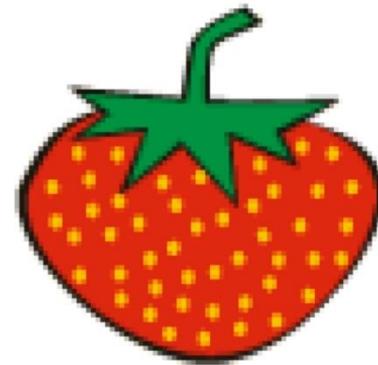
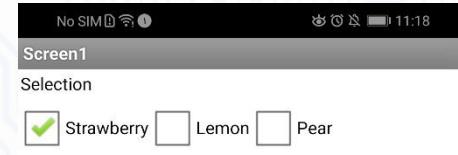
TextColor: Black

Visible:

Media

- fresa.gif
- limon.gif
- pera.gif

Upload File ...

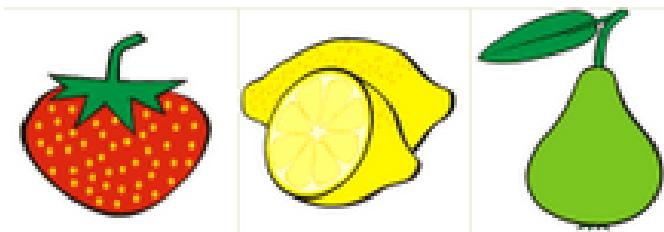


App Inventor



# Example02:Selection

- Remember that for the **Layout** occupies the width must put in property **Width: Fill parent**.
- We went down to our computer these three image files (right click on the image and save) and then click **Upload File...** to our project.
- The block section part
  - 1) **Checkbox**
  - 2) **Spinner**.
  - 3) **Selector the List and List menu.**
  - 4) **Selection by text.**

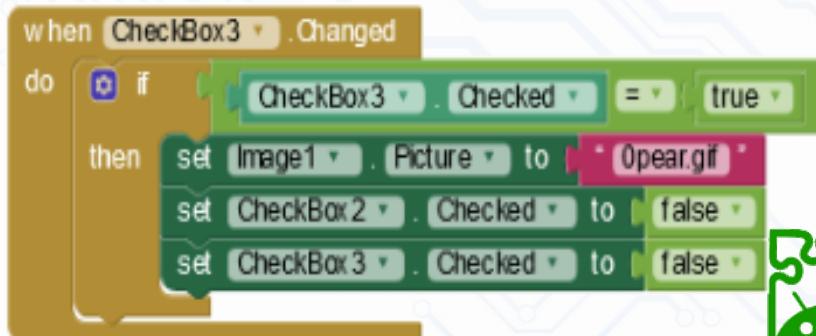
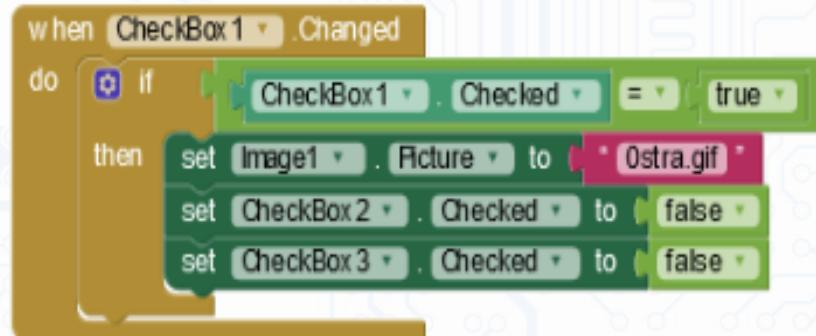




# Example02:Selection

## 1.checkbox

- When we make a **CheckBox** the chosen image will appear in the control **Image1**.
- In addition **CheckBox**, uncheck the other (false).
- If we remove the **if** and each pair of **false CheckBox**, you can choose more than one box at a time.
- That is, we just **put Imagen.Photo as fresa.gif** within the **CheckBox.Changed**. (Same in the other two CheckBox)





# Example02:Selection

## 2.Spinner.

```
initialize global fruits1 to make a list [Strawberry ; limon ; pear]
initialize global fruits2 to make a list [Ostra.gif ; Olimon.gif ; Opear.gif]
when [Screen1 Initialize]
do
set [Spinner1 v].Elements to get global fruits1
set [ListPicker1 v].Elements to get global fruits1
when [Spinner1 AfterSelecting]
selection
do
set [Image1 v].Picture to select list item list [get global fruits2 v] index [Spinner1 v].SelectionIndex
```



- When you press the **Spinner1**, we will get a list of options.

- First we create two lists with the name of the items you want to appear in the menu **Spinner** and another with the name of the file containing each **image.gif**

- When the display starts, it loads the list of **fruits1** on the menu **Spinner**.
- When you click an option, taken **index** of pulsed option, ie the rate of a fruit and is selected in the image list, this **index**, so that **matches** the index of the fruit selected with index image displayed.
- The two lists have one correspondence, ie each element of a list corresponds to an element of another list and also respecting the order.



# Example02:Selection

## 3.Selector the List and List menu.

```
initialize global fruits1 to make a list [Strawberry, limon, pear]
initialize global fruits2 to make a list [Ostra.gif, Olimon.gif, Opear.gif]

when Screen1.Initialize
do
  set Spinner1.Elements to get global fruits1
  set ListPicker1.Elements to get global fruits1

when Spinner1.AfterSelecting
selection
do
  set Image1.Picture to select list item list get global fruits2
  index Spinner1.SelectionIndex

when ListPicker1.AfterPicking
do
  set Image1.Picture to select list item list get global fruits2
  index ListPicker1.SelectionIndex
```

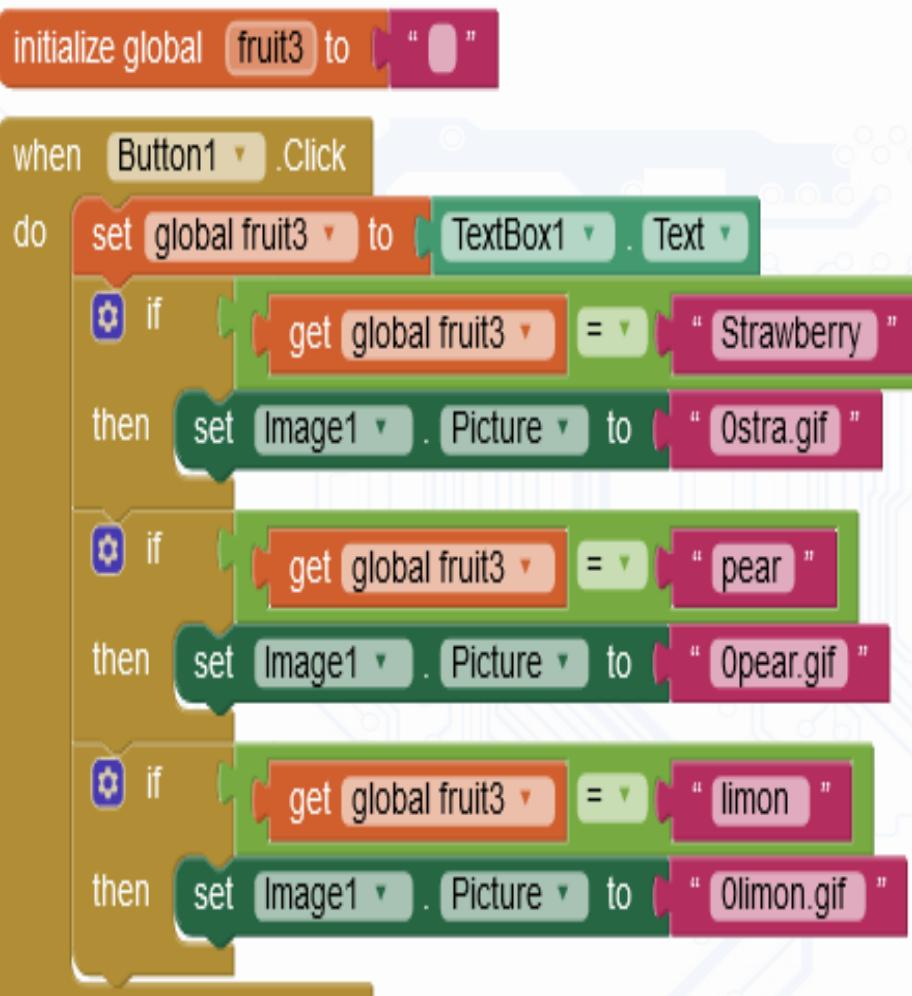
- Add code for ListPicker, similar to Spinner.





