



江西理工大学 信息工程学院

JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



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Mobile application development

移动应用开发



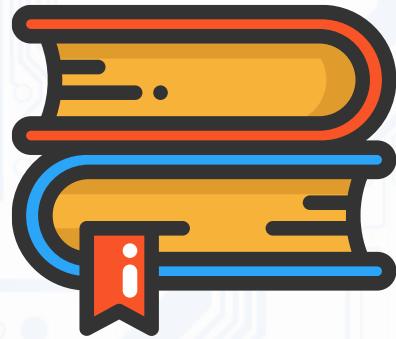
Lecture 020: APP Inventor _Example

Prof Associate ,
School of information engineering Jiangxi
university of science and technology, China

Autumn _2021



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MOBILE APPLICATION DEVELOPMENT

LECTURE 020:

APP Inventor _ Example

Example on various section



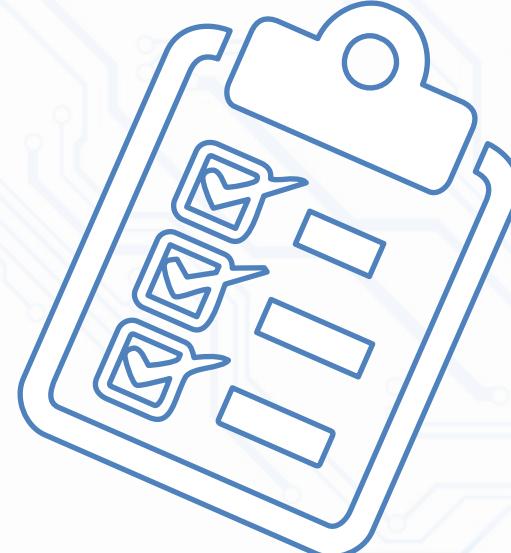
Agenda

- Counter page :
 - **Example 04:** Countdown timer with Sound
 - As the task student should follow two extension for mentioned example
 - (Extension Example 01_B and Extension Example 04_B)
- **03 example**

Example 01: Resizing of screen components. Responsive design

Example 02: Canvas & ImageSprite(1) A&B

Example 03: Canvas&ImageSprite. (II)





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MOBILE APPLICATION DEVELOPMENT

Example 04:

Countdown timer with Sound.



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App Inventor



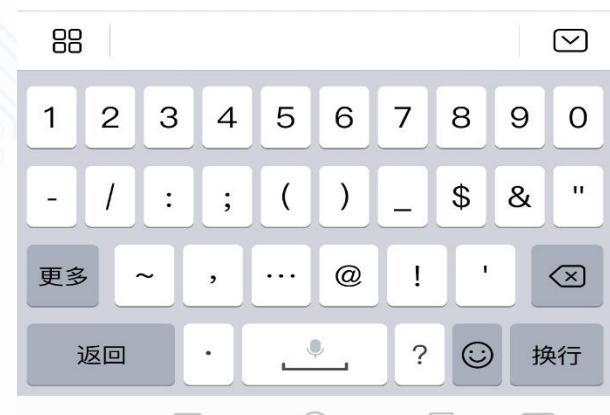
Example 04R:

Countdown timer with Sound



Example Aim

- Write a number, press the **Start button and Label** an account is displayed down to zero, plus a sound is heard.
- When it reaches zero, another sound finishing hear, the screen turns red.
- When you press the **Stop button**, for the account, but if pressed again, the account continues.

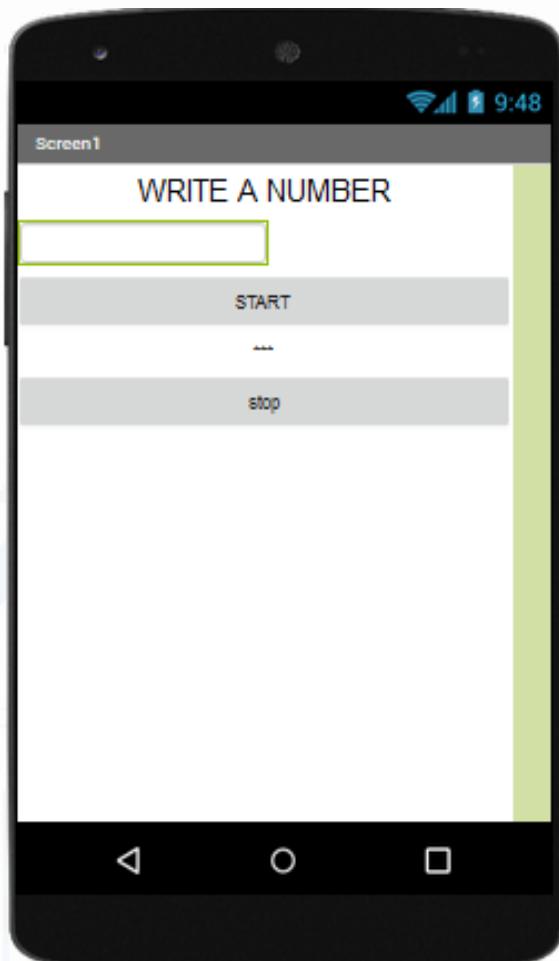


App Inventor



Example 04R:

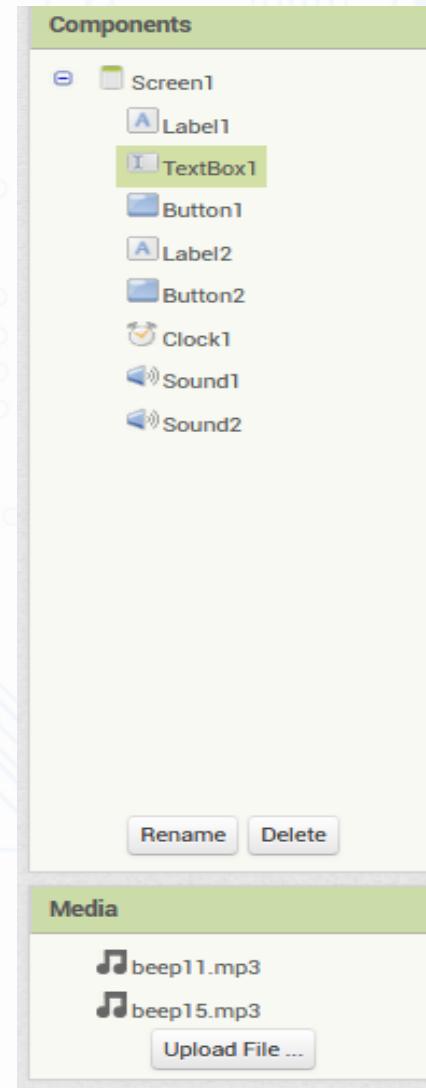
Countdown timer with Sound



Non-visible components



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App Inventor

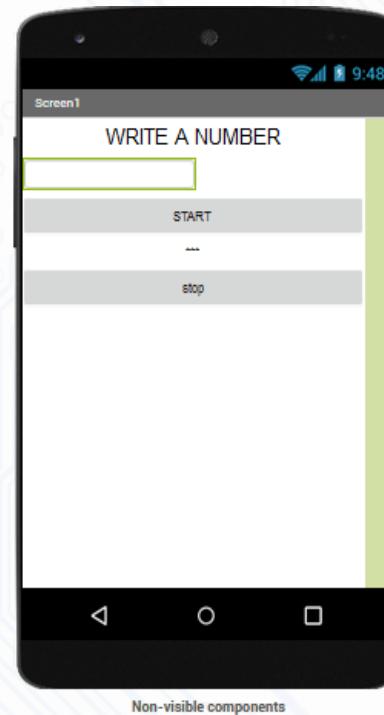


Example 04R:

Countdown timer with Sound

Design

- The **TextBox** has Properties "NumberOnly". Height = 40.
- At **Buttons and Labels** put them to the desired size. Label the X has a size of 80.
- The **Clock** we put a **TimeInterval** 1000 (this is a second).
- And uncheck **TimerEnabled**.
- Upload two Sound files. In the Property Source of them we put their names.
 - **beep11.mp3**
 - **beep15.mp3**



Components

- Screen1
- Label1
- TextBox1
- Button1
- Label2
- Button2
- Clock1
- Sound1
- Sound2

Non-visible components

- Clock1
- Sound1
- Sound2

Rename Delete

Media

- beep11.mp3
- beep15.mp3

Upload File ...





