



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 025:

APP Inventor –
Example Game

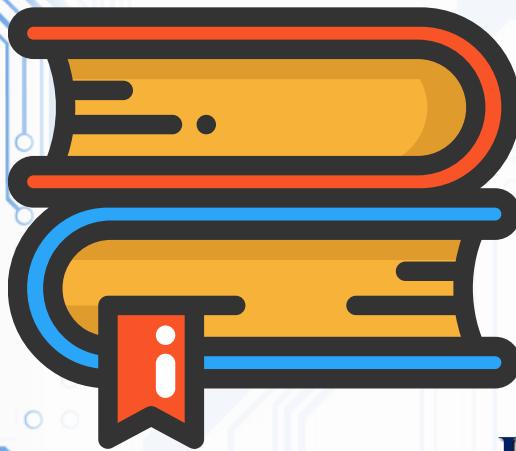
Prof Associate ,
School of information engineering Jiangxi
university of science and technology, China

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MOBILE APPLICATION DEVELOPMENT

LECTURE 025:

APP Inventor _ Example

GAME in App Inventor



Agenda

- Example01: Guess the number
- Example 02: Russian Roulette
- Example 03:Minesweeper
- Example 04:Three equal
- Example 05: Odd / Even. Multiple of 4. Divisors of a number.
- Example 06:Divisors of a number
- Example 07:Rock, paper, scissors.





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MOBILE APPLICATION DEVELOPMENT

Example01:
Guess the number



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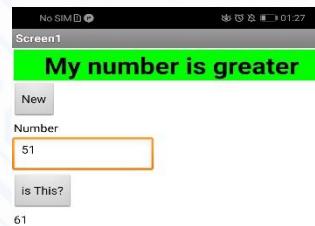
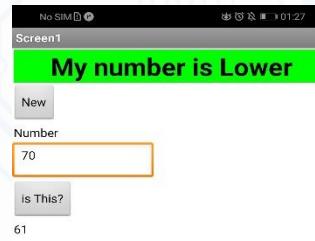
App Inventor



Example01: Guess the number.

Example Aim

- Now it is making a program called **Guess**.
- We press a **Button**, then the mobile **creates a random number** between 1 and 100 that we guess.
- Then we **introduce a number in the TextBox** and press the Button **Is This?**
- The program will answer us if the **number is created equal, greater or lesser than we have introduced**.

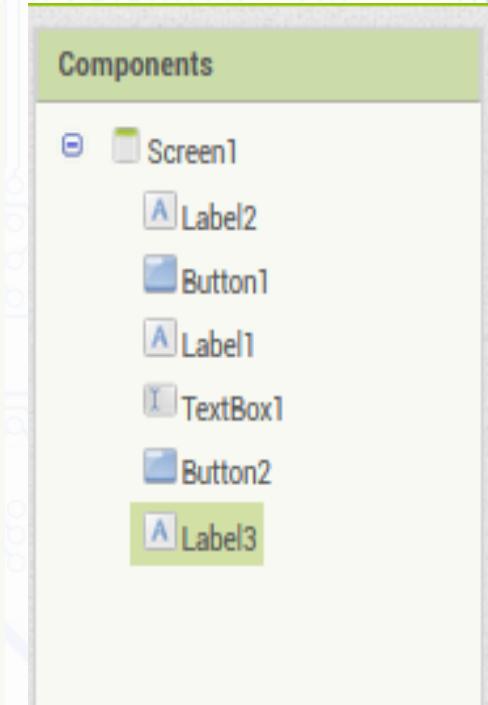
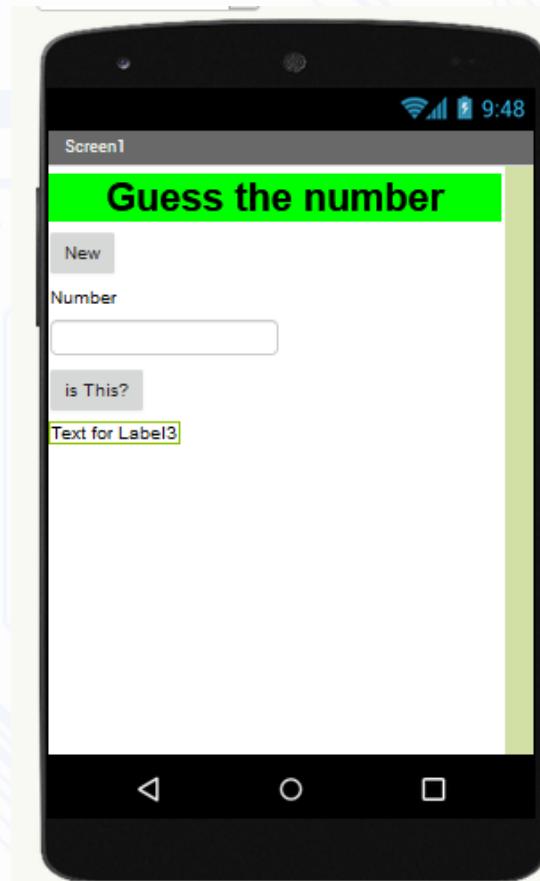




Design

Example01: Guess the number.

- **Screen1** enter into the screen the following elements:
 - **Button1**,
 - **Label**,
 - **TextBox**,
 - **HorizontalArragement**,
 - **Button2**,
 - **Label2 and Label3**





Blocks

Example01: Guess the number.

```
initialize global [computer] to 0  
initialize global [mine] to 0  
  
when [Button1].Click  
do  
  set [global computer] to random integer from 1 to 100  
  set [Label3].Text to get [global computer]  
  
when [Button2].Click  
do  
  set [global mine] to [TextBox1].Text  
  if get [global computer] > get [global mine]  
    then set [Label2].Text to "My number is greater"  
  if get [global computer] < get [global mine]  
    then set [Label2].Text to "My number is Lower"  
  if get [global computer] = get [global mine]  
    then set [Label2].Text to "YES sucessful"
```





Explanation: Example01: Guess the number.

- We define the variable as numerical **computer**
- We define the variable as numerical **mine**.
- When we **click on Button1**:
 - Variable **computer** to a random number between 1 and 100 is assigned
 - In the **Label3.Text** the number created appears.
- When we **click on Button2**:
 - Assigned to the **mine variable** to the user of the game put the **TextBox1**
 - If the number of the **computer** is higher than **mine**, the phrase appears in the **Label2.Text** **My number is greater.**
 - If the number is less **computer** than **mine**, the phrase appears in the **Label2.Text** **My number is lower.**
 - If the number of the **computer** is the same as **mine**, **SUCCESSFUL** phrase appears in the **Label2.Text**
- **NOTE:** **Label3** is only to check the operation of the application. When we ensure its smooth operation, delete or will disable this **Label3** not see the number we need to hit.



Example01:Guess the number.

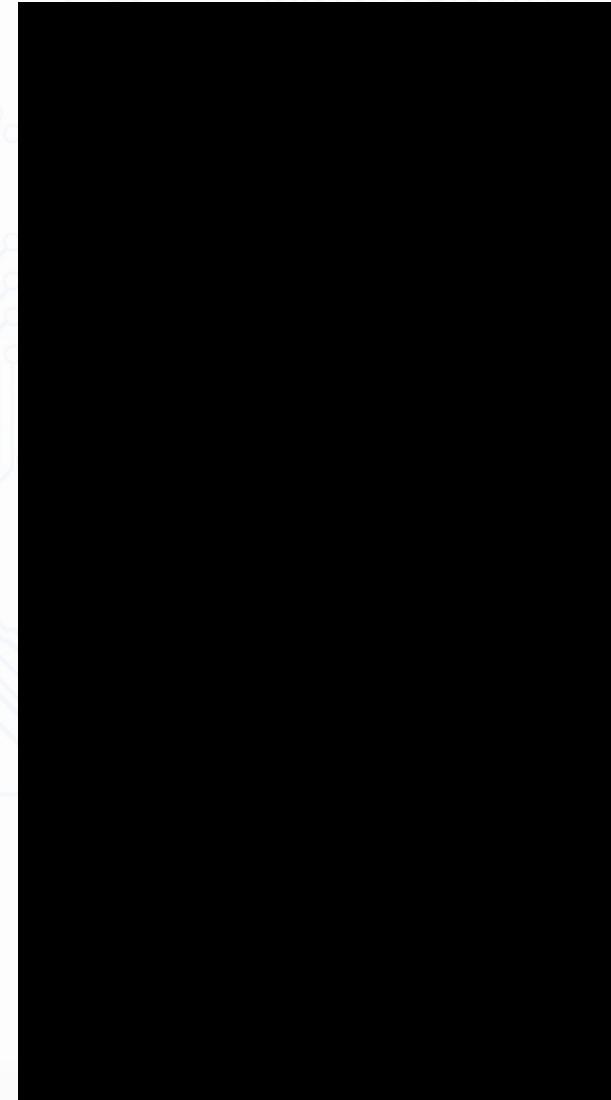
The screenshot shows the MIT App Inventor 2 environment. The top bar includes the menu (File, Edit, View, History, Bookmarks, Tools, Help) and the URL www.BANDICAM.com. The main workspace has tabs for "App inventor. Guess number." and "MIT App Inventor". The "Viewer" tab is active, displaying a smartphone icon representing "Screen1" with a white background. The "Components" panel on the right lists "Screen1" under the "Components" section. The "Properties" panel contains settings for "Screen1", such as "AppName" set to "Guestthenumber", "BackgroundImage" set to "None...", and "ScreenOrientation" set to "Unspecified". The "Palette" panel on the left lists various UI components like Button, CheckBox, DatePicker, Image, Label, ListPicker, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox, TimePicker, and WebViewer. The bottom taskbar shows icons for various Windows applications, and the system tray indicates the date and time as 23/12/2020, 01:11.



Demo

Example01: Guess the number.

Demo APP



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App Inventor



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MOBILE APPLICATION DEVELOPMENT

Example 02:
Russian Roulette



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App Inventor



Russian roulette

(Russian: русская рулетка, russkaya ruletka)

- *Russian roulette is a lethal game of chance in which a player places a single round in a revolver, spins the cylinder, places the muzzle against their head, and pulls the trigger in hopes that the loaded chamber does not align with the primer percussion mechanism and the barrel, causing the weapon to discharge.*
- Russian refers to the supposed country of origin, and roulette to the element of risk-taking and the spinning of the revolver's cylinder, which is reminiscent of a spinning roulette wheel.



https://en.wikipedia.org/wiki/Russian_roulette



Russian roulette

(Russian: русская рулетка, russkaya ruletka)

- The deadly game is commonly associated with six-shot revolvers. If such is the case, mathematically, the average number of consecutive pulls of the trigger before the gun discharges is 3.5.
- After a single spin, the probability of it firing is $1/6$, followed by $1/5$ on the second pull, $1/4$ on the 3rd pull and so on, until if it failed to fire 5 times, the probability is $1/1 (=1)$ on the final pull.
- If the cylinder is re-spun after each trigger pull, the probability of firing remains 1 in 6 on each occasion, and the probability of it having fired after 6 pulls is $1 - (\frac{5}{6})^6$, or about 66.5%.

