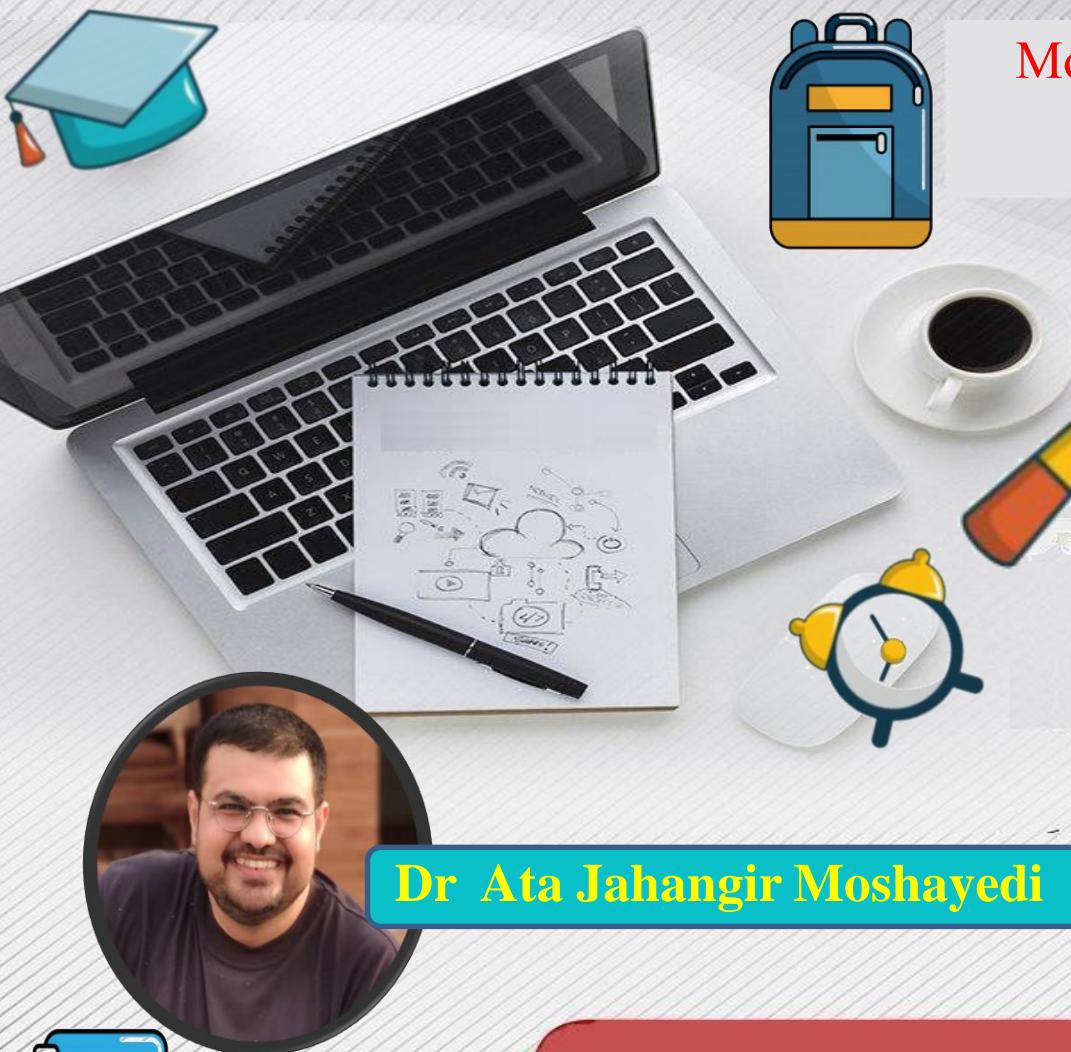




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JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



Mobile application development

移动应用开发



Lecture 010: APP Inventor blocks and Example

introduce Math blocks and Review the example



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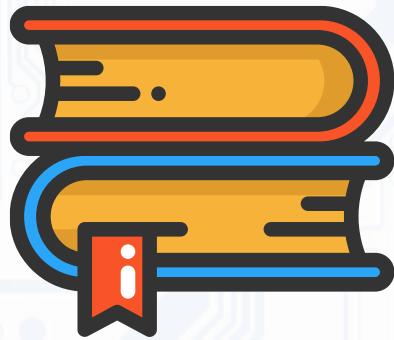
Prof Associate ,
School of information engineering Jiangxi
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Autumn _2021



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MOBILE APPLICATION DEVELOPMENT

LECTURE 010: APP Inventor blocks and Example

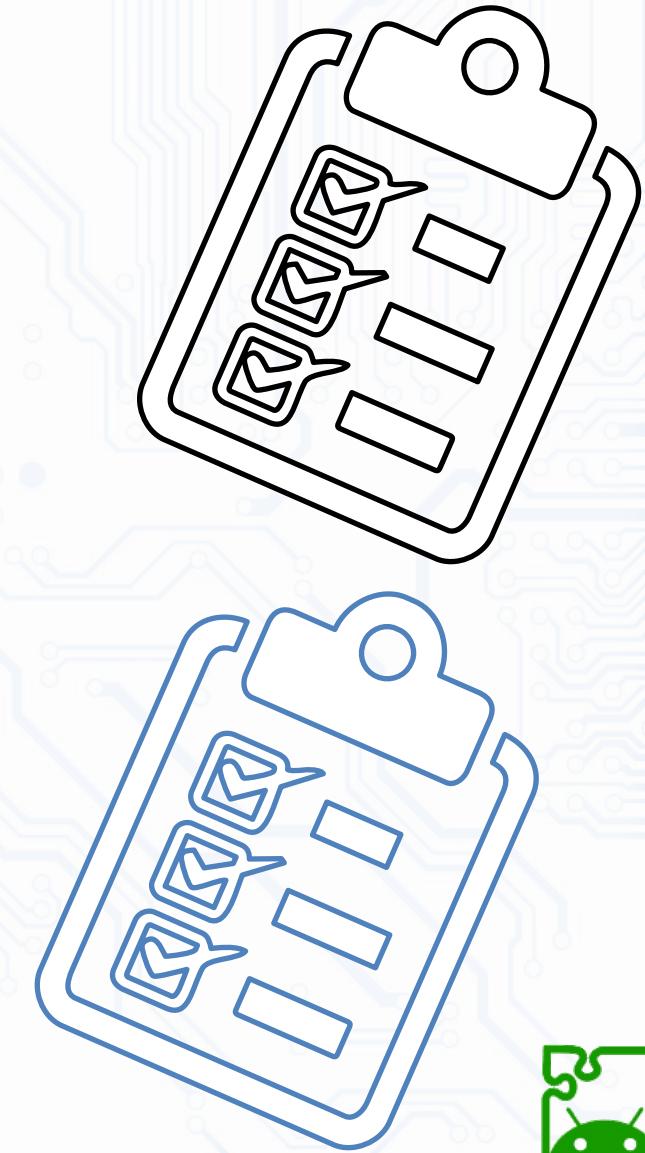
introduce Math blocks and Review the example





Agenda

- **APP Inventor blocks and Example**
 - MIT App Inventor Math Blocks
 - Example 3





MIT App Inventor Math Blocks

0 (basic number block)

0 (radix number block)

=

≠

>

≥

<

≤

+

-

*

/

[^](#exponent)

random integer

random fraction

random set seed to

min

Max

sqrt

abs

neg

log

e[^]

round

ceiling

floor

modulo

remainder

quotient

sin

cos

tan

asin

acos

atan

atan2

convert radians to degrees

convert degrees to radians

format as a decimal

is a number

convert number

bitwise and

bitwise or (inclusive)

bitwise or (exclusive)

Built-in

Control

Logic

Math

Text

Lists

Dictionaries

Colors

Variables

Procedures





MIT App Inventor Math Blocks



Some math blocks are dropdowns which means that they can be converted into different blocks. Here's a list of what is included in each dropdown.

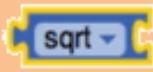
=, ≠, >, ≥, <, ≤



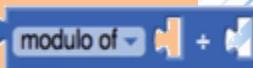
min, max



sqrt, abs, -, log, e^, round, ceiling, floor



modulo of, remainder of, quotient of



sin, cos, tan, asin, acos, atan



convert radians to degrees, convert degrees to radians





MIT App Inventor Math Blocks



Basic Number Block



- Can be used as any positive or negative number. Clicking on the “0” in the block will allow you to change the number.
- The block supports normal base-10 numbers (for example: 2, 12, and 2.12), as well as C-like prefixes for other number bases. It supports:
 - Base-2 (binary) numbers, e.g. 0b10 (decimal 2)
 - Base-8 (octal) numbers, e.g. 0o14 (decimal 12)
 - Base-16 (hexadecimal) numbers, e.g. 0xd4 (decimal 212)

Radix Number Block



- Represents a base-10 number. Clicking on the “0” will allow you to change the number.
- Clicking the dropdown will allow you to input a number in a different number base (aka radix). The number will then be “translated” into decimal (aka base-10).
- For example, these three blocks are equivalent:



The dropdown supports: decimal (base-10), binary (base-2), octal (base-8), and hexadecimal (base-16) input formats.

Decimal mode allows you to input any positive or negative number (e.g. 2, -12, 2.12). The other modes only allow you to input a whole number (aka any positive number, or zero).





MIT App Inventor Math Blocks



= {#=}



$\neq \{\#not= \}$



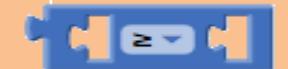
Tests whether two numbers are equal and returns true or false.

- Tests whether two numbers are not equal and returns true or false.

>



\geq



Tests whether the first number is greater than the second number and returns true or false.

Tests whether the first number is greater than or equal to the second number and returns true or false.

<



\leq



Tests whether the first number is less than the second number and returns true or false.

Tests whether the first number is less than or equal to the second number and returns true or false.





MIT App Inventor Math Blocks

+



Returns the result of adding any amount of blocks that have a number value together. Blocks with a number value include the basic number block, length of list or text, variables with a number value, etc.

This block is a mutator and can be expanded to allow more numbers in the sum.

How to use the plus mutator block

^



Returns the result of the first number raised to the power of the second.

-



*



Returns the result of multiplying any amount of blocks that have a number value together. It is a mutator block and can be expanded to allow more numbers in the product.

How to use the multiply mutator block

/



Returns the result of dividing the first number by the second.





MIT App Inventor Math Blocks



random integer

random integer from to

Returns a random integer value between the given values, inclusive. The order of the arguments doesn't matter.

random fraction

random fraction

Returns a random value between 0 and 1.

random set seed to

random set seed to

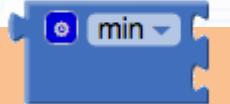
Use this block to generate repeatable sequences of random numbers. You can generate the same sequence of random numbers by first calling random set seed with the same value. This is useful for testing programs that involve random values.

random integer

random integer from to

Returns a random integer value between the given values, inclusive. The order of the arguments doesn't matter.

min



Returns the smallest value of a set of numbers. If there are unplugged sockets in the block, min will also consider 0 in its set of numbers. This block is a mutator and a dropdown.

max



Returns the largest value of a set of numbers. If there are unplugged sockets in the block, max will also consider 0 in its set of numbers. This block is a mutator and a dropdown.