Example 04R:

Countdown timer with Sound



App Inventor

Blocks

When you press the **Button**, initial conditions are set:

- Enable the **Clock**.
- Set the number of **TextBox1** in **variable n**.
- Put the **BackGroundColor** screen in white.

When the clock starts counting:

Subtracts one to the variable n.

Put the Label value of n.

Rings Sound1.

Compare if n is zero, in this case Pause Sound1 and rings Sound2, for the clock, puts the **BackGroundColor** screen in Red .

When you press the **Button2**, you see how is the Clock, if enabled of disabled and if disabled is enabled.

In addition, the text is changed **Button2**.

```
when green flag clicked
  initialize global [counter v] to [0]
  when [start! v] is pressed
    set [Clock1 v].TimerEnabled to [true]
    set [global n v] to [TextBox1 v].Text
    set [Screen1 v].BackgroundColor to [white]
  end
  when [Clock1 v].Timer
    set [global n v] to [get [global n v] - 1]
    set [Label2 v].Text to [get [global n v]]
    play sound [Ring v] for [1] second
    if [get [global n v] = 0] then
      stop
      set [Clock1 v].TimerEnabled to [false]
      set [Screen1 v].BackgroundColor to [red]
      play sound [Ring v] for [1] second
    end
  end
end
```

```
when [start! v] is pressed
  when [button2 v] is pressed
    if [Clock1 v].TimerEnabled then
      set [Clock1 v].TimerEnabled to [false]
      set [button2 v].Text to ["Continuar"]
    else
      set [Clock1 v].TimerEnabled to [true]
      set [button2 v].Text to ["Parar"]
    end
  end
end
```



App Inventor





Example 04R:

Countdown timer with Sound



App Inventor

MIT App Inventor

www.BANDICAM.com

ai2.appinventor.mit.edu/#519835354063872

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

Projects Connect Build Settings Help

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

Countdown_TIME Screen1 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
- WebView

Layout

Media

Drawing and Animation

Maps

Sensors

Social

Viewer

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

Screen1

Properties

Screen1

- AboutScreen
- AccentColor Default
- AlignHorizontal Left: 1
- AlignVertical Top: 1
- AppName Countdown_TIME
- BackgroundColor Default
- BackgroundImage None...
- BlocksToolkit All
- CloseScreenAnimation Default
- Icon None...
- OpenScreenAnimation Default
- PrimaryColor Default
- PrimaryColorDark Default
- ScreenOrientation Unspecified
- Scalable

Rename Delete

Upload File...



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App Inventor

00:12

ENG

03/12/2020



Example 04R:

Countdown timer with Sound



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

Blocks

Viewer

```
initialize global counter to 0   initialize global n to 0

when Button1.Click
do
  set Clock1.TimerEnabled to true
  set global n to TextBox1.Text
  set Screen1.BackgroundColor to black

when Clock1.Timer
do
  set global n to get global n + 1
  set Label2.Text to get global n
  call Sound1.Pause
  if get global n = 0
    then call Sound1.Pause
```

Screen1

- Label1
- TextBox1
- Button1
- Label2
- Button2
- Clock1
- Sound1

Media

- beep11.mp3
- beep15.mp3

Show Warnings



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00:22 ENG 03/12/2020



App Inventor



Example 04R:

Countdown timer with Sound

Screenshot of the MIT App Inventor 2 Blocks Editor showing the code for a Countdown timer with Sound.

The project is titled "Countdown_TIME".

Blocks Palette (Left):

- Built-in
 - Control
 - Logic
 - Math**
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
- Label1
- TextBox1

Viewer (Main Area):

```
initialize global counter to 0
initialize global n to 0

when Button1 .Click
do
  set Clock1 . TimerEnabled to true
  set global n to TextBox1 . Text
  set Screen1 . BackgroundColor to white

when Clock1 .Timer
do
  set global n to n + 1
  set Label2 . Text to get global n
  call Sound1 .Play
  if get global n = 0
    call Sound1 .Pause
    set Clock1 . TimerEnabled to false
    set Screen1 . BackgroundColor to black
    call Sound2 .Play

when Button2 .Click
do
  if Clock1 . TimerEnabled
    then set Clock1 . TimerEnabled to false
    set Button2 . Text to "Counter"
  else set Clock1 . TimerEnabled to true
    set Button2 . Text to "pause"

get global n - 1
```

The code initializes global variables `counter` and `n`. It starts a timer on `Clock1`. When `Button1` is clicked, it sets `Clock1` to enabled, sets `n` to the value of `TextBox1`, and changes the screen background to white. When the timer triggers, it increments `n`, updates the `Label2` text to the current value of `n`, plays a sound from `Sound1`, and checks if `n` is zero. If `n` is zero, it pauses the sound, disables the timer, changes the screen background to black, and plays a sound from `Sound2`. When `Button2` is clicked, it toggles the timer's enable state and updates the button's text to either "Counter" or "pause".

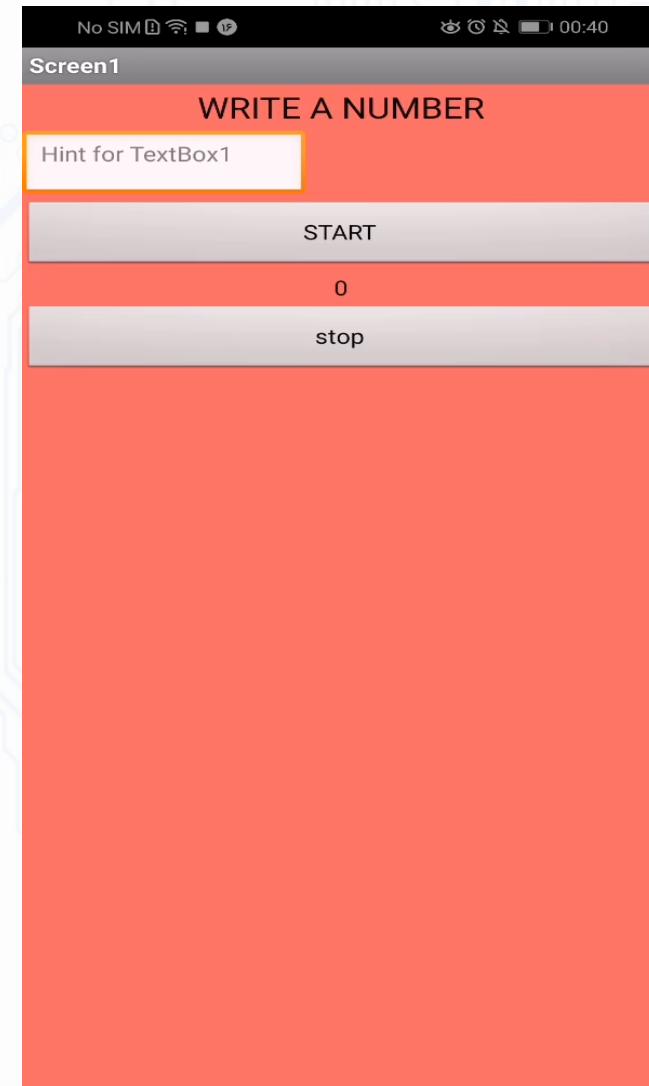
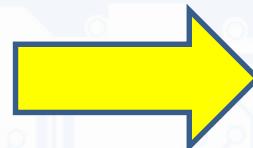




Example 04R:

Countdown timer with Sound

Demo APP



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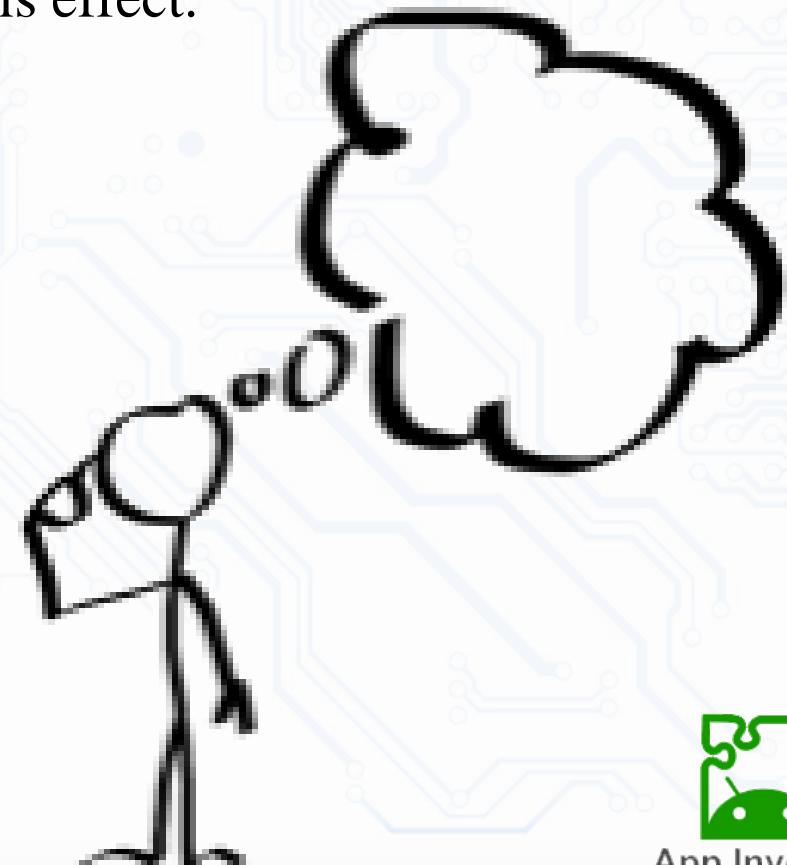


App Inventor



Example extension 04R_B: Counter range notifier

- Modify the code so that the number entered must be between **10 and 30** , ie, when you press **Button1** will check if the number is between these values.
 - If it is not, will a notification to this effect.
 - Try something like this ...
 - If $x < 10 \text{ O } x > 30$ Then
 - Error Notifier





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MOBILE APPLICATION DEVELOPMENT

Example 01:
Resizing of screen components.
Responsive design.



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Example 01:

Resizing of screen components Responsive design.



- One tricky issue in designing apps is making apps that look good on devices with screens of differing sizes.
- For example, apps designed for a given phone should also look good on tablets or phones with a different screen size.
- **Making apps that have this property is called responsive design.**
- A common approach to responsive design is to build apps that include multiple layouts and multiple images to accommodate different screen sizes and resolutions.
- This gives good results, but it makes more work for developers.
- App Inventor uses a simpler approach, but that approach is more limited in terms of the kinds of apps it can handle.



Example 01:

Resizing of screen components Responsive design.



- **There's one important rule when using App Inventor to create apps with responsive design:**
 - *Specify widths and heights of components as percentages of the screen width and height, rather than as fixed numbers of pixels.*
 - **For example, to make a button whose width is half the screen width, set the button's width to be 50 percent rather than setting it to a specific number of pixels.**
 - “Percentage” here means percentage of the screen width or height, not percentage of a containing component. For a button inside a horizontal arrangement, a width of 50 percent means half the screen width, not half the width of the arrangement.
 - You can also specify widths and heights using “fill parent” and “automatic” just as always in App Inventor.



Example 01:

Resizing of screen components Responsive design



Example Aim

- We may find that we have an arrangement of elements (label, buttons, images, ...) in a small mobile perfectly located in our application, but to bring this application to a larger Tablet these items look very small or located at unwanted sites.
- We can make the items have some proportional to the screen size, as a mobile or a Tablet of larger or smaller.

- This can be done by taking the value of the width of the device (mobile or tablet) and creating all elements in proportion to the width.
- For example the height of a picture is 20% of screen height, or the High a button is 10% of screen height ... so the dimensions of the elements will be referenced to the width screen.



Example 01:

Resizing of screen components Responsive design



Example 01:

Resizing of screen components Responsive design.

The screenshot shows the App Inventor interface. On the left is a preview of a mobile screen titled "Resize - (Juan A.. Villalpando)". The screen contains two buttons labeled "Text to Button1" and "Text to Button2", and two labels labeled "Label1" and "Label2". On the right is the "Components" panel, which lists the following components:

- Screen1
- VerticalArrangement1
 - Button1
 - Button2
 - Label1
 - Label2

At the bottom of the Components panel are "Rename" and "Delete" buttons. Below the Components panel is a green bar labeled "Media".

Some Guideline
about responsive UI





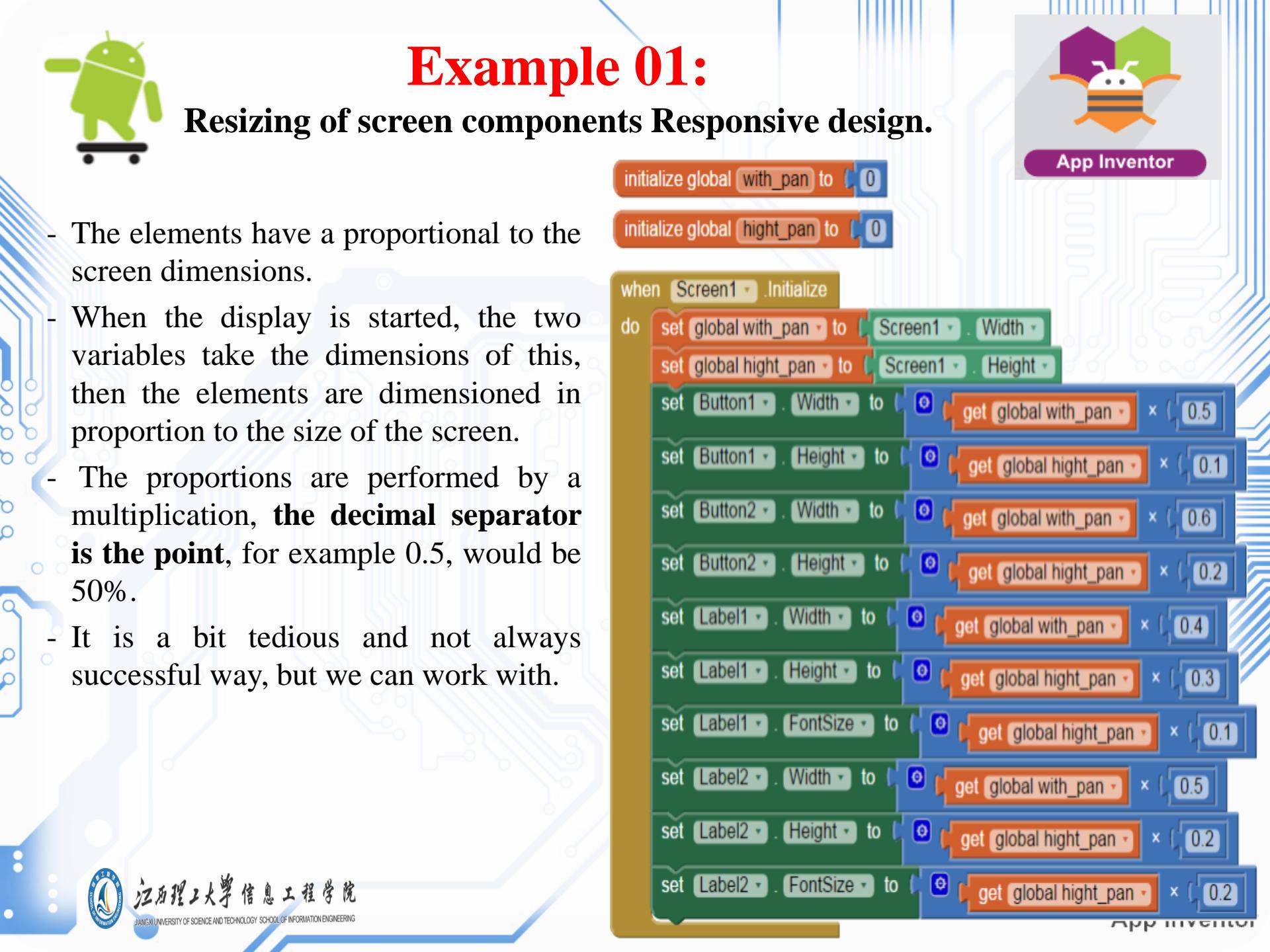
Example 01:

Resizing of screen components Responsive design.



