

MIT APP INVENTOR

DAY 2

INSTRUCTIONS

Welcome to the course on MIT App Inventor. We will be using Zoom Application for delivering this course. Please adhere to the following instructions during the presentation.

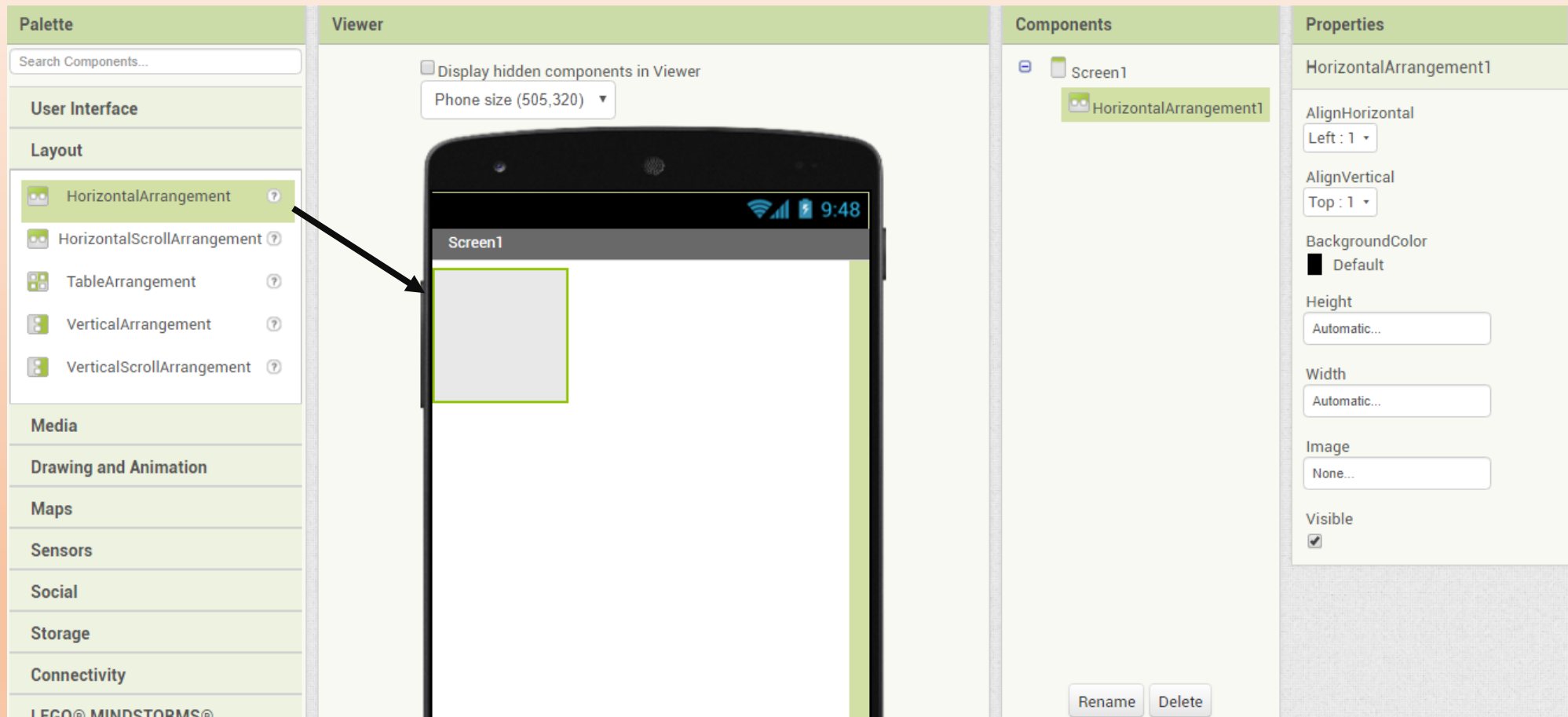
- All of the participates other than the host are requested to mute (Alt+A) their microphone unless otherwise specified.
- Please use the chat window to type in your doubts and response to questions/tasks.

OVERVIEW

- **Build Speech Recognition App:**
 - Speech recognition.
 - Voice control.

App 1: Speech recognition

1- Drag a horizontal arrangement component from the layout.



1- Set the Width property to "Fill Parent".

The screenshot displays an IDE interface with four main panels: Palette, Viewer, Components, and Properties.

- Palette:** Shows a search bar and a list of layout components under the 'Layout' category. 'HorizontalArrangement' is selected and highlighted in green.
- Viewer:** Shows a mobile phone simulator. A 'Screen1' component is visible, and a 'HorizontalArrangement1' component is placed on the screen, highlighted with a green border.
- Components:** Shows a tree view with 'Screen1' and 'HorizontalArrangement1' listed.
- Properties:** Shows the properties for 'HorizontalArrangement1'. The 'Width' property is expanded, and 'Fill parent' is selected with a radio button. Other properties like 'AlignHorizontal', 'AlignVertical', 'BackgroundColor', and 'Height' are also visible.