# Example02:Selection

## 4.Selection by text.



- We write a text (strawberry, pear or lemon) and using the command if an option is performed.
- **One must be careful with uppercase and lowercase.**



# Example02:Selection

File Edit View History Bookmarks Tools Help

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

Palette Search Components... User Interface Button CheckBox DatePicker Image Label ListView Notifier PasswordTextBox Slider Spinner Switch TextBox TimePicker WebViewer Layout

Viewer Display hidden components in Viewer Phone size (505,320)

Screen1

Components Screen1

Properties Screen1 AboutScreen AccentColor Default AlignHorizontal Left:1 AlignVertical Top:1 AppName Select BackgroundColor Default BackgroundImage None... BlocksToolkit All CloseScreenAnimation Default Icon None... Media Upload File... OpenScreenAnimation Default PrimaryColor

Rename Delete

22:09 20/12/2020 ENG

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App Inventor

The screenshot displays the MIT App Inventor 2 development environment. The main window title is "www.BANDICAM.com". The interface includes a top navigation bar with links like "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". Below the navigation is a tab bar with "MIT App Inventor" selected. The central workspace is titled "Select" and contains a "Screen1" component. The "Components" panel on the right lists "Screen1" and "AboutScreen". The "Properties" panel provides detailed settings for these components, including "AccentColor", "AlignHorizontal", "AlignVertical", "AppName", "BackgroundImage", "BlocksToolkit", "CloseScreenAnimation", "Icon", "Media", "OpenScreenAnimation", and "PrimaryColor". The "Designer" tab is currently active, showing a smartphone preview with a blank white screen labeled "Screen1". The "Blocks" tab is also visible. The bottom of the screen shows the Windows taskbar with icons for various applications like Microsoft Word, Excel, and Edge. A watermark for "JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING" is at the bottom left, and the "App Inventor" logo is at the bottom right.



# Example02:Selection

File Edit View History Bookmarks Tools Help

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Palette

- but
- Button

User Interface

Layout

- HorizontalArrangement
- HorizontalScrollViewArrangement
- TableArrangement
- VerticalArrangement
- VerticalScrollViewArrangement

Media

Drawing and Animation

Maps

Sensors

Social

Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Extension

Viewer

Display hidden components in Viewer  
Phone size (505,320)

Screen1

- TableArrangement1
  - CheckBox1
  - CheckBox2
  - CheckBox3
- HorizontalArrangement1
  - Image1
- TableArrangement2
  - Label1
  - TextBox1
  - Button1

Components

Properties

Screen1

AboutScreen

AccentColor Default

AlignHorizontal Left : 1

AlignVertical Top : 1

AppName Select

BackgroundColor Default

BackgroundImage None...

BlocksToolkit All

CloseScreenAnimation Default

Icon None...

OpenScreenAnimation Default

PrimaryColor Default

PrimaryColorDark Default

ScreenOrientation Unspecified

Rename Delete

Upload File ...

22:14 20/12/2020





# Example02:Selection

File Edit View History Bookmarks Tools Help

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Palette

User Interface

Layout

Media

Drawing and Animation

Maps

Sensors

Social

Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Extension

Viewer

Display hidden components in Viewer

Phone size (505,320)

Screen1

Selection

Strawberry

Lemon

Pear

Fruit name

Click to Fruit

add items...

Text for ListPicker

Components

Properties

CheckBox1

BackgroundColor

None

Checked

Enabled

FontBold

FontItalic

FontSize

14.0

FontTypeface

default

Height

Automatic...

Width

Automatic...

Text

Strawberry

TextColor

Default

Visible

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22:17 20/12/2020





# Example02:Selection

File Edit View History Bookmarks Tools Help

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MIT APP INVENTOR

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

Blocks

when [CheckBox3] .Changed  
do [if [CheckBox3] .Checked = true  
then set [Image1] .Picture to [pear]  
set [CheckBox2] .Checked to false  
set [CheckBox3] .Checked to false]

initialize global [fruits1] to [make a list "Strawberry", "limon", "pear"]  
initialize global [fruits2] to [make a list "Strawberry.gif", "limon.gif", "pear.gif"]

Show Warnings

Media Upload File ...

Windows taskbar: File Explorer, Microsoft Edge, Microsoft Word, Microsoft Powerpoint, Mozilla Firefox, Google Chrome, Task View, Taskbar settings, Volume, ENG, 22:22, 20/12/2020





# Example02:Selection

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

Blocks Viewer

when CheckBox3 .Changed  
do if CheckBox3 . Checked = true  
then set Image1 . Picture to "pear"  
set CheckBox2 . Checked to false  
set CheckBox3 . Checked to false

when Screen1 Initialize  
do set Spinner1 . Elements to get global fruits1  
set ListPicker1 . Elements to get global fruits1

when Spinner1 .AfterSelecting selection  
do set Image1 . Picture to select list item list get global fruits2 index Spinner1 . SelectionIndex

when ListPicker1 .AfterPicking  
do set Image1 . Picture to select list item list get global fruits2 index Spinner1 . SelectionIndex

initialize global fruits1 to make a list "Strawberry" "limon" "pear"  
initialize global fruits2 to make a list "Strawberry.gif" "limon.gif" "pear.gif"

Designer Blocks

APP INVENTOR

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22:27 ENG 20/12/2020

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# Example02:Selection

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

Palette

User Interface

Layout

HorizontalArrangement

HorizontalScrollView

TableArrangement

VerticalArrangement

VerticalScrollView

Media

Drawing and Animation

Maps

Sensors

Social

Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Viewer

Display hidden components in Viewer

Phone size (505,320)

Screen1

Selection

Strawberry Lemon Pear

Fruit name

Click to Fruit

add items...

Text for ListPicker

Components

- Screen1
- Label2
- TableArrangement1
  - CheckBox1
  - CheckBox2
  - CheckBox3
- HorizontalArrangement1
- TableArrangement2
  - Label1
  - TextBox1
  - Button1
  - Spinner1
  - ListPicker1

Properties

Image1

Clickable

Height

Width

Picture

RotationAngle

ScalePictureToFit

Visible

Designer

Blocks

22:32 20/12/2020

The screenshot shows the MIT App Inventor interface. In the center, there is a smartphone-like viewer displaying a screen titled "Screen1" with the title "Selection". On the screen, there are three checkboxes labeled "Strawberry", "Lemon", and "Pear". Below them is a "Fruit name" input field with a "Click to Fruit" button. At the bottom, there is a "Text for ListPicker" input field with a dropdown menu showing "add items...". To the left of the viewer is a "Palette" sidebar with various component categories like "User Interface", "Layout", and "Media". To the right of the viewer are "Components" and "Properties" panels. The "Components" panel lists the objects used in the screen, and the "Properties" panel shows the properties for the selected object, "Image1". The status bar at the bottom indicates the time as 22:32 and the date as 20/12/2020.





# Example02:Selection

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

- Blocks Explorer:** Shows the project structure under "Select". It includes categories like Built-in, Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, Procedures, and specific components for Screen1, TableArrangement1, and HorizontalArrangement1.
- Viewer:** Displays the block-based code for the application.
  - Three **when CheckBox1 .Changed** blocks are triggered by the state of CheckBox1:
    - Set Image1 .Picture to "Strawberry"
    - Set CheckBox2 .Checked to false
    - Set CheckBox3 .Checked to false
  - Two **when CheckBox2 .Changed** blocks are triggered by the state of CheckBox2:
    - Set Image1 .Picture to "limon"
    - Set CheckBox2 .Checked to false
    - Set CheckBox3 .Checked to false
  - One **when CheckBox3 .Changed** block is triggered by the state of CheckBox3:
    - Set Image1 .Picture to "pear"
    - Set CheckBox2 .Checked to false
    - Set CheckBox3 .Checked to false
- Code Area:** Shows additional global variable initializations and logic:
  - Initialize global fruits1 to make a list [Strawberry, limon, pear]
  - Initialize global fruits2 to make a list [Ostra.gif, Olimon.gif, Opear.gif]
  - Initialize global fruit3 to
  - when Button1 .Clicked do:
    - if fruit3 = 1 then set Image1 .Picture to fruits1
    - if fruit3 = 2 then set Image1 .Picture to fruits2
    - if fruit3 = 3 then set Image1 .Picture to fruit3
- Toolbar:** Includes standard browser controls (Back, Forward, Home, Stop, Refresh), zoom (80%), and other application-specific icons.
- System Tray:** Shows the date (20/12/2020), time (22:59), battery level, signal strength, and language (ENG).