MIT App Inventor Math Blocks

sqrt

sqrt

Returns the square root of the given number.

abs

abs

Returns the absolute value of the given number.

neg

neg

Returns the negative of a given number.

log

log

Returns the natural logarithm of a given number, that is, the logarithm to the base e (2.71828...).

**e[^]**e[^]

Returns e (2.71828...) raised to the power of the given number.

round

round

Returns the given number rounded to the closest integer. If the fractional part is < .5 it will be rounded down.

If it is > .5 it will be rounded up.

If it is exactly equal to .5, numbers with an even whole part will be rounded down, and numbers with an odd whole part will be rounded up.
(This method is called round to even.)

ceiling

ceiling

Returns the smallest integer that's greater than or equal to the given number.





MIT App Inventor Math Blocks

**floor**

Returns the greatest integer that's less than or equal to the given number.

modulo

Modulo(a,b) is the same as remainder(a,b) when a and b are positive.

More generally, modulo(a,b) is defined for any a and b so that $(\text{floor}(a/b) \times b) + \text{modulo}(a,b) = a$.

For example, modulo(11, 5) = 1, modulo(-11, 5) = 4, modulo(11, -5) = -4, modulo(-11, -5) = -1. Modulo(a,b) always has the same sign as b, while remainder(a,b) always has the same sign as a.

remainder

Remainder(a,b) returns the result of dividing a by b and taking the remainder. The remainder is the fractional part of the result multiplied by b.

For example, remainder(11,5) = 1 because

$$11 / 5 = 2 \frac{1}{5}$$

In this case, $\frac{1}{5}$ is the fractional part. We multiply this by b, in this case 5 and we get 1, our remainder.

Other examples are remainder(-11, 5) = -1, remainder(11, -5) = 1, and remainder(-11, -5) = -1.

quotient

Returns the result of dividing the first number by the second and discarding any fractional part of the result.





MIT App Inventor Math Blocks



sin



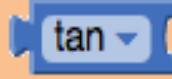
Returns the sine of the given number in degrees.

cos



Returns the cosine of the given number in degrees..

tan



Returns the tangent of the given number in degrees.

asin



Returns the arcsine of the given number in degrees.

acos



Returns the arccosine of the given number in degrees.

atan



Returns the arctangent of the given number in degrees.

acos



Returns the arccosine of the given number in degrees.

atan2



Returns the arctangent of y/x , given y and x .





MIT App Inventor Math Blocks

convert radians to degrees

convert radians to degrees

Returns the value in degrees of the given number in radians. The result will be an angle in the range [0, 360)

convert degrees to radians

convert degrees to radians

Returns the value in radians of the given number in degrees. The result will be an angle in the range $[-\pi, +\pi]$

format as decimal

format as decimal

number
places

Formats a number as a decimal with a given number of places after the decimal point. The number of places must be a non-negative integer. The result is produced by rounding the number (if there were too many places) or by adding zeros on the right (if there were too few).

is a number?

is a number?

Returns true if the given object is a number, and false otherwise.

convert number

convert number

binary to base 10

base 10 to hex

hex to base 10

base 10 to binary

✓ binary to base 10

Takes a text string that represents a positive integer in one base and returns a string that represents the same number in another base. For example, if the input string is 10, then converting from base 10 to binary will produce the string 1010; while if the input string is the same 10, then converting from binary to base 10 will produce the string 2. If the input string is the same 10, then converting from base 10 to hex will produce the string A.

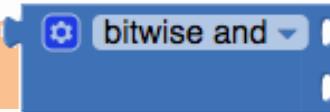




MIT App Inventor Math Blocks



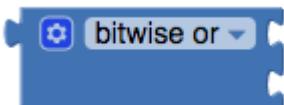
Bitwise And



Takes two numbers and compares each pair of bits. Each bit of the result is 1 only if the corresponding bits of both operands are 1.

	Decimal	Binary (internal representation)
	6	0 1 1 0
	3	0 0 1 1
Result:	2	0 0 1 0

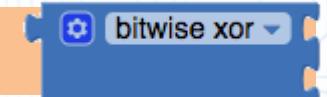
Bitwise Or (Inclusive)



Takes two numbers and compares each pair of bits. Each bit of the result is 1 if either of the corresponding bits in each operand is 1.

	Decimal	Binary (internal representation)
	6	0 1 1 0
	3	0 0 1 1
Result:	7	0 1 1 1

bitwise Or (Exclusive)



Takes two numbers and compares each pair of bits. Each bit of the result is 1 only if one corresponding bit in the operands is 1 and the other is 0.

	Decimal	Binary (internal representation)
	6	0 1 1 0
	3	0 0 1 1
Result:	5	0 1 0 1





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MOBILE APPLICATION DEVELOPMENT

APP Inventor Example 03

MIT App Inventor Math Blocks



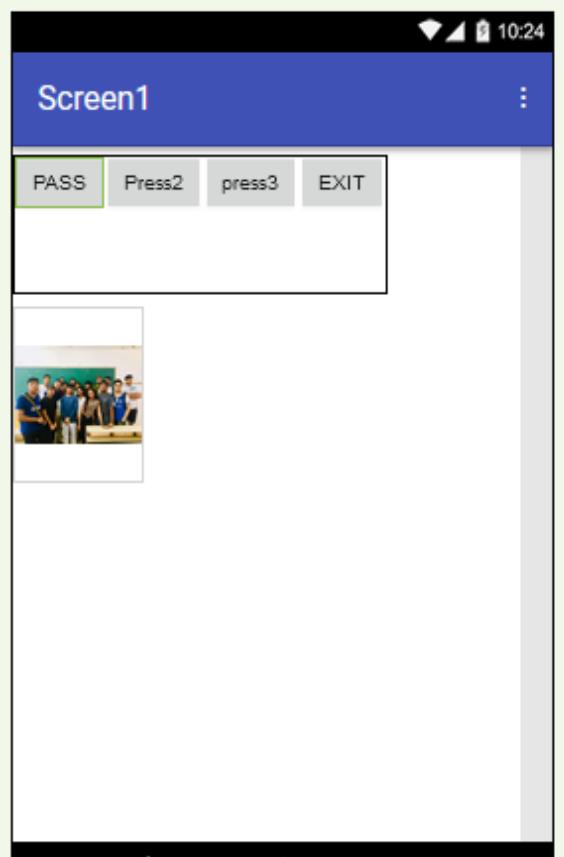


- Extend the Student portal project on screen2 section with the math blocks
- We call Student portal with the calculator

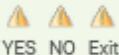




Last Project part in Designer section(example 01)



Non-visible components

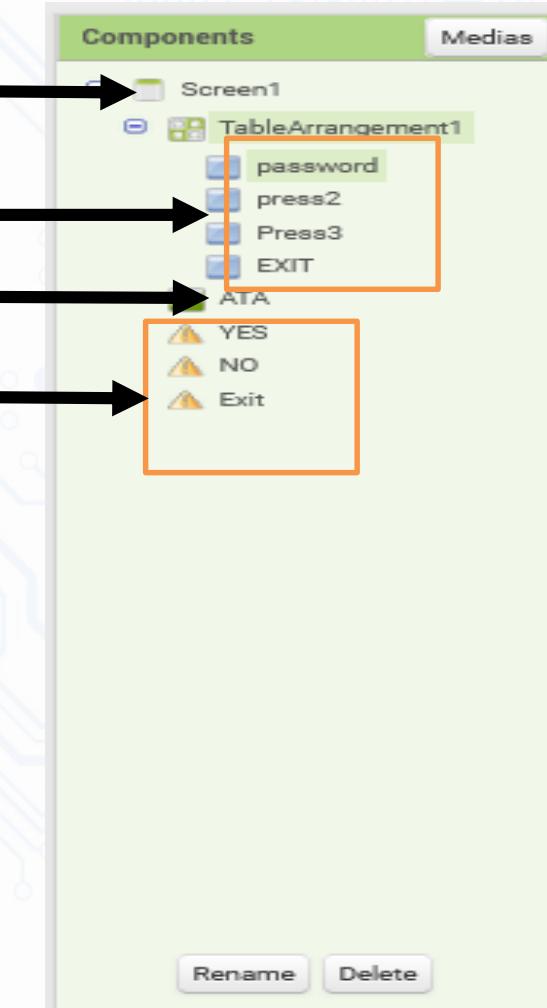


@Screen 1
Layout arrangement

Bottom *4

Image

Notification section





Last Project part in Designer section(example 02)

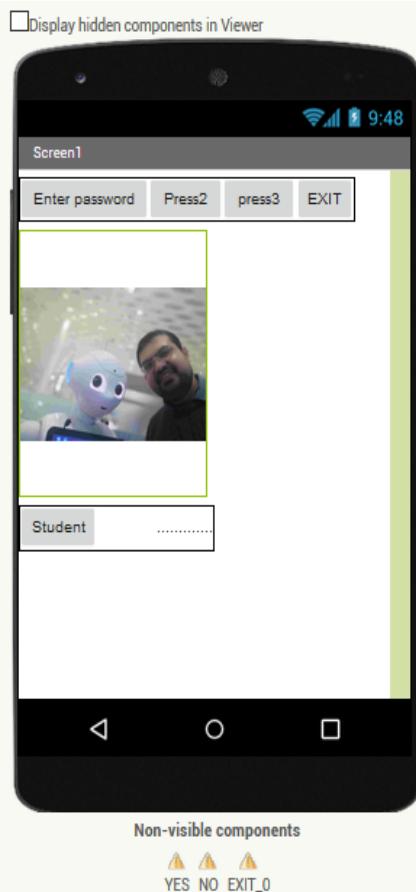
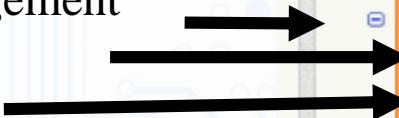


Table arrangement
List picker
Label



Components

- Screen1
 - TableArrangement1
 - PASS
 - press2
 - Press3
 - EXIT
 - ATA
 - TableArrangement2
 - STUDENT
 - Lcity
 - YES
 - NO
 - EXIT_0

Rename Delete

Media

- ATA.jpg
- ATA1.jpg

Upload File ...