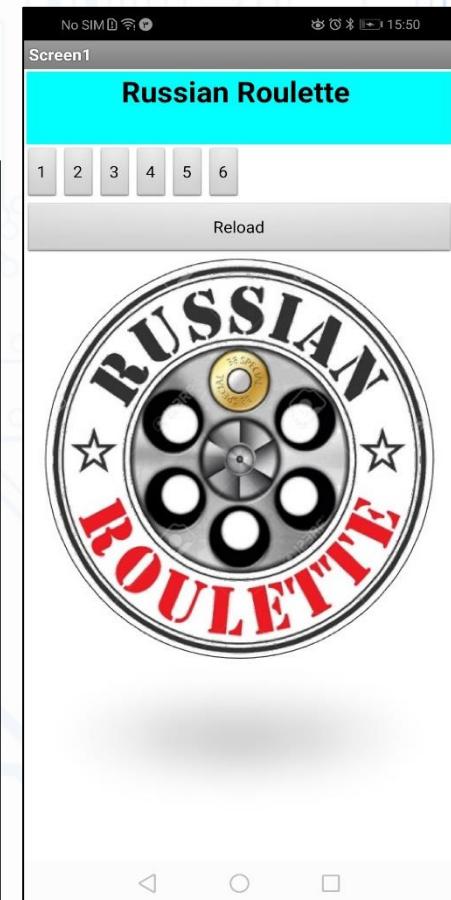
https://en.wikipedia.org/wiki/Russian_roulette

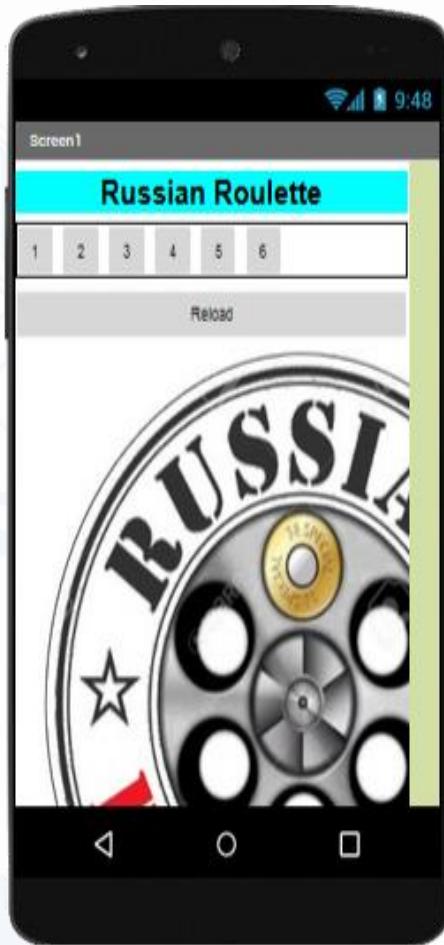


Example 02: Russian Roulette

Example Aim

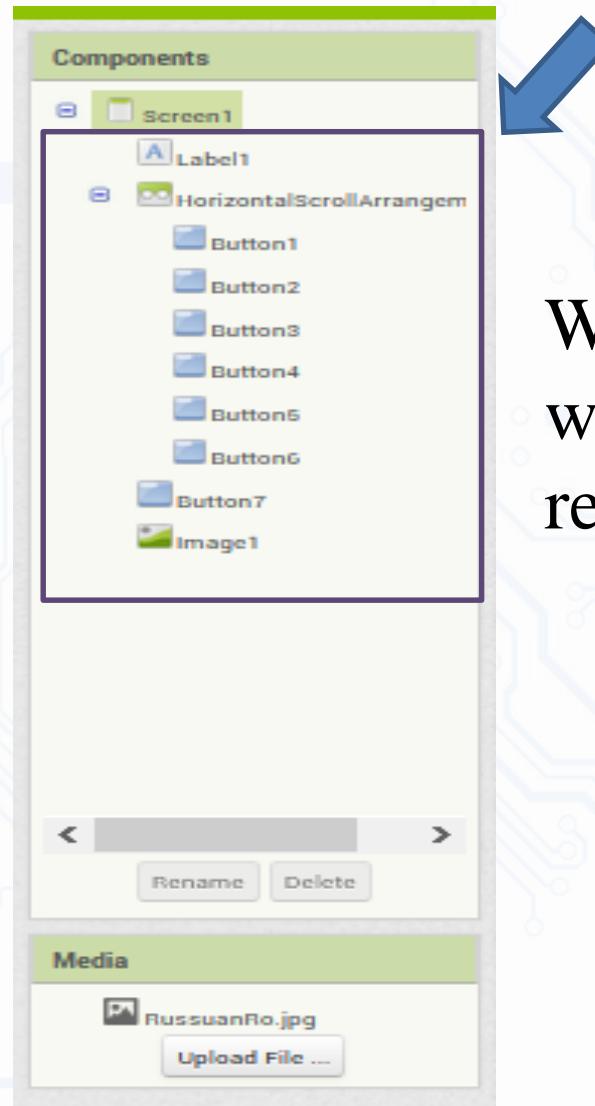
- Let's see a game - based of Russian Roulette.
- In this case we have a revolver for 6 bullets.
 - First Reload revolver putting a single bullet and rotating the drum. The bullet will be located randomly in one of the six sites.
 - Then let's pressing randomly the different buttons - If the number instead of the bullet matches the number of the button pressed, the screen turns red.
 - Else, (Button.Enabled = False).





Design

Example 02: Russian Roulette

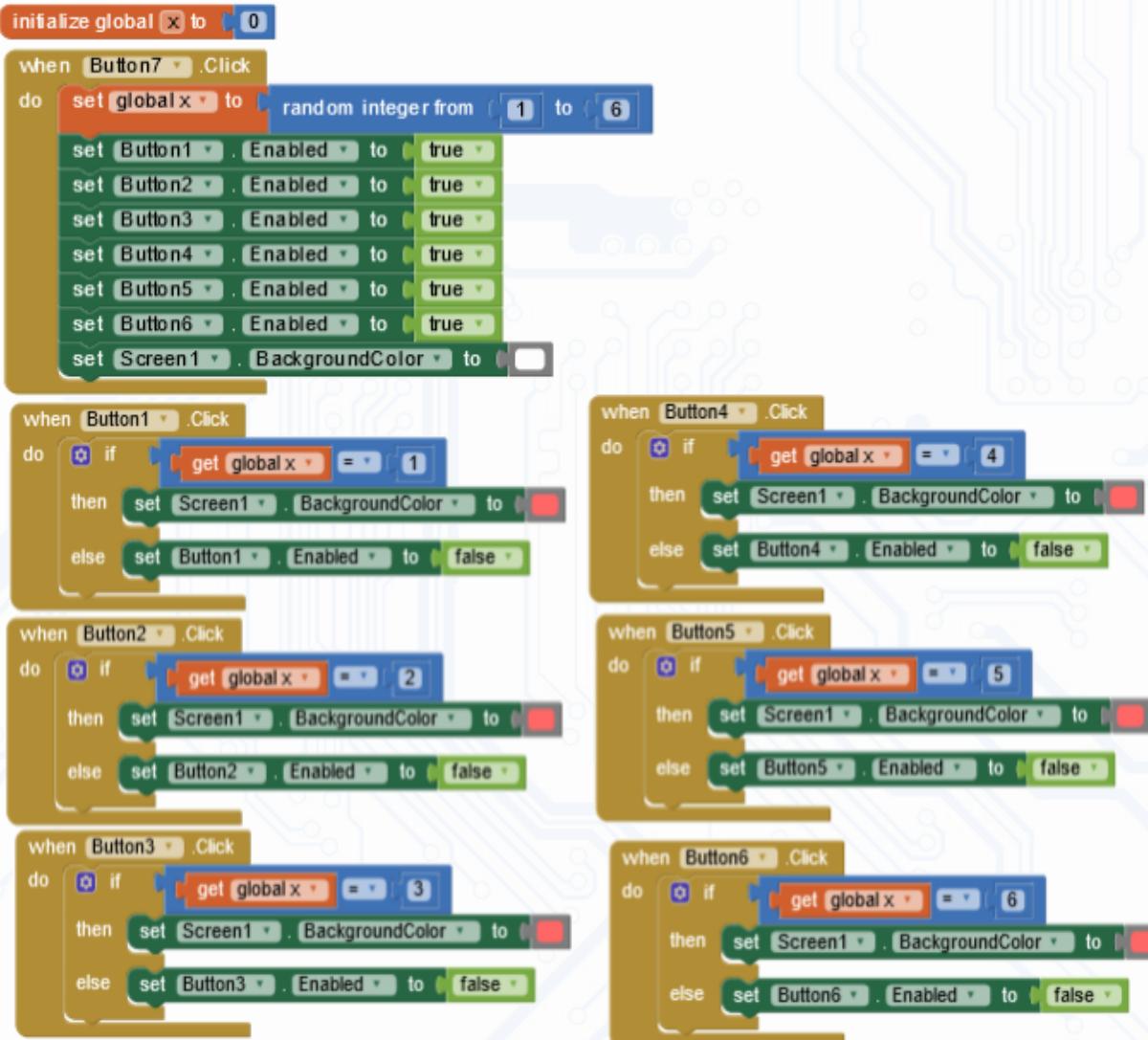


We acted on the widths and heights to resize the controls.



Design

Example 02: Russian Roulette



The image shows a Scratch script for a "Russian Roulette" game. It starts with an "initialize global [x] to [0]" block. A "when [Button7] clicked" hat block triggers a "do" loop that runs 6 times. Inside the loop, it sets global variable x to a random integer from 1 to 6, then enables all six buttons (Button1 to Button6) and sets the screen's background color to white. Below this, there are five more "when [Button1 to Button6] clicked" blocks, each with its own "do" loop. Each loop checks if global x equals the button number (1, 2, 3, 4, or 5). If true, it changes the screen's background color to red. If false, it disables the button. The "when [Button6] clicked" block also includes a "set [Screen1 v].BackgroundColor to [white]" block.

```
initialize global [x] to [0]
when [Button7] clicked
do (set global x to (random integer from [1] to [6])
    set [Button1 v].Enabled to [true]
    set [Button2 v].Enabled to [true]
    set [Button3 v].Enabled to [true]
    set [Button4 v].Enabled to [true]
    set [Button5 v].Enabled to [true]
    set [Button6 v].Enabled to [true]
    set [Screen1 v].BackgroundColor to [white])
when [Button1] clicked
do (if (get global x = [1])
then (set [Screen1 v].BackgroundColor to [red]
else (set [Button1 v].Enabled to [false]))
when [Button2] clicked
do (if (get global x = [2])
then (set [Screen1 v].BackgroundColor to [red]
else (set [Button2 v].Enabled to [false]))
when [Button3] clicked
do (if (get global x = [3])
then (set [Screen1 v].BackgroundColor to [red]
else (set [Button3 v].Enabled to [false]))
when [Button4] clicked
do (if (get global x = [4])
then (set [Screen1 v].BackgroundColor to [red]
else (set [Button4 v].Enabled to [false]))
when [Button5] clicked
do (if (get global x = [5])
then (set [Screen1 v].BackgroundColor to [red]
else (set [Button5 v].Enabled to [false]))
when [Button6] clicked
do (if (get global x = [6])
then (set [Screen1 v].BackgroundColor to [white]
else (set [Button6 v].Enabled to [false]))
```



Design

Example 02: Russian Roulette

The Scratch script consists of the following blocks:

- Global variable `x` initialized to 0.
- When `Button7` clicked:
 - Set `x` to random integer from 1 to 6.
 - Set `Button1` Enabled to true.
 - Set `Button2` Enabled to true.
 - Set `Button3` Enabled to true.
 - Set `Button4` Enabled to true.
 - Set `Button5` Enabled to true.
 - Set `Button6` Enabled to true.
 - Set `Screen1` BackgroundColor to white.
- When `Button1` clicked:
 - Do (if `get global x = 1` then set `Screen1` BackgroundColor to red else set `Button1` Enabled to false).
- When `Button2` clicked:
 - Do (if `get global x = 2` then set `Screen1` BackgroundColor to red else set `Button2` Enabled to false).
- When `Button3` clicked:
 - Do (if `get global x = 3` then set `Screen1` BackgroundColor to red else set `Button3` Enabled to false).
- When `Button4` clicked:
 - Do (if `get global x = 4` then set `Screen1` BackgroundColor to red else set `Button4` Enabled to false).
- When `Button5` clicked:
 - Do (if `get global x = 5` then set `Screen1` BackgroundColor to red else set `Button5` Enabled to false).
- When `Button6` clicked:
 - Do (if `get global x = 6` then set `Screen1` BackgroundColor to red else set `Button6` Enabled to false).





Blocks

Example 02: Russian Roulette

- When you click the button **Reload, Button7.Click**, a random number from 1 to 6 is created, they are enabled (**Enable = True**) all buttons and the bottom of the screen goes blank it gets.
- When you press any button:
 - If the value x randomly generated in the reset matches the number of the button, the screen turns red.
 - Else, it **disables** the button down.



Example 02: Russian Roulette

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

Gmail ddownr - Online Downloader MIT App Inventor

Getting Started PID Basic functions related... C جاوازش 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

Russian_Roulette 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

Viewer

Display hidden components in Viewer

Phone size (505,320)

Screen1

Components

Properties

AccentColor Default

AlignHorizontal Left : 1

AlignVertical Top : 1

AppName Russian_Roulette

BackgroundColor Default

BackgroundImage None...

