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N.M.A.M. INSTITUTE OF TECHNOLOGY

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• 2. Move the Catcher

The image shows a Scratch project titled '2. Move the Catcher'. On the left, under 'ADD THIS CODE', is a script: a 'when green flag clicked' block followed by a 'forever' loop. Inside the loop, there are two 'if' blocks. The first 'if' block checks 'key right arrow pressed?' and if true, 'change x by 10'. The second 'if' block checks 'key left arrow pressed?' and if true, 'change x by -10'. On the right, there's a 'Choose a catcher, like Bowl.' section with a 'New sprite:' button and a 'Bowl' sprite. Below this, it says 'Drag the Bowl to the bottom of the Stage.' The stage shows a red apple falling from the top and a brown bowl at the bottom.

• 3. Catch It! and Keep Score – Catch the falling sprite.

The image shows a Scratch project titled '3. Catch It! and Keep Score'. On the left, under 'ADD THIS CODE', is a script: a 'when green flag clicked' block followed by a 'forever' loop. Inside the loop, there is an 'if touching Bowl?' block. If true, it triggers three actions: 'play sound pop', 'go to random position', and 'set y to 180'. On the right, there's a 'Click to select the Apple.' section with a 'Sprite' menu showing an 'Apple' and a 'Bowl'. Below this, it says 'Choose Bowl from the menu.' and 'Choose a sound.' The stage shows a red apple falling from the top and a brown bowl at the bottom.



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• Keep Score

– Add a point each time you catch the falling

Choose Data.

Click the Make a Variable button.

Control
Sensing
Operators
More Blocks

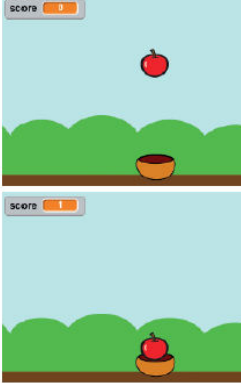
Make a Variable
Make a List

New Variable
Variable name: score
☒ For all sprites ☐ For this sprite only
☐ Cloud variable (stored on server)
OK Cancel

Name this variable score and then click OK.

ADD THESE BLOCKS
Add two new blocks to the script you made:

when clicked
set score to 0 — Add this block to reset the score.
Forever
if touching bowl - ? then
play sound pop
change score by 1 — Add this block to increase the score.
go to random position
set y to 150



4. Bonus Points

- Get extra points when you catch a golden sprite.

Choose the Duplicate tool.

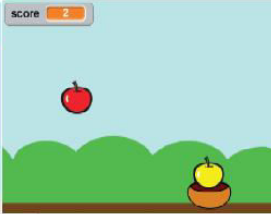
Click your sprite to duplicate it.

Click the Costumes tab.

New costume: apple
You can use the paint tools to make your bonus sprite look different.

Click the Scripts tab.

when clicked
set score to 0
Forever
if touching bowl - ? then
play sound pop
change score by 2 — Type how many points for the bonus sprite.
go to random position
set y to 180



• 5. You Win! – When you score enough points, display a winning message!

Click the paintbrush to draw a new sprite.

New sprite:

Bitmap Mode
Convert to vector

Click the Convert to vector button.

Use the Text tool to write a message, like "You won!"

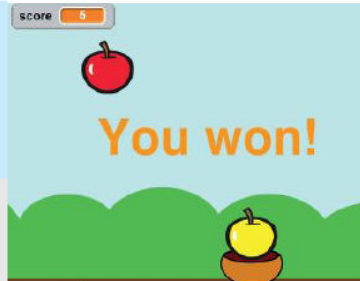
You can change the font color, size, and style.

ADD THIS CODE

Click the Scripts tab.

when clicked
hide
wait until score > 5
show
stop all

Insert the score block





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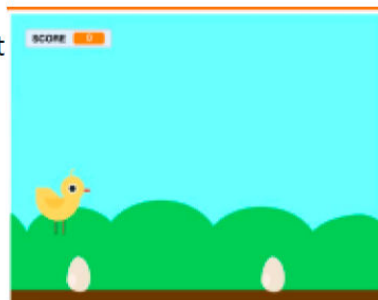
2. Design and create a Jumping game using MIT scratch coding

Jumping Game

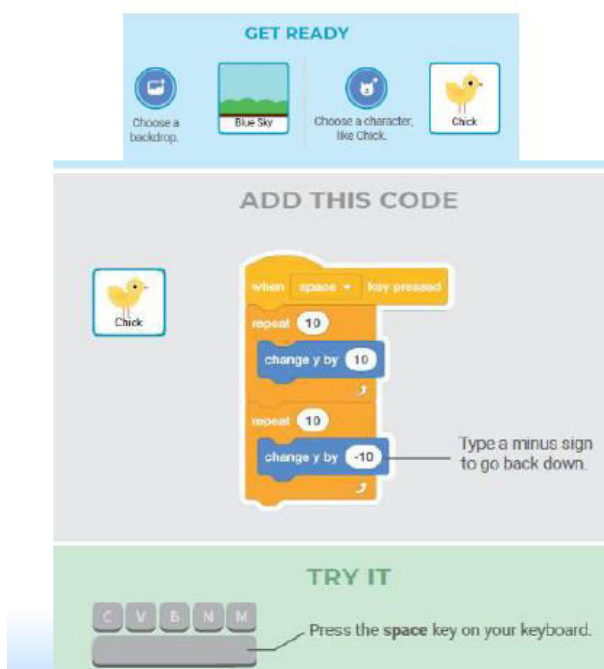
- Make a character jump over moving obstacles.

• Steps:

- 1. Jump and Go to Start
- 2. Moving Obstacle
- 3. Add a Sound
- 4. Stop the Game
- 5. Add More Obstacles
- 6. Score



1. Jump and Go to Start





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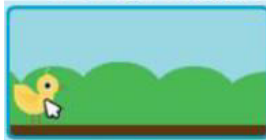
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• Go to Start



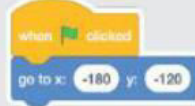
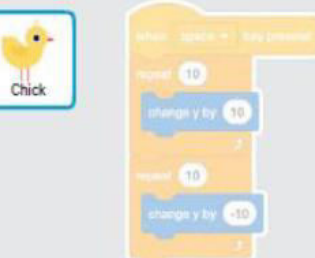
Drag your character to where you want it.



When you move your character, its **x** and **y** position will update in the blocks palette.

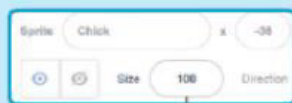
Now when you drag out a **go to** block, it will set to your character's new position.

ADD THIS CODE



Set the starting position.
(Your numbers may be different.)

TIP



Change the size of a sprite by typing a smaller or larger number.



• 2.Moving Obstacle



Choose a sprite to be an obstacle, such as **Egg**.



ADD THIS CODE



Start at the right edge of the Stage

Glide to the left edge of the Stage

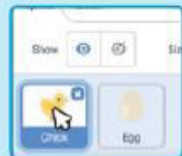
Type a smaller number to go faster.



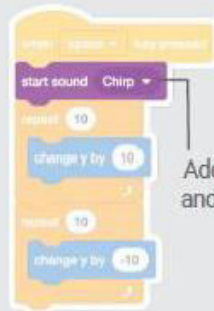
• 3. Add a Sound

– Play a sound when your sprite jumps.

Click to select the Chick sprite.



ADD THIS CODE



Add the **start sound** block, and then select a sound.



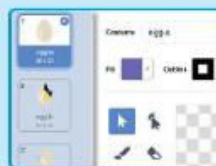
• 4. Stop the Game

Stop the game if your sprite touches the egg

Click to select the Egg sprite.



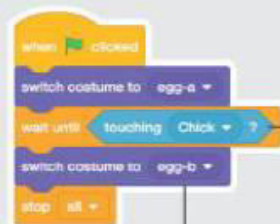
Click the **Costumes** tab to see the Egg sprite's costumes.



ADD THIS CODE

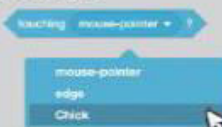


Click the **Code** tab and add this code.