App Inventor



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New Project part

Designer section(example 03)

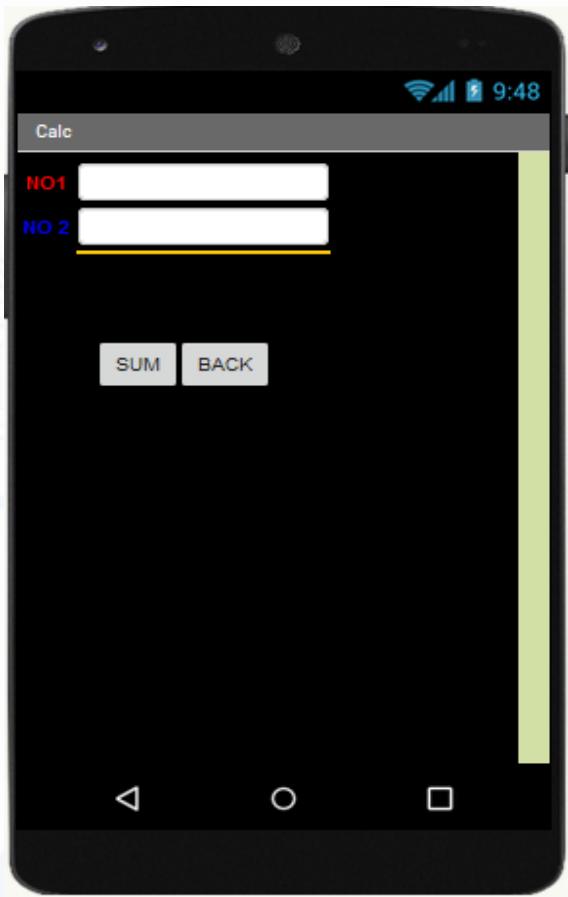


Table arrangement_1

Textbox 1

Textbox 2

Label 1

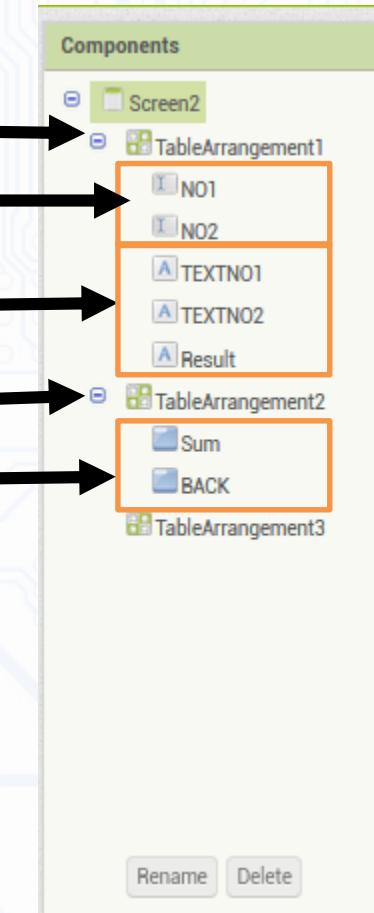
Label 2

Label 3

Table arrangement_2

Button 1

Button 2



On Second Screen



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App Inventor



Designer section



App Inventor

The screenshot shows the MIT App Inventor Designer interface. The project is titled "ATA_mth_03". The Designer tab is selected in the top right. The screen displays a mobile phone with the title "Student ID finder" and a placeholder image. Below the title is a text input field with the placeholder "Student". The Components panel on the right lists various UI components like TableArrangement, Label, and Button. The Properties panel shows settings for the current component, "Screen1", including its name, accent color, alignment, and background. The Media panel lists images "ATA.jpg" and "ATA1.jpg". The bottom taskbar shows the Windows Start button and several pinned application icons.



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Live Demo



App Inventor



Designer/Blocks section



App Inventor

The screenshot shows the MIT App Inventor Designer interface. The top bar includes the MIT App Inventor logo, a plus sign for creating new projects, the URL www.BANDICAM.com, a zoom level of 80%, and various browser controls. Below the bar, the navigation menu offers links to Getting Started, PID, Basic functions related..., and other resources in English and Persian. The main workspace is titled "ATA_mth_03" and displays a mobile phone screen with the title "Calc". The phone screen is currently empty. The Designer tab is selected in the top right corner of the workspace. The interface is divided into several panels: the Palette panel on the left lists components like Text, User Interface (Button, CheckBox, DatePicker, Image, Label, ListPicker, ListView, Notifier, PasswordTextBox, Slider, Spinner, Switch, TextBox), and Media (ATA.jpg, ATA1.jpg); the Components panel on the right shows "Screen2"; the Properties panel on the far right contains settings for "Screen2" such as AboutScreen, AlignHorizontal, AlignVertical, BackgroundColor, BackgroundImage, CloseScreenAnimation, OpenScreenAnimation, ScreenOrientation, Scrollable, ShowStatusBar, Title, and TitleVisible; the Viewer panel in the center shows the mobile phone screen; and the bottom taskbar features icons for various Windows applications.



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App Inventor



Designer/Blocks section



MIT App Inventor x www.BANDICAM.com

Getting Started PID Basic functions related... بورش زبان JRM | Fuji Technology ...

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ATA_mth_03 Screen2 Add Screen ... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen2
- TableArrangement1
 - NO1
 - NO2
 - TEXTNO1
 - TEXTNO2
 - Result
- TableArrangement2

Screen1 Screen2

when Sum .Click
do set Result .Text to [NO1 .Text + NO2 .Text]

when BACK .Click
do open another screen screenName "Screen1"

Show Warnings

Live Demo

App Inventor





Designer/Blocks section



App Inventor

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ATA_mth_03 Screen1 Add Screen Remove Screen Designer Blocks

Blocks

Viewer

Built-in

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

Screen1

TableArrangement1

- PASS
- Calc
- Press3
- EXIT
- Label2
- ATA

RHONDOREN JAHANGIR

RAWNAK

SAZEDUL

initialize global name2 to make a list * ATA JAHANGIR *

* 2520180026 *

* 2520180030 *

* 2520180031 *

when Student .AfterPicking

do set Label1 .Text to select list item list get global name2

index Student .SelectionIndex

when Calc .Click

do open another screen screenName * Screen2 *

do call EXIT_0 .ShowProgressDialog message hi title EXIT close screen

when YES .AfterTextInput response

do set global name to get response

if ATA = get response then call EXIT_0 .ShowProgressDialog message Yes title OK

else call EXIT_0 .ShowProgressDialog message OOH title NO

when PASS .Click

do call YES .ShowPasswordDialog message Enter your pass word title password cancelable true

Show Warnings

Windows taskbar: File, Search, Task View, File Explorer, Microsoft Edge, Chat, Firefox, Camera, Task Manager, Start

19:19
11/11/2020



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App Inventor



Designer/Blocks section



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ATA_mth_03 Screen1 Add Screen ... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
- TableArrangement1
 - PASS
 - Calc
 - Press3
 - EXIT
 - Label2
 - ATA

Viewer

```
blocks_code = """
when [YES].AfterTextInput
  response
  do set [global name] to [get response]
    if [ATA] = [get response]
      then call [EXIT_0].ShowProgressDialog [message] [title]
      else call [EXIT_0].ShowProgressDialog [message] [title]
    end if
  end set
end when

when [PASS].Click
  do call [YES].ShowPasswordDialog [message] [title] [cancelable] [true]
end when

when [Calc].Click
  do open another screen [screenName] ["Screen2"]
end when

when [EXIT].Click
  do
end when

when Student.AfterPicking
  do set [Label1].Text to [select list item [list] [get global name2] [index] [Student.SelectionIndex]]
end when

initialize global [name2] to [make a list]
  [ATA JAHANGIR]
  [2520180026]
  [2520180030]
  [2520180031]
end initialize
"""

# Media
ATA.jpg
ATA1.jpg
Upload File ...
"""

# Windows Taskbar
# Icons: Search, File, Home, PPT, Word, Edge, Firefox, Camera, Task View, Start, Taskbar
# System Tray: 19:25, ENG, 11/11/2020

```



Designer/Blocks section



The screenshot shows the MIT App Inventor 2 interface with a project titled "ATA_mth_03". The project contains several blocks:

- Blocks:** A sidebar showing categories like Built-in, Screen1, and TableArrangement1.
- Screen1:** Contains:
 - when EXIT .Click
 - when EXIT .GotFocus
 - when EXIT .LongClick
 - when EXIT .LostFocus
 - when EXIT .TouchDown
 - when EXIT .TouchUp
 - when EXIT .BackgroundColor
 - when EXIT .Enabled
- TableArrangement1:** Contains:
 - PASS
 - Calc
 - Press3
 - EXIT
 - Label2
 - ATA
- Media:** ATA.jpg, ATA1.jpg, Upload File ...
- Viewer:** Displays a list of student names: MD:TEACHER, KHONDOKER JAHIDUL, RAWNAK, SAZEDUL, ATA JAHANGIR, 2520180026, 2520180030, 2520180031.
- Global Variable:** initialize global name to []
- Conditional Block:** when YES .AfterTextInput response do set global name to [get response] if [ATA] = [get response] then call EXIT_0 .ShowProgressDialog message [Yes] title [OK] else call EXIT_0 .ShowProgressDialog message [OOH] title [NO]
- Event Block:** when PASS .Click



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Live Demo



App Inventor



Designer/Blocks section



App Inventor

The screenshot shows the MIT App Inventor 2 interface. The top bar includes tabs for "MIT App Inventor" and "App Inventor 2", and a browser window displaying "www.BANDICAM.com". The main workspace is titled "ATA_mth_03" and contains a "Screen1" block. The "Blocks" palette on the left lists categories like Built-in, Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures. The "Blocks" tab in the toolbar is selected. The workspace contains several blocks, including:

- A yellow "when EXIT .Click" block with a blue "do" block below it.
- A yellow "when EXIT .GofFocus" block with a blue "do" block below it, which contains a green "make a list" block with items: "MD:TEACHER", "KHONDOKER JAHIDUL", "RAWNAK", and "SAZEDUL".
- A yellow "when EXIT .LongClick" block with a blue "do" block below it.
- A yellow "when EXIT .LostFocus" block with a blue "do" block below it, which contains a green "make a list" block with items: "ATA JAHANGIR", "2520180026", "2520180030", and "2520180031".
- A yellow "when EXIT .TouchDown" block with a blue "do" block below it, which contains a green "when Student .AfterPicking" block with a blue "Text" block below it, followed by a green "select list item list" block with "get global name2" and "index Student .SelectionIndex" blocks.
- A yellow "when EXIT .TouchUp" block with a blue "do" block below it.
- A green "EXIT .BackgroundColor" block with a blue "set EXIT .BackgroundColor to Screen2" block below it.
- A green "EXIT .Enabled" block.
- A red "initialize global name to " block.
- A yellow "when YES .AfterTextInput" block with a blue "response" block below it, followed by a green "do" block with an orange "if" block inside. The "if" block compares "ATA" and "get response". If true, it calls "ShowProgressDialog" with "Yes" message and "OK" title. If false, it calls "ShowProgressDialog" with "OOH" message and "NO" title.
- A yellow "when PASS .Click" block with a blue "call ShowPasswordDialog" block below it.

The bottom of the screen shows the Windows taskbar with various application icons and the system tray.



Live Demo





New part in screen 1



App Inventor

```
when Student .TouchDown  
do set Student .Elements to make a list ["MD:TEACHER",  
                                         "KHONDOKER JAHIDUL",  
                                         "RAWNAK",  
                                         "SAZEDUL"]  
  
initialize global name2 to make a list ["ATA JAHANGIR",  
                                         "2520180026",  
                                         "2520180030",  
                                         "2520180031"]  
  
when Student .AfterPicking  
do set Label1 .Text to select list item list get global name2  
   index Student .SelectionIndex
```

```
initialize global name to
```

```
when YES .AfterTextInput  
do response  
  if "ATA" = get response  
    then call EXIT_0 .ShowProgressDialog  
        message "Yes"  
        title "OK"  
  else call EXIT_0 .ShowProgressDialog  
        message "OOh"  
        title "NO"
```

```
when Calc .Click  
do open another screen screenName "Screen2"  
  
when EXIT .Click  
do close screen
```

```
when PASS .Click  
do call YES .ShowPasswordDialog  
  message "Enter your pass word"  
  title "password"  
  cancelable true
```



App Inventor



New part on screen 2 Blocks section



MIT App Inventor

ai2.appinventor.mit.edu/#6691670026747904

Getting Started PID Basic functions related... آموزش زبان JRM | Fuji Technology ...