BlocksToolkit All

CloseScreenAnimation Default

Icon None...

OpenScreenAnimation Default

PrimaryColor

Rename Delete

Media Upload File ...



Example 02: Russian Roulette

The screenshot shows the MIT App Inventor Designer interface for a project titled "Russian_Roulette". The interface is divided into several panels:

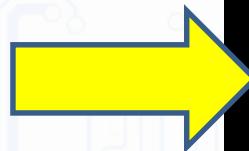
- Palette (Left):** Shows categories like Image, User Interface, Layout, Media, Drawing and Animation, Maps, Sensors, Social, Storage, and Connectivity.
- Viewer (Center):** Displays a smartphone screen with a "Upload File ..." dialog box. The dialog has a "Browse..." button, a message "No file selected.", and "Cancel" and "OK" buttons. Below the dialog is a numeric keypad with buttons 1 through 6 and a "Reload" button.
- Components (Right):** A tree view of components:
 - Screen1
 - Label1
 - HorizontalScrollViewArrangement
 - Button1
 - Button2
 - Button3
 - Button4
 - Button5
 - Button6
 - Button7
 - Image1
- Properties (Right):** A panel for "Image1" with settings:
 - Clickable:
 - Height: Automatic...
 - Width: Automatic...
 - Picture: None...
 - RotationAngle: 0.0
 - ScalePictureToFit:
 - Visible:
- Media (Bottom Right):** Buttons for "Rename" and "Delete", and a "Upload File ..." button.



Demo

Example02:Russian Roulette

Demo APP





More about Russian roulette

- A dangerous and deadly game in which a revolver or six shooter has one (or more) bullets put into the chamber.
- The chamber is then spun around and snapped into position, leaving no idea as to the bullet's exact position.
- Two or more men then take turns putting the gun to their head and pulling the trigger, hoping it falls on an empty chamber.
- Others will commonly bet on this sort of game.
- **Russian roulette may also appear in the form of a similar game in which many glasses full of some substance are placed down.** All but one are filled with water or alcohol or something, the last containing deadly poison. Men take turns choosing and picking glasses to drink until one dies. (I think this is also called russian roulette)





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MOBILE APPLICATION DEVELOPMENT

Example 03:
Minesweeper



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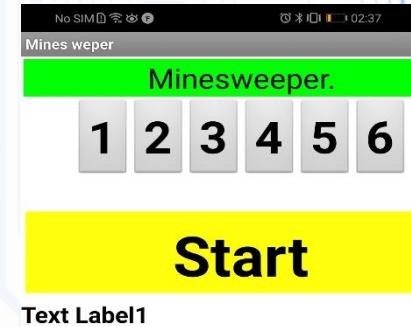
App Inventor



Example 03:Minesweeper

Example Aim

- Based on the previous application of "Russian Roulette", we will build a simple "Minesweeper".
- Let's modify a bit the Design and blocks, but keep the style.
- Press the button "Start", 6 random numbers (which only have two values: 0 or 1) will be created. Each random number is assigned to a button:b1, b2, b2, b4, b6 and b5.
 - If the random number is 1, it means that there is a mine.**
 - If it is a 0 no mine.**
- The user pressed the buttons. If the pressed button has a corresponding variable to 1, you will have a mine and the screen is coloured red.



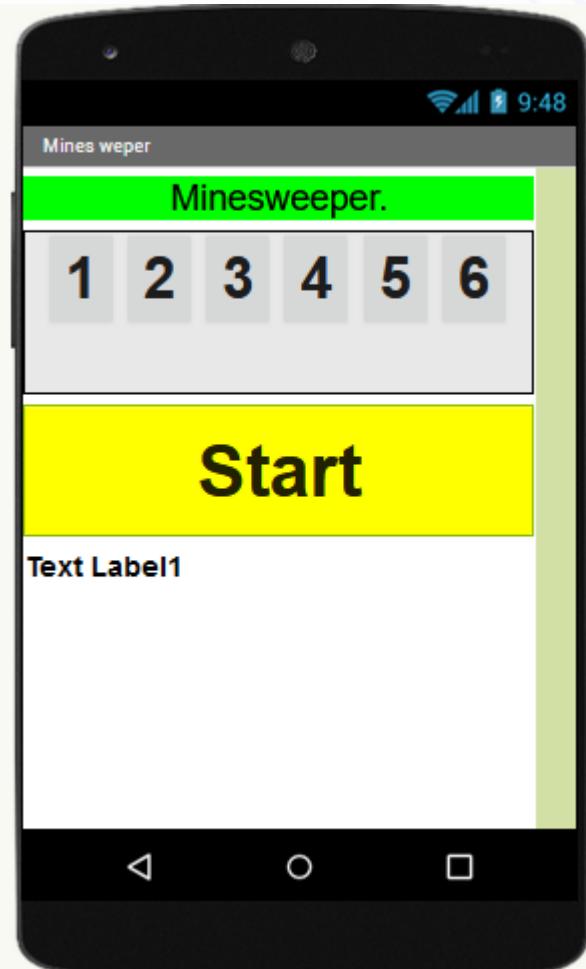
App Inventor



Design

Example 03: Minesweeper

- It is similar to "Russian Roulette"
- Add **Label1**.



App Inventor



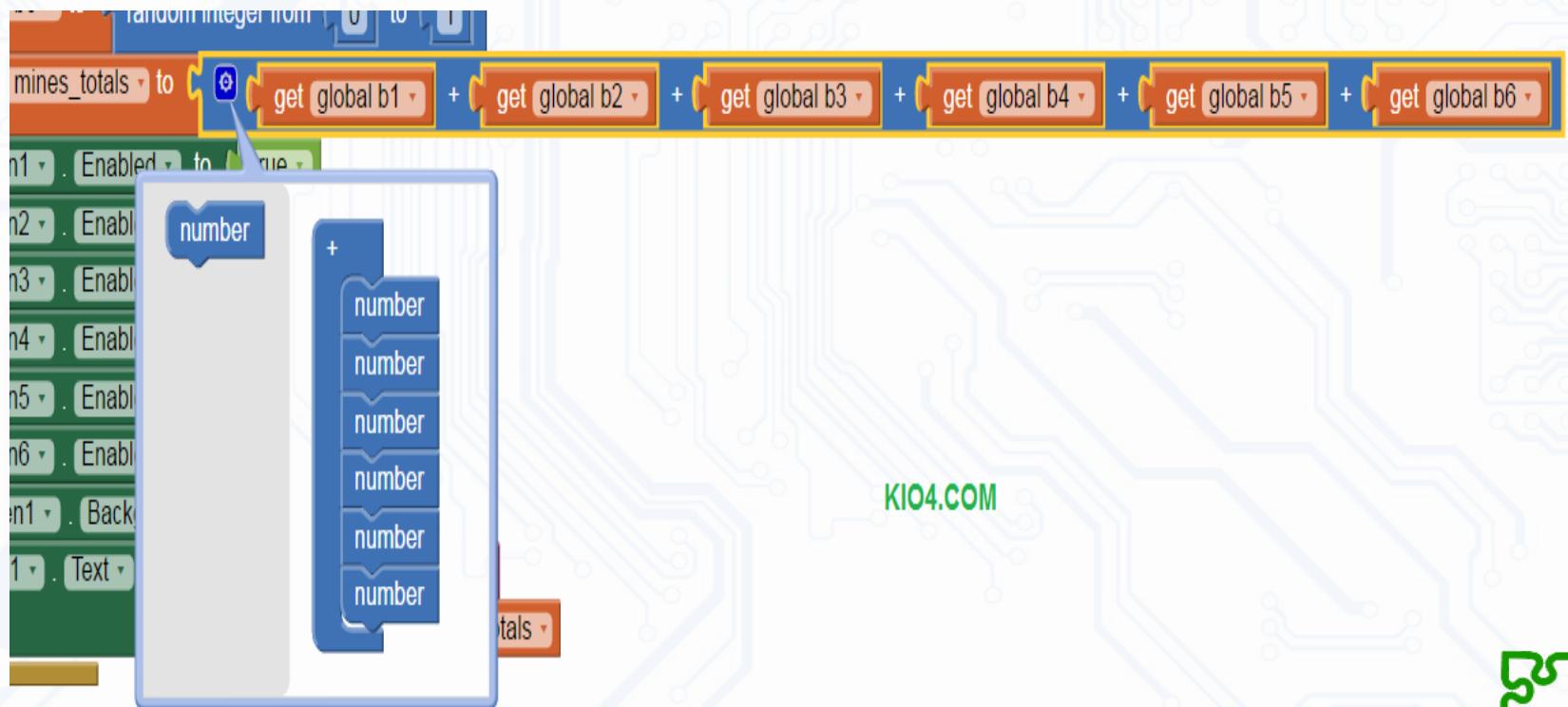
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Blocks

Example 03:Minesweeper

- NOTE:- To put different summands, click on blue icon block sum and we add "number".



KI04.COM



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App Inventor



Example 03: Minesweeper

KIO4.COM

```
initialize global [mines_totals] to [0]
initialize global [b1] to [0]
initialize global [b2] to [0]
initialize global [b3] to [0]
initialize global [b4] to [0]
initialize global [b5] to [0]
initialize global [b6] to [0]

when [Button7] .Click
do
  set [global b1] to [random integer from [0] to [1]]
  set [global b2] to [random integer from [0] to [1]]
  set [global b3] to [random integer from [0] to [1]]
  set [global b4] to [random integer from [0] to [1]]
  set [global b5] to [random integer from [0] to [1]]
  set [global b6] to [random integer from [0] to [1]]
  set [global mines_totals] to [+ get [global b1] + get [global b2] + get [global b3] + get [global b4] + get [global b5] + get [global b6]]
  set [Button1] .Enabled to [true]
  set [Button2] .Enabled to [true]
  set [Button3] .Enabled to [true]
  set [Button4] .Enabled to [true]
  set [Button5] .Enabled to [true]
  set [Button6] .Enabled to [true]
  set [Screen1] .BackgroundColor to [red]
  set [Label1] .Text to [join ["Mines totals: ", get [global mines_totals]]]
```

```
when [Button1] .Click
do
  if [get [global b1] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button1] .Enabled to [false]
```

```
when [Button2] .Click
do
  if [get [global b2] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button2] .Enabled to [false]
```

```
when [Button3] .Click
do
  if [get [global b3] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button3] .Enabled to [false]
```

```
when [Button4] .Click
do
  if [get [global b4] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button4] .Enabled to [false]
```

```
when [Button5] .Click
do
  if [get [global b5] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button5] .Enabled to [false]
```