Choose a second costume for the Egg sprite to change to.

Insert the **touching** block and choose **Chick** from the menu.





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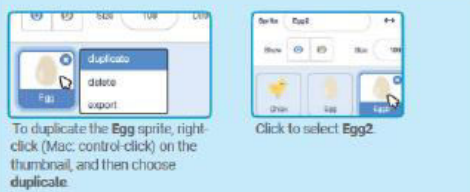
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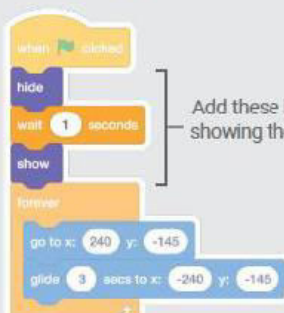
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• 5. Add More Obstacles

- Make the game harder by adding more obstacles



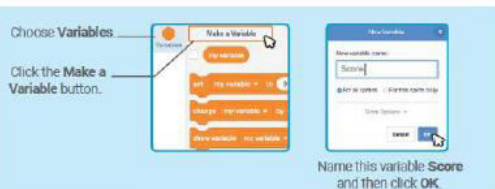
ADD THIS CODE



Add these blocks to wait before showing the second egg.

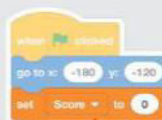
• 6.Score

Add a point each time your sprite jumps over an egg.

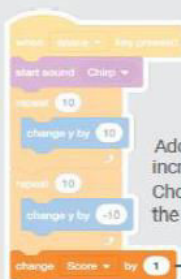


ADD THIS CODE

Click the Chick sprite and add two blocks to your code:



Add this block and then choose Score from the menu.



Add this block to increase the score. Choose Score from the menu.

3 Design and create pong game using MIT scratch coding

Steps:

1. Choose a Backdrop, Add a Ball Sprite and Make the Ball Bounce
2. Add a Paddle Sprite and Move the Paddle
3. Make the Ball Bounce Off the Paddle
4. Add a Score, Reset the Score and Update the Score
5. Add a Line Sprite and Make a Game Over

1. Choose a Backdrop, Add a Ball Sprite and Make the Ball Bounce



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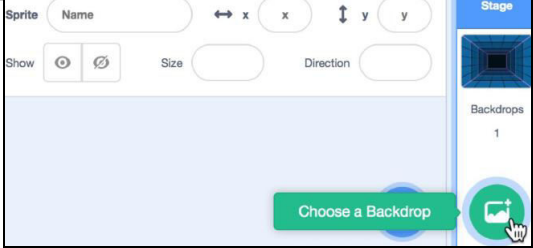
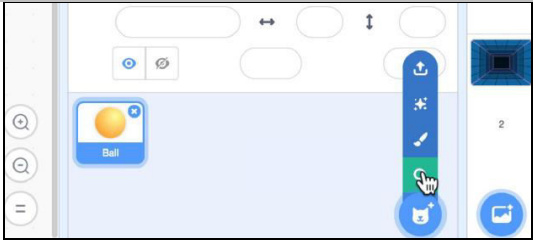
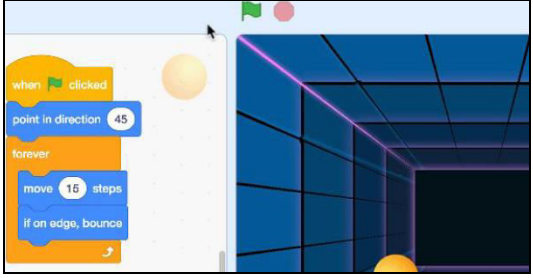
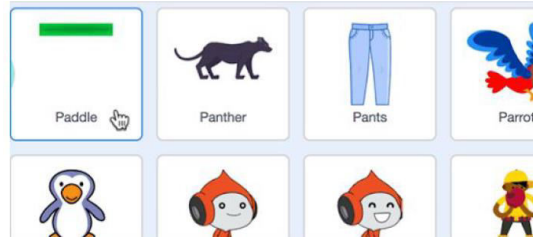
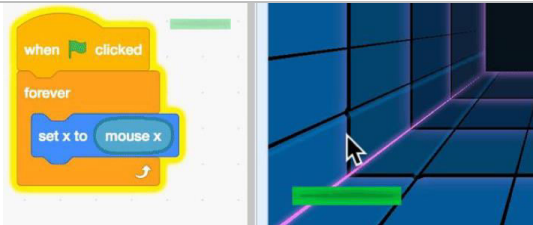
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<p>2. Add a Paddle Sprite and Move the Paddle</p> 	
	
<p>3. Make the Ball Bounce Off the Paddle</p>	



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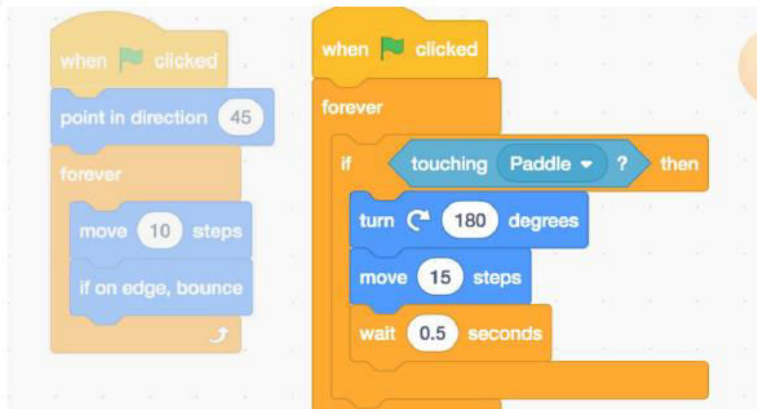
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- Add the following code to the center of the screen, next to the blocks of code that are already there.



4. Add a Score, Reset the Score and Update the Score

- Create a new variable name called score by clicking "Make a Variable" in the Variables section.

Variables

Make a Variable

a.

- Call your new variable "Score" and press Okay

New Variable

New variable name:

Score

☒ For all sprites ☐ For this sprite only

CancelOK



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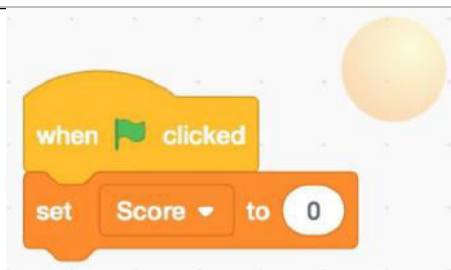
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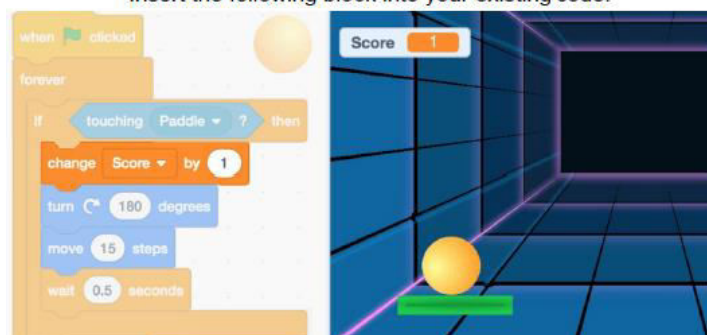
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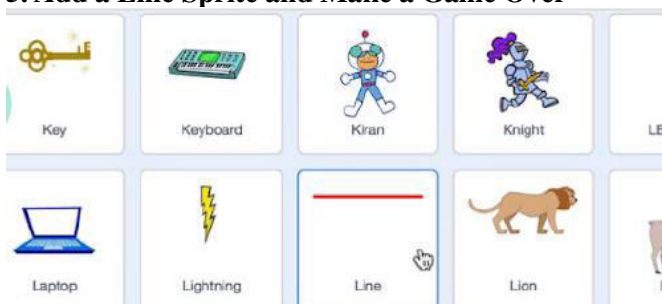