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ATA_mth_03 Screen2 Add Screen ... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen2
- Any component

Viewer

when [BACK] .Click
do open another screen screenName "Screen1"

when [Sum] .Click
do set [Result] .Text to $(N01 + N02)$

Rename Delete

Media

ATA.jpg ATA1.jpg Show Warnings Upload File ...

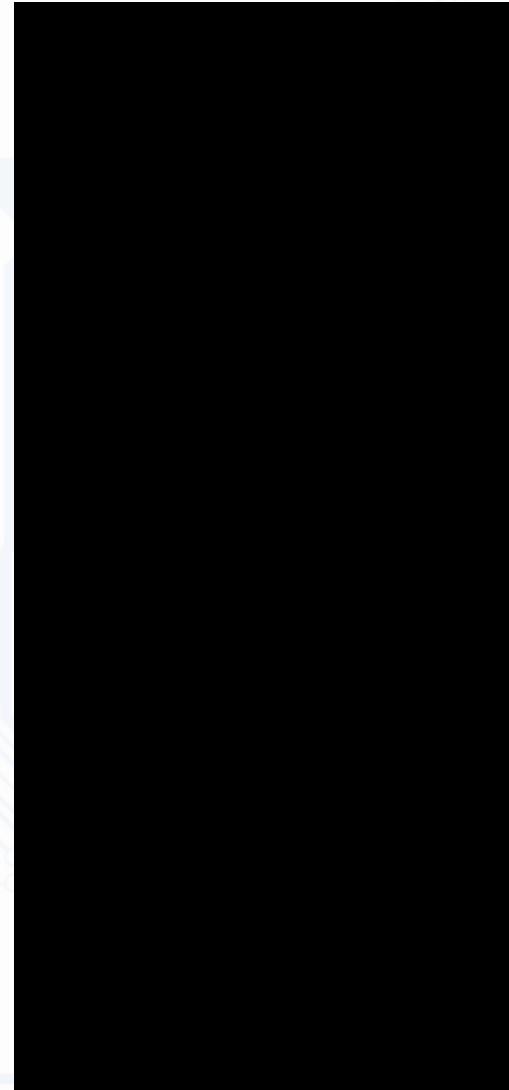
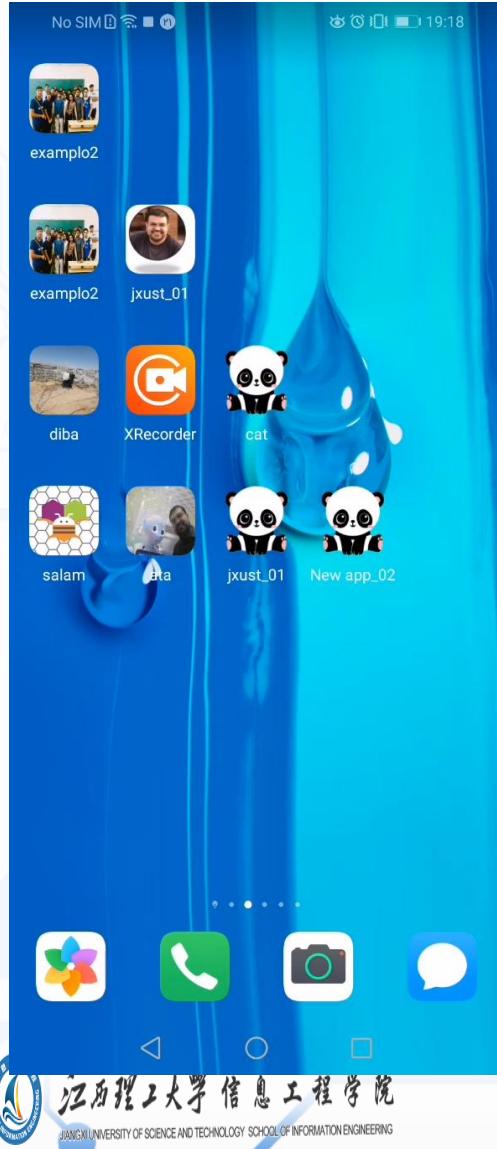
Windows Taskbar: File Explorer, Microsoft Word, Microsoft Excel, Microsoft Powerpoint, Microsoft Edge, Mozilla Firefox, Task View, Start button, Taskbar icons.

System Tray: Battery, ENG, 20:03, 11/11/2020, App Inventor icon.





Step 1: Demo



There is a
problem ?
What's your
solution

Live Demo



App Inventor



version 2:

making the calculator on screen 2

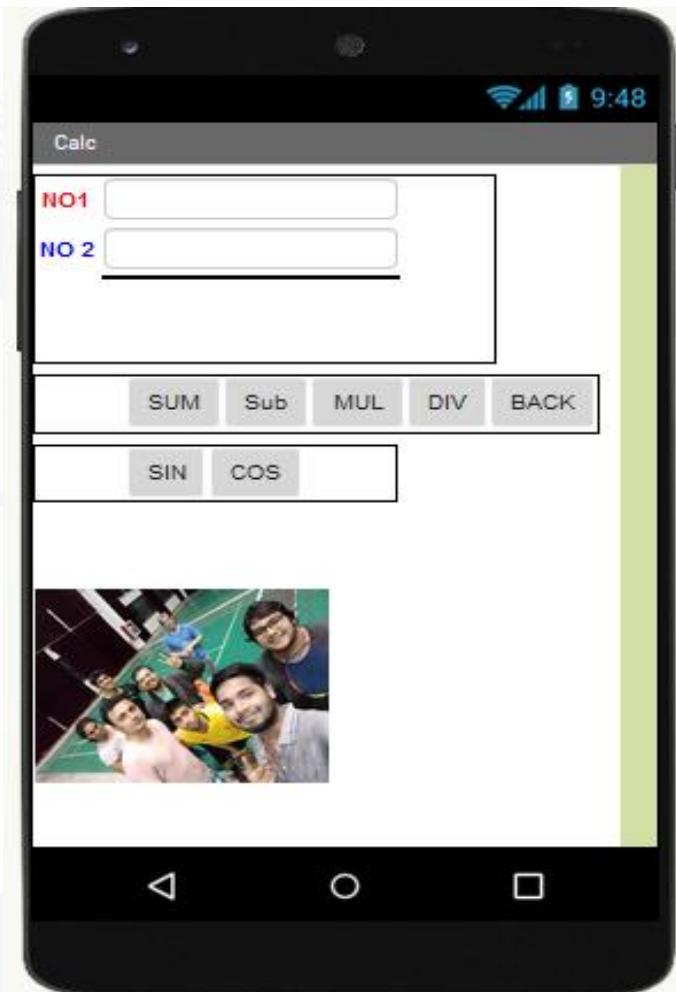


Table arrangement_1

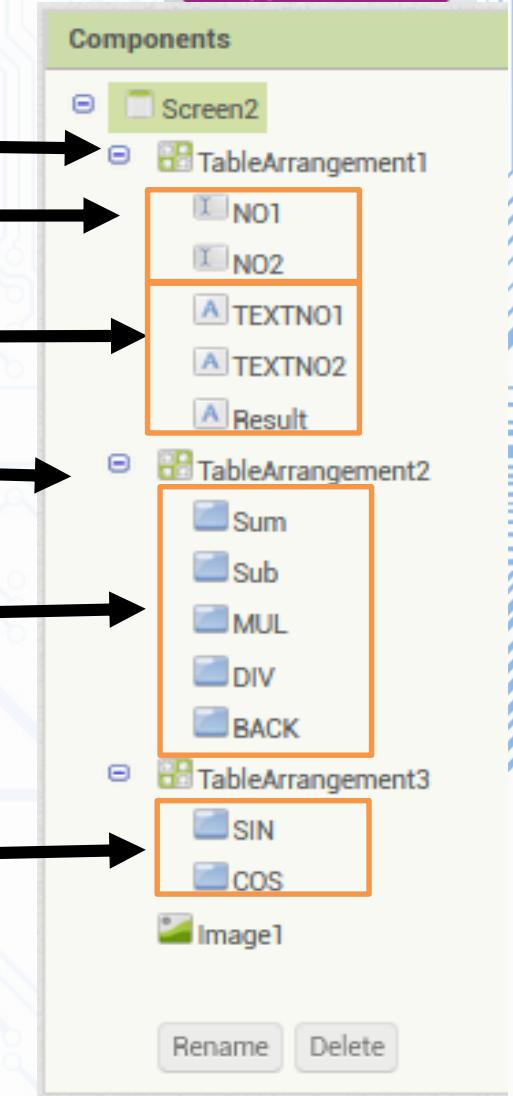
Textbox 1
Textbox 2

Label 1
Label 2
Label 3

Table arrangement_2

Button 1
Button 2
Button 3
Button 4
Button 5

Button 6
Button 7





version 2:



MIT App Inventor google doodle - Google Search www.BANDICAM.com

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ATA_mth_03 Screen2 Add Screen ... Remove Screen Designer Blocks

Palette Search Components...

User Interface

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

Layout

Media

Viewer

Display hidden components in Viewer

Components

- Screen2
 - TableArrangement1
 - N01
 - N02
 - TEXTN01
 - TEXTN02
 - A Result
 - TableArrangement2
 - Sum
 - BACK
 - TableArrangement3

Properties

Screen2

AboutScreen

AlignHorizontal

AlignVertical

BackgroundColor

BackgroundImage

CloseScreenAnimation

OpenScreenAnimation

ScreenOrientation

Scrollable

ShowStatusBar

Title

TitleVisible

Media

ATA.jpg

ATA1.jpg

Upload File ...

Rename Delete



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Live Demo



App Inventor

21:34
11/11/2020



version 2:



The screenshot shows the MIT App Inventor 2 environment. The top bar includes tabs for "MIT App Inventor" and "google doodle - Google Search". The main window displays a project titled "ATA_mth_03" which contains a single screen labeled "Screen2". The screen shows a mobile phone interface with a calculator application. The calculator has two text input fields labeled "NO1" and "NO 2", a numeric keypad, and a row of buttons for "SUM", "Sub", "MUL", "DIV", "BACK", "SIN", and "COS". The right panel shows the "Components" tree, which includes three TableArrangement components. The first TableArrangement contains buttons for NO1, NO2, TEXTNO1, TEXTNO2, and Result. The second contains buttons for Sum, Sub, MUL, DIV, and BACK. The third contains SIN and COS. The "Properties" panel shows settings for the TableArrangement1 component, including columns (3), height (Automatic...), width (Automatic...), rows (4), and visible (checked). The bottom status bar shows system icons and the date/time (21:37, 11/11/2020).





version 2:



MIT App Inventor X google doodle - Google Search + www.BANDICAM.com

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ATA_mth_03 Screen2 Add Screen ... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen2
- TableArrangement1
 - NO1
 - NO2
 - TEXTNO1
 - TEXTNO2
 - Result
- TableArrangement2

Viewer

```
when BACK .Click
do open another screen screenName "Screen1"

when Sum .Click
do set Result .Text to [ NO1 .Text + NO2 .Text ]
```

Designer Blocks

Show Warnings

Media

- ATA.jpg
- ATA1.jpg

Upload File ...