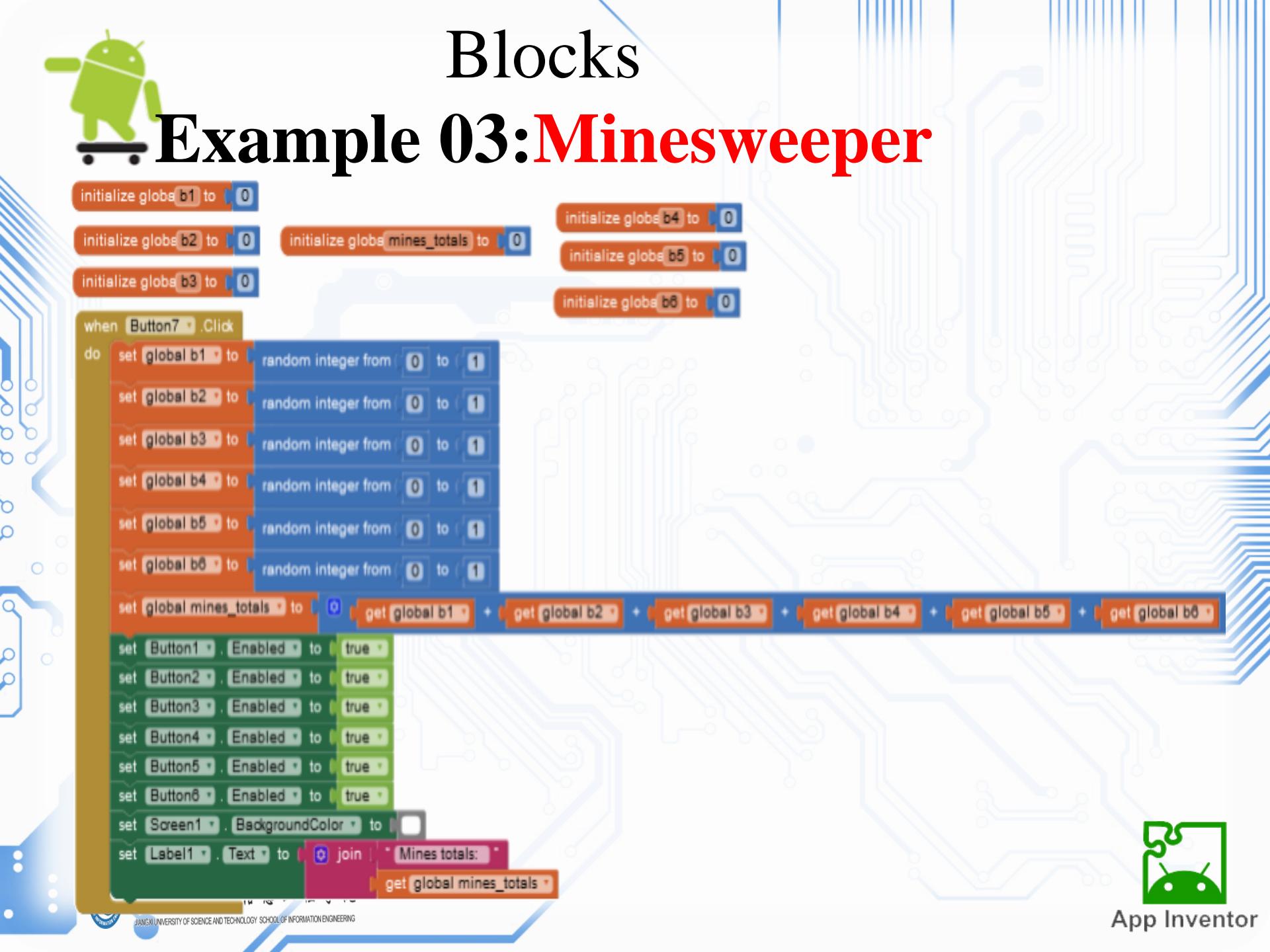
```
when [Button6] .Click
do
  if [get [global b6] = [1]] then
    set [Screen1] .BackgroundColor to [red]
  else
    set [Button6] .Enabled to [false]
```



Blocks



Example 03:Minesweeper



```
initialize globa b1 to 0
initialize globa b2 to 0
initialize globa mines_totals to 0
initialize globa b3 to 0
initialize globa b4 to 0
initialize globa b5 to 0
initialize globa b6 to 0

when Button7 .Click
do
  set [global b1] to [random integer from 0 to 1]
  set [global b2] to [random integer from 0 to 1]
  set [global b3] to [random integer from 0 to 1]
  set [global b4] to [random integer from 0 to 1]
  set [global b5] to [random integer from 0 to 1]
  set [global b6] to [random integer from 0 to 1]
  set [global mines_totals] to [0 + get [global b1] + get [global b2] + get [global b3] + get [global b4] + get [global b5] + get [global b6]]
set [Button1 . Enabled] to [true]
set [Button2 . Enabled] to [true]
set [Button3 . Enabled] to [true]
set [Button4 . Enabled] to [true]
set [Button5 . Enabled] to [true]
set [Button6 . Enabled] to [true]
set [Screen1 . BackgroundColor] to [#f0f0f0]
set [Label1 . Text] to [join ["Mines totals:", get [global mines_totals]]]
```





Blocks

Example 03:Minesweeper

```
when Button1.Click
do if get global b1 = 1
then set Screen1.BackgroundColor to red
else set Button1.Enabled to false
```

```
when Button2.Click
do if get global b2 = 1
then set Screen1.BackgroundColor to red
else set Button2.Enabled to false
```

```
when Button3.Click
do if get global b3 = 1
then set Screen1.BackgroundColor to red
else set Button3.Enabled to false
```

```
when Button4.Click
do if get global b4 = 1
then set Screen1.BackgroundColor to red
else set Button4.Enabled to false
```

```
when Button5.Click
do if get global b5 = 1
then set Screen1.BackgroundColor to red
else set Button5.Enabled to false
```

```
when Button6.Click
do if get global b6 = 1
then set Screen1.BackgroundColor to red
else set Button6.Enabled to false
```

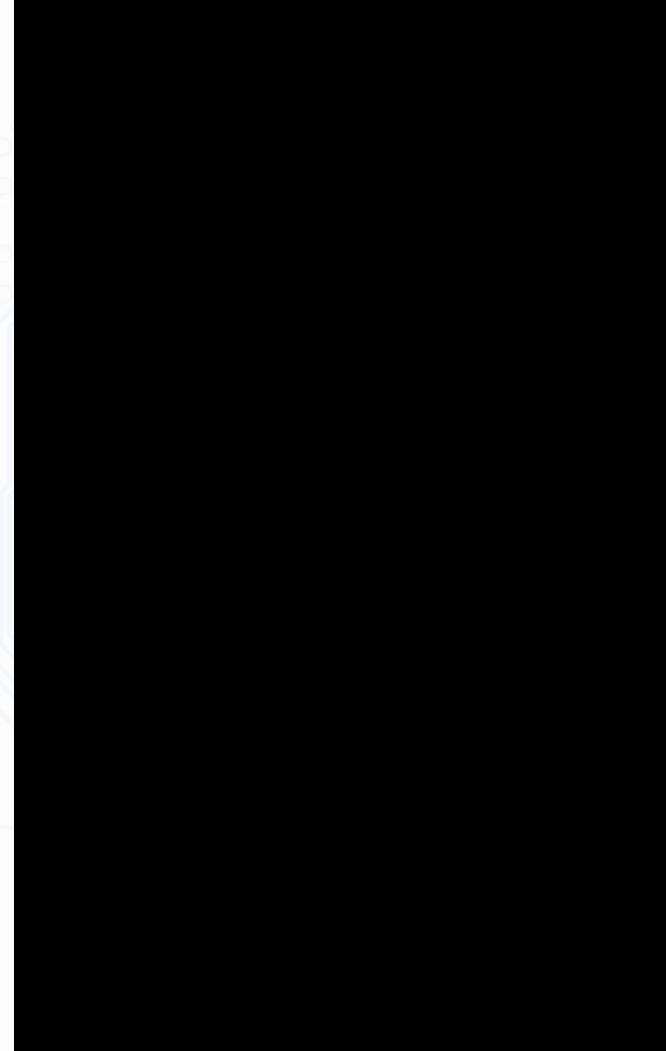
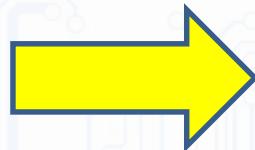




Demo

Example 03: Minesweeper

Demo APP



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App Inventor



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MOBILE APPLICATION DEVELOPMENT

Example 04:Three equal



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App Inventor

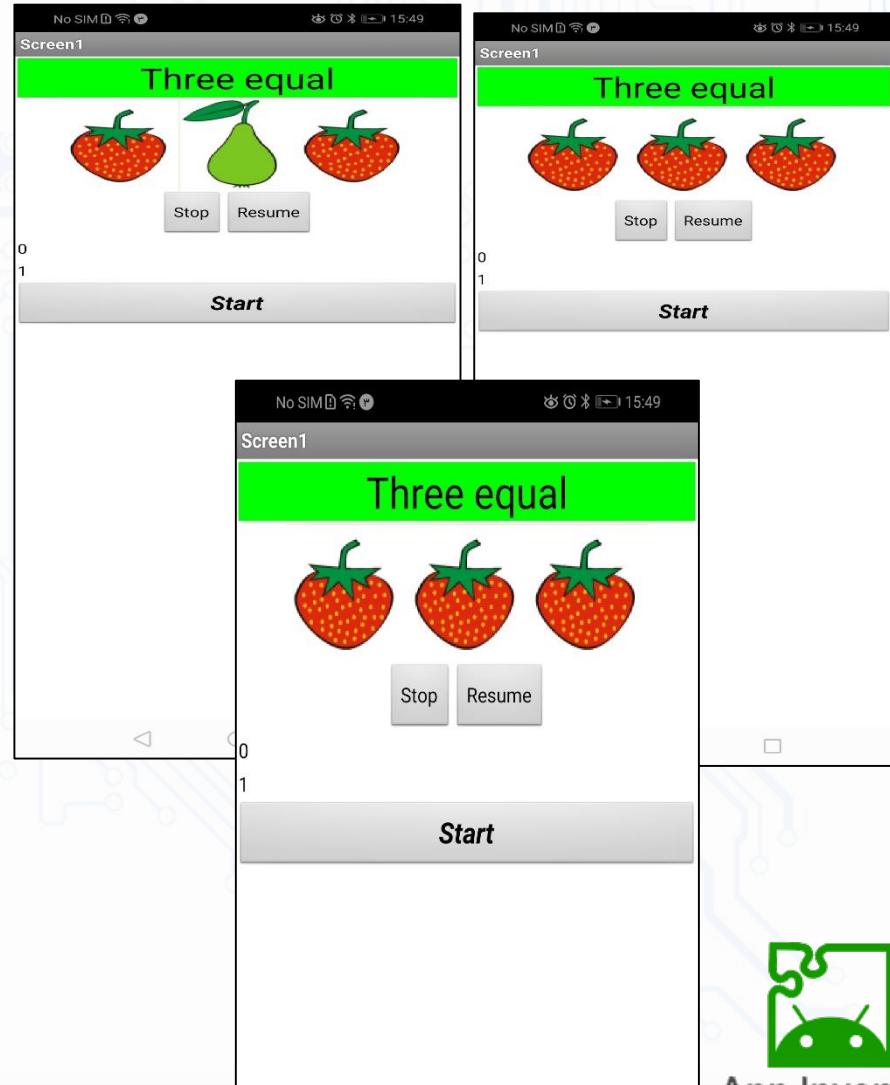


Example 04: Three equal



Example Aim

- It is pressing the Start button, at that moment three images fresa.gif, limon.gif and pera.gif, they are played randomly in Images (Image1, Image2 and Image3).
- When you press the button Stop, the images are static, increases by one the number of attempts and checked if the three images are the same, in this case increases by one the number of hits.
- The images you are going to use (fresa.gif, limon.gif and pera.gif) we added in the section Media.
- From here you can download the images of fruit .

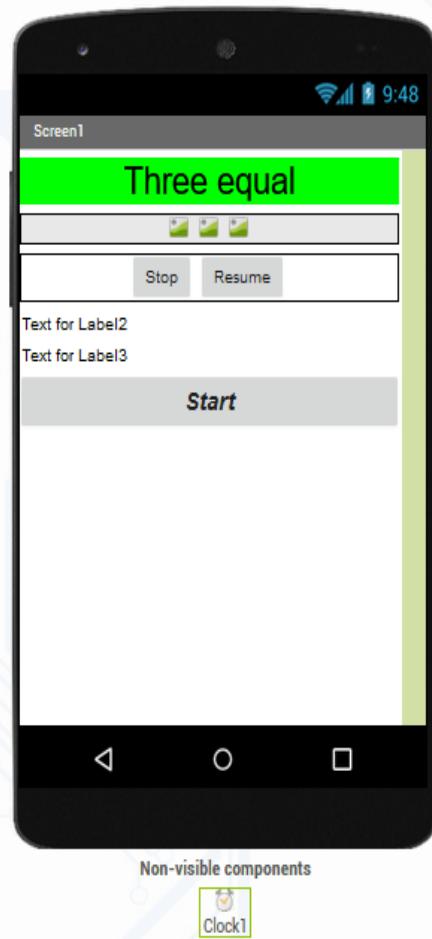




Design

Example 04: Three equal

- We put the Clock **TimerInterval** to 200.
- If we want this value will decline faster.
- Note that the **timer Timer1** we have put **TimerInterval** to 200



The Components panel lists the following components:

- Screen1
- Label1
- HorizontalArrangement1
 - Image2
 - Image1
 - Image3
- HorizontalArrangement2
 - Button1
 - Button2
 - Label2
 - Label3
 - Button3
 - Clock1

The Properties panel shows the properties for Clock1:

- TimerAlwaysFires:
- TimerEnabled:
- TimerInterval: 200

The Media panel lists three images: limon.gif, pear.gif, and stra.gif. There is also a "Upload File ..." button.