App Inventor

- The elements have a proportional to the screen dimensions.
- When the display is started, the two variables take the dimensions of this, then the elements are dimensioned in proportion to the size of the screen.
- The proportions are performed by a multiplication, **the decimal separator is the point**, for example 0.5, would be 50%.
- It is a bit tedious and not always successful way, but we can work with.



```
initialize global [with_pan] to 0
initialize global [height_pan] to 0

when [Screen1.Initialize]
do
  set [global with_pan] to [Screen1.Width]
  set [global height_pan] to [Screen1.Height]

  set [Button1.Width] to [(get [global with_pan]) * 0.5]
  set [Button1.Height] to [(get [global height_pan]) * 0.1]
  set [Button2.Width] to [(get [global with_pan]) * 0.6]
  set [Button2.Height] to [(get [global height_pan]) * 0.2]
  set [Label1.Width] to [(get [global with_pan]) * 0.4]
  set [Label1.Height] to [(get [global height_pan]) * 0.3]
  set [Label1.FontSize] to [(get [global height_pan]) * 0.1]
  set [Label2.Width] to [(get [global with_pan]) * 0.5]
  set [Label2.Height] to [(get [global height_pan]) * 0.2]
  set [Label2.FontSize] to [(get [global height_pan]) * 0.2]
```



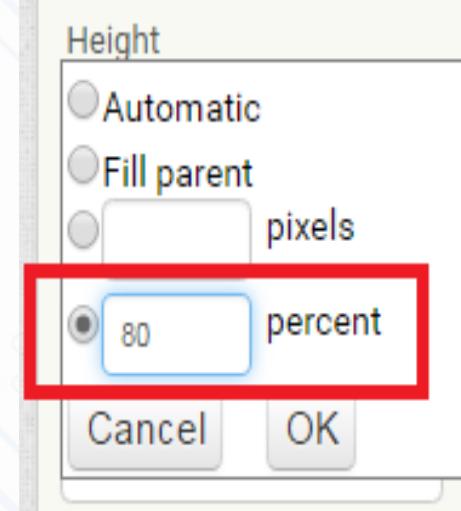
Example 01:

Resizing of screen components Responsive design.



Responsive design

- In August 2015 (nb145), App inventor adds "**Responsive design**" is something like what we have just seen, ie the elements are adapted proportionally to the size of the screen.
- Both part of Design as part of blocks, we can use this possibility, a percentage of the screen size is set.



```
set Button1 . WidthPercent to
```

```
set Button1 . HeightPercent to
```

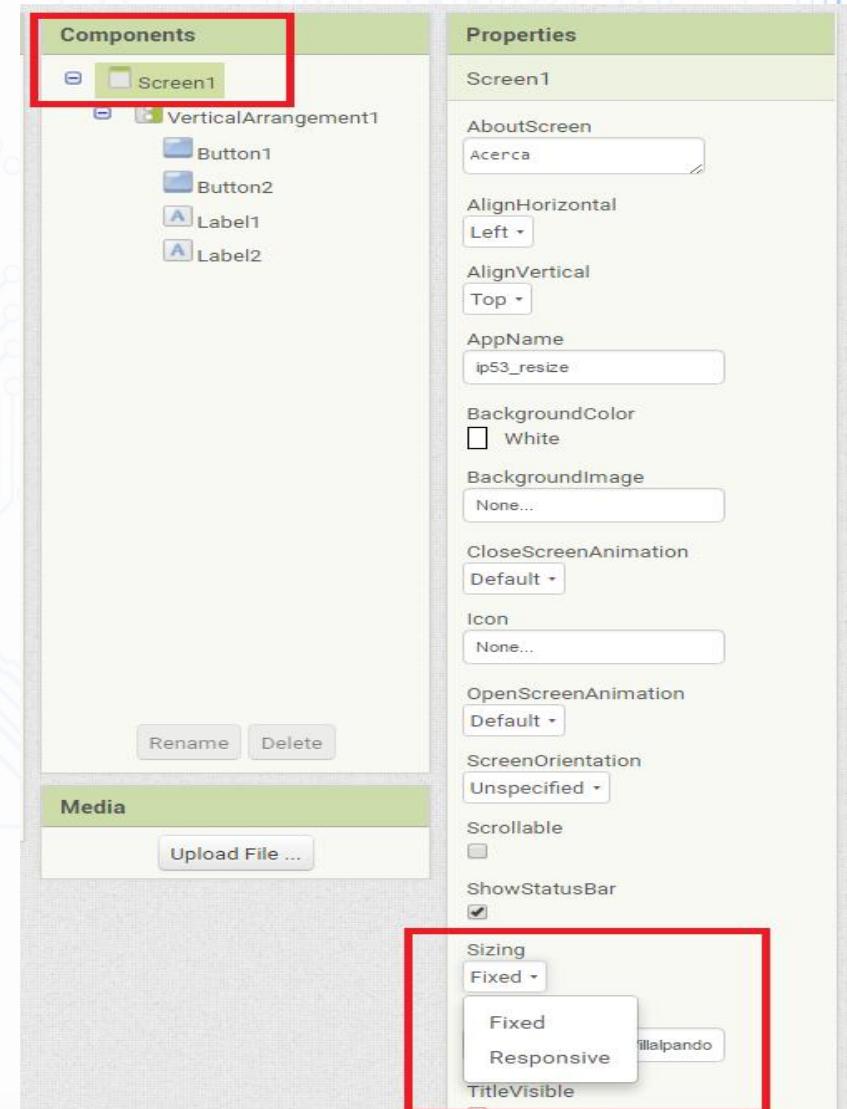


Example 01:

Resizing of screen components Responsive design



- To use the classic method or the new Responsive, let the Properties Screen and part of **Sizing chose Responsive**, as shown in the following image.





Example 01:

Resizing of screen components Responsive design.

- One of the limitations of this resource is not functioning properly with Canvas and sprites.

**Make this example
based on guideline and
clip**



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MOBILE APPLICATION DEVELOPMENT

Example 02:
Canvas & ImageSprite(1)



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App Inventor



Example 02:

Canvas & ImageSprite(1)



Example Aim.

- **Canvas** is an area of the screen where you can draw, draw lines, circles points .
- **ImageSprite** is a drawing **should go on a Canvas** and can move.
 - The Canvas Height: 400 pixel
 - The **LineWidth**, should draw a line, it would be drawn to that thickness.
 - The ImageSprite goes into the Canvas.
 - The Button I have given with the **Property Form Oval**.
 - we put an image with a transparent background.
 - **Download this image and sound file from lecture Group.**





Example 02:

Canvas & ImageSprite(1)

The screenshot shows the App Inventor interface with the following components:

- Components pane:** Lists the components used in the app:
 - Screen1
 - Button1
 - Canvas1
 - ImageSprite1
 - Sound1
- Properties pane:** Provides settings for the Screen1 component:
 - AboutScreen
 - AccentColor: Default
 - AlignHorizontal: Left : 1
 - AlignVertical: Top : 1
 - AppName: ip28_imagesprite_canv
 - BackgroundColor: Default
 - BackgroundImage: None...
 - BlocksToolkit: All
 - CloseScreenAnimation: Default
 - Icon: None...
 - OpenScreenAnimation: Default
 - PrimaryColor: Default
- Media pane:** Lists the media files used in the app:
 - balon3.gif
 - la.mp3





Example 02:

Canvas & ImageSprite(1)



The screenshot shows the App Inventor interface for creating a mobile application.