# Example02:Selection

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

Blocks      Viewer

when Spinner1 .AfterSelecting  
selection  
do set Image1 . Picture to select list item list get global fruits2  
index Spinner1 . SelectionIndex

when ListPicker1 .AfterPicking  
do set Image1 . Picture to select list item list get global fruits2  
index Spinner1 . SelectionIndex

initialize global fruit3 to

when Button1 .Click  
do set global fruit3 to TextBox1 . Text  
if get global fruit3 = "Strawberry"  
then set Image1 . Picture to "Ostra.gif"  
if get global fruit3 = "pear"  
then set Image1 . Picture to "Opear.gif"  
if get global fruit3 = "limon"  
then set Image1 . Picture to "Olimon.gif"

Show Warnings

Media

Olimon.gif Opear.gif

Windows Taskbar: Search, Start, File Explorer, Mozilla Firefox, Microsoft Edge, Google Chrome, File Manager, Media Player, Task View, Taskbar Icons, Taskbar Buttons, Taskbar Buttons.

System tray: Volume, Network, Battery, Date and Time (23:03, 20/12/2020), ENG, Android icon.

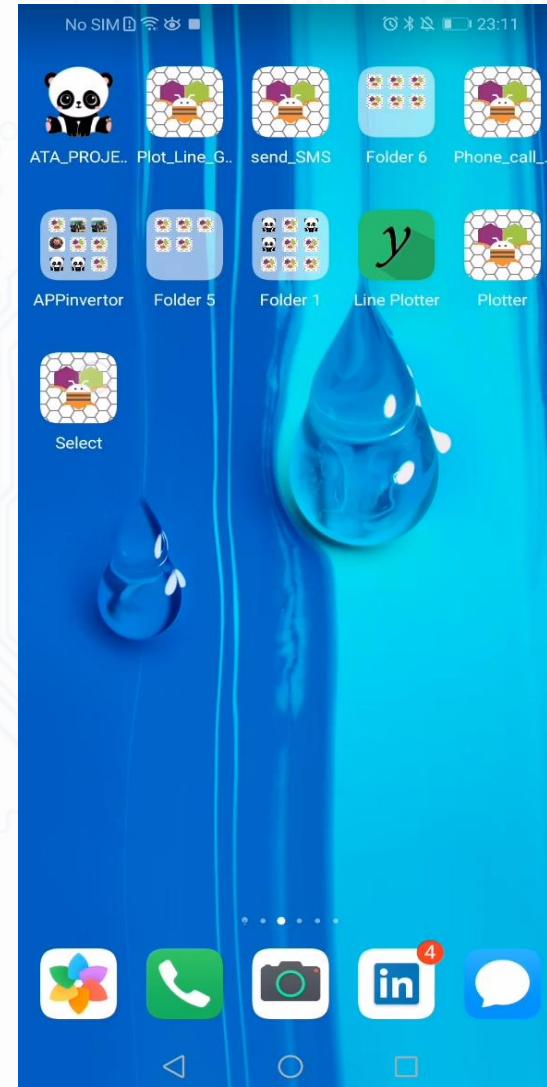
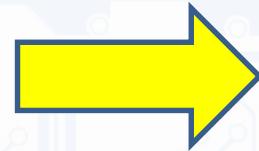
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App Inventor



# Example02:Selection

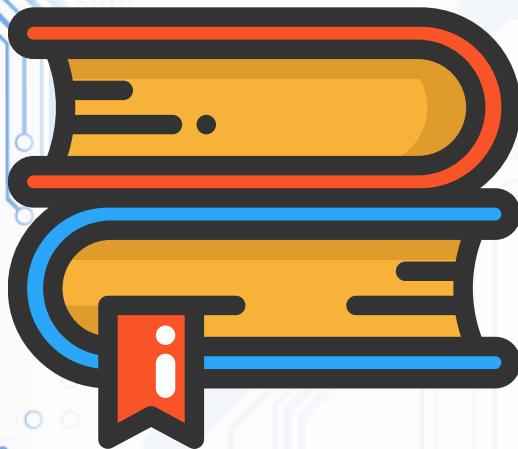
Demo APP





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# MOBILE APPLICATION DEVELOPMENT

Example03: **ListPicker(2).**



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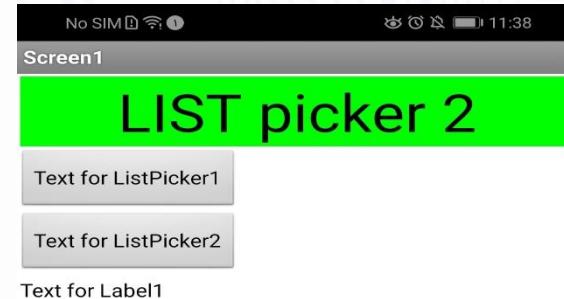
App Inventor



## Example03: ListPicker(2).

### Example Aim

- We can choose between triangles and rectangles.
- According to choose one way or another we will Rectangle, Equilateral, Isosceles and Scalene. Or, Square, Rectangle, Rhombus and Rhomboid.
- When choosing one of these classes, we will get its definition

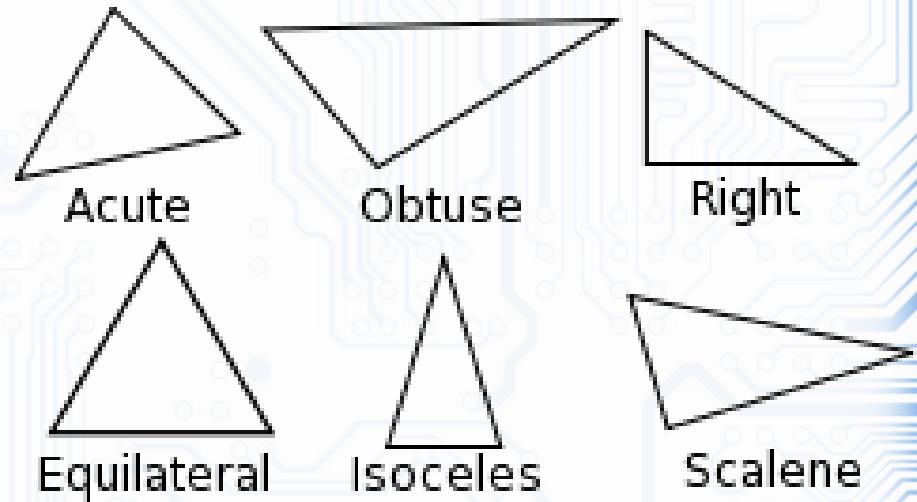




# Example03:ListPicker(2).

## Triangles

Triangles are just shapes with 3 (straight) sides. They can be big or small and can look somewhat different. Depending on the angles and the sides we can sort the triangles into different types.