Update the Score

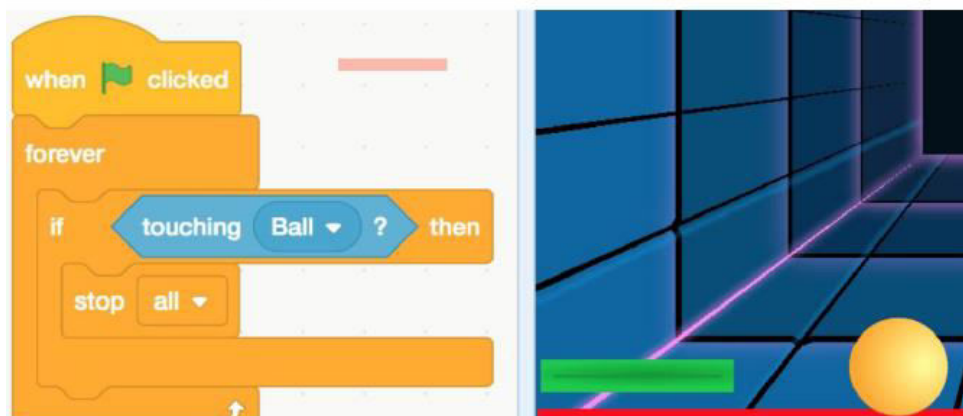
- Make sure your ball sprite is selected and Insert the following block into your existing code.



5. Add a Line Sprite and Make a Game Over



- Make sure the line sprite is selected and add the following code.



Your game is now ready to play!



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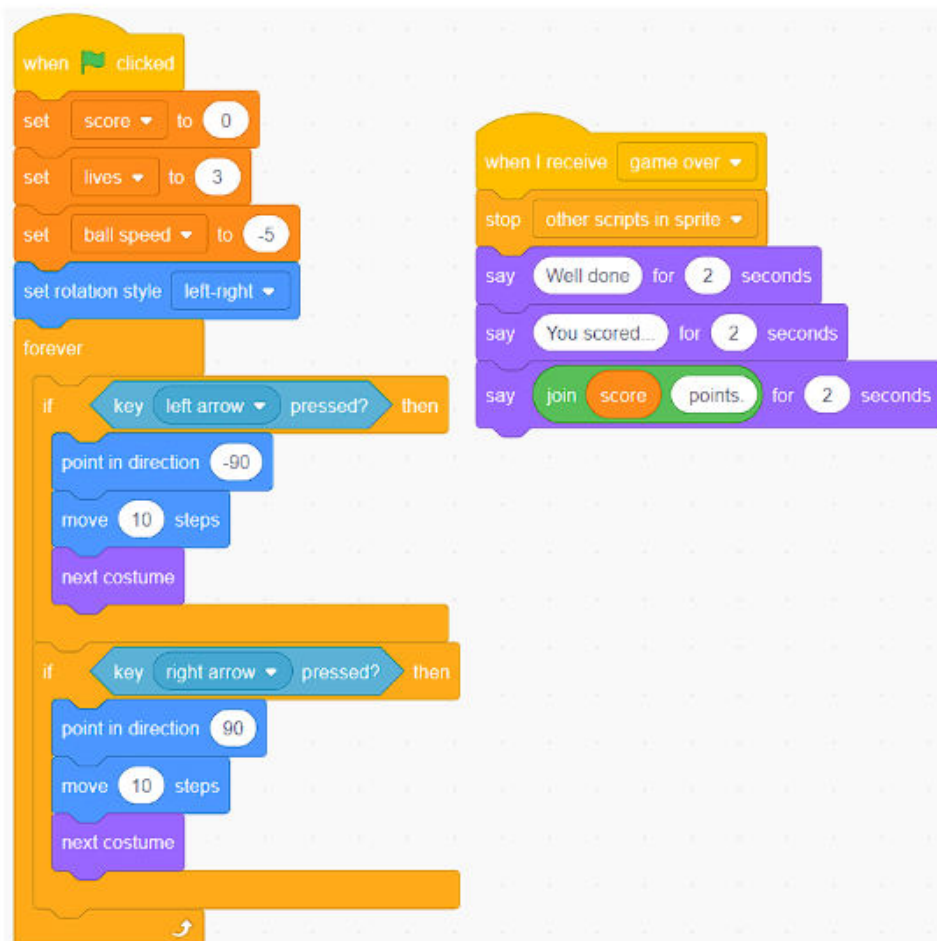
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Cat Code





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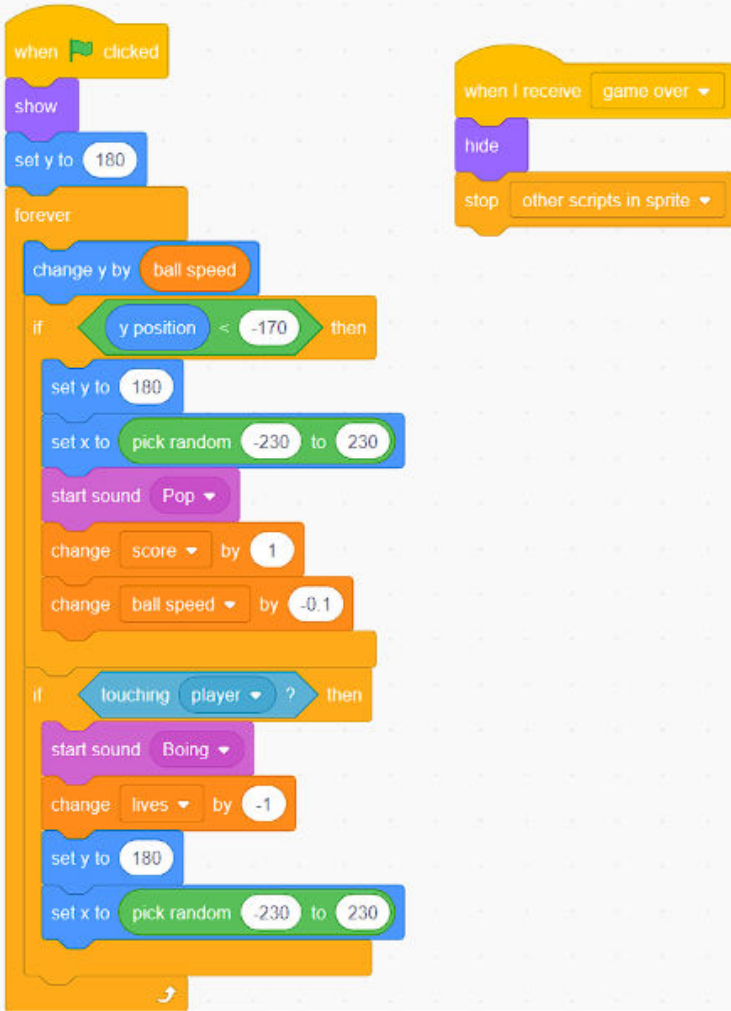
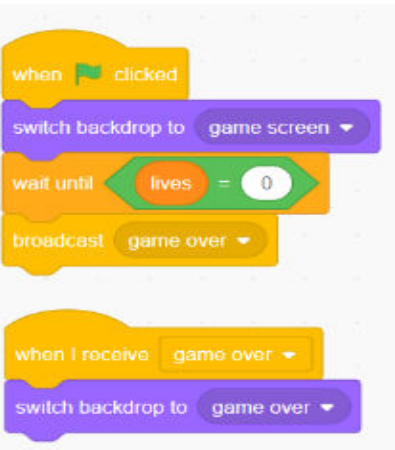
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	<p>Ball Code</p> 	
	<p>Stage Code</p> 	<p>Detailed Solution link for Dodge-ball: https://learnlearn.uk/scratch/falling-dodge-ball-game-tutorial-scratch-3/</p>
I I	<p>Design and create simple android applications using MIT app inventor</p> <p>1. Create an application to display a “Hello, World!” message on screen.</p>	



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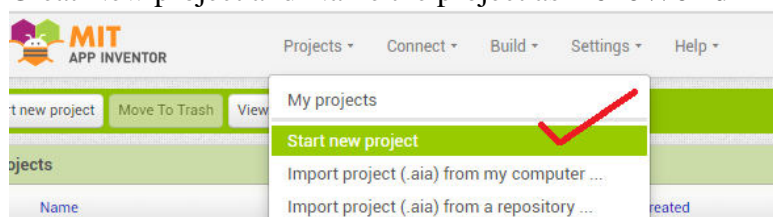
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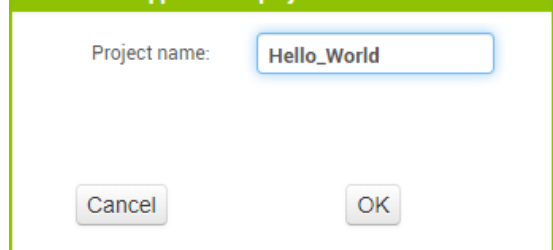
Main Steps:

- Create New project and Name the project as **HelloWorld**
- Drag a Button and a Label onto the Screen and change their text property as bntHello and lblHello
- Add when...click code block for button and set text for lblLabel with text "Hello World".
- Run the code in Emulator (or AI Companion.)