Block

Example 04: Three equal

The Scratch script starts with three global variable assignments:

- initialize global [x] to [0]
- initialize global [y] to [0]
- initialize global [z] to [0]

It then enters a loop triggered by a timer:

- Set global x to random integer from 1 to 3
- Set global y to random integer from 1 to 3
- Set global z to random integer from 1 to 3
- Check if get global x = 1, then set Image1 Picture to stra.gif
- Check if get global x = 2, then set Image1 Picture to limon.gif
- Check if get global x = 3, then set Image1 Picture to pear.gif
- Check if get global y = 1, then set Image2 Picture to stra.gif
- Check if get global y = 2, then set Image2 Picture to limon.gif
- Check if get global z = 1, then set Image3 Picture to stra.gif
- Check if get global z = 2, then set Image3 Picture to limon.gif
- Check if get global z = 3, then set Image3 Picture to pear.gif

This Scratch script contains three separate if-then blocks, each setting a different image based on a global variable:

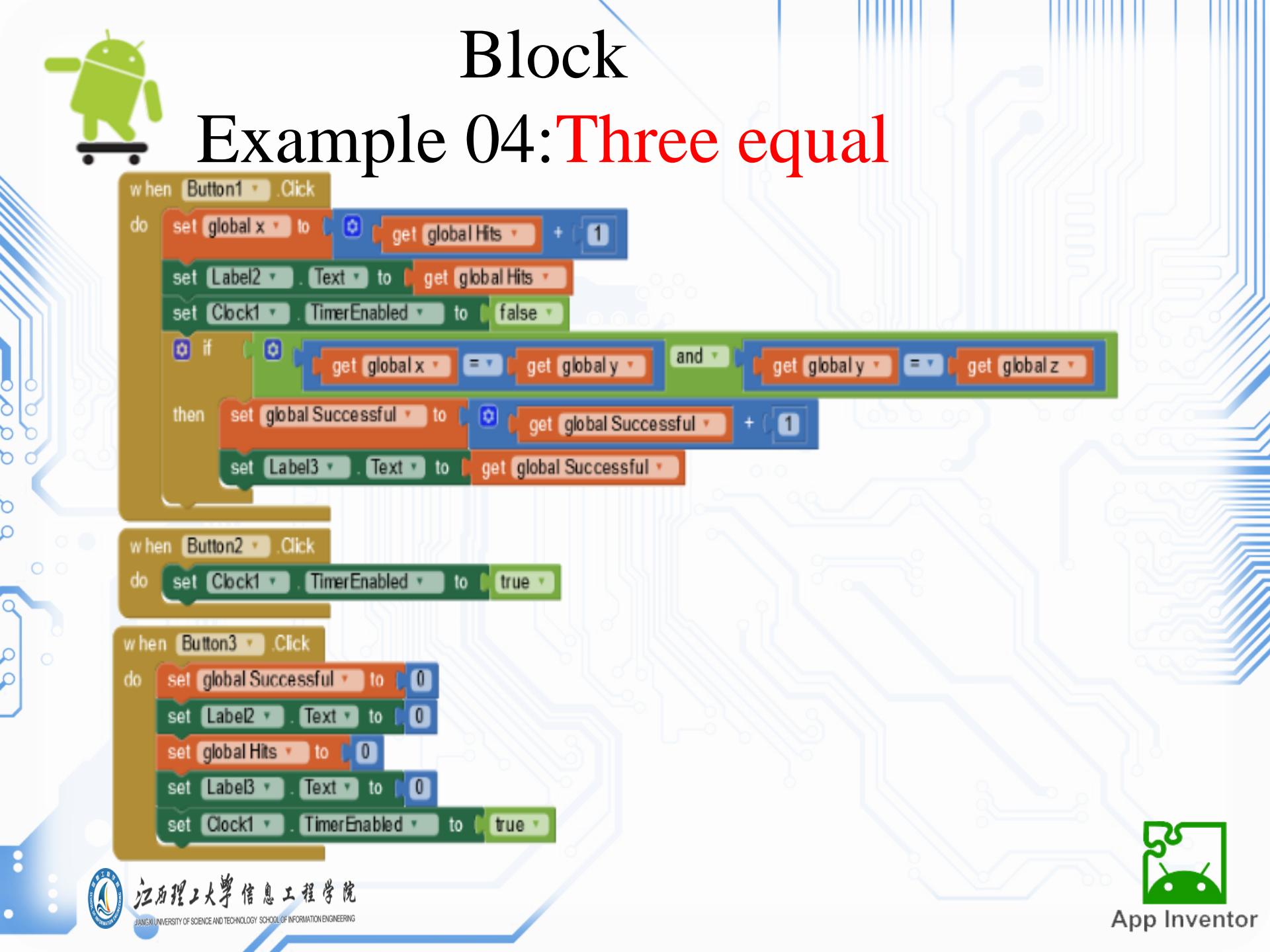
- if get global y = 3 then set Image2 Picture to pear.gif
- if get global z = 1 then set Image3 Picture to stra.gif
- if get global z = 2 then set Image3 Picture to limon.gif
- if get global z = 3 then set Image3 Picture to pear.gif





Block

Example 04: Three equal



```
when Button1 .Click
do set global x to get global Hits + 1
set Label2 .Text to get global Hits
set Clock1 .TimerEnabled to false
if get global x = get global y and get global y = get global z
then set global Successful to get global Successful + 1
set Label3 .Text to get global Successful

when Button2 .Click
do set Clock1 .TimerEnabled to true

when Button3 .Click
do set global Successful to 0
set Label2 .Text to 0
set global Hits to 0
set Label3 .Text to 0
set Clock1 .TimerEnabled to true
```





Example 04: Three equal

This Scratch script initializes global variables `x`, `y`, and `z` to 0. It then enters a loop triggered by `Clock1 Timer`. Inside the loop, it sets `global x`, `y`, and `z` to random integers from 1 to 3. It then uses nested `if` blocks to set `image1`, `image2`, and `image3` to different fruit images based on the values of `x`, `y`, and `z`.

```
initialize global [x] to [0]
initialize global [y] to [0]
initialize global [z] to [0]

when [Clock1] timer
do
set [global x] to [random integer (1) to (3)]
set [global y] to [random integer (1) to (3)]
set [global z] to [random integer (1) to (3)]
if [get [global x] = (1)] then
set [image1] picture to [tresa.gif]
end
if [get [global x] = (2)] then
set [image1] picture to [lemon.gif]
end
if [get [global x] = (3)] then
set [image1] picture to [pera.gif]
end
if [get [global y] = (1)] then
set [image2] picture to [tresa.gif]
end
if [get [global y] = (2)] then
set [image2] picture to [lemon.gif]
end
if [get [global y] = (3)] then
set [image2] picture to [pera.gif]
end
if [get [global z] = (1)] then
set [image3] picture to [tresa.gif]
end
if [get [global z] = (2)] then
set [image3] picture to [lemon.gif]
end
if [get [global z] = (3)] then
set [image3] picture to [pera.gif]
end
```

This Scratch script contains three separate sections for buttons `Button1`, `Button2`, and `Button3`.
- `Button1 Click`: Sets `global hits` to 0, increments it by 1, and updates `Label1` and `Label2` with the current value of `global hits`. It also disables the `Clock1 Timer`.
- `Button2 Click`: Enables the `Clock1 Timer`.
- `Button3 Click`: Resets all global variables (`x`, `y`, `z`, `successul`, `hits`) to 0, and updates `Label1` and `Label2` with 0.

```
when [Button1] clicked
do
set [global hits] to [0]
set [global hits] + [1]
set [Label1] text to [get [global hits]]
set [Clock1] timer enabled to [false]
if [get [global x] = (get [global y]) and (get [global y] = (get [global z]))] then
set [global successul] to [0]
set [global successul] + [1]
set [Label2] text to [get [global successul]]
end
when [Button2] clicked
do
set [Clock1] timer enabled to [true]
when [Button3] clicked
do
set [global successul] to [0]
set [Label1] text to [0]
set [global hits] to [0]
set [Label2] text to [0]
set [Clock1] timer enabled to [true]
```



Comments.

- We declare numeric variables: **x, y, z, hits, successes**.
- Each timer is activated **Clock1.Timer**
- We created three random numbers **x, y and z**: 1 to 3
- Depending on the number rolled and insert a variable Image.
- When **Button1.Click (Stop)**, the timer disables **Clock1.Enabled = false**, we increase one intents and show them in **Label1.Text** also we check if the random numbers x, y, z are equal in this case it increases by one the successes and shown in **Label2.Text**.
- The **Button2.Click** again Enable the timer **Clock1.Enabled = true**.
- The **Button3.Click** sets the initial values and starts the timer.



Example 04: Three equal

The screenshot shows the MIT App Inventor 2 environment. The central area displays a smartphone screen labeled "Screen1" with a white background. The left side features a "Palette" window containing categories for User Interface (Button, CheckBox, DatePicker, Image, Label, ListPicker, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox, TimePicker, WebViewer) and Layout. The right side has a "Components" list with "Screen1" selected and a "Properties" panel. The properties for "Screen1" include:

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

The status bar at the bottom shows system icons and the date/time: 14:56 23/12/2020.





Example 04: Three equal

The screenshot shows the MIT App Inventor 2 Designer interface. The top bar includes the menu (File, Edit, View, History, Bookmarks, Tools, Help), the website address (www.BANDICAM.com), and browser controls. Below the address bar is a toolbar with various icons. The main workspace is titled "Three_equal". It features a "Blocks" palette on the left containing categories like Built-in, Screen1, and Media. The "Viewer" pane on the right displays the Scratch-style script blocks for the project. The script includes global variable initializations (x=0, Successful=0, y=0, Hits=0, z=0), a when Clock1.Timer do loop, and a set Image1.Picture to stra.gif block. There are also three set global x/y/z to random integer from 1 to 3 blocks and an if then block. The bottom of the screen shows the Windows taskbar with several pinned application icons.



Example 04: Three equal

Screenshot of the MIT App Inventor interface showing the code for a game involving three fruits (strawberry, lemon, and pear) and a timer.