Equilateral Triangle



Isosceles Triangle



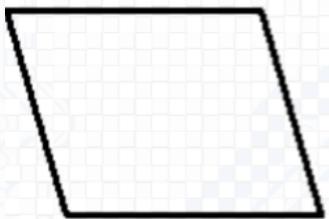
Scalene Triangle



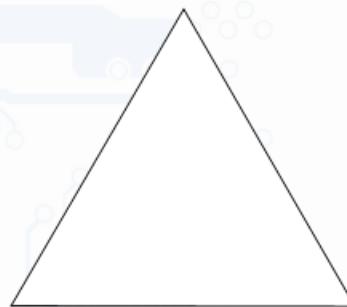


# Example03:ListPicker(2).

## Rhomboid

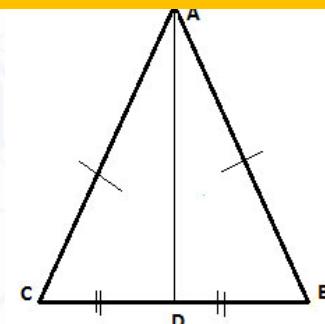


## Equilateral triangle



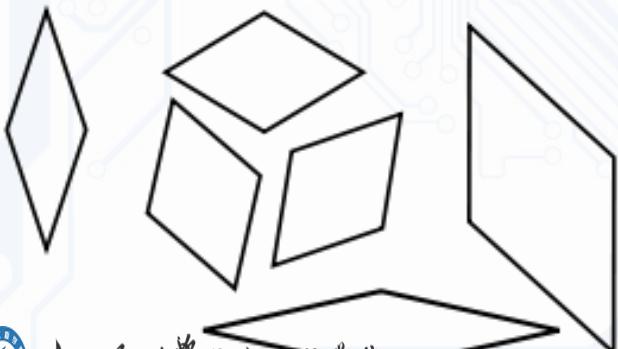
## Isosceles Triangles

Median is Perpendicular to the Base



## Rhombus

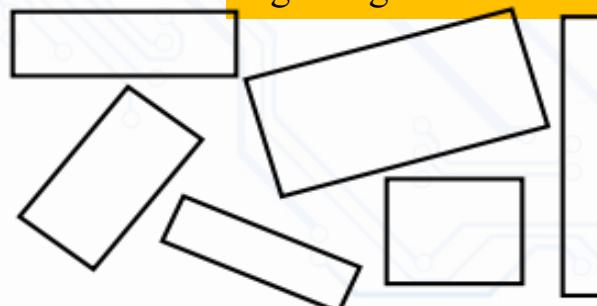
A quadrilateral having all four sides of equal length.



## Rectangles

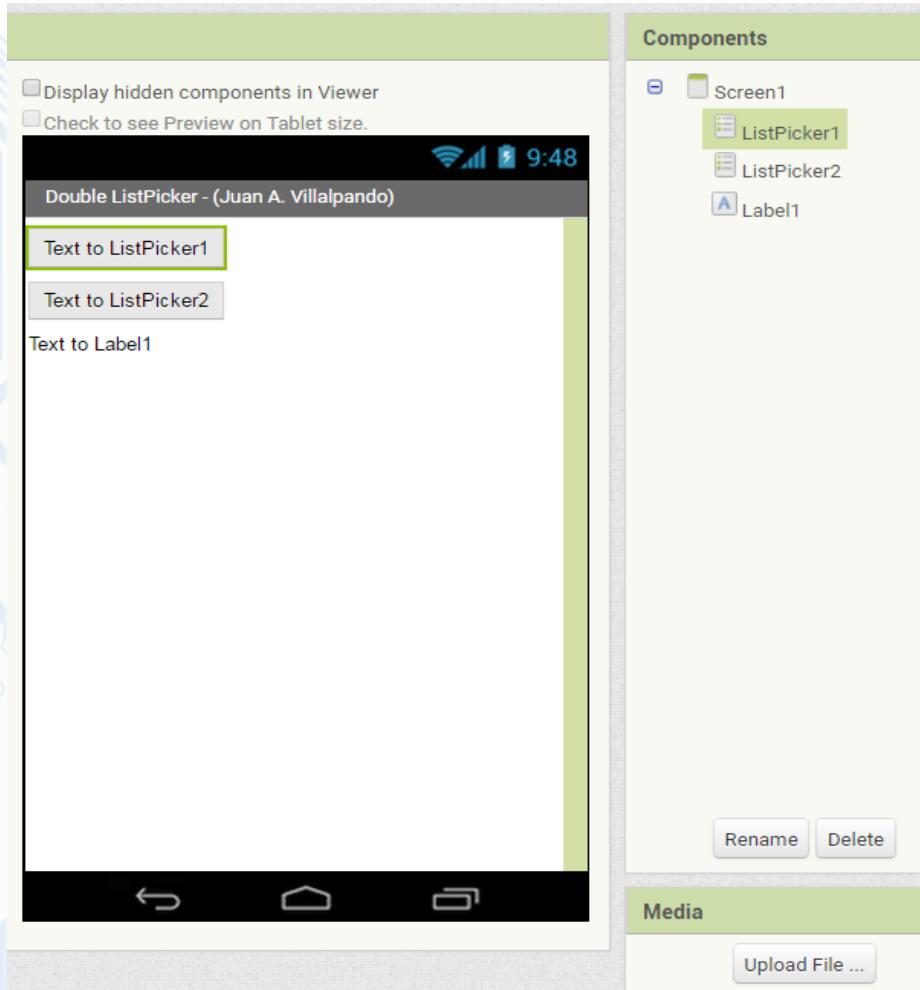
### Rectangle:

A quadrilateral having four right angles





# Example03:ListPicker(2).



- In this case we put **one ListPicker1** and **other ListPicker2** . Also we put a **Label1**.



## Example03:ListPicker(2).

- In the block section Note that two lists have been created.
- The list of triangles and squares, was made directly by adding those words, but the list box, Equilateral, ... Rombo, Romboide, was performed using a **csv file**, ie those words are passed to a csv format and then they get into the list.
- it's a somewhat complicated way to the beginning, but it is effective. in csv format elements are enclosed in double quotes and separated by a comma.
- The line change is performed by / n.



# Example03:ListPicker(2).

```
initialize global definition to "0"  
  
initialize global Form to make a list "Triangles"  
"Quadrilateral"  
  
initialize global Class to make a list  
list from csv row text "Rectangle, Equilateral, Isosceles, Scalene"  
list from csv row text "Square, Rectangle, Rhombus, Rhomboid"  
  
when ListPicker1 .BeforePicking  
do set ListPicker1 . Elements to get global Form  
  
when ListPicker1 .AfterPicking  
do set ListPicker2 . Elements to select list item list get global Class  
index ListPicker1 . SelectionIndex  
call ListPicker2 .Open
```





## Example03:ListPicker(2).

```
when ListPicker2 .AfterPicking
do
  if ListPicker2 . Selection = " Square "
    then set global definition to : Equals 4 sides and 4 angles square.
  else if [ ListPicker1 . Selection = " Quadrilateral " and ListPicker2 . Selection = " Rectangle " ]
    then set global definition to : Equals side two to two and 4 angles squares.
  else if ListPicker2 . Selection = " Rhombus "
    then set global definition to : Equals 4 sides.
  else if ListPicker2 . Selection = " Rhomboid "
    then set global definition to : Equals 4 sides two to two.
  else if ListPicker2 . Selection = " Equilateral "
    then set global definition to : Equals 3 sides and 3 angles.
  else if ListPicker2 . Selection = " Isoscel "
    then set global definition to : Equals 2 sides.
  else if ListPicker2 . Selection = " Scalene. "
    then set global definition to : They have no equal anywhere.
  else if [ ListPicker1 . Selection = " Triangels " and ListPicker2 . Selection = " Rectangle " ]
    then set global definition to : One side 90°.
  set Label1 . Text to join ListPicker2 . Selection
  get global definition
```

If you do not want it to look **ListPicker2** , we put the Property **Visible: false**





## Example03:ListPicker(2).

- In this code it notes that the word **Rectangle** belongs to both **Triangles** as **Quadrilateral**. So when we want to get the definition has to check if it has arrived by selecting Triangles or Rectangles.



# Example03:ListPicker(2).

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Palette

User Interface

- Button
- CheckBox
- DatePicker
- Image
- Label
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider
- Spinner
- Switch
- TextBox
- TimePicker
- WebView

Viewer

Display hidden components in Viewer

Phone size (505,320)

Screen1

Components

Properties

Screen1

AboutScreen

AccentColor Default

AlignHorizontal Left : 1

AlignVertical Top : 1

AppName ListPicker\_02

BackgroundColor Default

BackgroundImage None...

BlocksToolkit All

CloseScreenAnimation Default

Icon None...

OpenScreenAnimation Default

PrimaryColor Default

PrimaryColorDark Default

ScreenOrientation Unspecified

Rename Delete

Media

Upload File ...

