

プログラミング概論

第7回 2024年11月6日

App Inventorによる
Androidアプリ開発の実践
(1) 数あてゲーム

今回の授業内容

- 数あてゲームの仕組み
- 二分探索法とは
- 数あてゲームを作る
- 数あてゲームを拡張する
- 数あてゲームのゲーム性を向上

数あてゲームの仕組み

数あてゲームのルール

- コンピュータが用意した数をプレイヤーが当てる
- 当てる数は1～100までの乱数（整数）で、アプリを起動するごとに異なる値になる
- プレイヤーが入力した値と正解を比較し、入力した値の方が小さければ「小さいです」大きければ「大きいです」とヒントが表示される
- 正解するまで何度でもチャレンジできる

数あてゲームの仕組み

正解 ← 乱数 (1~100)

ボタンをクリックしたとき

もし プレイヤーが入力した値 < 正解 なら

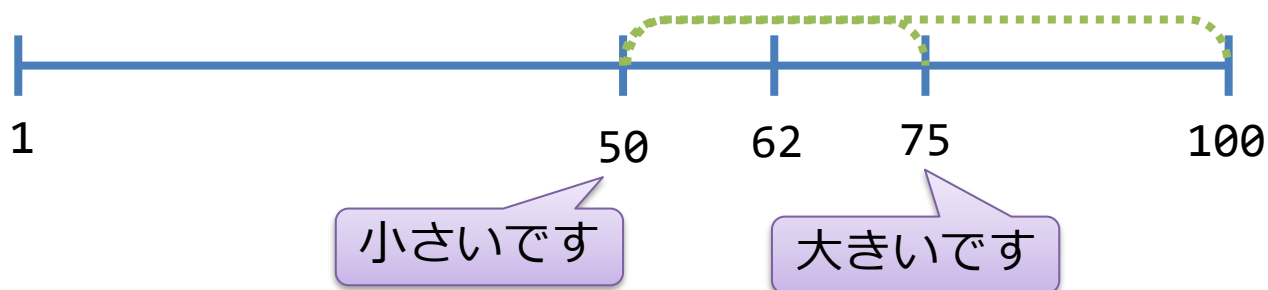
「小さいです」と表示

ではなくもし プレイヤーが入力した値 > 正解 なら

「大きいです」と表示

でなければ

「正解です」と表示



二分探索法とは

二分探索法とは

- 今回のゲームにおいて、（理論上）何回試せば正解にたどりつくはずでしょうか。



- データがあらかじめ順番に並んでいるときは「調べる範囲を半分に絞りながら探していく方法」が使える。これを「**二分探索法**」という。

どんなときに使う？

- 答案用紙の束（学生番号順になっている）から特定の学生の答案を探し出すとき
- 日付順に積み重なっている書類の山からとある日の会議資料を探し出すとき

データが並んでいない場合

- 順番に並べることを「ソート」という
- ソートされていないならば（順番に並んでいなければ）先頭から順に探していくしかない。これを「**線形探索法**」という。
- 線形探索ではデータ数が100のとき最大の（最悪の）繰り返しの回数は100回、10000のときは10000回、100000のときは100000回。
- 二分探索では？

数あてゲームを作る

新しいプロジェクトをつくる

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the text "新しいプロジェクトをつくる" (Create a new project). Below the banner, the browser address bar shows the URL "aia.appinventor.mit.edu/#5275968697597952". The main navigation bar includes "MIT APP INVENTOR", "Projects", "Connect", "Build", "Settings", "Help", "My Projects", "View Trash", "Guide", "Report an Issue", "English", and "akiyolab6@gmail.com". A red arrow labeled "1" points to the "Projects" menu. A second red arrow labeled "2" points to the "My projects" dropdown menu, which is open and displays the following options:

- Start new project
- Import project (.aia) from my computer ...
- Import project (.aia) from a repository ...
- Move To Trash
- Save project
- Save project as ...
- Checkpoint
- Project Properties...
- Export selected project (.aia) to my computer
- Export all projects
- Import keystore
- Export keystore
- Delete keystore

The background of the interface shows a mobile app preview with a yellow tag that says "おめでとう" (Congratulations), a component palette on the left, and a properties panel on the right.

新しいプロジェクトをつくる

ai2.appinventor.mit.edu/#5275968697597952

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab6@gmail.com

Projects New project New folder Move... Move To Trash View Trash Login to Gallery Publish to Gallery

<input type="checkbox"/> Name	Date Created	Date Modified ▼
<input type="checkbox"/> Omikuji	Oct 29, 2024, 11:18:34 PM	Oct 30, 2024, 9:31:11 AM

[Privacy Policy and Terms of Use](#) [Accessibility: accessibility.mit.edu](#)

プロジェクトに名前をつける

ai2.appinventor.mit.edu/#5275968697597952


MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab6@gmail.com

Projects New project New Folder Move... Move To Trash View Trash Login to Gallery Publish to Gallery

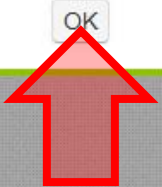
Projects	Name	Date Created	Date Modified
<input type="checkbox"/>	Omikuji	Oct 29, 2024, 11:18:34 PM	Oct 30, 2024, 9:31:11 AM

Create new App Inventor project

Project name: 

Toolkit: ?