The code uses a global variable `x` to determine which fruit appears at random positions `y` and `z`. It also tracks hits and successful completions.

```
when Clock1 .Timer
do
  set [global x] to [random integer from 1 to 3]
  set [global y] to [random integer from 1 to 3]
  set [global z] to [random integer from 1 to 3]
  if [get [global x] = 1] then
    set [Image1 . Picture] to [stra.gif]
  if [get [global x] = 2] then
    set [Image1 . Picture] to [limon.gif]
  if [get [global x] = 3] then
    set [Image1 . Picture] to [pear.gif]
  if [get [global y] = 1] then
    set [Image1 . Picture] to [stra.gif]
  if [get [global y] = 2] then
    set [Image1 . Picture] to [limon.gif]
  if [get [global v] = 1] then
    set [Image1 . Picture] to [stra.gif]

when Button1 .Click
do
  set [global x] to [get [global Hits] + 1]
  set [Label2 . Text] to [get [global Hits]]
  set [Clock1 . TimerEnabled] to [false]
  if [get [global x] = get [global y] and get [global y] = get [global z]] then
    set [global Successful] to [get [global Successful] + 1]
    set [Label2 . Text] to [get [global Successful]]
  when Button2 .Click
  do
    set [Clock1 . TimerEnabled] to [true]
    set [get [global Hits] + 1] to [global Hits]
  when Button3 .Click
  do
    set [global Successful] to [0]
    set [Label2 . Text] to [0]
    set [global Successful] to [0]
    set [Clock1 . TimerEnabled] to [true]
    set [Image1 . Picture] to [stra.gif]
```





Example 04: Three equal

File Edit View History Bookmarks Tools Help

www.BANDICAM.com

MIT App Inventor

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Blocks

Viewer

then set Image1 Picture to "stra.gif"
if get global x = 2
then set Image1 Picture to "limon.gif"
if get global x = 3
then set Image1 Picture to "pear.gif"
if get global y = 1
then set Image1 Picture to "stra.gif"
if get global y = 2
then set Image1 Picture to "limon.gif"
if get global y = 3
then set Image1 Picture to "pear.gif"
if get global z = 1
then set Image1 Picture to "stra.gif"
if get global z = 2
then set Image1 Picture to "limon.gif"
if get global z = 3
then set Image1 Picture to "pear.gif"

then set global Successful to + 1
set Label2 Text to get global Successful
when Button2 .Click
do set Clock1 TimerEnabled to true
when Button3 .Click
do set global Successful to 0
set Label2 Text to 0
set global Hits to 0
set Label3 Text to 0
set Clock1 TimerEnabled to true

Media

limon.gif
pear.gif
stra.gif

Show Warnings

Privacy Policy and Terms of Use

15:28 23/12/2020

```
then set Image1 Picture to "stra.gif"
if get global x = 2
then set Image1 Picture to "limon.gif"
if get global x = 3
then set Image1 Picture to "pear.gif"
if get global y = 1
then set Image1 Picture to "stra.gif"
if get global y = 2
then set Image1 Picture to "limon.gif"
if get global y = 3
then set Image1 Picture to "pear.gif"
if get global z = 1
then set Image1 Picture to "stra.gif"
if get global z = 2
then set Image1 Picture to "limon.gif"
if get global z = 3
then set Image1 Picture to "pear.gif"

then set global Successful to + 1
set Label2 Text to get global Successful
when Button2 .Click
do set Clock1 TimerEnabled to true
when Button3 .Click
do set global Successful to 0
set Label2 Text to 0
set global Hits to 0
set Label3 Text to 0
set Clock1 TimerEnabled to true
```

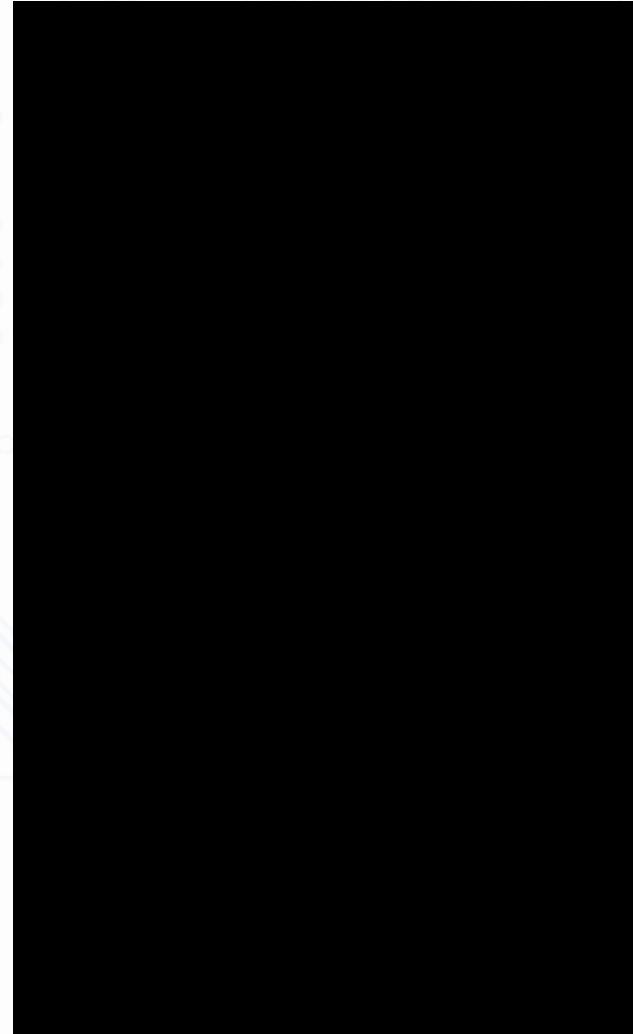




Demo

Example 04: Three equal

Demo APP



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App Inventor



Example 04: Extend the example

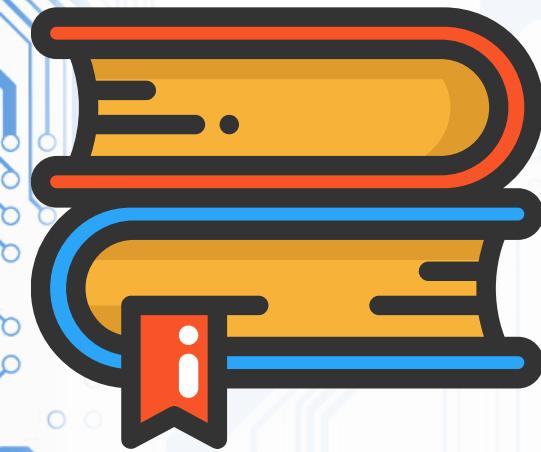
- **YOU can tray as the example 4B in task section :**
 - Create another label where the relationship between successes and attempts to display.
 - Get the probability of hitting:
 - There are $3^3 = 27$ possible combinations and 3 hits.
 - Then the probability of sucess is $3/27 = 1/9$





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MOBILE APPLICATION DEVELOPMENT

Example 05:
Odd / Even. Multiple of 4.
Divisors of a number.



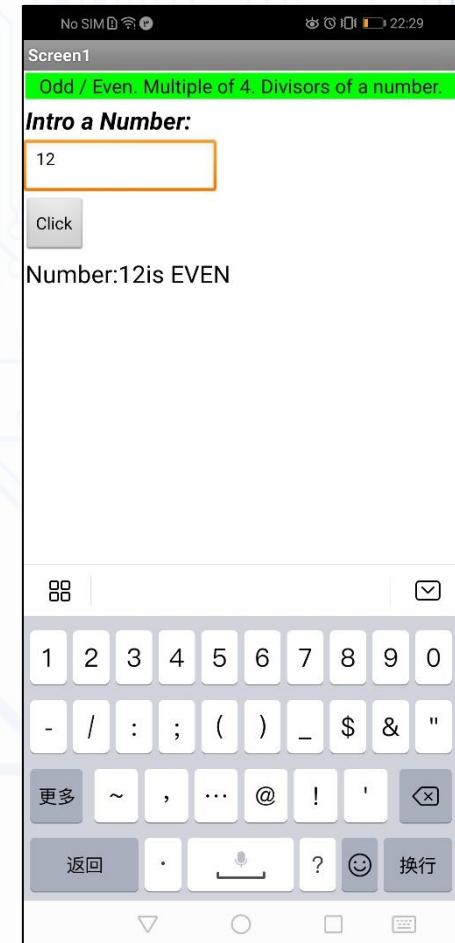
Example 05:

Odd / Even. Multiple of 4. Divisors of a number.



Example Aim

- Even - Odd.
- We write a number and app answer whether it is even or odd.
- We use the operator **module**, it makes a division between two numbers, but what we get **rest division**.
- If to divide a number by 2, the remainder is zero, that is even, otherwise it is ODD.

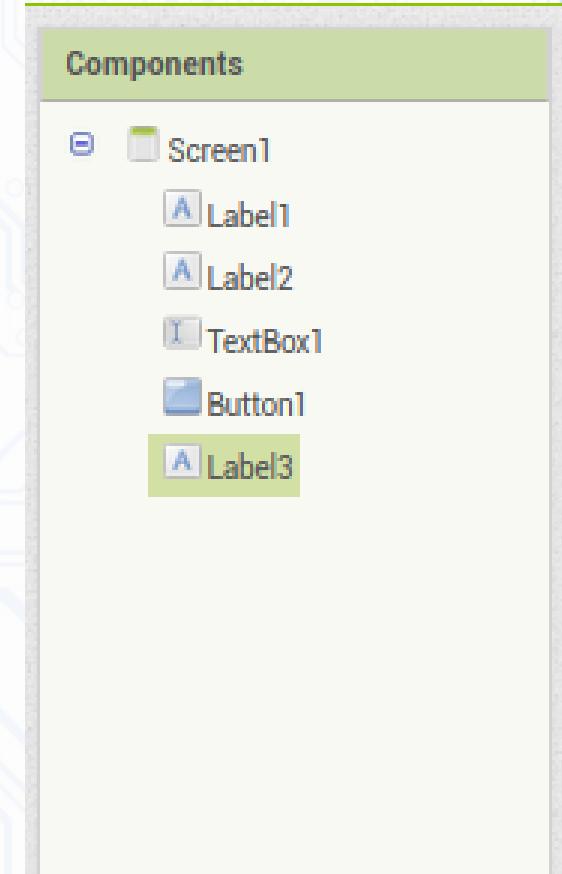
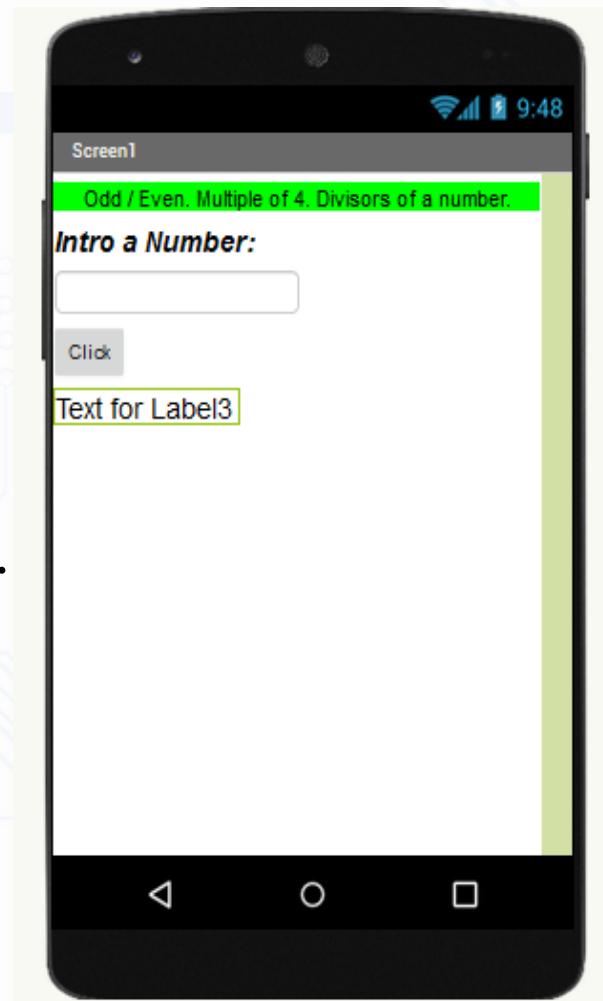




Design

Example 05:**Odd / Even. Multiple of 4. Divisors of a number.**

- We put letters in **Bold**.
- The size: Fill to parent.
 - The **TextBox** in "NumberOnly".
- FontSize: 30. Bold.
 - The **Button** with Width and Height 60 pixel container.





Blocks

Example 05: Odd / Even. Multiple of 4. Divisors of a number.

```
initialize global number to 0
initialize global reminder to 0

when Button1 .Click
do
  set global number to TextBox1 .Text
  set global reminder to modulo of get global number ÷ 2
  if get global reminder = 0
    then set Label3 .Text to join "Number: " get global number " is EVEN"
  else set Label3 .Text to join "Number: " get global number " IS ODD"
```





Example 05:

Odd / Even. Multiple of 4. Divisors of a number.