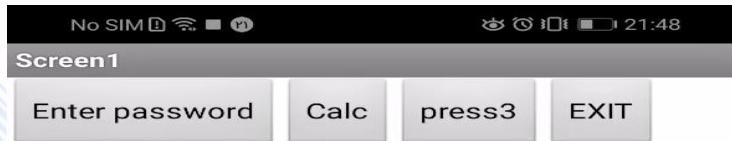
Windows taskbar: File Explorer, Microsoft Word, Microsoft Powerpoint, Microsoft Edge, Firefox, Task View, Start button, Taskbar icons.

System tray: Volume, Battery, ENG, 21:38, 11/11/2020.





APP Demo



Student ID finder



Student



Live Demo



Step 2_Screen 2: Block



```
when BACK .Click
do open another screen screenName "Screen1"

when Sum .Click
do set Result .Text to [ NO1 .Text + NO2 .Text ]

when Sub .Click
do set Result .Text to [ NO1 .Text - NO2 .Text ]

when MUL .Click
do set Result .Text to [ NO1 .Text × NO2 .Text ]

when DIV .Click
do set Result .Text to [ NO1 .Text / NO2 .Text ]

when SIN .Click
do set Result .Text to sin [ NO1 .Text ]

when COS .Click
do set Result .Text to cos [ NO1 .Text ]
```





Step 2_Screen 1: Block



App Inventor

```
when Student .TouchDown
do set Student . Elements to make a list [ MD:TEACHER
   KHONDOKER JAHIDUL
   RAWNAK
   SAZEDUL ]
```

```
initialize globl name2 to make a list [ ATA JAHANGIR
   2520180028
   2520180030
   2520180031 ]
```

```
when Student .AfterPicking
do set Label1 .Text to select list item list [ get global name2 ]
   index [ Student . SelectionIndex ]
```

```
when Calc .Click
do open another screen screenName [ "Screen2" ]
when EXIT .Click
do close screen
```

```
initialize globl name to [ ]
when YES .AfterTextInput
do set global name to get response
  if [ ATA ] = [ get response ]
then call EXIT_0 .ShowProgressDialog
   message [ Yes ]
   title [ OK ]
else call EXIT_0 .ShowProgressDialog
   message [ OOH ]
   title [ NO ]
```

```
when PASS .Click
do call YES .ShowPasswordDialog
   message [ Enter your pass word ]
   title [ password ]
   cancelable [ true ]
```



App Inventor



Student Task_7



- **Read the task book 2**
- **send solved example(Student Portal with calculator) for all your friend in our lecture(cs2019) in this ppt + video clip based on each section and total app Follow the task PPT format .**
- **Report the problem and solution for the Student portal and calculator version 1.**

Next lecture

- You have time to send your task
- Send the file in PPT(power point format) to **JUST MOOC**
- Your file should have this format of name

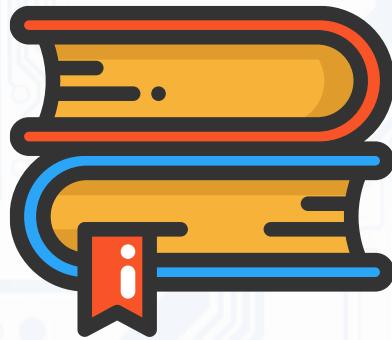
<Task number><student name><Student ID>.ppt





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MOBILE APPLICATION DEVELOPMENT

LECTURE 011_B: 7 Golden step in APP Inventor practical POINT

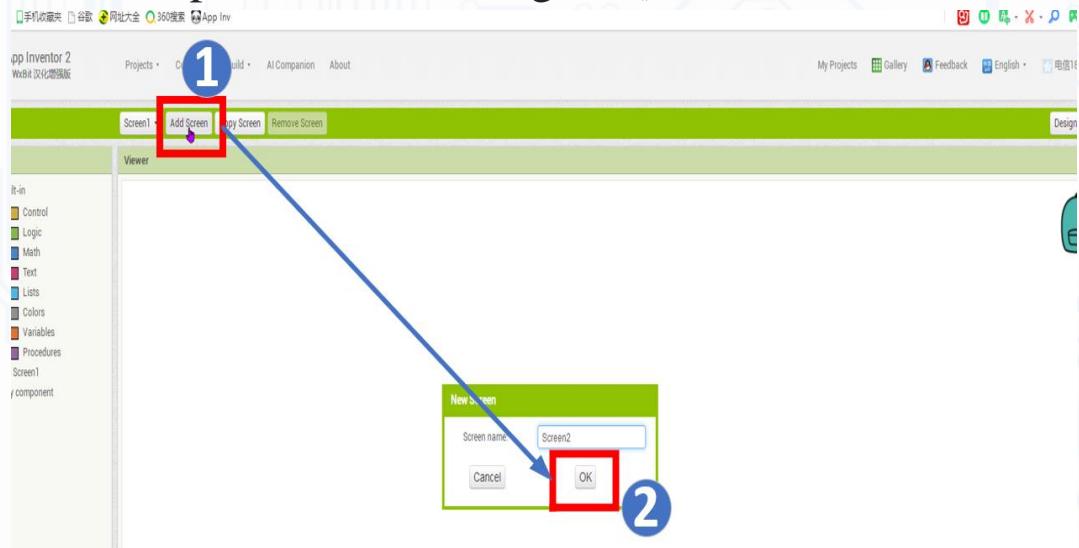


Step1:

How to make the blank page



- a. **User Interface:** in the designer screen (User interface), select the “ADD button” “from screen related Button section (#B) and click the button of “add screen”, then click the ok.
- b. **Blocks Editor:** as the aim of this example is to have a blank page there is not any part in Blocks Editor. These steps are shown in figure () .





Step2:

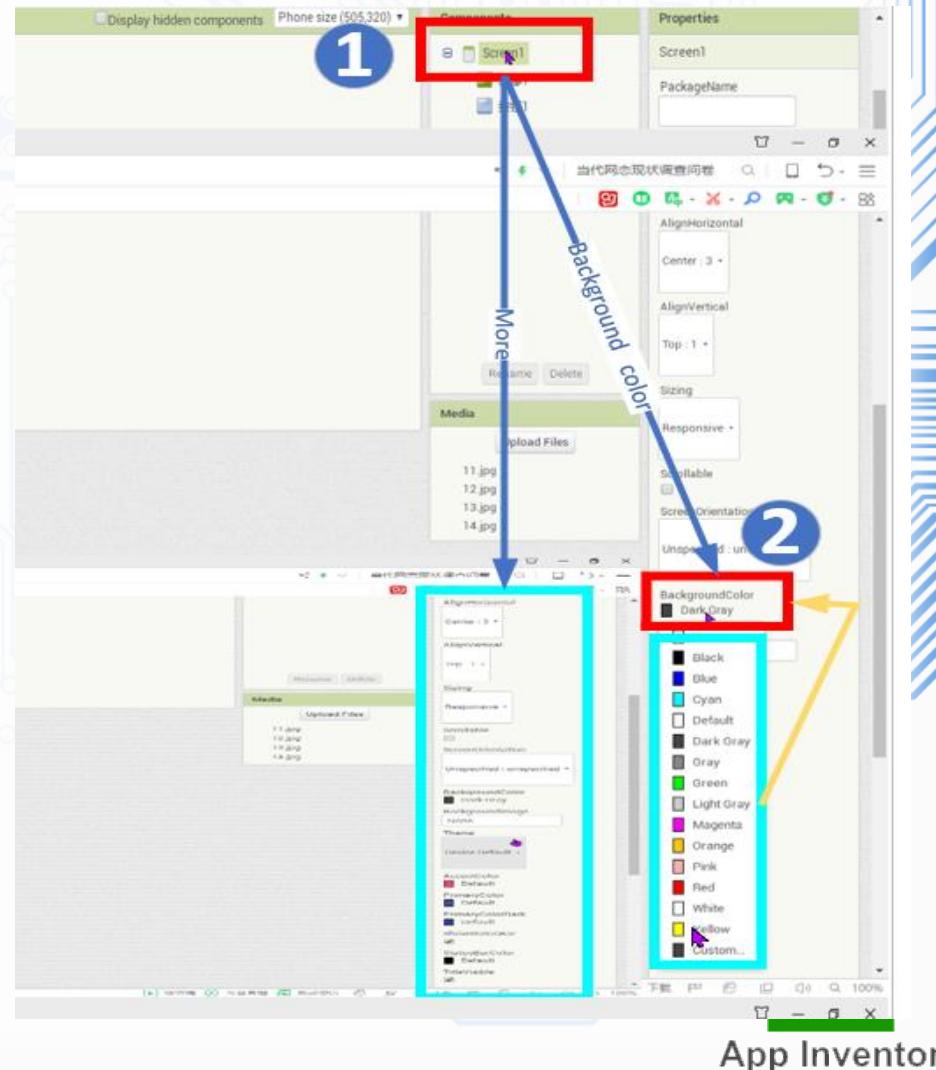
How to change the color of a blank page back ground to blue



User Interface: in the designer screen (User interface), select the “screen 1 “from topper window in software (#?), and then select the” background color” and change background from properties windows (#).

The user by press the default segment(means the default color of current page) with mouse can select blue (any color) in the large box on the far right and select the blue color, as shown in the figure () .

Also, the other properties like title, about screen, etc. can be change in this section.