Drawing and Animation category in the Components palette:

- Ball
- Canvas
- ImageSprite

Components pane:

- Screen1
 - Button1
 - Canvas1
 - ImageSprite1
 - Sound1

Properties pane (for Canvas1 component):

- Canvas1
- BackgroundColor: White
- BackgroundImage: None...
- FontSize: 14.0
- Height: 400 pixels...
- Width: Fill parent...
- LineWidth: 2.0
- PaintColor: Black
- TextAlignment: left
- Visible: checked

Media section (highlighted with a red box):

- balon3.gif
- la.mp3

Non-visible components pane:

- Sound1

Bottom right corner: App Inventor logo



Example 02:

Canvas & ImageSprite(1)

The image displays a Scratch script composed of several blocks:

- when [Canvas1] .TouchDown**:
 - do [set [Canvas1] .PaintColor to [black v] make color [make a list v] randominteger from [100] to [255] randominteger from [100] to [255] randominteger from [100] to [255]]
 - call [Canvas1] .DrawCircle
centerX [get x v]
centerY [get y v]
radius [randominteger from [1] to [80]]
fill [true v]
- when [Canvas1] .TouchUp**:
 - do [call [Sound1] .Play]
- when [ImageSprite1] .Dragged**:
 - do [set [ImageSprite1] .X to [get currentX v]
set [ImageSprite1] .Y to [get currentY v]
set [ImageSprite1] .Heading to [0 v] + [ImageSprite1] .Heading + [3 v]]
- when [Canvas1] .Dragged**:
 - do [set [Canvas1] .PaintColor to [black v]
set [Canvas1] .LineWidth to [3 v]
call [Canvas1] .DrawLine
x1 [get currentX v]
y1 [get currentY v]
x2 [get prevX v]
y2 [get prevY v]]
- when [ImageSprite1] .EdgeReached**:
 - do [call [Canvas1] .Clear]
- when [Button1] .Click**:
 - do [call [Canvas1] .Clear]



Example 02: Canvas & ImageSprite(1)



```
when Canvas1 .TouchDown
do set Canvas1 .PaintColor to make color [make a list [random integer from 100 to 255, random integer from 100 to 255, random integer from 100 to 255]]
call Canvas1 .DrawCircle
  centerX [get x]
  centerY [get y]
  radius [random integer from 1 to 80]
  fill [true]
```

```
when Canvas1 .Dragged
do set Canvas1 .PaintColor to [set Canvas1 .LineWidth to 3]
call Canvas1 .DrawLine
  x1 [get currentX]
  y1 [get currentY]
  x2 [get prevX]
  y2 [get prevY]
```

```
when ImageSprite1 .Dragged
do set ImageSprite1 .X to [get currentX]
  set ImageSprite1 .Y to [get currentY]
  set ImageSprite1 .Heading to [ImageSprite1 .Heading + 3]
```

```
when Button1 .Click
do call Canvas1 .Clear
```

```
when ImageSprite1 .EdgeReached
do call Canvas1 .Clear
```

Blocks

When **touch the Canvas**, a random color, mixing Red, Green and Blue is created, according to random numbers.

- Each RGB can have a value from 0 to 255, in this case I started at 100 to come out lighter colors.
- In addition a filled circle is drawn with the random color obtained before and also random diameter of 1-80.





Example 02:

Canvas & ImageSprite_01

The screenshot shows the MIT App Inventor Designer interface. The top bar includes the title "MIT App Inventor", a "+" button, the URL "www.BANDICAM.com", and a search bar with the text "ai2.appinventor.mit.edu/#5314362358497280". Below the bar are tabs for "Getting Started", "PID", "Basic functions related...", "C زبان", "JRM | Fuji Technology ...", "YouTube (36)", and "New Tab". The main workspace is titled "Canvas_ImageSprite_01" and contains a single screen named "Screen1". The "Components" panel on the right lists "screen1" with options to "Rename" or "Delete". The "Properties" panel for "Screen1" shows settings like "AboutScreen", "AccentColor", "AlignHorizontal", "AlignVertical", "AppName", "BackgroundImage", "BlocksToolkit", "CloseScreenAnimation", "Icon", "Media", "OpenScreenAnimation", "PrimaryColor", "PrimaryColorDark", and "ScreenOrientation". The bottom of the screen shows the Windows taskbar with various application icons and the system tray.





Example 02: Canvas & ImageSprite_01.

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www.BANDICAM.com

ai2.appinventor.mit.edu/#5314362358497280

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Canvas_ImageSprite_01 Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Blocks

when [Canvas1] .TouchDown
do set [Canvas1] .PaintColor to make color
make a list random integer from 100 to 255
random integer from 100 to 255
random integer from 100 to 255
call [Canvas1] .DrawCircle
centerX get x
centerY get y
radius random integer from 100 to 80
fill true

when [Canvas1] .Dragged
do set [Canvas1] .PaintColor to
set [Canvas1] .LineWidth to 3
call [Canvas1] .DrawLine
x1 get currentX
y1 get currentY
x2 get prevX
y2 get prevY

when [ImageSprite1] .Dragged
do
set [ImageSprite1] .X to get currentX
set [ImageSprite1] .Y to get currentY

Viewer

Media

balon3.gif
la.mp3
Upload File ...

Download audio from this page ? X

3 2 Show Warnings

16:13 09/12/2020

The screenshot shows the MIT App Inventor 2 interface with the project titled "Canvas_ImageSprite_01". The code in the blocks editor is as follows:

- A green "when [Canvas1] .TouchDown" block triggers a series of actions:
 - Set [Canvas1] .PaintColor to a "make color" block (which generates a list of three random integers between 100 and 255).
 - Call [Canvas1] .DrawCircle with parameters: center X (get x), center Y (get y), radius (random integer from 100 to 80), and fill (true).
- A brown "when [Canvas1] .Dragged" block triggers a series of actions:
 - Set [Canvas1] .PaintColor to black.
 - Set [Canvas1] .LineWidth to 3.
 - Call [Canvas1] .DrawLine with parameters: x1 (get currentX), y1 (get currentY), x2 (get prevX), and y2 (get prevY).
- A yellow "when [ImageSprite1] .Dragged" block triggers a series of actions:
 - Set [ImageSprite1] .X to get currentX.
 - Set [ImageSprite1] .Y to get currentY.

The interface includes a sidebar with categories like Built-in, Screen1, Canvas1, and Media, and a toolbar with icons for Designer and Blocks. The status bar at the bottom shows the date and time.

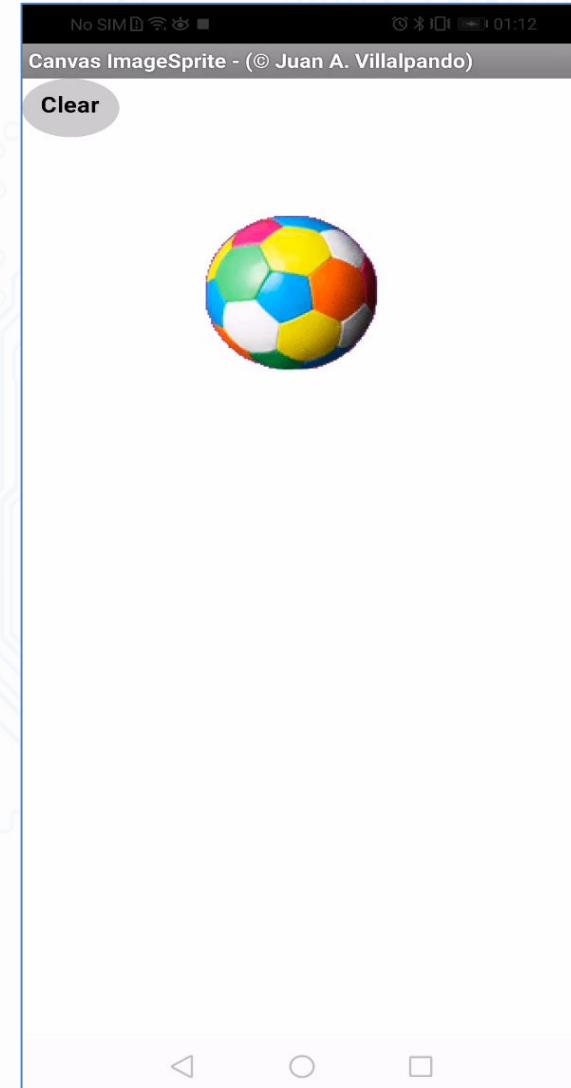
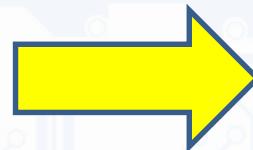




Example 02:

Canvas & ImageSprite_01.