23:54 20/12/2020





# Example03:ListPicker(2).

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Palette

User Interface

- Label
- Button
- CheckBox
- DatePicker
- Image
- Label
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider
- Spinner
- Switch
- TextBox
- TimePicker
- WebViewer

Components

- Screen1
- Label2
- ListPicker1
- ListPicker2
- Label1

Properties

Label2

- BackgroundColor: Green
- FontBold:
- FontItalic:
- FontSize: 40
- FontTypeface: default
- HTMLFormat:
- HasMargins:
- Height: Automatic...
- Width: Fill parent...
- Text: LIST picker 2
- TextAlignment: center : 1
- TextColor: Default
- Visible:

Media

- Upload File ...

The screenshot shows the MIT App Inventor development environment. The central area displays a smartphone screen with the title "LIST picker 2". Below the title are two ListPicker components, each with a placeholder text "Text for ListPicker1" and "Text for ListPicker2". To the right of the phone screen is the "Components" panel, which lists "Screen1", "Label2", "ListPicker1", "ListPicker2", and "Label1". The "Properties" panel is open for "Label2", showing its configuration: background color is set to "Green", font size is 40, and the text is "LIST picker 2". The "User Interface" palette on the left contains various UI components like Button, CheckBox, DatePicker, etc. The bottom of the screen shows the Windows taskbar with other application icons.





# Example03:ListPicker(2).

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ListPicker\_02 Screen1 Add Screen ... Remove Screen Publish to Gallery Designer Blocks

Blocks Viewer

Alene

void

```
if (ListPicker2.Selection = "Square") then
    set global definition to "Equal 4 sides and 4 angles square"
else if (ListPicker1.Selection = "Quadrilateral" and ListPicker2.Selection = "Rectangle")
    set global definition to "Equal 4 side two and 4 angles square"
else if (ListPicker2.Selection = "Rhombus")
    set global definition to "Equal 4 sides"
else if (ListPicker2.Selection = "Rhomboid")
    set global definition to "Equal 4 sides two to two"
else if (ListPicker2.Selection = "Equaliteral")
    set global definition to "Equal 3 sides 3 angles"
else if (ListPicker2.Selection = "Isoscel")
    set global definition to "Equal 2 sides"
else if (ListPicker2.Selection = "Scalene")
    set global definition to "They have no equal anywhere"
else if
then
```

Rename Delete Show Warnings

Media Upload File ...

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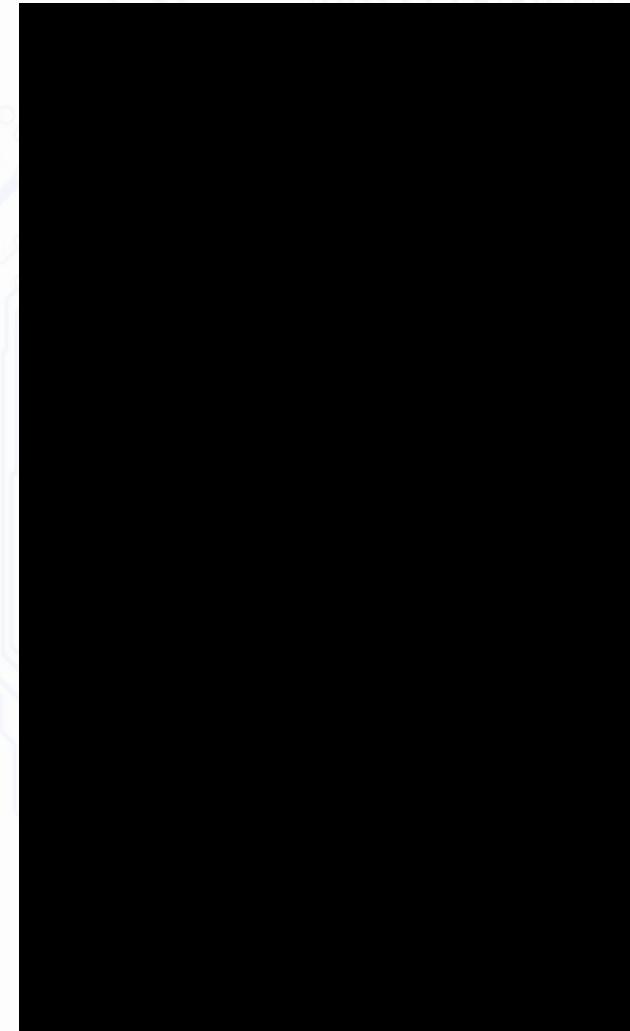
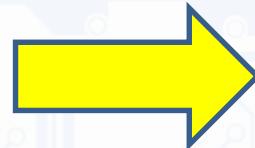
00:11 ENG 21/12/2020

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# Example03:ListPicker(2).

Demo APP



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# MOBILE APPLICATION DEVELOPMENT

Example 04:  
Line graph



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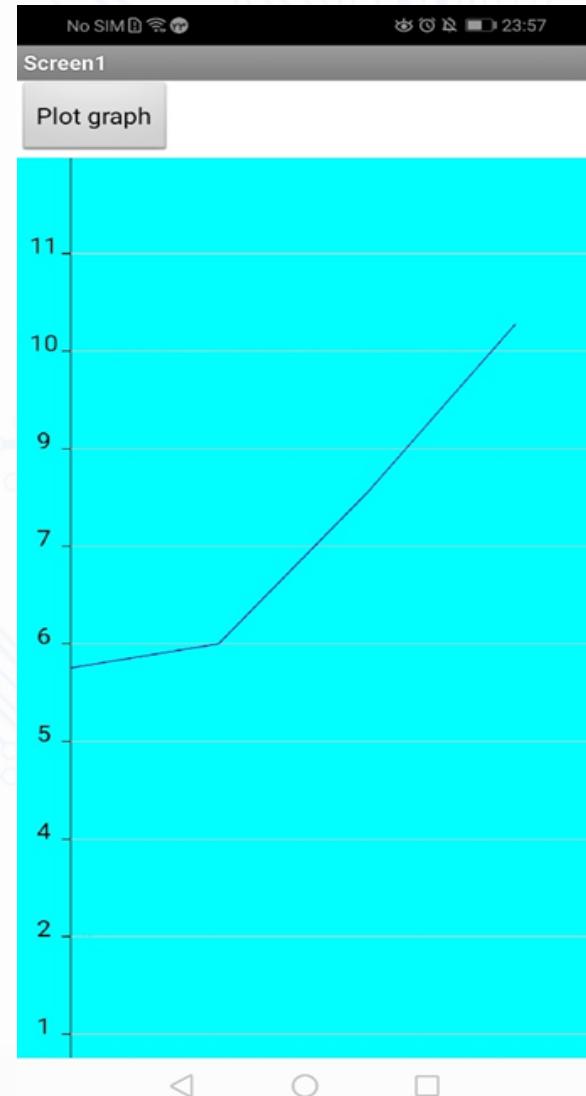


App Inventor



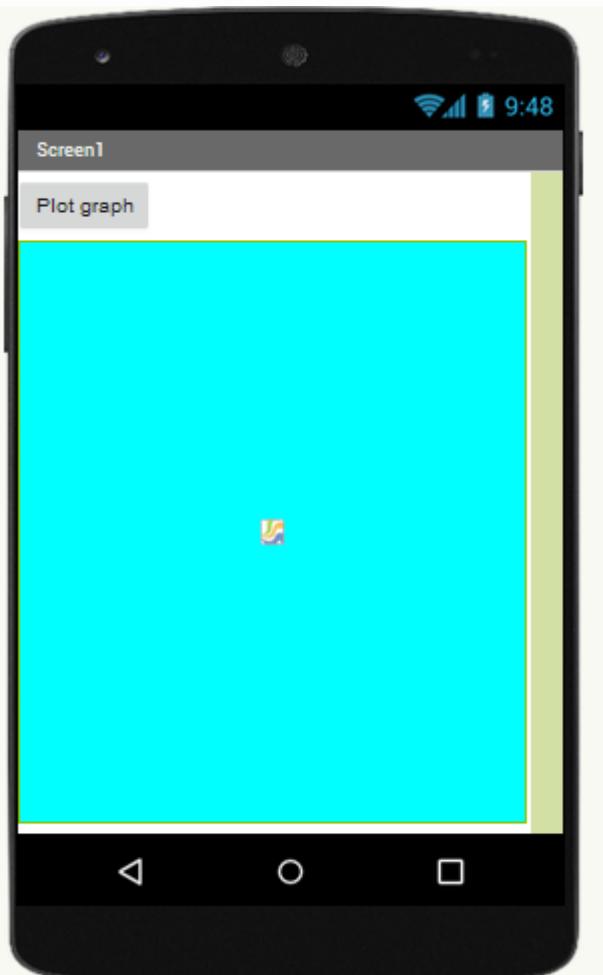
# Example 04: Line graph

- The aia file is share in group
- You should modify and make the report





# Example 04: Line graph



Components

- Screen1
- Button\_Plot\_graph
- Canvas1

Properties

Canvas1	
BackgroundColor	Cyan
BackgroundImage	None...
ExtendMovesOutsideCanvas	<input type="checkbox"/>
FontSize	14.0
Height	Fill parent...
Width	Fill parent...
LineWidth	2.0
PaintColor	Default
TextAlignment	center : 1 ▾
Visible	<input checked="" type="checkbox"/>

Media

Rename Delete

Upload File ...