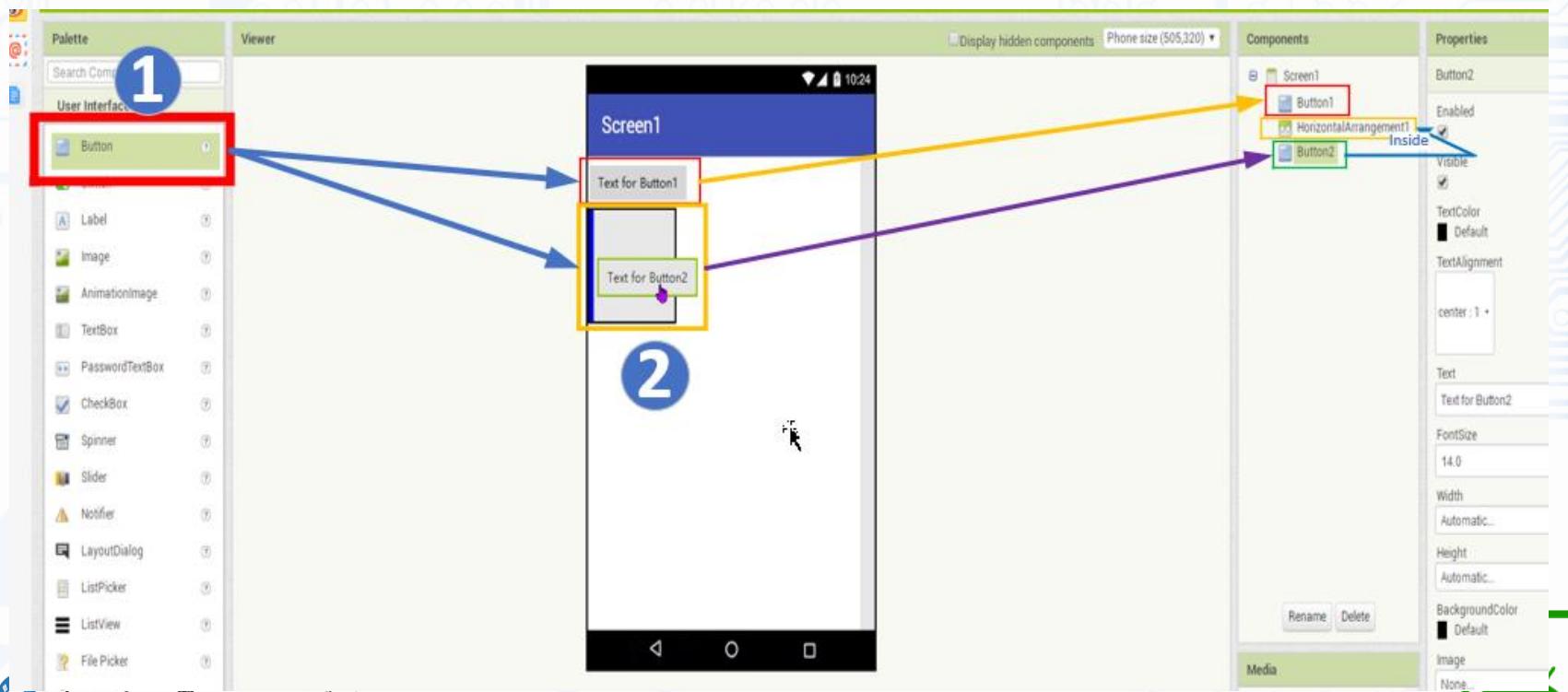


Step3:

How to insert the button in a blank page



User Interface: in the designer screen (User interface), select the “screen 1 “from component selection box, (#A), Select the button from “User interface” section as its show in this section there are some component like Switch ,label, Image (as shown in figure) Select the button and drag to the blank page. Also user can change the name, color , size , font size from properties section(figure()0, also the inserted block can be delete by press the dele in the components windows(figure)



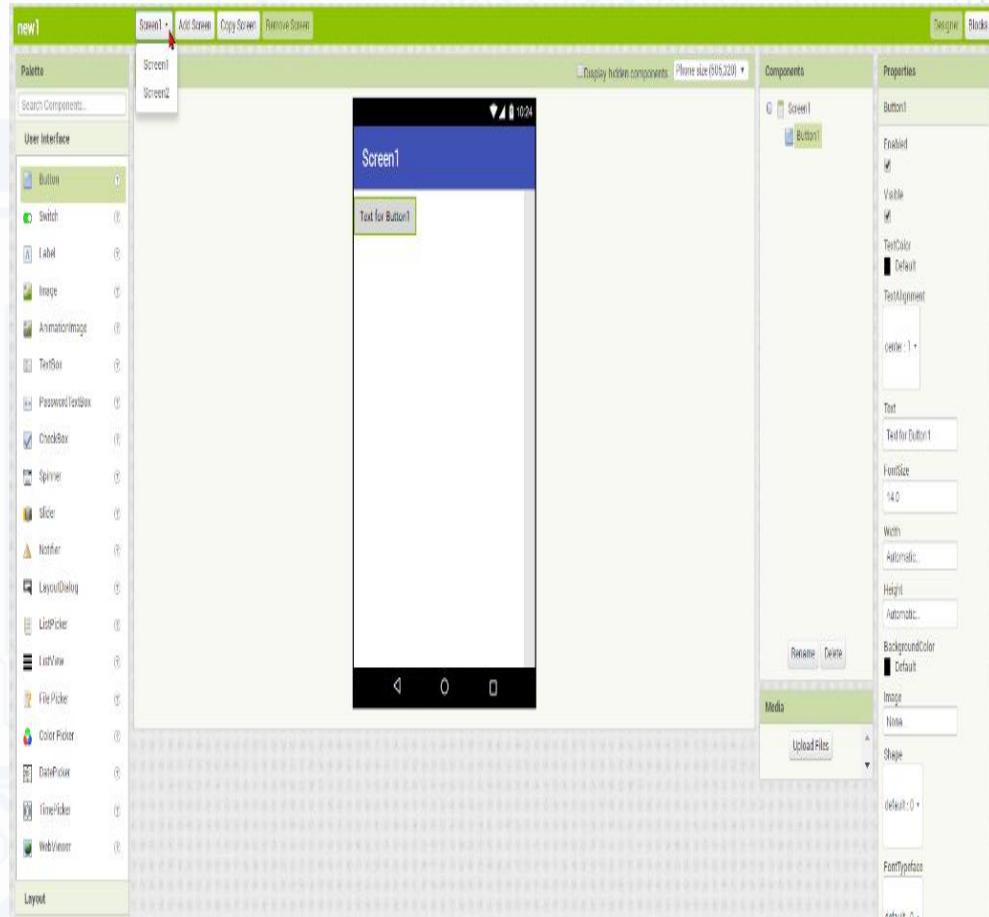


Step4:

How to go to second page by press a button in a first blank page



- **User Interface:** in the designer screen (User interface), select the “screen 1 “from component selection box, (#A), Select the button from “User interface window (#) then select the “ADD screen on the top window(#()) named “screen2”.
- After that user should return to screen 1 and make the block on the screen1 page to open the second page. User should click the “blocks” from top window (#()) then in the “Blocks” window (#()) select the control and select the “Open another screen name”





How to go to second page by press a button in a first blank page



App Inventor

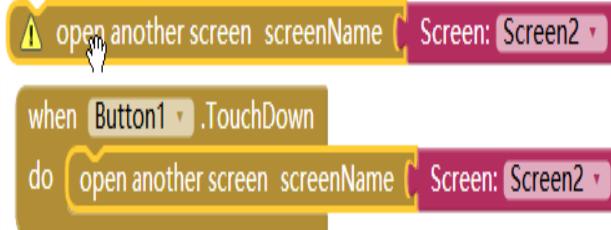
Then click the block name “Open another screen name” and select “Screen2” means the screen that user wants to open.



Next step is to select the button form the components attached to screen 1 which is shown on the left side windows. And select the block name “when button1 .toch Down”



After selecting this block user should merge with the pervious block “Open another screen name”





How to go to second page by press a button in a first blank page



App Inventor

The screenshot shows the App Inventor 2 workspace. At the top, there is a browser bar with the URL <https://app.wxbit.com/>. Below it is a toolbar with icons for '收藏' (Favorites), '手机收藏夹' (Mobile Favorites), '谷歌' (Google), '网址大全' (Website Catalog), '360搜索' (360 Search), and 'App Inv'. The main area has a green header bar with the project name 'fjhjf' and tabs for 'Screen1', 'Add Screen', 'Copy Screen', and 'Remove Screen'. A search icon is also present. On the left, there is a 'Palette' section with a 'User Interface' category containing components: Button (selected), Switch, Label, Image, AnimationImage, TextBox, and PasswordTextBox. A blue circle with the number '1' is overlaid on the 'Add Screen' button, which is highlighted with a red border. A green circle with the number '2' is overlaid on the 'Screen2' component in the palette list.





Step5:

How to insert a picture in a blank page



User Interface: in the designer screen (User interface), select the “screen 1” from component selection box, (#A), Select the “image: from “User interface window(#) and drag to the screen page.

The screenshot shows the App Inventor 2 Designer interface. On the left, the Palette contains various components like Button, Switch, Label, and Image. The 'Image' component is highlighted with a red arrow. In the center, the Designer workspace shows a blank screen labeled 'Screen1'. On the right, the Components and Properties panels are visible. A 'Media' tab is open in the Properties panel, showing a dropdown menu with 'Image'. A sub-menu is open, showing 'Image1' selected. Below it, there are 'Upload File...' and 'Cancel' buttons. The status bar at the bottom indicates 'Scalable9Patch'.

The screenshot illustrates the steps to insert an image into a screen. It shows the 'Image' component being selected from the palette, and then being added to the screen via the media properties panel.

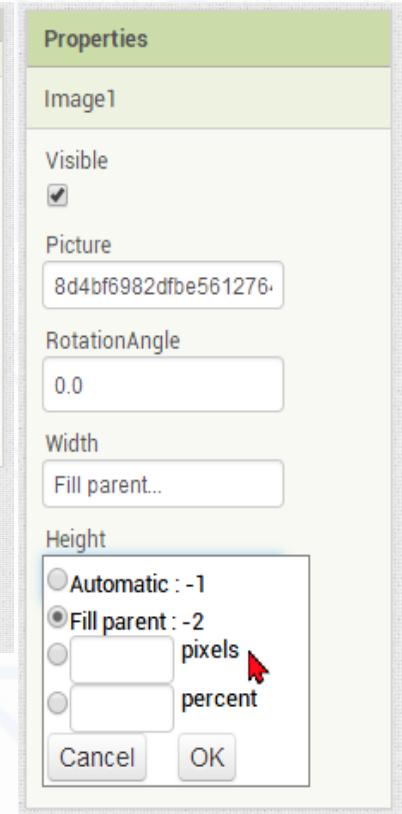
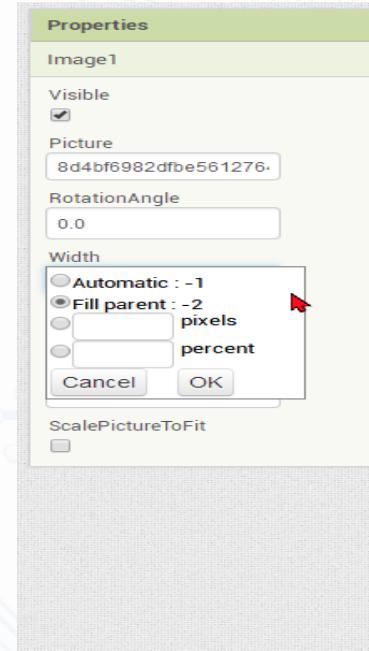




Step5:

How to insert a picture in a blank page

Then from “properties” windows (# ()) select the picture segment and then press the Upload files button and insert the photo from any location in computer and press ok .the inserted image will be shown in small windows of Picture section in properties part . It may happened that the size of image is not fit to the screen then user should change the image size form width and height segment in this part as shown in figure ()