Demo APP



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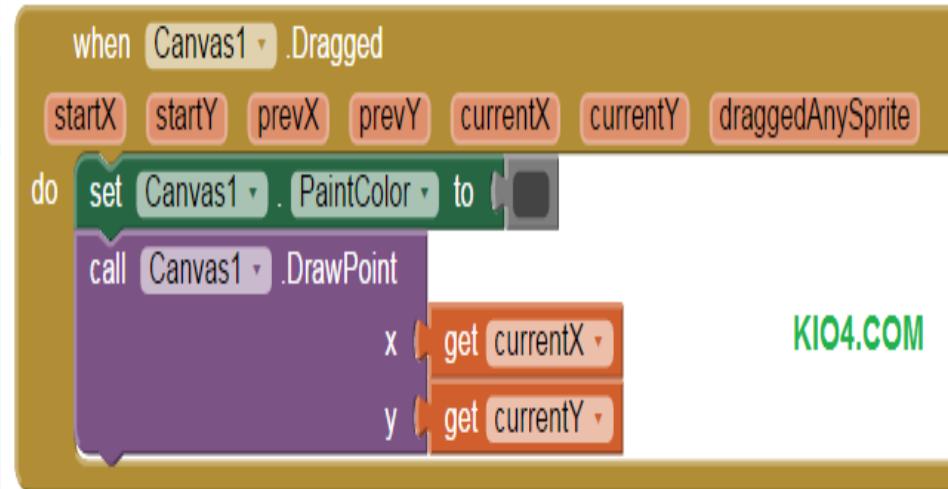
App Inventor



Example 02b:

Canvas & ImageSprite_01B.

- When we **raise the finger** **Canvas**, a sound rings.
- When you **drag your finger across the canvas** one is drawn **Black line of three pixels thick**.
- We put your finger on the image and drag across the canvas. Also as will be dragging **turning 3 degrees by ImageSprite1.Heading**.
- When you press the Button or **EdgeReached**, **the contents of the Canvas is Clear**.
- If instead we want the black line **black Points**, we would put this...



KI04.COM





Example 02: Canvas & ImageSprite_02

The image displays a Scratch script composed of several events and their corresponding blocks:

- when [Canvas1 TouchDown v]**:
 - do [set [Canvas1 PaintColor] to [make color] & make a list [random integer from [100] to [255]] & random integer from [100] to [255] & random integer from [100] to [255]]
 - call [Canvas1 DrawCircle v]
 - centerX [get x v]
 - centerY [get y v]
 - radius [random integer from [1] to [80]]
 - fill [true v]
- when [Canvas1 Dragged v]**:
 - do [set [Canvas1 PaintColor] to [black] & call [Canvas1 DrawPoint v]
 - x [get currentX v]
 - y [get currentY v]
- when [Canvas1 TouchUp v]**:
 - do [call [Sound1 Play v]]
- when [ImageSprite1 Dragged v]**:
 - do [set [ImageSprite1 X] to [get currentX] & set [ImageSprite1 Y] to [get currentY] & set [ImageSprite1 Heading] to [ImageSprite1 Heading + 3]]
- when [ImageSprite1 EdgeReached v]**:
 - do [call [Canvas1 Clear v]]
- when [Button1 Click v]**:
 - do [call [Canvas1 Clear v]]





Example 02:

Canvas & ImageSprite_02.

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APP INVENTOR

Canvas_ImageSprite_02 Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Blocks

Built-in

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

Screen1

- Button1
- Canvas1
- ImageSprite1
- Sound1

Any component

Canvas1

when Canvas1 TouchDown
do set [Canvas1 PaintColor] to [make color make a list random integer from 100 to 256 random integer from 100 to 256 random integer from 100 to 256]
call [Canvas1 DrawCircle centerX [get x] centerY [get y] radius [random integer from 100 to 80] fill [true]]

when Canvas1 Dragged
do set [Canvas1 PaintColor] to [set [Canvas1 LineWidth] to [3]
call [Canvas1 DrawLine x1 [get currentX] y1 [get currentY] x2 [get prevX] y2 [get prevY]]]

when ImageSprite1 Dragged
do set [ImageSprite1 X] to [get currentX]
set [ImageSprite1 Y] to [get currentY]
set [ImageSprite1 Heading] to [modulo of [ImageSprite1 Heading] + 3]

when Button1 Click
do call [Canvas1 Clear]

when Canvas1 TouchUp
do call [Sound1 Play]

when ImageSprite1 EdgeReached edge
do call [Canvas1 Clear]

Designer

Blocks

Media

- balon3.gif
- la.mp3

Show Warnings

Windows Taskbar

16:27 09/12/2020

Jiangxi University of Science and Technology School of Information Engineering

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Example 02:

Canvas & ImageSprite_02.

Demo APP



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MOBILE APPLICATION DEVELOPMENT

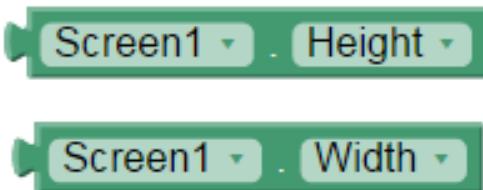
Example 03:

Canvas&ImageSprite. (II)

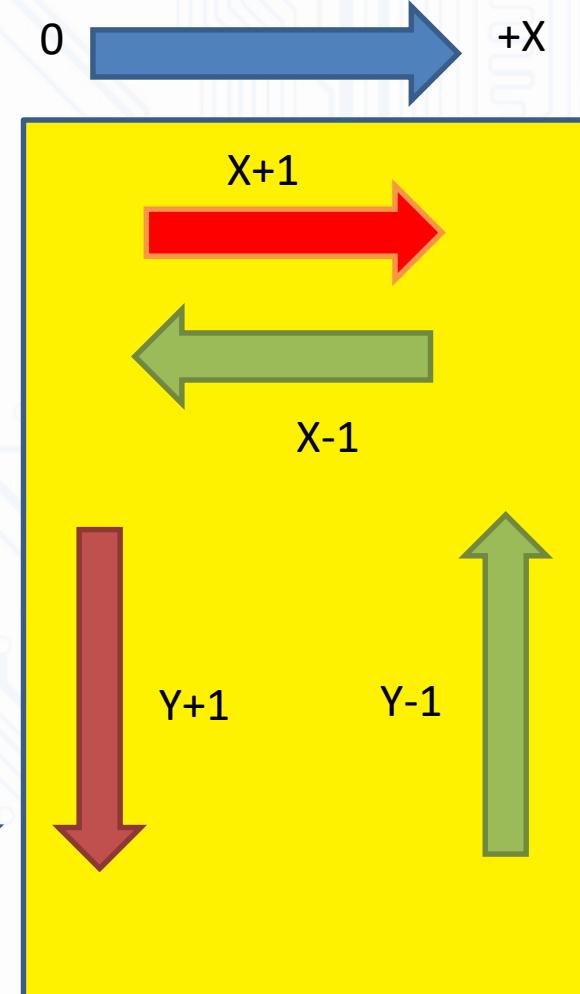


Example 03: Canvas & ImageSprite.