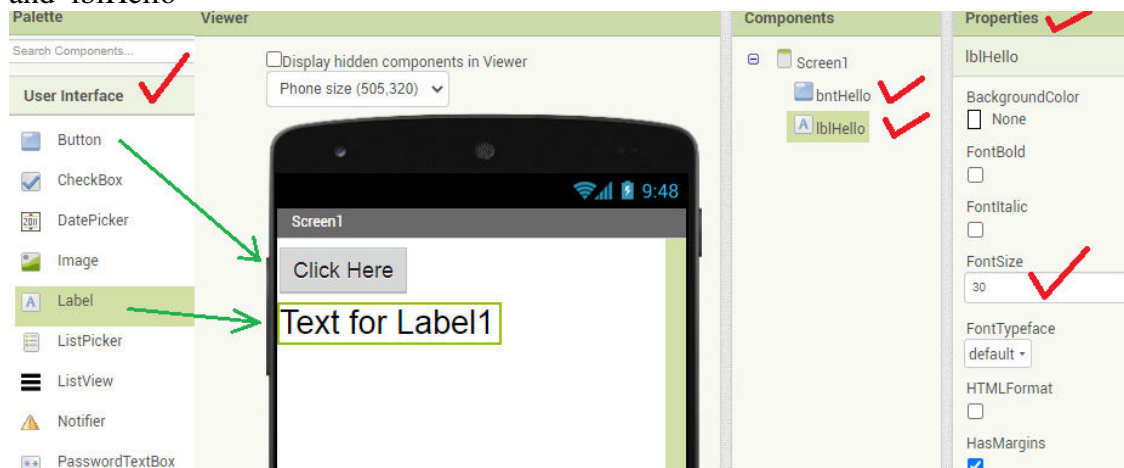
Creat New project and Name the project as **HelloWorld**



Create new App Inventor project



Drag a Button and a Label onto the Screen and change their text property as bntHello and lblHello



Change the font size and other properties of button and label as required.



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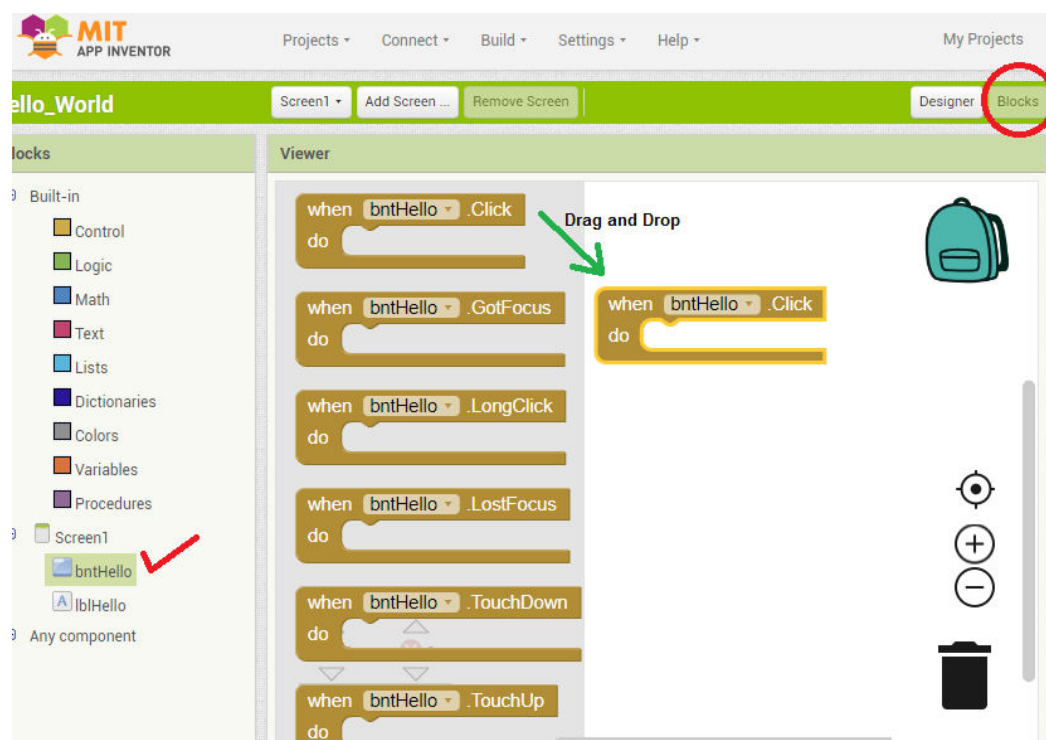
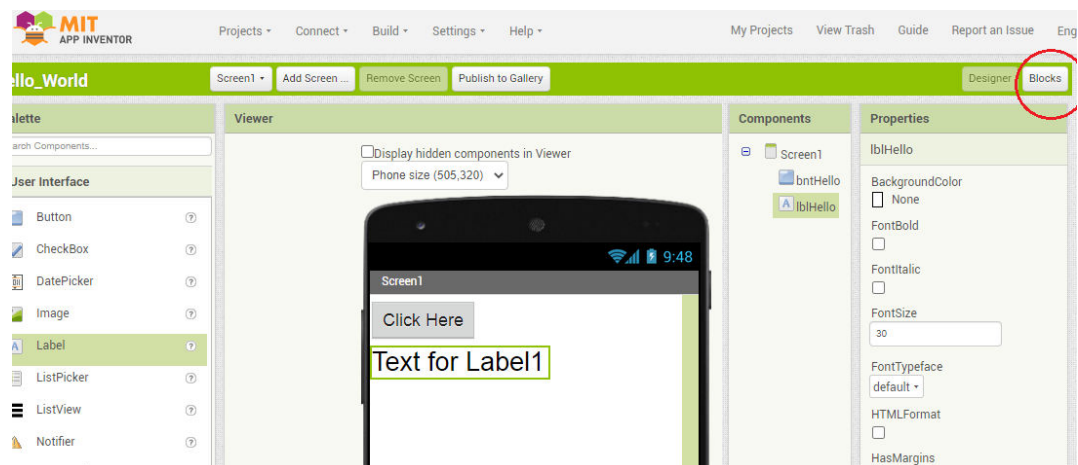
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Coding:

Click Blocks button on top - right





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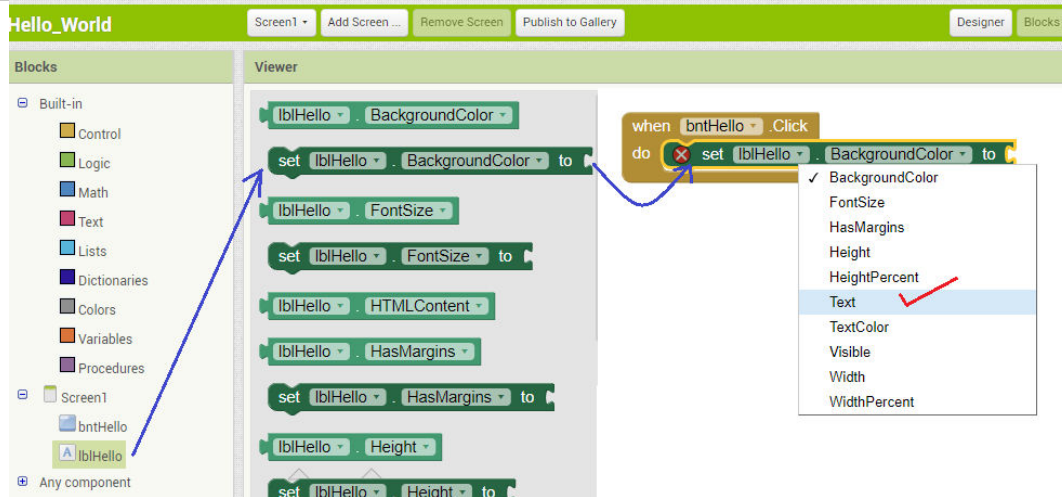
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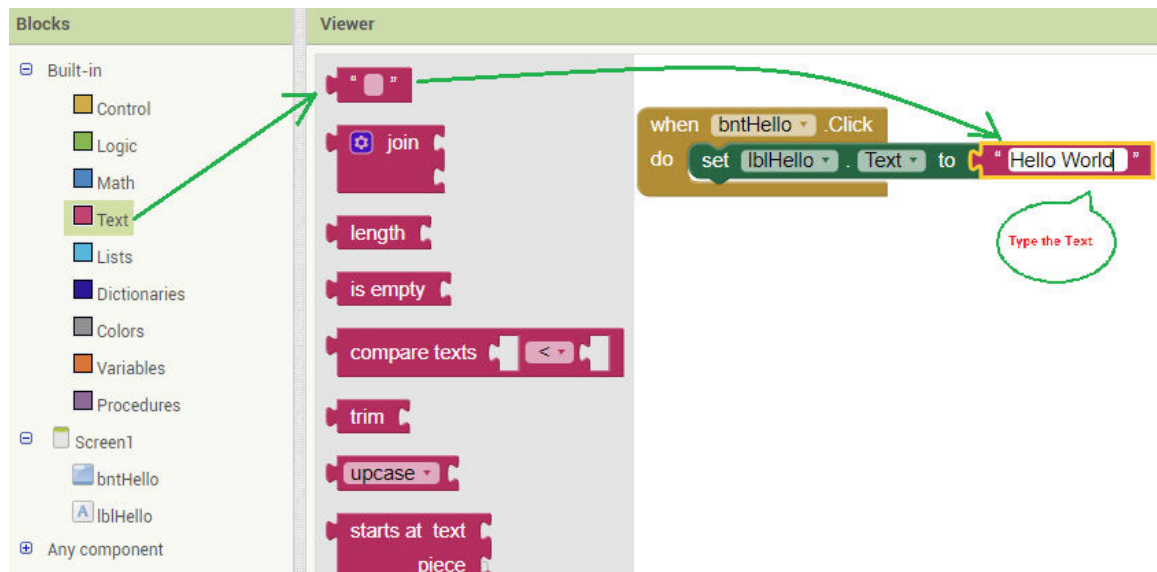
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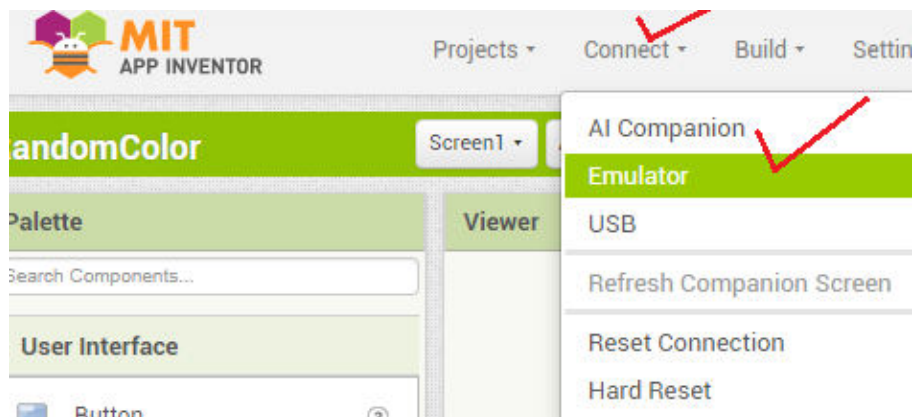
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Select text block and drag empty text block fix to the code block as shown and **type the text "Hello World"**



- Run the code in Emulator (or AI Companion.)





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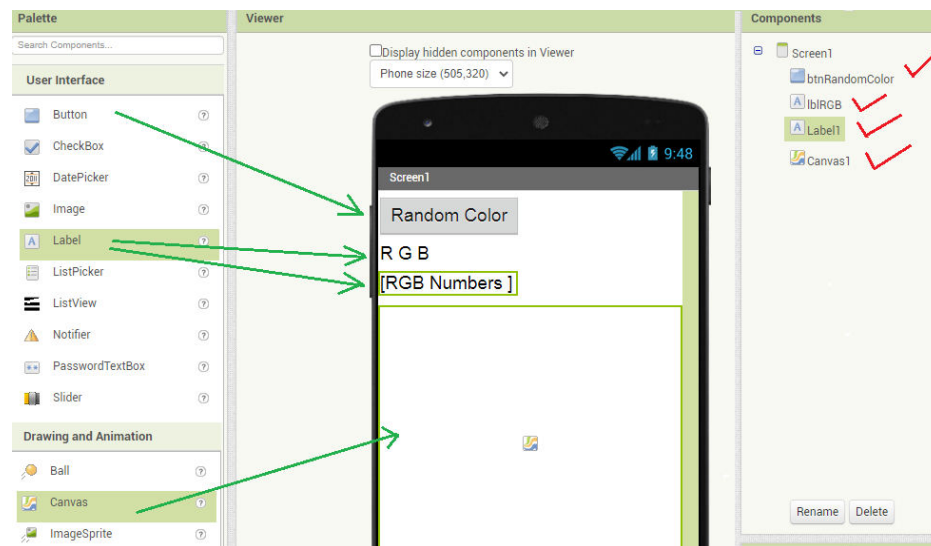
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2. Create an application which generates a random colour on each click

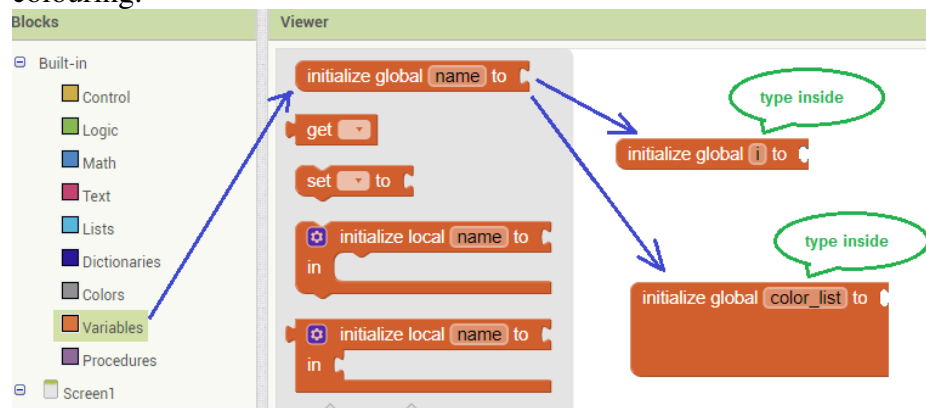
Main Steps:

- Drag Button, 2 labels controls and a canvas.
- Create variables, namely, **i** for indexing and **color_list** (of three elements) for RGB colouring.

Drag Button, 2 labels controls from user Interface pallet (left side) and a canvas from Drawing and Animation pallet. Rename the controls and fill the label with the texts as shown below. Change Height and width of the Canvas1 Fill parent...



Create variables, namely, **i** for indexing and **color_list** (of three elements) for RGB colouring.