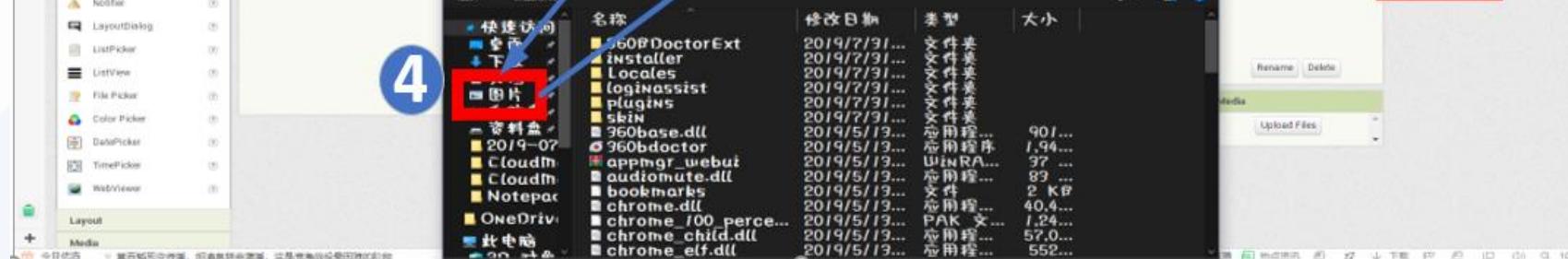
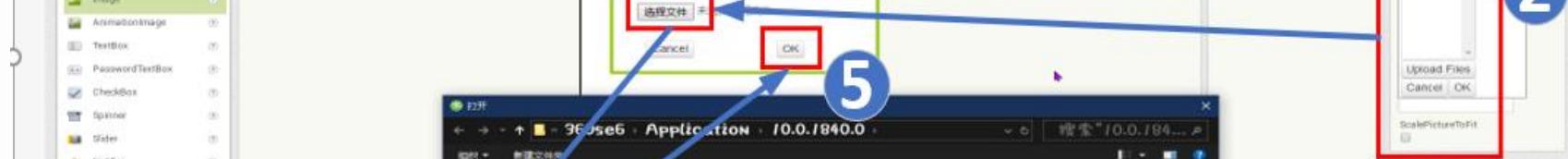
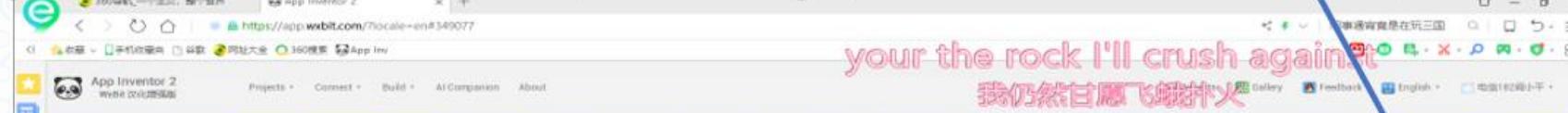
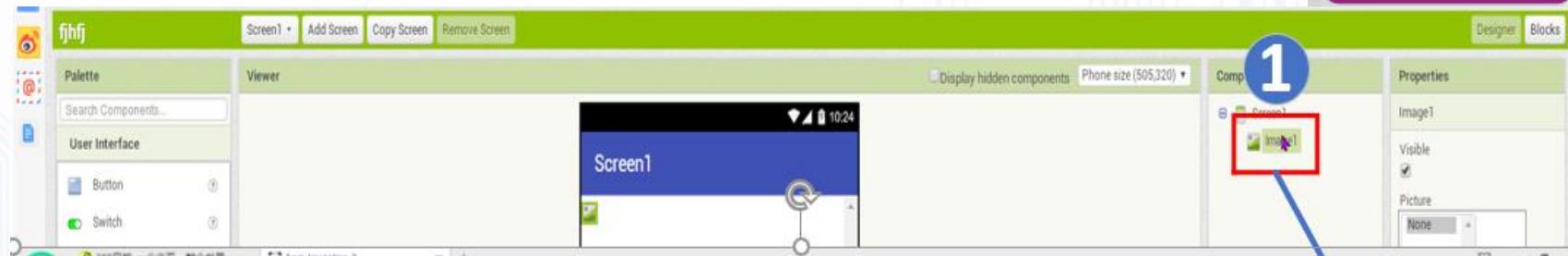


Step5:

How to insert a picture in a blank page



App Inventor



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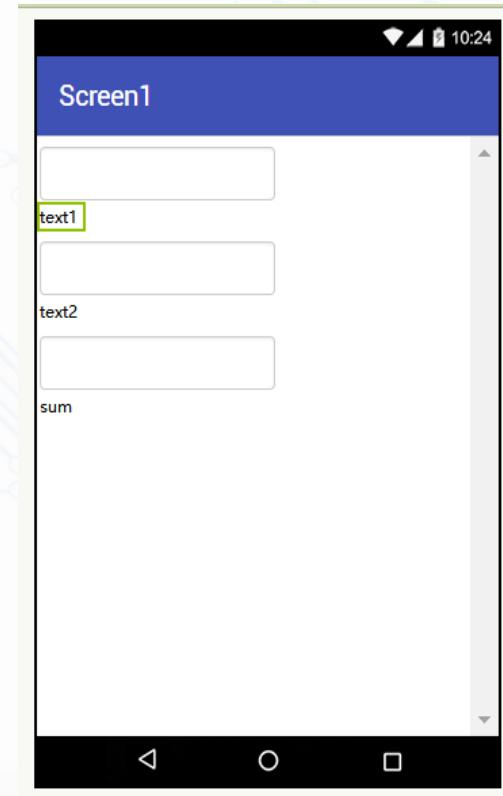
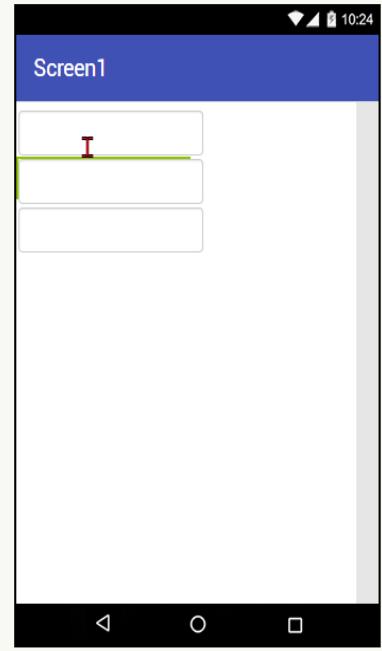
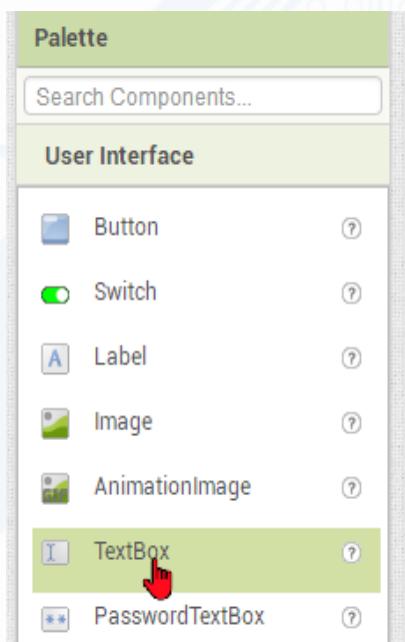


Step 6:

How to insert two different number in a two box and show the summation in a third box a blank page



User Interface: in the designer screen (User interface), select the “screen 1” from component selection box, (#A), Select the three “Text box” and drag them all in the screen .Then user can select the “Label” from component selection box and rename them to text1, text2, and sum (as shown in figure()) .





Step 6:

How to insert two different number in a two box and show the summation in a third box a blank page



In the next step in the blocks, select the “Tect1.text” block, “Tect2.text” block and “set Tect3.text” block

A set block where the target is TextBox3, the property is Text, and the value is to.



After that select the “math” and select the add block

In this step the text1 and text2 should be merge with Add block and the text3 select as the summation place for both mentioned texts.

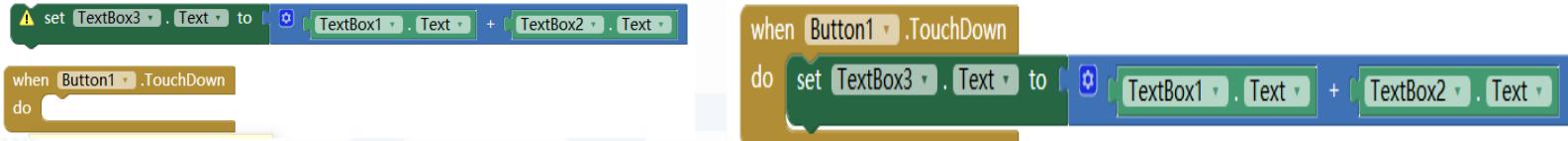
An add block with two green text blocks (TextBox1.Text and TextBox2.Text) connected by a plus sign (+).

In order to have the summation in the screen on user need a button to press and see the summation result then this step by add the button and select the “When button1.touchdown” block form block section can be achieved (figure()).



Step 6:

How to insert two different number in a two box and show the summation in a third box a blank page



Now user after press the button can have the summation of text1 and text2 box numbers

The image shows the App Inventor interface with the following components and steps:

- Screen1 Layout:** A screenshot of an Android device showing three text boxes labeled "text1", "text2", and "sum", and a button labeled "Text for Button1".
- Palette:** On the left, the "User Interface" palette shows icons for Button, Switch, Label, Image, Animation, and TextBox.
- Viewer:** In the center, a preview window shows "Screen1" with three text boxes and a button. A red box highlights the top text box (text1).
- Code Editor:** On the right, the code editor shows the following blocks:
 - A green block: **when Button1 .TouchDown**
 - An orange block: **do**
 - A blue block: **set TextBox3 . Text to**
 - A green block: **TextBox1 . Text + TextBox2 . Text**
- Component List:** A sidebar on the right lists the components: Screen1, TextBox1, TextBox2, and TextBox3.

Green arrows numbered 1, 2, and 3 point from the text boxes in the layout to their corresponding components in the palette and code editor.