# Example 04: Line graph

```
initialize global X_Data_List to make a list [a, b, c, d]
initialize global Y_Data_List to make a list [5.8, 6.1, 8, 10.1]

when Button_Plot_graph .Click
do call Plot_Line_Graph

when Screen1 .ScreenOrientationChanged
do call Plot_Line_Graph

to origin_convertX [X]
result
do set X to get X + 30
result get X

to origin_convertY [Y]
result
do set Y to neg get Y + (Canvas1 .Height - 30)
result get Y
```





# Example 04: Line graph



```
to Plot_Line_Graph
do
  call [Canvas1] .Clear
  set [Canvas1] .BackgroundColor to #000000
  set [Canvas1] .PaintColor to black
  set [Canvas1] .FontSize to 14
  call [Canvas1] .DrawLine
    x1: 30
    y1: 0
    x2: 30
    y2: [Canvas1] .Height - 30
  call [Canvas1] .DrawLine
    x1: 30
    y1: [Canvas1] .Height - 30
    x2: [Canvas1] .Width
    y2: [Canvas1] .Height - 30
  initialize local [Max_Value_Y_Data] to 0
  initialize local [Max_rangeY] to [Canvas1] .Height - 30
  initialize local [Number_of_separationY] to 10
  initialize local [Y_Draw_Ratio] to 1
  in
    for each number from 1 to length of list [get global Y_Data_List] by 1
      do
        if < [get Max_Value_Y_Data] < [select list item list [get global Y_Data_List] index get number]
        then
          set [Max_Value_Y_Data] to [select list item list [get global Y_Data_List] index get number]
```

```
set [Y_Draw_Ratio] to [format as decimal number [get Max_Value_Y_Data] x 1.1] / [get Max_rangeY] places 2
initialize local [Segment_space_Y] to [get Max_rangeY] / [get Number_of_separationY]
in
  for each number from 1 to [get Number_of_separationY] by 1
    do
      call [Canvas1] .DrawLine
        x1: call [origin_convertX] x -5
        y1: call [origin_convertY] y
        x2: call [origin_convertX] x 0
        y2: call [origin_convertY] y
          [get number] * [get Segment_space_Y]
        x1: call [origin_convertX] x 0
        y1: call [origin_convertY] y
        x2: call [origin_convertX] x [Canvas1] .Width - 30
        y2: call [origin_convertY] y
          [get number] * [get Segment_space_Y]
```





# Example 04: Line graph



```
set [Canvas1 : PaintColor] to [black]
call [Canvas1 : DrawText]
text [round ((get [Y_Draw_Ratio : number] * get [number : number] * get [Segment_space_Y : number]))]
x [call [origin_convertX : number] -15]
y [call [origin_convertY : number] + (get [number : number] * get [Segment_space_Y : number])]

initialize local [Max_rangeX] to [Canvas1 : Width] - 30
initialize local [Number_of_separationX] to [length of list list : get [global X_Data_List : list]]
in initialize local [Segment_space_X] to [get [Max_rangeX : number] / get [Number_of_separationX : number]]
in for each [number] from [1] to [get [Number_of_separationX : number]] by [1]
do call [Canvas1 : DrawLine]
x1 [call [origin_convertX : number] + ((get [number : number] - 1) * get [Segment_space_X : number])]
y1 [call [origin_convertY : number] 0]
x2 [call [origin_convertX : number] + ((get [number : number] - 1) * get [Segment_space_X : number])]
y2 [call [origin_convertY : number] -5]
set [Canvas1 : PaintColor] to [black]
call [Canvas1 : DrawText]
```





# Example 04: Line graph

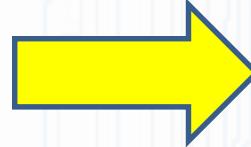


```
set [Canvas1 : PaintColor] to [black]
call [Canvas1 : DrawText]
    text: [select list item list: [get global X_Data_List] | index: [get number: 1]]
    x: [call [origin_convertX] | X: [get number: 1] * [get Segment_space_X: 15]]
    y: [call [origin_convertY] | Y: -15]
for each [number] from [1] to [get (Number_of_separationX) - 1] by [1]
do
    call [Canvas1 : DrawLine]
        x1: [call [origin_convertX] | X: [get number: 1] * [get Segment_space_X: 15]]
        y1: [call [origin_convertY] | Y: [select list item list: [get global Y_Data_List] | index: [get number: 1]] / [get Y_Draw_Ratio: 100]]
        x2: [call [origin_convertX] | X: [get number: 1] * [get Segment_space_X: 15]]
        y2: [call [origin_convertY] | Y: [select list item list: [get global Y_Data_List] | index: [get number: 1] + 1] / [get Y_Draw_Ratio: 100]]
```



# Example 04: Line graph

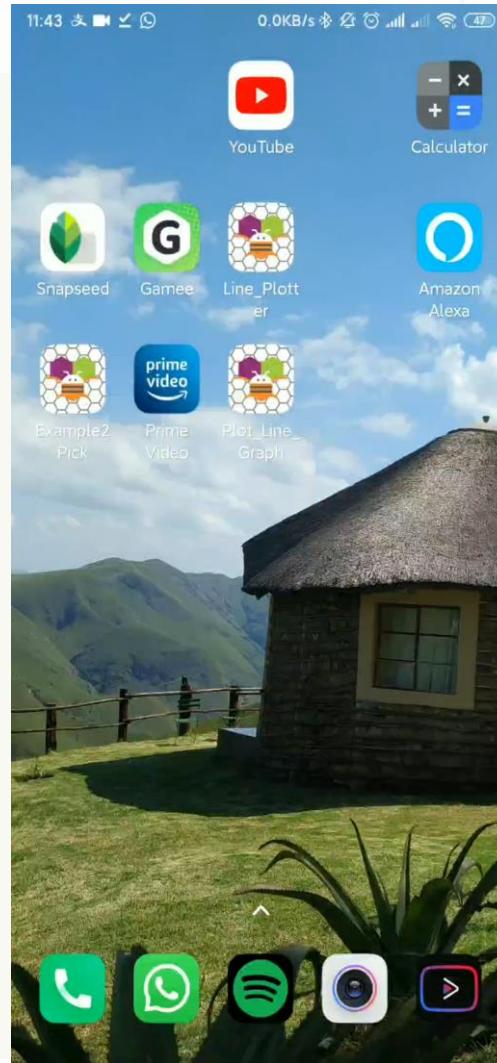
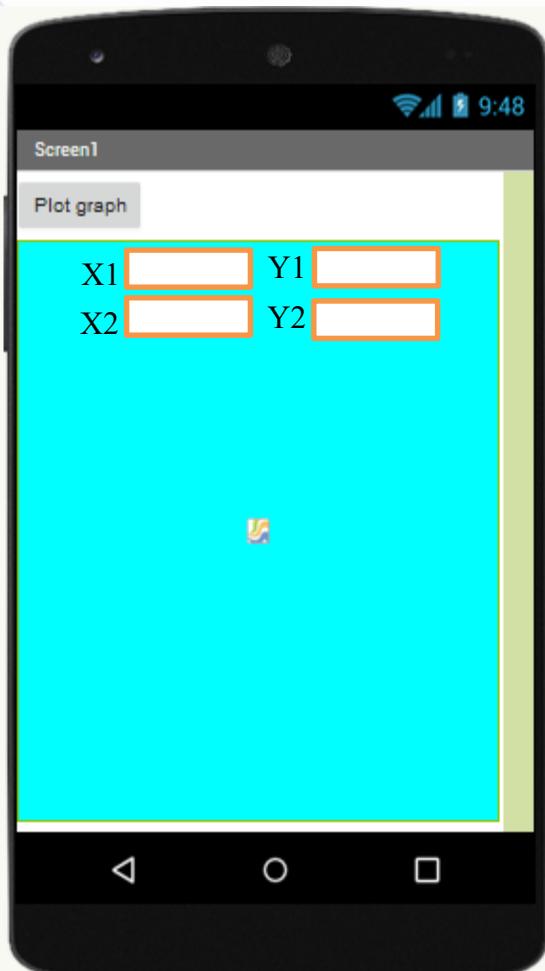
Demo APP