☐ Drag an image

- 1- Go to the use interface and drag an image to the horizontal arrangement component
- 2- Upload an image

The screenshot displays a mobile application development IDE with four main panels: Palette, Viewer, Components, and Properties.

- Palette:** A search bar is at the top. Under the "User Interface" section, the "Image" component is highlighted.
- Viewer:** Shows a mobile phone simulation. A checkbox "Display hidden components in Viewer" is checked. Below it, a dropdown menu shows "Phone size (505,320)". The phone screen displays a landscape image of a person in an orange jacket looking at snow-capped mountains.
- Components:** A tree view shows the hierarchy: "Screen1" contains "HorizontalArrangement1", which contains "Image1".
- Properties:** The "Image1" component is selected, showing properties: "Clickable" (unchecked), "Height" (Automatic...), "Width" (Automatic...), "Picture" (vv.jpg...), "RotationAngle" (0.0), "ScalePictureToFit" (unchecked), and "Visible" (checked).

□ Add a button

- 1- Drag another horizontal arrangement component then set Width property to "Fill Parent".
- 2- Drag a button to horizontal arrangement component for speech text command

The screenshot displays the Android Studio IDE with four main panels: Palette, Viewer, Components, and Properties.

- Palette:** Shows the "User Interface" section with various widgets. The "Button" widget is highlighted.
- Viewer:** Shows a mobile phone emulator. The screen displays a landscape image of a person taking a photo. Below the image is a button with the text "Text for Button1". A dropdown menu above the emulator shows "Phone size (505,320)".
- Components:** Shows a tree view of the app's components. It includes "Screen1", "HorizontalArrangement1" (containing "Image1"), and "HorizontalArrangement2" (containing "Button1").
- Properties:** Shows the properties for the selected "Button1" component. The "Width" property is set to "Automatic...".

❑ Till Now!

- Click on button and upload an image then reduce the size change height and width to 20 pixels.
- Change AlignHorizontal to center. Go back to button and rename the text.
- Drag a button to horizontal arrangement component and set Width property to "Fill Parent".
- Drag label from layout to the arrangement component then change AlignHorizontal to center and rename label text name.
- Now go to media and drag speech recognizer to the screen.

□ Add speech recognizer

The image displays a software development environment with three main panels:

- Left Panel (Component Palette):** A list of components under the 'Media' category. 'SpeechRecognizer' is highlighted in green. Other components include Camcorder, Camera, ImagePicker, Player, Sound, SoundRecorder, TextToSpeech, VideoPlayer, and YandexTranslate.
- Center Panel (Mobile App Preview):** A simulated mobile device screen. At the top, it shows 'Screen1' and a video player with a scene of a person in an orange jacket taking a photo of a mountain. Below the video player is a 'current word' label. The bottom of the screen shows standard Android navigation icons.
- Right Panel (Component Tree):** A tree view of the application's components. It includes 'Button1', 'HorizontalArrangement3', 'Label1', and 'SpeechRecognizer1' (highlighted in green). Below this are 'Rename' and 'Delete' buttons.
- Bottom Panel (Non-visible components):** A section labeled 'Non-visible components' containing 'SpeechRecognizer1' (highlighted in green).

❑ Event handler for speech conversion button

- When the button is clicked the speech recogniser is called to change speech to text.
- Set the text in the label to the text stored in a speech recogniser component.
- After the result is obtained the text and the label must be set to this result speech recognizer.
- Also you have to add another code block to show its empty before speech recognizer has been called.

```
when Button1 Click
do call SpeechRecognizer1 . GetText

when SpeechRecognizer1 BeforeGettingText
do set Label1 . Text to [ . . ]

when SpeechRecognizer1 AfterGettingText
result
do set Label1 . Text to SpeechRecognizer1 . Result
```

❑ Add Bluetooth

1 - The program will work if the Bluetooth is on

- Drag a button to horizontal arrangement component and set Width property to "Fill Parent".
- Click on user interface and drag list picker
- Change AlignHorizontal to center. Go back to button and rename list picker text.
- Click on Connectivity and drag Bluetoothclient1.

- Layout
- Media
- Drawing and Animation
- Maps
- Sensors
- Social
- Storage
- Connectivity
 - ActivityStarter
 - BluetoothClient**
 - BluetoothServer
 - Serial
 - Web
- LEGO® MINDSTORMS®
- Experimental
- Extension



- Non-visible components
- SpeechRecognizer1
 - BluetoothClient1**

- Image1
- HorizontalArrangement2
 - Button1
- HorizontalArrangement3
 - Label1
- HorizontalArrangement4
 - ListPicker1
 - SpeechRecognizer1
 - BluetoothClient1**

UTF-8

DelimiterByte
0

DisconnectOnError

HighByteFirst

Secure

Media

- vv.jpg
- red-tree...er-hd.jpg

Upload File ...