- You can check the width and height of the screen using these blocks that are on Screen



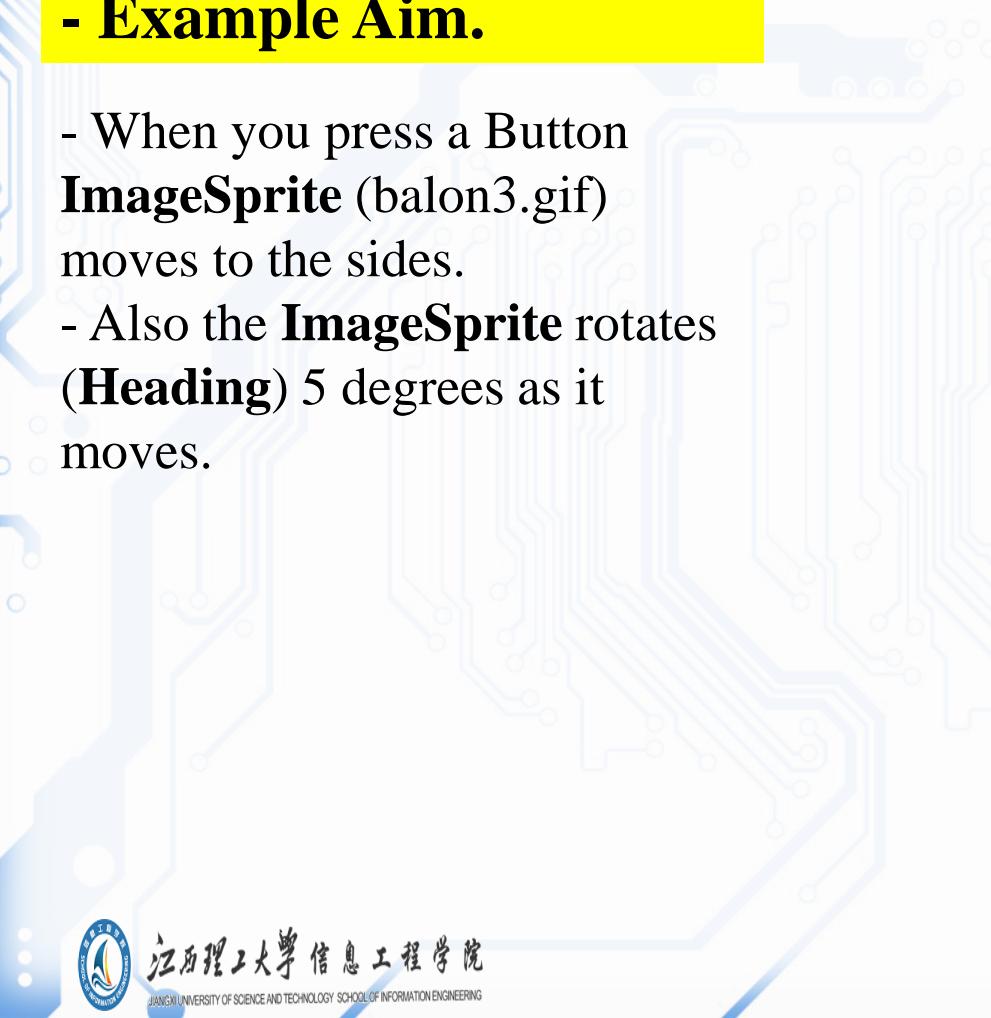
Screen coordinates.
The X to the right: positive
The Y down: positive





- Example Aim.

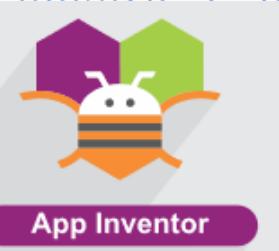
- When you press a Button **ImageSprite** (balon3.gif) moves to the sides.
- Also the **ImageSprite** rotates (**Heading**) 5 degrees as it moves.



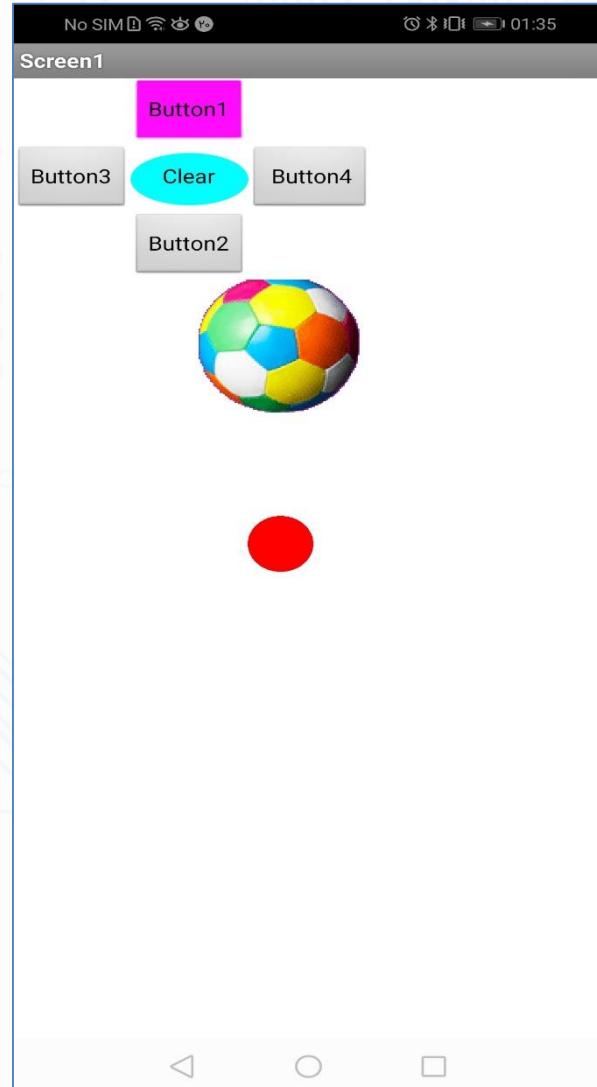
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Example 03:

Canvas & ImageSprite.



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Example 03: Canvas & ImageSprite.



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- Example Aim.

- When you press a Button **ImageSprite** (balon3.gif) moves to the sides.
- Also the **ImageSprite** rotates (**Heading**) 5 degrees as it moves.



Components

- Screen1
 - TableArrangement1
 - Button1
 - Button3
 - Clear
 - Button4
 - Button2
 - Canvas1
 - ImageSprite1
 - Ball1
 - Sound1

Properties

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

Media

- balon3.gif
- la.mp3
- sol.mp3

Non-visible components

- Sound1

Rename Delete

Upload File ...





Example 03:

Canvas & ImageSprite.



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The image shows four separate Scratch script blocks, each triggered by a button click (Button1, Button2, Button3, Button4). Each script moves the image sprite 5 units in a random direction (either up, down, left, or right) and then sets its heading to that same direction. This results in the sprite moving in a zig-zag pattern.

```
when [Button1 v] Click
do (call [ImageSprite1 v].MoveTo [x v ImageSprite1 v X v] [y v ImageSprite1 v Y v] - (5))
  set [ImageSprite1 v].Heading to (0 + [ImageSprite1 v].Heading + (5))
when [Button2 v] Click
do (call [ImageSprite1 v].MoveTo [x v ImageSprite1 v X v] [y v ImageSprite1 v Y v] + (5))
  set [ImageSprite1 v].Heading to (0 + [ImageSprite1 v].Heading + (5))
when [Button3 v] Click
do (call [ImageSprite1 v].MoveTo [x v ImageSprite1 v X v] [y v ImageSprite1 v Y v] - (5))
  set [ImageSprite1 v].Heading to (0 + [ImageSprite1 v].Heading + (5))
when [Button4 v] Click
do (call [ImageSprite1 v].MoveTo [x v 0 + [ImageSprite1 v].X v] [y v ImageSprite1 v Y v] + (5))
  set [ImageSprite1 v].Heading to (0 + [ImageSprite1 v].Heading + (5))
```

This Scratch script is triggered when a ball reaches an edge. It makes the ball bounce off the edge and play a sound effect from a file named "sol.mp3".

```
when [Ball1 v] EdgeReached
do (call [Ball1 v].Bounce [edge v get edge v])
  set [Sound1 v].Source to ("sol.mp3")
  call [Sound1 v].Play
```

This Scratch script is triggered when a ball collides with another sprite. It changes the ball's heading to 360 degrees and plays a sound effect from a file named "la.mp3".

```
when [ImageSprite1 v] CollidedWith [other v]
do (set [Ball1 v].Heading to (360 + [ImageSprite1 v].Heading))
  set [Sound1 v].Source to ("la.mp3")
  call [Sound1 v].Play
```

This Scratch script is triggered when an image sprite is dragged. It updates the sprite's X and Y coordinates to reflect its current position relative to the top-left corner of the stage.

```
when [ImageSprite1 v] Dragged
do (set [ImageSprite1 v].X to (get [currentX v])
  set [ImageSprite1 v].Y to (get [currentY v]))
```

when [Button5 v] Click
do (close application)





Example 03:

Canvas & ImageSprite.