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)
- ai2.appinventor.mit.edu/#5864271063154688** (URL)
- Getting Started PID Basic functions related... بوزش زبان C JRM | Fuji Technology ... YouTube New Tab** (navigation bar)
- MIT APP INVENTOR** (header)
- Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English moshaydi@gmail.com** (header)
- Odd_Even_Multiple_of_4** (project name)
- Screen1 Add Screen ... Remove Screen Publish to Gallery Designer Blocks** (project tabs)
- Palette** (User Interface components: Button, CheckBox, DatePicker, Image, Label, ListPicker, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox, TimePicker)
- Viewer** (Smartphone preview showing "Screen1" with a white background)
- Components** (List: Screen1)
- Properties** (Screen1 properties: AboutScreen, AccentColor (Default), AlignHorizontal (Left : 1), AlignVertical (Top : 1),AppName (Odd_Even_Multiple_), BackgroundColor (Default), BackgroundImage (None...), BlocksToolkit (All), CloseScreenAnimation (Default), Icon)
- Windows taskbar** (includes icons for File Explorer, Edge, Firefox, File Manager, Task View, Start, and others)
- System tray** (22:13, 23/12/2020, ENG, battery level, signal strength)

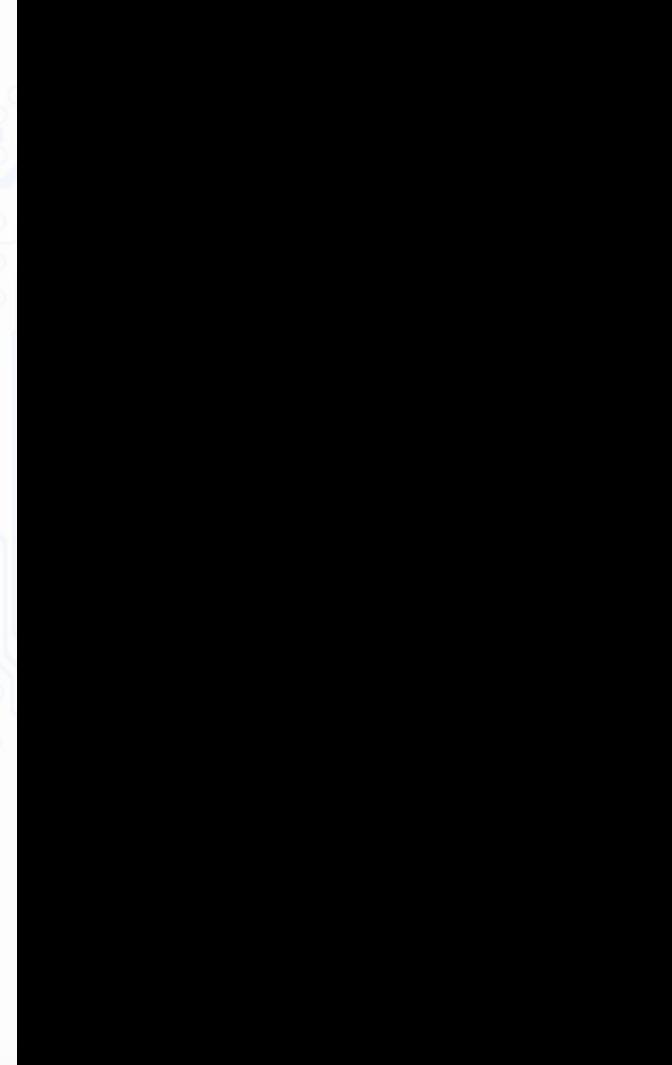
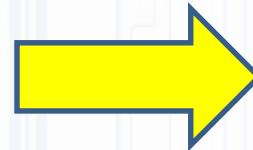




Example 05:

Odd / Even. Multiple of 4. Divisors of a number.

Demo APP



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Extension: Try as task 5B

- We can make a similar code where indicated if a year is a leap year or not.
- The code would be similar to what we have seen, only in the modulo operator rather than put 2 put to 4.
- If by dividing one year from 4 the remainder is zero, it means that this year is a leap year, otherwise it is not.
- Remember that leap years are Olympic years.

Module:

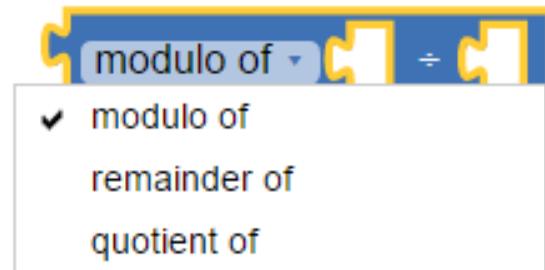
two numbers is divided and the remainder is taken.
The remainder has the same sign as the denominator.

Remaining:

two numbers is divided and the remainder is taken.
The remainder has the same sign as the numerator.

Quotient:

get the integer quotient without decimals.





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MOBILE APPLICATION DEVELOPMENT

Example 06:
Divisors of a number



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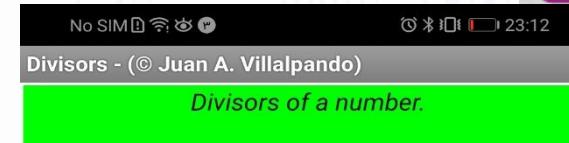
Example 06:

Divisors of a number



Example Aim

- Write a number and should give us the divisors of that number, separated by a hyphen.



Intro a number

600

Click to get divisors

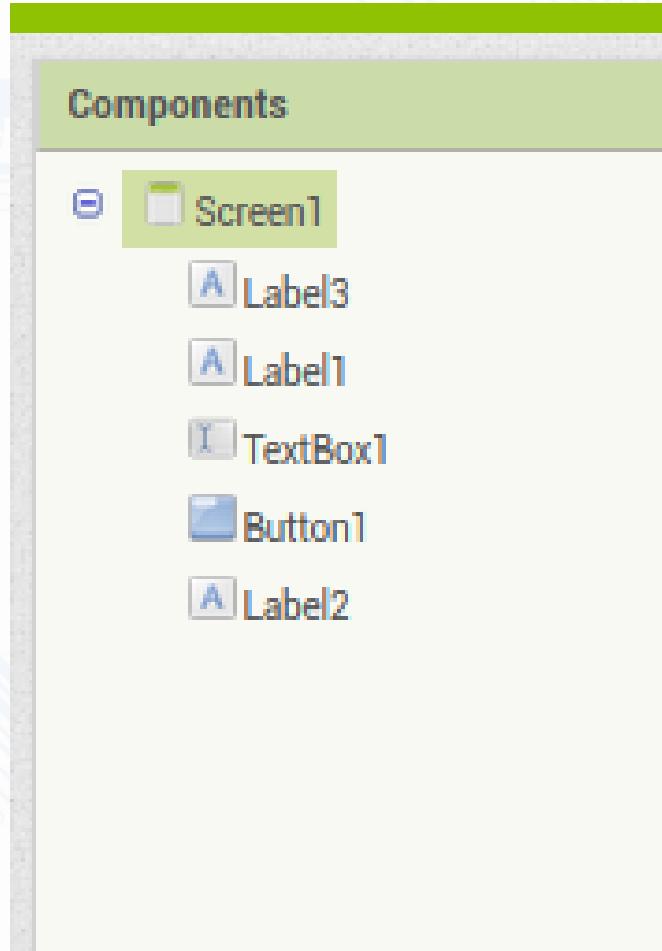
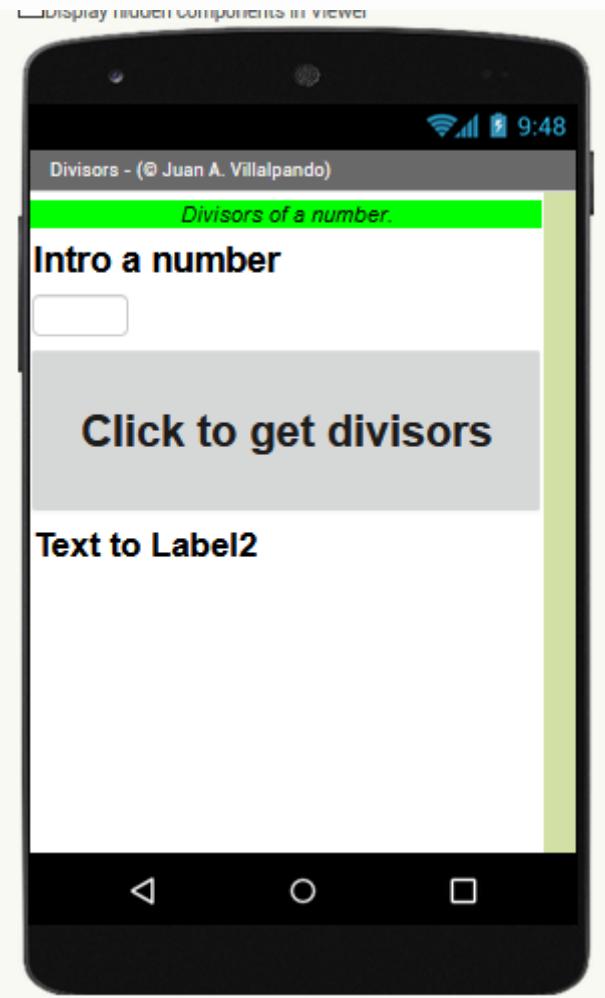
- 1 - 2 - 3 - 4 - 5 - 6 - 8 - 10 - 12
- 15 - 20 - 24 - 25 - 30 - 40 - 50 -
60 - 75 - 100 - 120 - 150 - 200 -
300 - 600





Example 06:

Divisors of a number





Blocks

Example 06:Divisors of a number



- Introduce a number.
- When you press the button passes the **TextBox** to the variable **number**.
- **Enter a loop** that is performing an operation as many times as the number entered.
- In each execution of the loop, performs the module number from the current value of **n**.

- If the modulus (remainder of the division) is zero, the number **n** is divisible, in this case added to the text variable: **dividers**.
- At the end all the information of the **dividers** variable is set in the **Label2**.

Note that the Variable **dividers do this:**

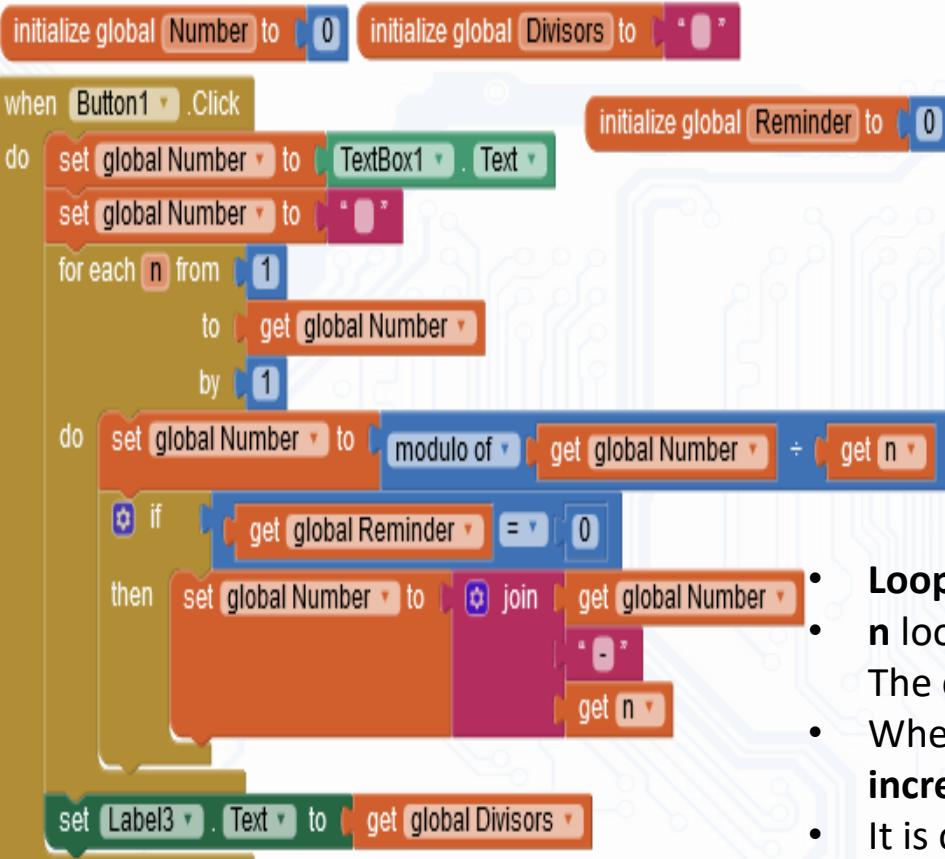
- **divisors** = **divisors join - join n**
- That is, the **variable text divisors**, is adding the new values of **divisors**.





Example 06:

Divisors of a number



- **Loop**
- **n** loop starts **from 1**.
The code is done **run** that is inside.
- When you just start again, but this time the value **n** is **incremented by 1** and now is **2**.
- It is carried out again to execute code the value of **n** reaches **to the end number**





Example 06:

Divisors of a number

File Edit View History Bookmarks Tools Help

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Divisors_of_a_number 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

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 Divisors_of_a_number

BackgroundColor Default

BackgroundImage None...