❑ Last Step

- Set the selection of list picker to addresses and name of the Bluetooth client.
- After that the app will request an address for a connection.
- If the request is accepted the connection is perfect.
- If the request is not accepted set the selection of list picker to addresses and names of the Bluetooth client .

Viewer



```
when Button1 .Click
do call SpeechRecognizer1 .GetText
```

```
when SpeechRecognizer1 .BeforeGettingText
do set Label1 .Text to " "
```

```
when ListPicker1 .AfterPicking
do set ListPicker1 .Selection to BluetoothClient1 .AddressesAndNames
```

```
when SpeechRecognizer1 .AfterGettingText
result partial
do set Label1 .Text to SpeechRecognizer1 .Result
call BluetoothClient1 .SendText
text SpeechRecognizer1 .Result
```

```
when ListPicker1 .BeforePicking
do if call BluetoothClient1 .Connect
address ListPicker1 .Selection
then set ListPicker1 .Selection to BluetoothClient1 .AddressesAndNames
```

Warning icons: 0 warnings, 0 errors.

Show Warnings

Navigation icons: Home, Zoom In (+), Zoom Out (-), and Delete (trash can).

□ App 2: Get the gold

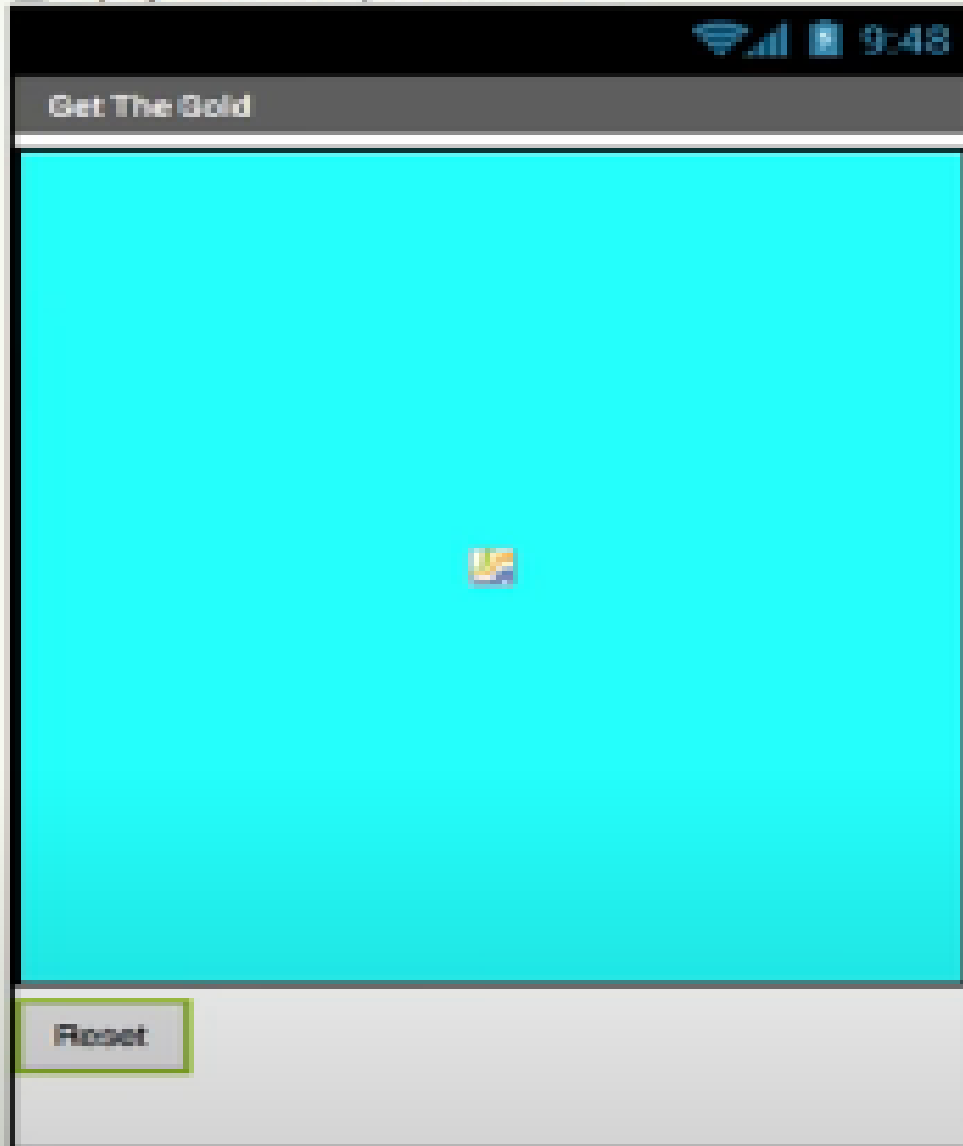
- Copy the image files to your desktop



❑ Create a pirate ship

- Drag a canvas .
- Change it width to fill parent and height to 350 pixels.
- Change color to blue since the game is in the ocean.
- Button to reset the game.