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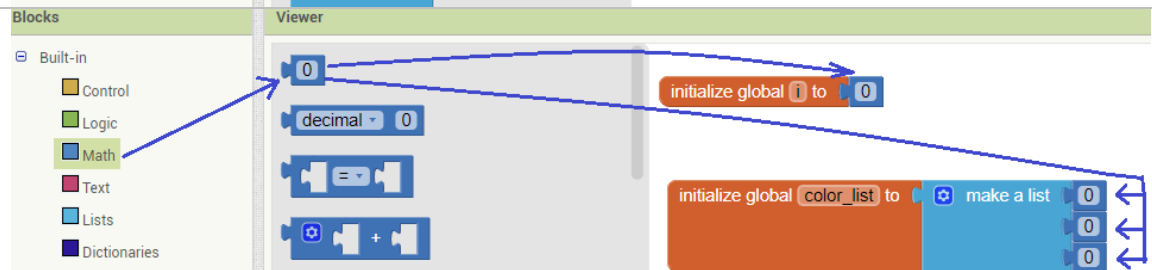
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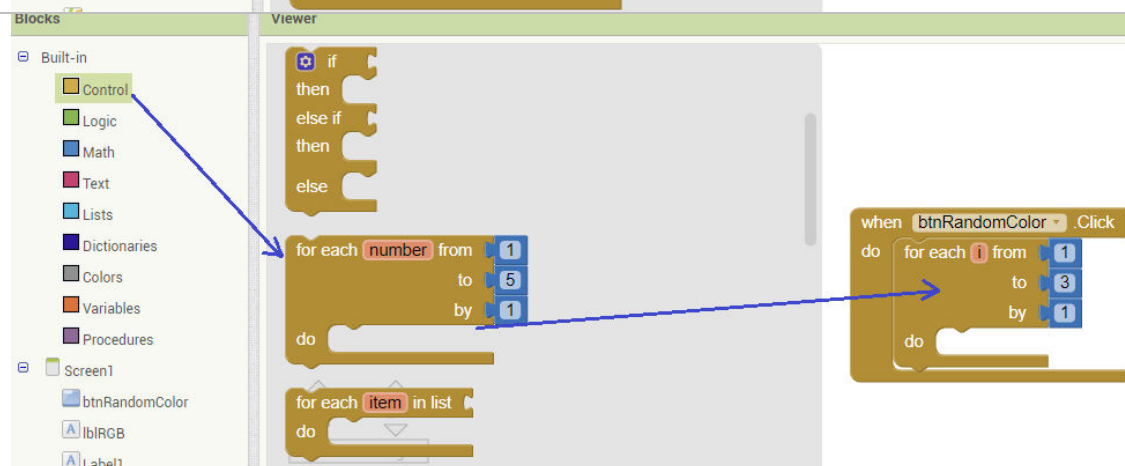
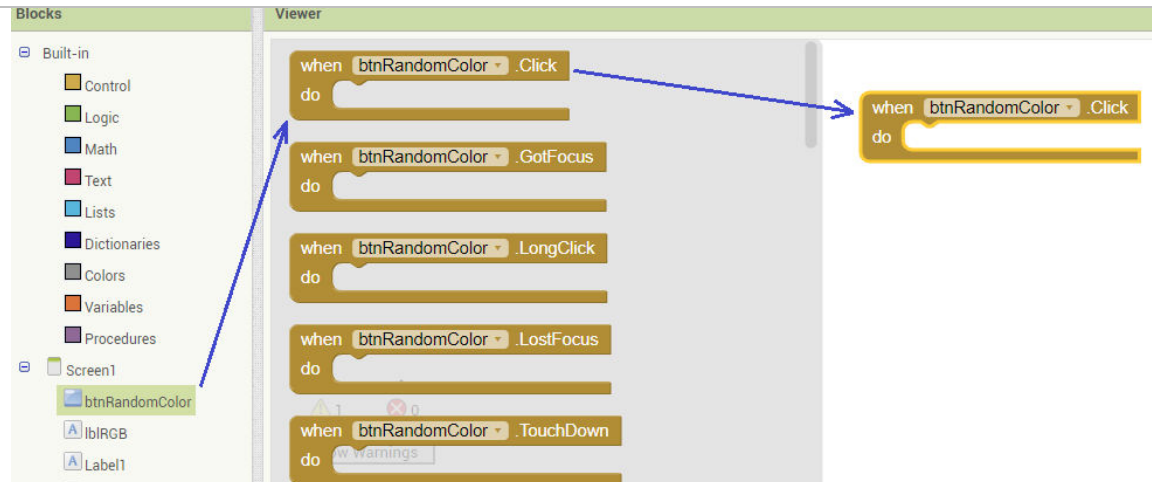
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Color_list is list variable and Initialize them and variable i with value 0 as follows.



Build code blocks when Random Button is clicked:





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<p>Blocks</p> <ul style="list-style-type: none"> Built-in <ul style="list-style-type: none"> Control Logic Math Text Lists Dictionaries Colors Variables Procedures 	<p>Viewer</p> <pre> select list item list index insert list item list index item replace list item list index replacement remove list item list </pre>	<pre> when btnRandomColor .Click do for each i from 1 to 3 by 1 do replace list item list index replacement </pre>
<p>Blocks</p> <ul style="list-style-type: none"> Built-in <ul style="list-style-type: none"> Control Logic Math Text Lists Dictionaries Colors Variables Procedures 	<p>Viewer</p> <pre> initialize global name to get set to initialize local name to in initialize local name to in </pre>	<pre> when btnRandomColor .Click do for each i from 1 to 3 by 1 do replace list item list index replacement get global color_list get i </pre>
<p>Blocks</p> <ul style="list-style-type: none"> Built-in <ul style="list-style-type: none"> Control Logic Math Text Lists Dictionaries Colors Variables Procedures 	<p>Viewer</p> <pre> bitwise and random integer from 1 to 100 random fraction random set seed to min </pre>	<pre> when btnRandomColor .Click do for each i from 1 to 3 by 1 do replace list item list index replacement get global color_list get i random integer from 0 to 255 </pre>
<p>Blocks</p> <ul style="list-style-type: none"> Built-in <ul style="list-style-type: none"> Control Logic Math Text Lists Dictionaries Colors Variables Procedures Screen1 <ul style="list-style-type: none"> btnRandomColor lblRGB Label1 Canvas1 Any component 	<p>Viewer</p> <pre> call Canvas1 .SetBackgroundPixelColor x y color Canvas1 . BackgroundColor set Canvas1 . BackgroundColor to Canvas1 . BackgroundImage set Canvas1 . BackgroundImage to No available assets set Canvas1 . BackgroundImageBase64 to Canvas1 . ExtendMovesOutsideCanvas set Can </pre>	<pre> when btnRandomColor .Click do for each i from 1 to 3 by 1 do replace list item list index replacement get global color_list get i random integer from 0 to 255 set Canvas1 . BackgroundColor to make color get global color_list set Label1 . Text to get global color_list </pre>
<p>From Color Blocks create</p>	<pre>make color get global color_list</pre>	
<p>From Label1 blocks create</p>	<pre>set Label1 . Text to get global color_list</pre>	
<p>• Run the code in Emulator (or AI Companion.)</p>		