# Example 04: Line graph extenstion



- Get  $(X_1, Y_1), (X_2, Y_2)$  from user and Draw the line
- From  $(0,0)$  to  $(X_1, Y_1), (X_2, Y_2)$





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# MOBILE APPLICATION DEVELOPMENT

## Example 05:

### BT\_APP



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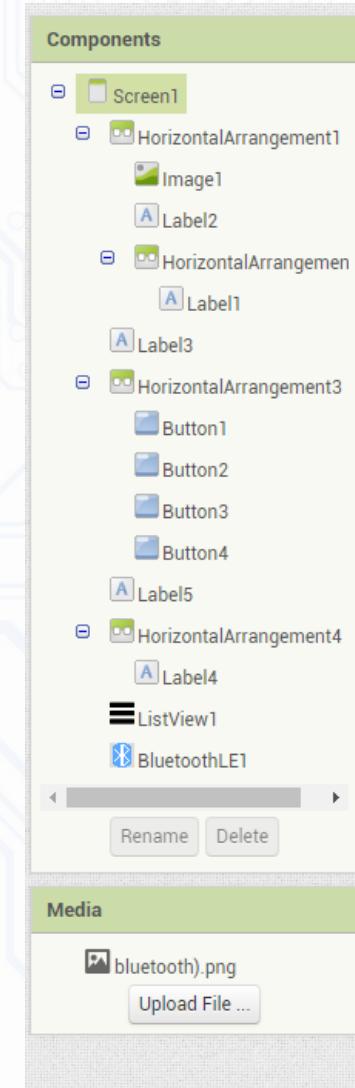
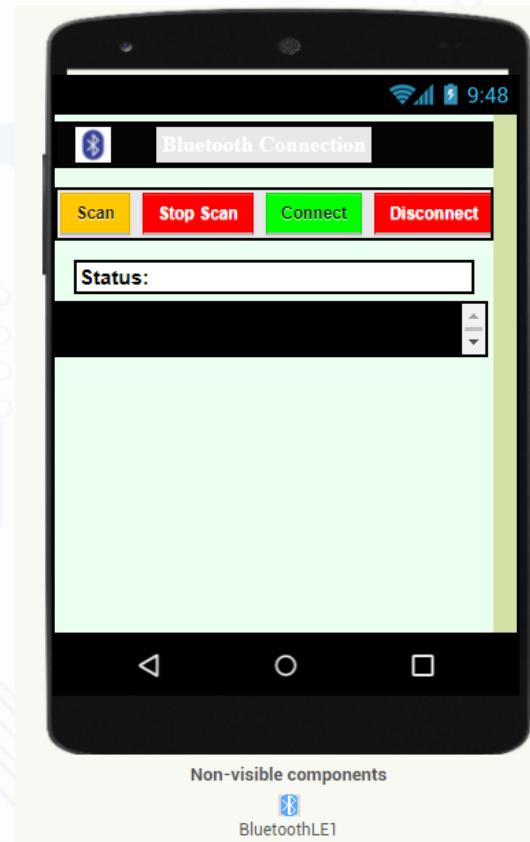
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# Bluetooth Example

The aim :

Connect Bluetooth with  
a device and share data.

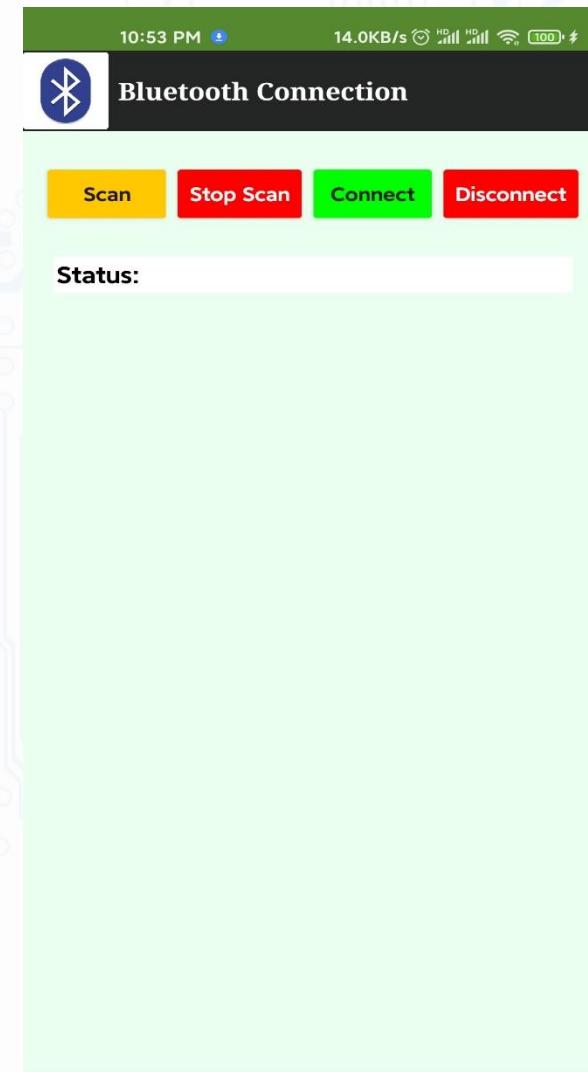


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# Bluetooth Example

Final App UI



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initialize global devices to create empty list

```
when Button1 .Click
do call BluetoothLE1 .StartScanning
set Label4 .Text to " Status: Scanning "
set ListView1 .Visible to true

when Button2 .Click
do call BluetoothLE1 .StopScanning
set Label4 .Text to " Status: Stopped Scanning "

when BluetoothLE1 .DeviceFound
do set global devices to BluetoothLE1 .DeviceList
set ListView1 .ElementsFromString to get global devices

when Button3 .Click
do call BluetoothLE1 .Connect
index ListView1 .SelectionIndex
set Label4 .Text to " Status: Connecting "

when BluetoothLE1 .Connected
do set Label4 .Text to " Status: Connected "
set ListView1 .Visible to false
```

```
when Button4 .Click
do call BluetoothLE1 .Disconnect

when BluetoothLE1 .Disconnected
do set Label4 .Text to " Status: DisConnected "
```





App Inventor 2

app.wxbit.com/?locale=en#717069

Apps TorrentBD : Home TorrentBD : Forums vocabulary | IELTS A... New folder Tense বা কাল - Engl... Home - সূচিপত্র - L... Copy of Copy of Sh... New Tab cowndown Number... App inventor. Exam...