- When the red ball **Collides with** a edge a sound bounces sound.
 - When the **ImagenSprite** (balon) **Collides with** something, the red ball changes direction.
 - You hear another sound.
- - We can move the **SpriteImage** (balon) moving the finger.
- - When you click on **Button5** , the program (closes **not work while being emulated, only when installed**).





Example 03:

Canvas & ImageSprite.



Drawing of a function.

- It is **drawing** a sine, cosine and parable.
- To draw on Canvas. We put your property Width: Fill parent, and its Height Property: 400 pixels





Example 03:

Canvas & ImageSprite.



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```
when Button1 .Click
do call ImageSprite1 .MoveTo
  x ImageSprite1 .X
  y ImageSprite1 .Y + 5
set ImageSprite1 .Heading to ImageSprite1 .Heading + 5

when Button2 .Click
do call ImageSprite1 .MoveTo
  x ImageSprite1 .X
  y ImageSprite1 .Y + 5
set ImageSprite1 .Heading to ImageSprite1 .Heading + 5

when Button3 .Click
do call ImageSprite1 .MoveTo
  x ImageSprite1 .X - 5
  y ImageSprite1 .Y
set ImageSprite1 .Heading to ImageSprite1 .Heading + 5

when Button4 .Click
do call ImageSprite1 .MoveTo
  x ImageSprite1 .X + 5
  y ImageSprite1 .Y
set ImageSprite1 .Heading to ImageSprite1 .Heading + 5
```

```
when Ball1 .EdgeReached
edge
do call Ball1 .Bounce
  edge get edge
set Sound1 .Source to "sol.mp3"
call Sound1 .Play

when ImageSprite1 .CollidedWith
other
do set Ball1 .Heading to ImageSprite1 .Heading + 360
set Sound1 .Source to "la.mp3"
call Sound1 .Play

when ImageSprite1 .Dragged
startX startY prevX prevY currentX currentY
do set ImageSprite1 .X to get currentX
  set ImageSprite1 .Y to get currentY

when Clear .Click
do close application
```



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Example 03:

Canvas & ImageSprite.



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canvas_image3 Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Palette

User Interface

- Button
- CheckBox
- DatePicker
- Image
- Label
- 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 comes_image3

BackgroundColor Default

BackgroundImage None...

BlockToolkit All

CloseScreenAnimation Default

Icon None...

OpenScreenAnimation Default

PrimaryColor Default

PrimaryColorDark Default

ScreenOrientation Unspecified

Scalable

Rename Delete

Media

Upload File ...



Example 03: Canvas & ImageSprite.



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convas_image3 Screen1 Add Screen... Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - TableArrangement1
 - Button1
 - Button2
 - Button3
 - Button4
 - Clear
 - Canvas1

Viewer

balon3.gif la.mp3 sol.mp3

Show Warnings

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20:58 09/12/2020



Example 03:

Canvas & ImageSprite.



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Designer Blocks

convas_image3

Screen1 Add Screen... Remove Screen Publish to Gallery

Blocks

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

Screen1 TableArrangement1 Button1 Button3 Button2 Button4 clear

Canvas1 Rename Delete

Media

balon3.gif la.mp3 sol.mp3 Upload File...

when Button1 .Click
do call ImageSprite1 .MoveTo
x ImageSprite1 . X +
y ImageSprite1 . X + + 5
set ImageSprite1 . Heading to ImageSprite1 . X + + 5

when Button2 .Click
do call ImageSprite1 .MoveTo
x ImageSprite1 . X +
y ImageSprite1 . X + + 5
set ImageSprite1 . Heading to ImageSprite1 . X + + 5

when Button3 .Click
do call ImageSprite1 .MoveTo
x ImageSprite1 . X +
y ImageSprite1 . X + + 5
set ImageSprite1 . Heading to ImageSprite1 . X + + 5

when Button4 .Click
do call ImageSprite1 .MoveTo
x ImageSprite1 . X +
y ImageSprite1 . X + + 5
set ImageSprite1 . Heading to ImageSprite1 . X + + 5

when Ball1 .EdgeReached
edge
do call Ball1 .Bounce
edge get edge
set Sound1 . Source to sol.mp3
call Sound1 . Play

when ImageSprite1 .CollidedWith
other
do set Ball1 . Heading to ImageSprite1 . Heading + 360
set Sound1 . Source to la.mp3
call Sound1 . Play

when ImageSprite1 .Dragged
startX startY prevX prevY currentX currentY
do set ImageSprite1 . X to get currentX
set ImageSprite1 . Y to get currentY

when Clear .Click
do close application

Show Warnings

Colours, Patterns and Themes Editor

Windows Taskbar

21:05 09/12/2020 ENG

This screenshot shows the MIT App Inventor interface for a project titled "convas_image3". The project uses the "Blocks" programming language. It features a single screen with a canvas and several buttons. The buttons (Button1-4) trigger scripts that move an image sprite (ImageSprite1) diagonally across the screen. The sprite's heading is also updated. A ball sprite (Ball1) bounces off the edges of the screen, and sound effects (sol.mp3 and la.mp3) are played upon collision. The "Blocks" palette on the left contains various blocks for control, logic, and media. The "Media" section lists three files: balon3.gif, la.mp3, and sol.mp3.

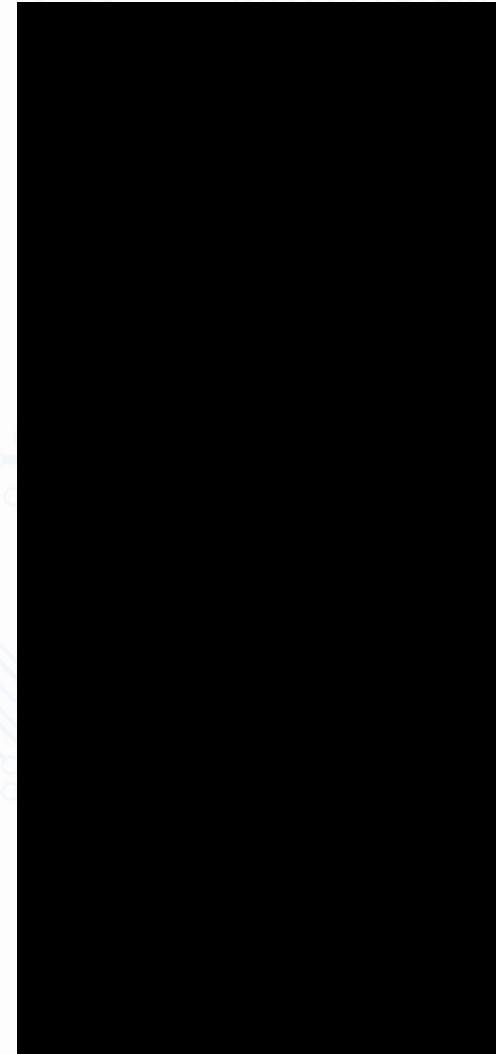
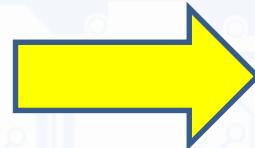




Example 03:

Canvas & ImageSprite.

Demo APP



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Student Task_15



- For resize example need to have process clips and repeat the clips project as well as the example 1, beside should send aia file and apk (example 1 based on our format include all part)
- Repeat this examples and make based on our task format no need for process clip for example 2,3
- Please send your all file with your name (ppt, apk,aia file,etc) in a zip file.
- Please send all file in all format with your name

- MOOC
- Your file should have this format of name

<Task number><student name><Student ID>.ppt

Next lecture





Reference

- <https://imagnity.com/tutorials/app-inventor/website-viewer-on-app-inventor/>
- <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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School of information engineering

Digital Image Processing

THANK YOU





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