Step 6:

How to insert two different number in a two box and show the summation in a third box a blank page



App Inventor

4

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Variables
 - Procedures
- Any component
- Any TextBox

Viewer

```
set TextBox1 . . Focusable to True
TextBox1 . . TextColor
set TextBox1 . . TextColor to White
TextBox1 . . TextAlignment
set TextBox1 . . TextAlignment to Center
TextBox1 . . Hint
set TextBox1 . . Hint to "Please enter a number"
TextBox1 . . Text
set TextBox1 . . Text to "0"
TextBox1 . . FontSize
set TextBox1 . . FontSize to 24
```

360导航 一个主页, 整个世界 App Inventor 2

6

Blocks

- Screen
- Any TextBox

Viewer

```
set TextBox3 . . TextColor to Black
TextBox3 . . TextAlignment
set TextBox3 . . TextAlignment to Center
TextBox3 . . Hint
set TextBox3 . . Hint to "The sum of two numbers"
TextBox3 . . Text
set TextBox3 . . Text to "0"
```

8

Blocks

- Math

Viewer

```
Return the sum of two numbers.
```

360导航 一个主页, 整个世界 App Inventor 2

7

Blocks

- Screen
- Any TextBox

Viewer

```
set TextBox3 . . TextColor to Black
TextBox3 . . TextAlignment
set TextBox3 . . TextAlignment to Center
TextBox3 . . Hint
set TextBox3 . . Hint to "The sum of two numbers"
TextBox3 . . Text
set TextBox3 . . Text to "0"
```

360导航 一个主页, 整个世界 App Inventor 2

9





Step 6:

How to insert two different number in a two box and show the summation in a third box a blank page

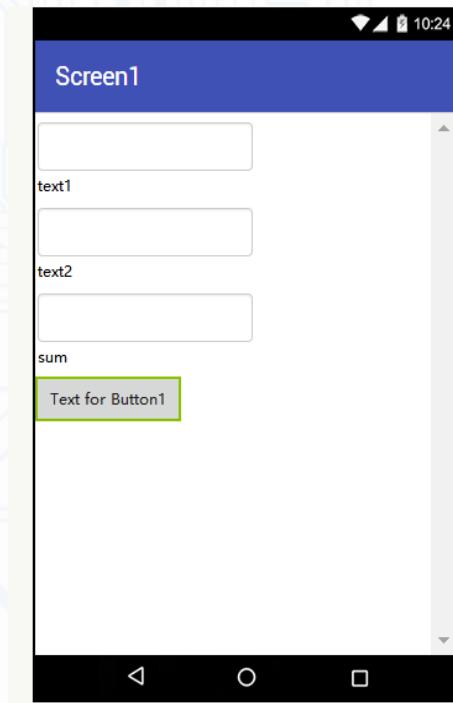


App Inventor

The screenshot shows the App Inventor 2 workspace. On the left, the blocks palette is open, showing categories like Buttons, Math, Text, Lists, Colors, Variables, Procedures, and Screens. A yellow box highlights the 'Text' category, which contains a blue circle with the number '10'. In the center, the blocks editor displays a script for 'Button1':

```
when [Button1].TouchDown
do
when [Button1].TouchUp
do
when [Button1].GotFocus
do
when [Button1].LostFocus
do
```

A yellow box highlights the top row of blocks: 'when [Button1].TouchDown' and 'do'. A blue circle with the number '11' has a cursor arrow pointing to it. On the right, the preview screen shows a mobile phone interface with three text boxes labeled 'text1', 'text2', and 'sum'. Below 'sum' is a button labeled 'Text for Button1'.



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App Inventor



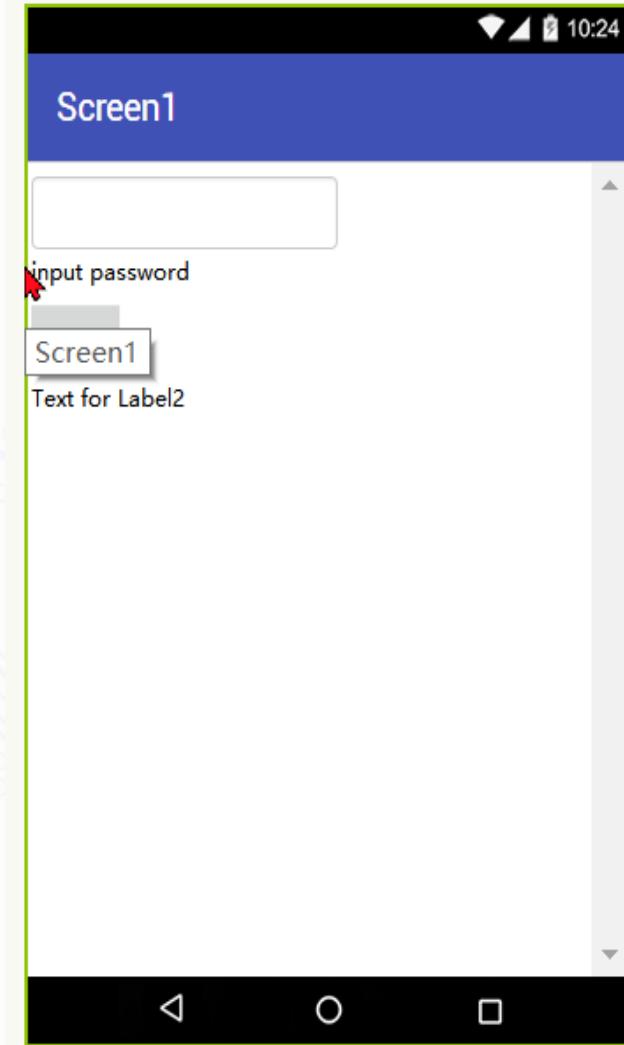
Step7 :

How to check an insert number in text box is as same as define different in a blank page



In this project assume that the password “1111” is stored before and now the user enter number will be check with that if the enter number is equal to the stored number the user can receive the text OK and if not receive the text try once more.

User Interface: in the designer screen (User interface), select the “screen 1 “from component selection box, (#A), Select the “Text box”, “label1,” label2: and: button and drag them all in the screen .



App Inventor



Step7 :

How to check an insert number in text box is as same as define different in a blank page

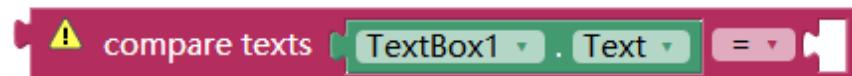
Rename the button to “enter “label 1 “ input password” and the label2.

Now in the blocks part select the “When Button1. Touch” block and select the text box 1 and select the block name” TextBox1.Text”



then insert the compare texts block

and merge with the previous block.



After that select the block equal from text blocks And merge with the last block



In the last part of this block user should store the desire password”123456” in the next step from control select the if block and merge



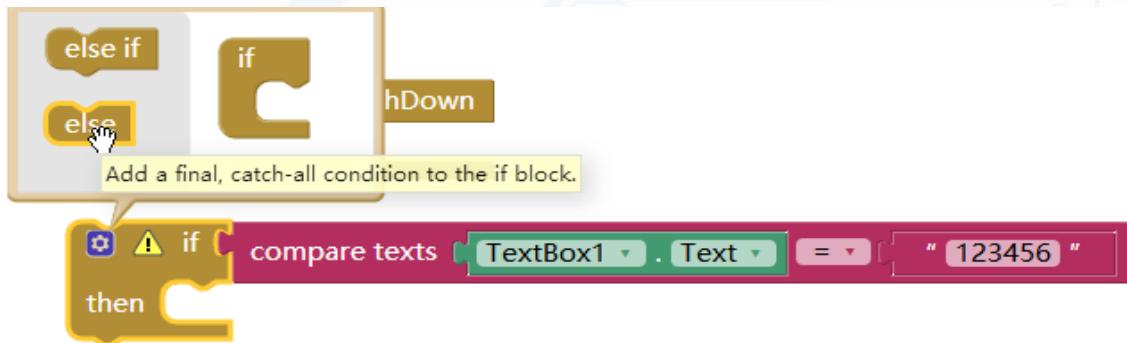


Step7 :

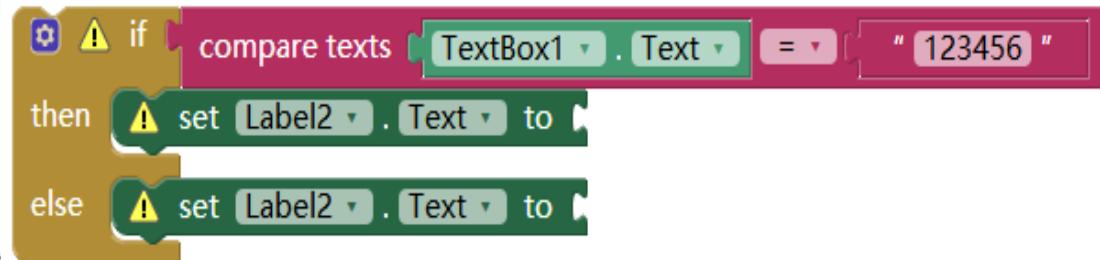
How to check an insert number in text box is as same as define different in a blank page



in this step if the entered password is equal to the store value it should give the OK message then user need the else condition which by press the blue icon on the top of block(figure)



that condition can be made. Select else and drag to if condition then for the message text user should select “set label2.text”. user can duplicate or insert two text blocks.



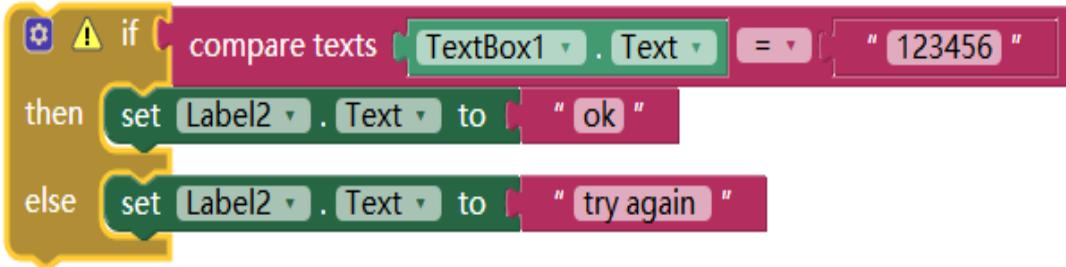


Step7 :

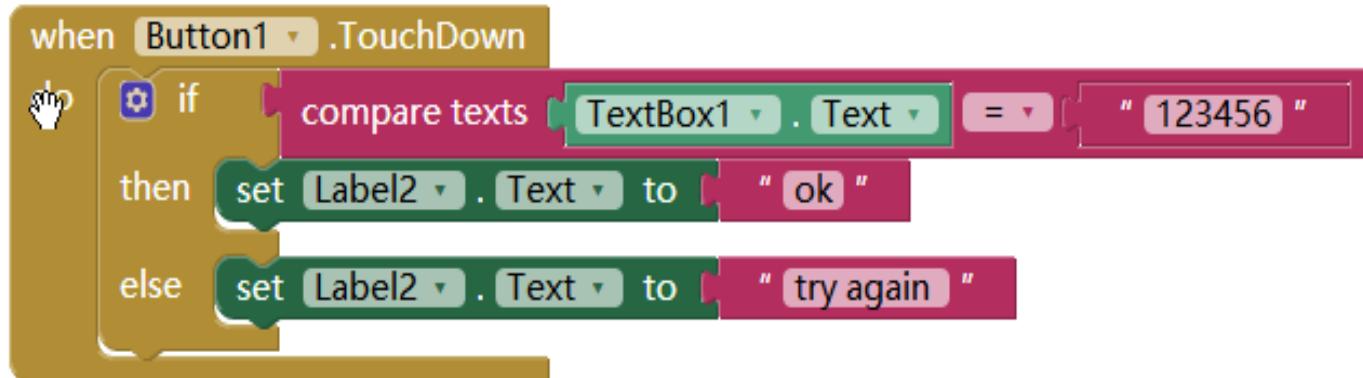
How to check an insert number in text box is as same as define different in a blank page



To show the result add two equal block and enter “OK” and “try again “



Now whole code should be merge together





Reference

- <http://ai2.appinventor.mit.edu/reference/blocks/math.html>
- <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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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."**