App Inventor 2 WxBit 汉化增强版

Projects Help

OBS 26.0.2 (64-bit, windows) - Profile: Untitled - Scenes: Untitled

File Edit View Profile Scene Collection Tools Help

My Projects

Name

No source selected

Properties Filters

Scenes Sources Audio Mixer Scene Transitions Controls

Scene

Display Capture Desktop Audio 0.0 dB

Display Capture Mic/Aux 0.0 dB

Display Capture

Fade Duration 300 ms

Start Streaming Start Recording Start Virtual Camera Studio Mode Settings Exit

(0) LIVE: 00:00:00 REC: 00:00:00 CPU: 1.5%, 60.00 fps

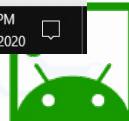
Theme Color Dark Mode

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2:51 PM  
12/31/2020



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# Working Demo



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# App process video

The image shows a dual-monitor setup. The left monitor displays the App Inventor 2 environment, specifically a scene titled "TASK\_19". The "User Interface" palette is open, showing various UI components like Button, Switch, Label, Image, AnimationImage, TextBox, PasswordTextBox, RadioButton, CheckBox, Spinner, HorizontalSlider, VerticalSlider, Notifier, LayoutDialog, ListPicker, ListView, and File Picker. The right monitor displays OBS Studio 26.0.2. In the Preview window of OBS, two video sources are visible, each showing a split-screen view of a video player and a camera feed. The Program window shows a timeline with two clips. Between the clips, a transition settings panel is open, showing "Quick Transitions" set to "Cut" and "Fade (300ms)" followed by "Fade to Black (300ms)". Below the preview windows, the "Scenes" and "Sources" tabs are selected. The "Sources" tab shows a "Display Capture" source. At the bottom of the OBS interface, the "Audio Mixer" is visible with two channels: "Desktop Audio" and "Mic/Aux", both at 0.0 dB. To the right of the OBS interface is a "Controls" sidebar with buttons for "Start Streaming", "Start Recording", "Studio Mode", "Settings", and "Exit". The "Start Streaming" button is currently highlighted. The taskbar at the bottom of the screen shows several pinned icons, including File Explorer, Task View, FileZilla, Microsoft Edge, Google Chrome, and a clock icon. The system tray shows battery status, signal strength, and date/time (ENG 22:24 INTL 01/01/2021). The bottom right corner features the "App Inventor" logo.



# Demo App working from our mobile



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App | U3D Blaster Tugger | Android | Processing | Python 2.7.2 Review | Download the Game | Carver Pi Customs | U3A/G2018LC-PIP | Scientific evidence | TelPower T70200E | Basic PLA Planner | Thread - Child & Tel | Real Components | Mousercise Outfitters |

MIT APP INVENTOR

Project | Create | Build | Help | My Projects | Gallery | Issue | Report an issue | English | csailweb@mit.edu

New project | Open project | Recent activity

### My Projects

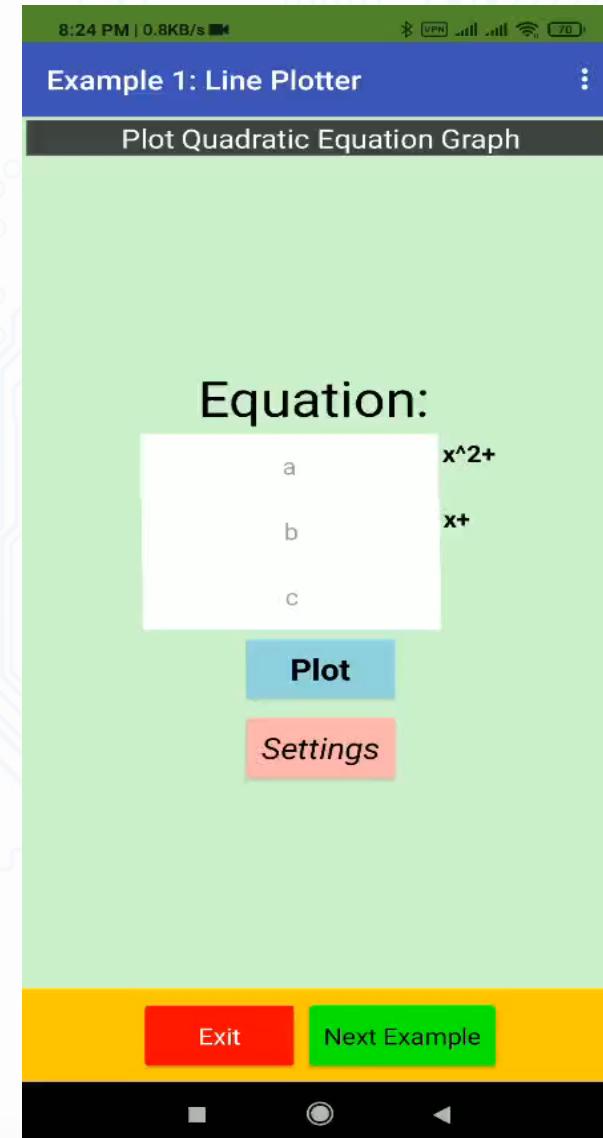
Name	Last Update	Last Modified	Published
Bluetooth_Test	Mar 16, 2018, 8:22:30 PM	Mar 16, 2018, 8:48:18 PM	No
MotorController	Mar 28, 2018, 10:03:33 PM	Mar 16, 2018, 8:56:18 PM	No
Accelerometer	Jan 8, 2018, 7:16:43 PM	Mar 16, 2018, 8:55:44 PM	No
web	Mar 6, 2018, 8:26:35 PM	Mar 6, 2018, 10:34:27 PM	No
Multiple Device Test	Mar 4, 2018, 3:00:04 PM	Mar 5, 2018, 8:36:17 PM	No
Radio_buttons	Mar 4, 2018, 9:15:21 PM	Mar 4, 2018, 9:31:32 PM	No
New_Field_Camera	Apr 6, 2018, 2:42:16 PM	Feb 28, 2018, 8:47:21 PM	No
Remote_Controls	Oct 2, 2017, 8:47:19 PM	Nov 26, 2017, 8:31:03 PM	No
Lumen	Aug 28, 2018, 11:19:10 AM	Sep 8, 2017, 12:00:25 PM	No
Lighting_09	Nov 17, 2018, 10:20:01 PM	Sep 8, 2017, 12:00:05 PM	No
Lumens	Jul 4, 2018, 10:23:27 PM	Sep 8, 2017, 12:52:49 PM	No
Example	Jan 10, 2017, 8:54:41 PM	Mar 16, 2017, 8:29:41 AM	No
SaveTime	Jan 10, 2017, 11:13:38 PM	Jan 20, 2017, 8:54:09 PM	No
tel_for_Android	Feb 21, 2018, 1:21:33 PM	Jan 24, 2017, 8:09:12 PM	No
imagePicker	Jan 18, 2017, 12:00:18 PM	Jan 23, 2017, 8:34:00 PM	No
install	Jan 13, 2017, 7:42:31 PM	Jan 23, 2017, 8:24:05 PM	No
Web_Profile_Pages	Feb 13, 2018, 7:05:43 PM	Jan 16, 2017, 1:09:52 AM	No
ActiviyIcons	Jan 15, 2017, 9:05:01 PM	Jan 16, 2017, 11:18:38 PM	No
g2018_server_deployable_jng	Jan 15, 2017, 2:52:27 PM	Jan 16, 2017, 9:01:04 PM	No
Vine	Jan 9, 2017, 4:45:54 PM	Jan 16, 2017, 2:17:14 PM	No
Profile_Pages	Dec 7, 2014, 9:22:26 PM	Jan 8, 2017, 1:55:54 PM	No
Notification	Jan 8, 2017, 1:00:09 AM	Jan 8, 2017, 1:03:45 AM	No
BatteryMonitor	Dec 30, 2016, 1:31:29 PM	Dec 31, 2016, 4:30:12 PM	No
web_chat	Apr 9, 2018, 9:00:53 PM	Dec 16, 2016, 9:00:39 PM	No
Time	Mar 18, 2018, 8:34:36 PM	Apr 16, 2016, 12:18:12 AM	No
Accelerometer	Mar 6, 2018, 12:54:02 PM	Jan 19, 2016, 10:44:45 PM	No
Social_App	Mar 12, 2018, 12:27:53 AM	Feb 11, 2018, 12:26:13 PM	No
web_chat_copy	Apr 20, 2018, 10:02:33 PM	Apr 20, 2018, 10:02:33 PM	No
WebTables	Feb 15, 2018, 9:00:31 PM	Mar 11, 2018, 1:38:06 AM	No

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# Review on all task



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# Student Task\_17



Example 1: Plotter example:	no need to have process clips no need for any report but your apk file should work ( send.apk and aia file) .Write comment about each function job and use( input/ out put and job)
Example 2: Select example:	report +process video, ( send.apk and aia file)
Example03: ListPicker(2)	just report
Example04: Line example	report +process video( send.apk and aia file)
Example 05: BT	For student who want get more mark Report +process clip+send.apk and aia file

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



# NEXT

- Next lecture as the last one we will have some example about Game and review some exam point



**MD**



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# Reference

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- <http://ai2.appinventor.mit.edu/reference/other/activitystarter.html>
- <https://appinventor.mit.edu/explore/ai2/concepts>
- <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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## Digital Image Processing

THANK YOU





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