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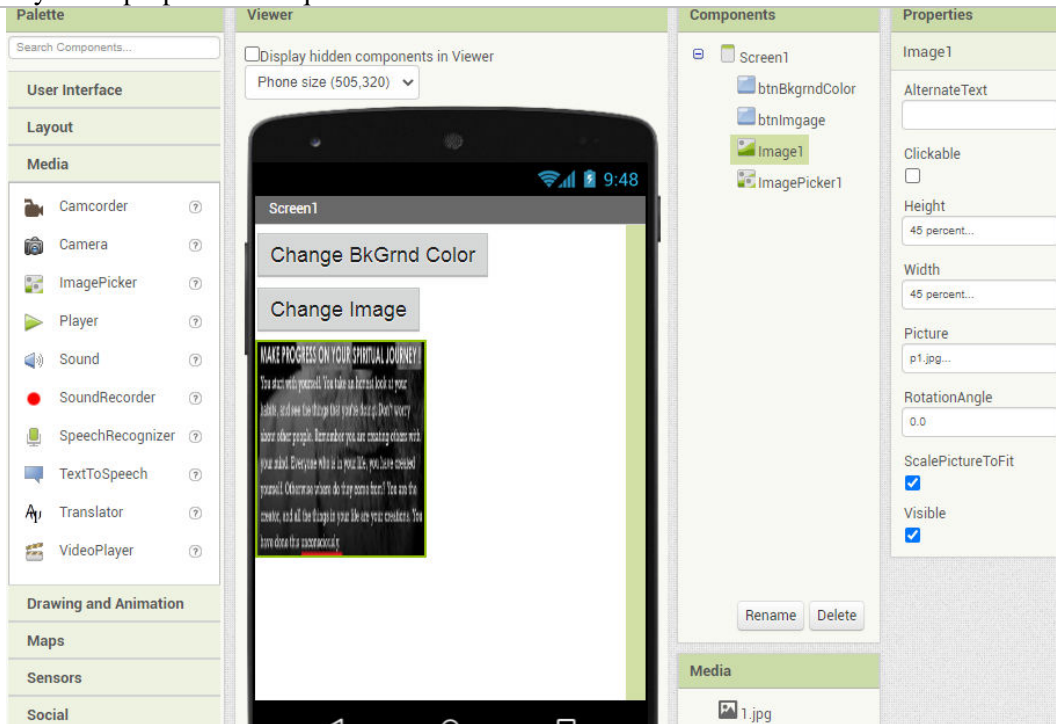
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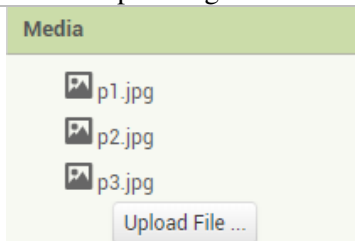
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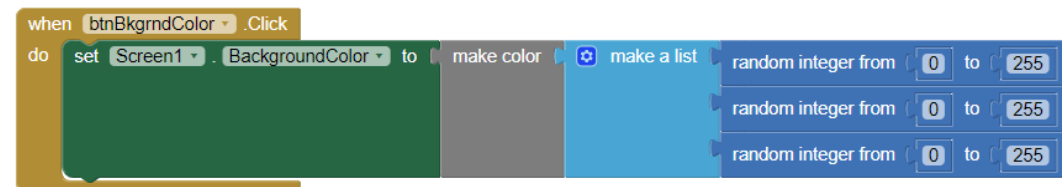
- 3 Implement an application to change the background colour and image of the screen**
Drag and drop 2 buttons, image control and ImagePicker from pallet. Change their names and any other properties if required.



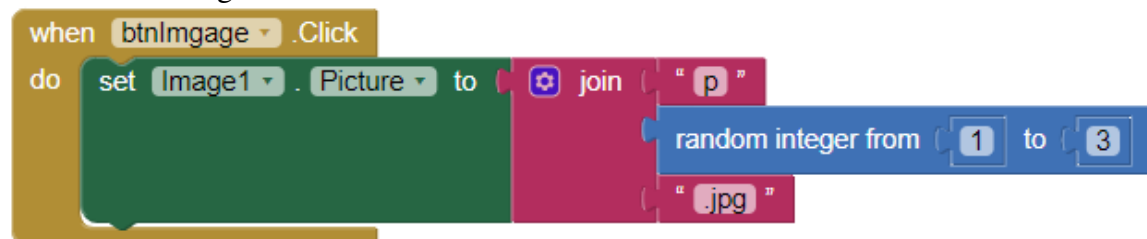
Fill the imagepicker control with the images having their name in some order.
For example images with name such as p1.jpg, p2.jpg, p3.jpg and so on.



Code for btnBkGrndColor



Code for btnImage





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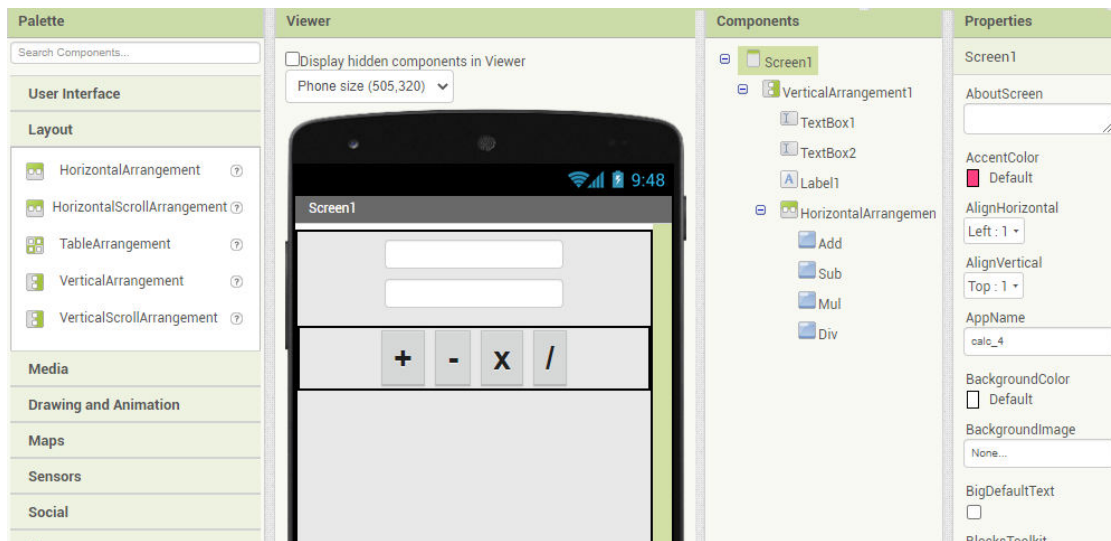
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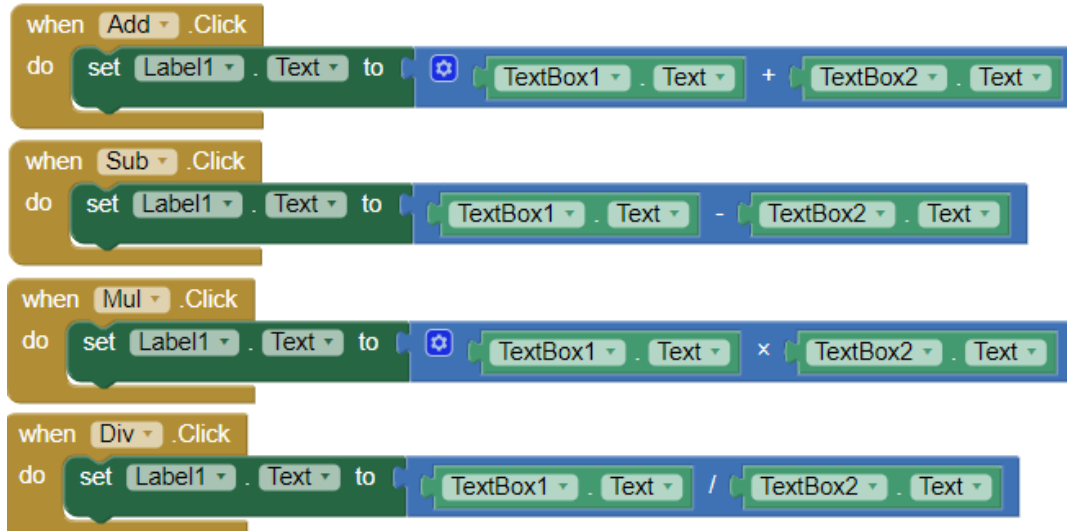
4

Create a simple calculator which can perform basic arithmetic operations like addition, subtraction, multiplication, or division depending upon the user input

Drag and drop 2 textbox (one each for a number), a label (for result), and 4 buttons (for 4 basic operators)



Code for each button as shown below:





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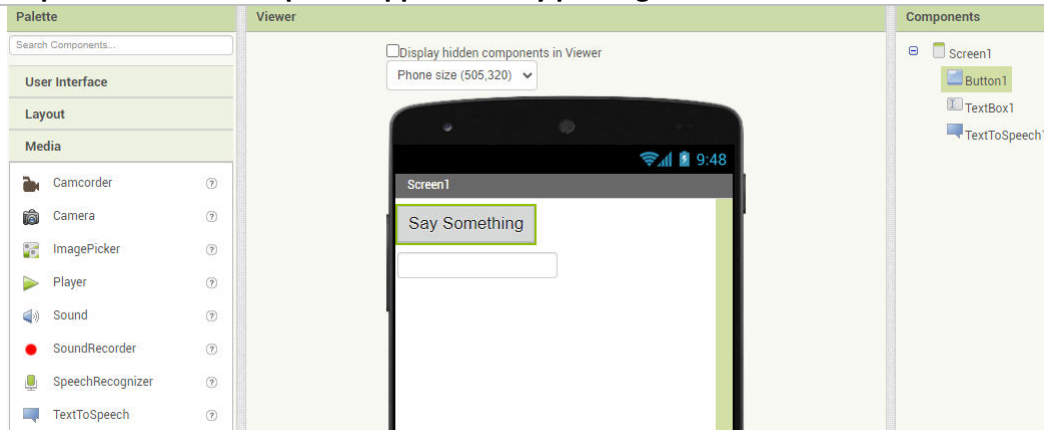
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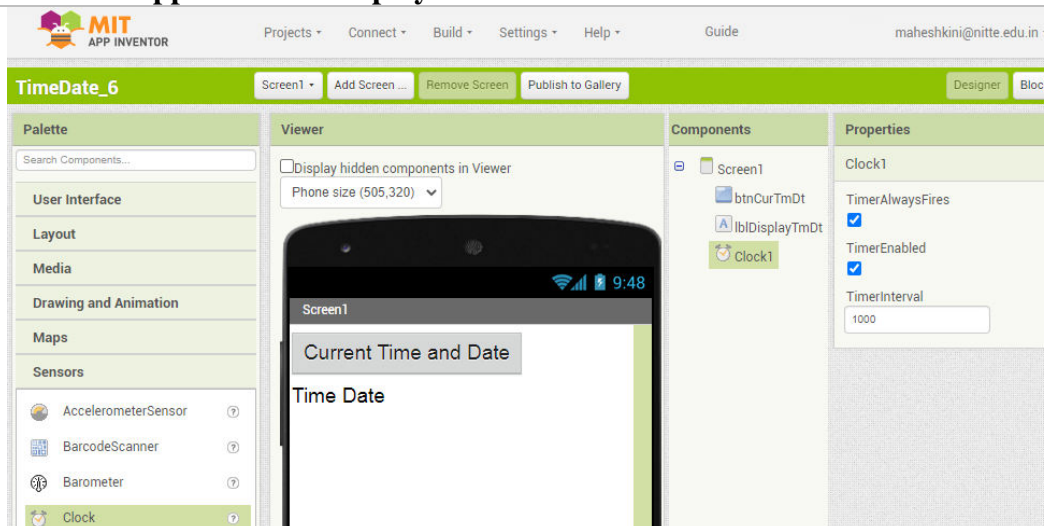
5 Implement a text-to-speech application by passing text from the user



Code as follows:

```
when Button1.Click
do
  call TextToSpeech1.Speak
  message TextBox1.Text
```

6 Write an application to display the current time and date



Code as follows:

```
when btnCurTmDt.Click
do
  set lblDisplayTmDt.Text to call Clock1.FormatDateTime
  instant call Clock1.Now
  pattern "MM/dd/yyyy hh:mm:ss a"
```



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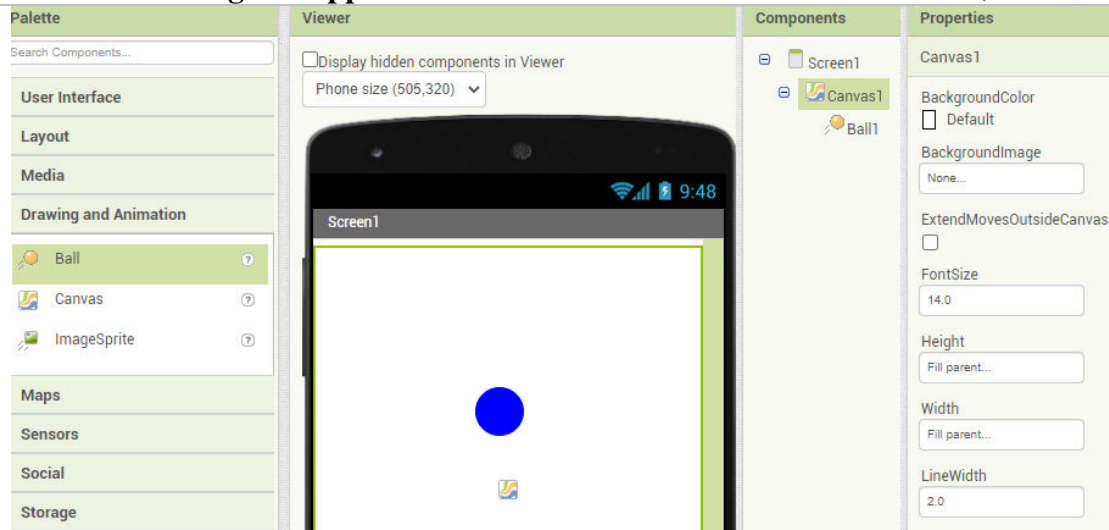
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7 Build a bouncing ball app or make a ball bounce around on the screen (on a Canvas)



```
when Ball1 .Flung
  x y speed heading xvel yvel
do
  set Ball1 . Heading to get heading
  set Ball1 . Speed to get speed
```

```
when Ball1 .EdgeReached
  edge
do
  call Ball1 .Bounce
  edge get edge
```



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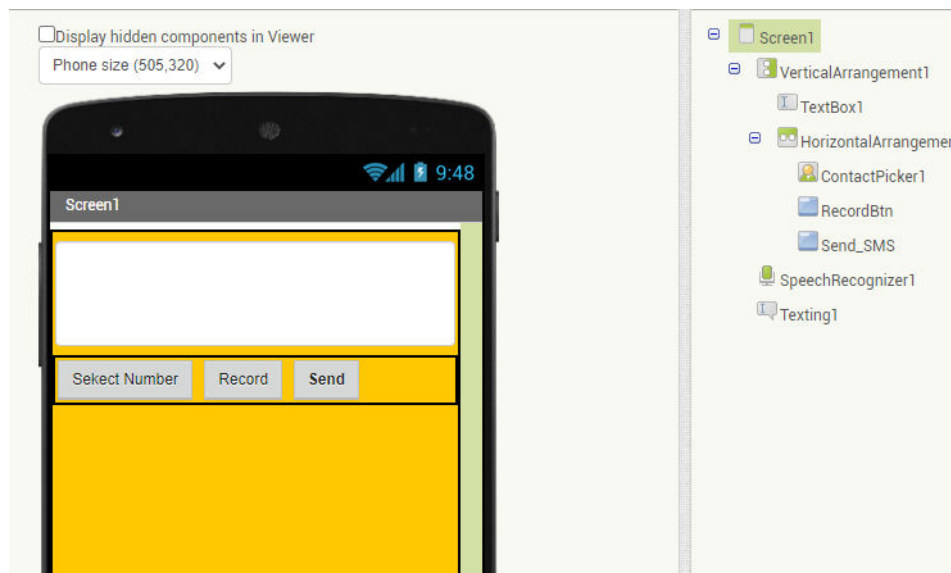
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8 Write an application to send SMS



```
when ContactPicker1 .AfterPicking
do set Texting1 . PhoneNumber to ContactPicker1 . PhoneNumber

when Send_SMS .Click
do set Texting1 . Message to TextBox1 . Text
   call Texting1 .SendMessage

when RecordBtn .Click
do call SpeechRecognizer1 .GetText

when SpeechRecognizer1 .AfterGettingText
result partial
do set TextBox1 . Text to get result
```