Display hidden components in Viewer



- Screen1
 - Canvas1
 - ResetButton

Rename

Delete

❑ Create a pirate ship

- Drag a clock .
- Change Timer Interval to 5000.
- Drag an image sprite.
- Rename it to pirateship .
- Import pirate ship and change its speed to 5.0.
- Drag five gold sprite put it randomly.
- Rename it to goldcoin with numbers.

Viewer

Display hidden components in Viewer



Get The Gold

Reset

Non-visible components

TimerClock

Components

- Screen1
 - Canvas1
 - PirateShip
 - ImageSprite1
 - ImageSprite2
 - ImageSprite3
 - ImageSprite4
 - ImageSprite5
 - ResetButton
 - TimerClock

Rename Delete

Media

goldcoin.png

❑ Blocks editor

- Create a variable to keep track all the coins.
- Rename the variable as you want.
- When screen gets initialized image sprites must come out.
- Add items when screen is initialized.

Viewer

initialize global `CoinList` to `create empty list`

when `Screen1` initialize

do `add items to list` list `get global CoinList`

item `ImageSprite1`

item `ImageSprite2`

item `ImageSprite3`

item `ImageSprite4`

item `ImageSprite5`

□ Loop

- Import goldcoin image to the five imagesprite when user open the app.
- Using for loop it can be accomplished.
- Click on any component and drag set image sprite.

The image shows a programming environment with a project hierarchy on the left and a script on the right.

Project Hierarchy (Left):

- Screen1
 - Canvas1
 - PirateShip
 - ImageSprite1
 - ImageSprite2
 - ImageSprite3
 - ImageSprite4
 - ImageSprite5
 - ResetButton
 - TimerClock
- Any component
 - Any Button
 - Any Canvas
 - Any Clock
 - Any ImageSprite

Script (Right):

```
initialize global CoinList to create empty list

when Screen1.Initialize
do
  add items to list list
  item ImageSprite1
  item ImageSprite2
  item ImageSprite3
  item ImageSprite4
  item ImageSprite5

  for each item in list
  do
    get global CoinList
    set ImageSprite. Picture
    of component get item
    to "goldcoin.png"
```


□ Bounce off

- Control the heading when user throw the sprite.
- Bounce off the edge of the screen.

```
initialize global CoinList to [ ] create empty list
```

```
when Screen1 Initialize
```

```
do [ ] add items to list list [ ] get global CoinList -
```

```
item [ ] ImageSprite1 -
```

```
item [ ] ImageSprite2 -
```

```
item [ ] ImageSprite3 -
```

```
item [ ] ImageSprite4 -
```

```
item [ ] ImageSprite5 -
```

```
for each item in list [ ] get global CoinList -
```

```
do [ ] set ImageSprite. Picture -
```

```
of component [ ] get item -
```

```
to "goldcoin.png"
```

```
when PirateShip - .Flung
```

```
x y speed heading xvel yvel
```

```
do [ ] set PirateShip - .Heading - to [ ] get heading -
```

```
when PirateShip - .EdgeReached
```

```
edge
```

```
do [ ] call PirateShip - .Bounce
```

```
edge [ ] get edge -
```

❑ Collation detection

- When pirate ship colloid with gold coin, if so gold coin disappear.
- After all coin disappear click reset for the coins to reappear.

```
when PirateShip .CollidedWith  
  other  
do  
  for each item in list  
    get global CoinList  
  do  
    if  
      call PirateShip .CollidingWith  
        other  
        get item  
    then  
      set ImageSprite. Visible  
        of component  
        to  
        false
```

```
when ResetButton .Click  
do  
  for each item in list  
    get global CoinList  
  do  
    set ImageSprite. Visible  
      of component  
      to  
      true
```

☐ Random position

- Coins must keep changing position every five seconds.
- Drag time event handler.

```
when TimerClock > Timer
do
  for each item in list get global CoinList >
  do
    call ImageSprite.MoveTo
      for component get item >
      x random integer from 0 to Canvas1 > . Width > - ImageSprite > . Width >
        of component get item >
      y random integer from 0 to Canvas1 > . Height > - ImageSprite > . Height >
        of component get item >
```

NEXT DAY

❖ **Build Piano board & To Do list:**

Introducing the concept of procedures.

Helps to build more advanced apps.

Build Piano board & To Do list app

THANK YOU!