BlocksToolkit All

CloseScreenAnimation Default

Icon None...

OpenScreenAnimation Default

PrimaryColor

Rename Delete

Media Upload File ...

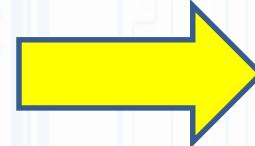




Example 06:

Divisors of a number

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MOBILE APPLICATION DEVELOPMENT

Example 07:
Rock, paper, scissors.



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Example 07:

Rock, paper, scissors.



Example Aim

- Game Rock, Paper, Scissors.
 - In other countries:
- **jankenpon**,
- **dum-kin-go**,
- **yan ken po**,
- **bun chis potatoes**,
- **hakembó**,
- **chin-chan-pu or kokepon**

Scissors

Paper

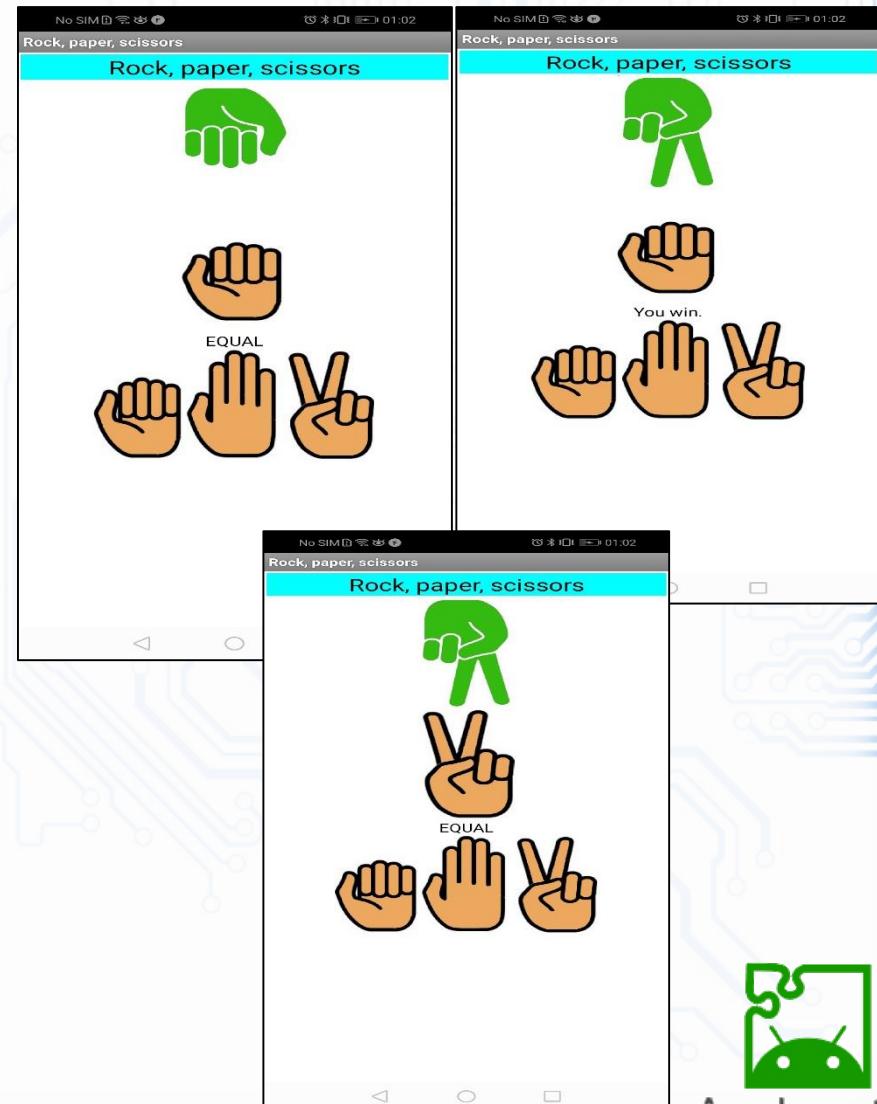




Example 07:

Rock, paper, scissors.

- Here is the game of rock, paper, scissors.
- The player presses one of the three hands at the bottom of the screen are buttons.
 - When you press a button mobile puts a picture in the picture above, as are the drawings of mobile and player, so will be the result .





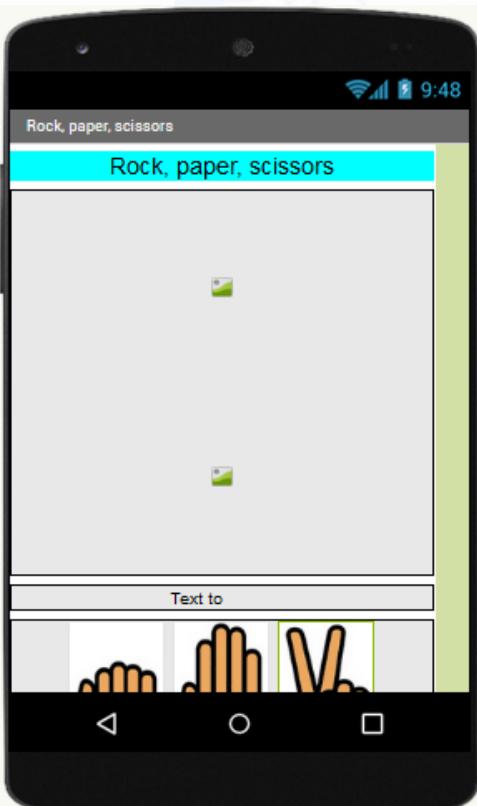
Design

Example 07: Rock, paper, scissors.



App Inventor

- Size Images, Width: 80 and High: 113
- Size Buttons, Width: 70 and High: 118
- On the buttons put different images of hand.
- In Image1 and Image2 not put anything in the design.
- Dispositons occupying the entire container.



The screenshot shows the App Inventor interface. The top part displays the 'Components' palette with a tree view of the screen's components:

- Screen1
 - Label3
 - VerticalArrangement1
 - Image1
 - Image2
 - HorizontalArrangement1
 - Label1
 - HorizontalArrangement2
 - Button1
 - Button2
 - Button3

Below the components is a toolbar with 'Rename' and 'Delete' buttons. The bottom part shows the 'Media' palette listing several GIF files:

- pptpapelb.gif
- pptpapelbm.gif
- pptpapeln2.gif
- pptpiedrab.gif
- pptpiedrabm.gif
- pptpiedran2.gif
- ppttijerasb.gif
- ppttijerasbm.gif
- ppttijerasn2.gif

An 'Upload File ...' button is at the bottom of the media list.



App Inventor



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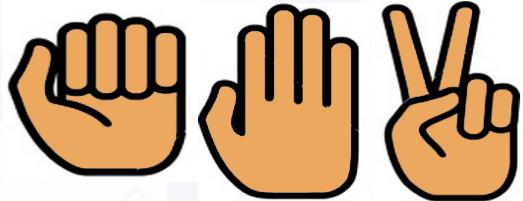


Design

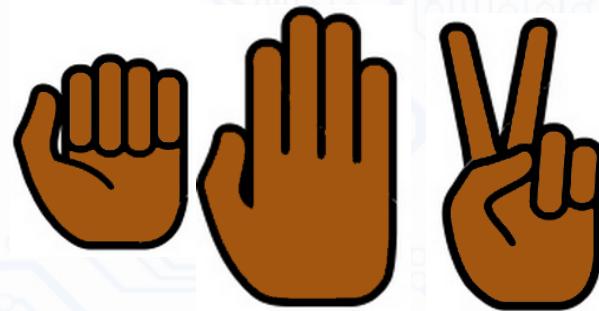
Example 07: Rock, paper, scissors.



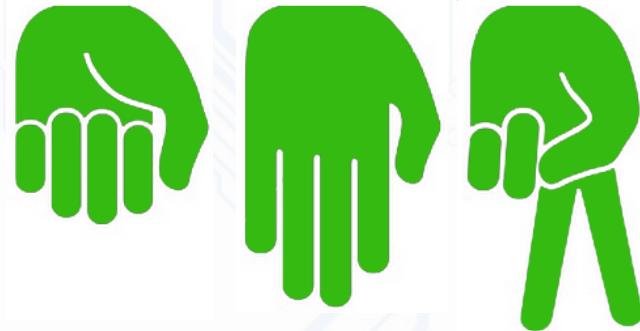
- These images are resized in the code.
- Yes, I know have made him very strange names.



Rock, Paper, Scissors



Rock, Paper, Scissors



Rock, Paper, Scissors





```
initialize global elements to make a list
initialize global android to 0
```

```
when Button1 .Click
do
  set global android to pick a random item list get global elements
    if get global android = "pptpapeln2.gif"
      then set Label1 .Text to "Android wins."
    else if get global android = "pptpiedran2.gif"
      then set Label1 .Text to "EQUAL"
    else if get global android = "pptijerasn2.gif"
      then set Label1 .Text to "You win."
    set Image1 .Picture to get global android
    set Image2 .Picture to "pptpiedrab.gif"
```



Rock



Paper



Scissors



Paper



Rock



Scissors



Rock



App Inventor



Jiangxi
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Example 07:

Rock, paper, scissors.

```
when Button2 .Click
do set global android to pick a random item from get global elements
  if get global android = "pptpaperln2.gif"
    then set Label1 .Text to "EQUAL"
  else if get global android = "pptpiedran2.gif"
    then set Label1 .Text to "You win."
  else if get global android = "pptijerasn2.gif"
    then set Label1 .Text to "Android wins."
  set Image1 .Picture to get global android
  set Image2 .Picture to "pptpaperlb.gif"
```



Paper



Rock



Scissors



Paper



App Inventor





Example 07:

Rock, paper, scissors.

```
when Button3 .Click
do set [global android] to [pick a random item from list [get [global elements]]]
  if [get [global android] = "pptpaper1n2.gif"]
    then set [Label1 .Text] to ["You win."]
  elseif [get [global android] = "ppt piedra2.gif"]
    then set [Label1 .Text] to ["Android wins."]
  elseif [get [global android] = "ppttijerasn2.gif"]
    then set [Label1 .Text] to ["EQUAL"]
  set [Image1 .Picture] to [get [global android]]
  set [Image2 .Picture] to ["ppttijerasb.gif"]
```



Paper



Rock



Scissors



Scissors



```
when Button1 .TouchDown  
do set Button1 .Image to pptpiedrabm.gif
```



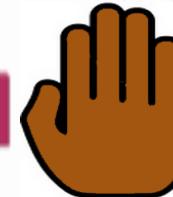
Rock

```
when Button1 .TouchUp  
do set Button1 .Image to pptpiedrab.gif
```



Rock

```
when Button2 .TouchDown  
do set Button2 .Image to pptpaperbm.gif
```



Paper

```
when Button2 .TouchUp  
do set Button2 .Image to pptpaperb.gif
```



Paper

```
when Button3 .TouchDown  
do set Button3 .Image to ppttijerasbm.gif
```



Scissors

```
when Button3 .TouchUp  
do set Button3 .Image to ppttijerasb.gif
```



Scissors



App Inventor



App Inventor



江西科技
大学

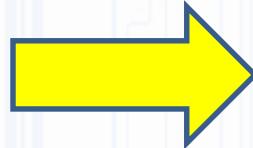
JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



Example 07: Rock, paper, scissors.



Demo APP





Example 07:

Rock, paper, scissors.

- - With this code we get the hands of the buttons change color (brown-light brown-dark) when the press:
- these are programs of learning, initiation, in this case you can improve by putting sounds, bookmarks, other drawings, even instead of pressing a button the user issues a voice message: rock, paper, scissors.



Student Task_18



- Follow and repeat all example based on our ppt format and send on time
- Do the extensities as the separate example

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



NEXT





Reference

- <https://sites.google.com/site/lineplotterdemo/technical-description>
- <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



江西理工大学

Jiangxi University of Science and Technology

信息工程学院

School of information engineering

Digital Image Processing

THANK YOU





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





“The beauty of research is that you never know where it's going to lead.”

RICHARD ROBERTS
Nobel Prize in Physiology or Medicine 1993