Theme: ? **Classic**



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MIT App Inventor

ai2.appinventor.mit.edu/#5785722125615104

MIT APP INVENTOR

Projects Connect Build Settings Help Saving ... View Trash Guide Report an Issue English akiyolab6@gmail.com

Kazuete

Screen1 Add Screen ... Remove Screen Project Properties Publish to Gallery Designer Blocks

Palette

Search Components...

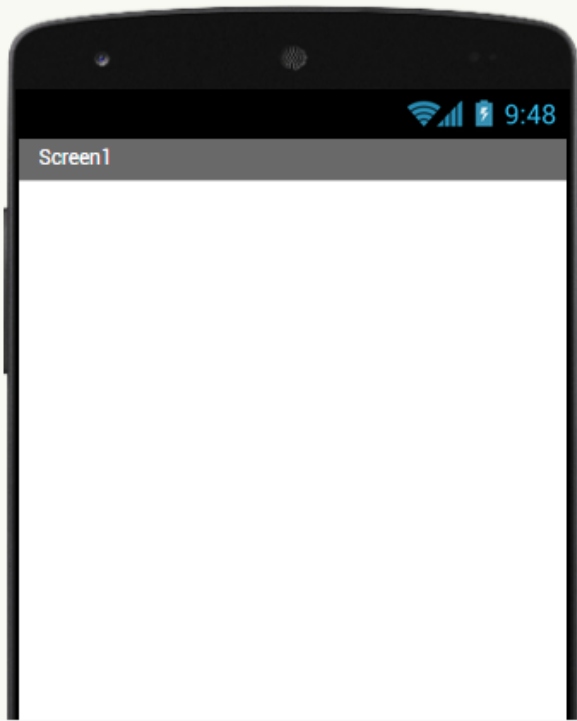
User Interface

- Button
- CheckBox
- CircularProgress
- DatePicker
- Image
- Label
- LinearProgress
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider

Viewer

Display hidden components in Viewer

Phone size (320 x 505)



All Components

- Screen1

Properties

Screen1 (Screen)

Appearance

- AboutScreen
- AlignHorizontal: Left : 1
- AlignVertical: Top : 1
- BackgroundColor: Default
- BackgroundImage: None...
- BigDefaultText
- CloseScreenAnimation: Default
- HighContrast
- OpenScreenAnimation

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アプリのタイトルを変える

ai2.appinventor.mit.edu/#5785722125615104

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab6@gmail.com

- Label
- LinearProgress
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider
- Spinner
- Switch
- TextBox
- TimePicker
- WebViewer

Layout

Media

Drawing and Animation

Maps

BackgroundColor

BackgroundImage

BigDefaultText

CloseScreenAnimation

HighContrast

OpenScreenAnimation

ScreenOrientation

Scrollable

ShowStatusBar

Title

TitleVisible

数当てゲーム

「数当てゲーム」

Privacy Policy and Terms of Use Accessibility: accessibility.mit.edu

ラベル・テキストボックス・ボタンを配置

The screenshot displays the MIT App Inventor web interface. The central canvas shows a mobile app design for a phone (320 x 505) titled "数当てゲーム". The app contains a text input field, a button, and two labels. Annotations 1 through 4 are placed on the interface:

- 1**: Points to the "Label" component in the "User Interface" palette.
- 2**: Points to the "TextBox" component in the "User Interface" palette.
- 3**: Points to the "Button" component in the "User Interface" palette.
- 4**: Points to the "Text for Label2" text on the mobile app canvas.

The right-hand side of the interface shows the "Appearance" properties for the selected "Label2" component, including options for BackgroundColor, FontBold, FontItalic, FontSize (14.0), FontTypeface (default...), HTMLFormat, HasMargins (checked), Height (Automatic...), Width (Automatic...), Text (Text for Label2), and TextAlignment.

ラベル1のTextにメッセージを入力

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the title "ラベル1のTextにメッセージを入力". Below it, the browser address bar shows the URL "ai2.appinventor.mit.edu/#5785722125615104". The interface includes a top navigation bar with options like "Projects", "Connect", "Build", "Settings", "Help", "My Projects", "View Trash", "Guide", "Report an Issue", "English", and "akiyolab6@gmail.com".

The main workspace is divided into three panels:

- User Interface:** A list of components on the left, with "Label" selected and highlighted in green.
- Design View:** A central preview of a mobile phone screen. The screen displays a game titled "数当てゲーム" (Number Guessing Game) with a text box containing "1~100までの数字を入力してください" (Please enter a number between 1 and 100). Below the text box are two buttons labeled "Text for Button1" and "Text for Label2".
- Properties Panel:** On the right, the "Appearance" properties for the selected "Label1" are shown. A red arrow points to "Label1" in the component list. The "Text" property is highlighted with a red box and contains the same message as the text box in the design view: "1~100までの数字を入力してください".

At the bottom of the interface, there are links for "Privacy Policy and Terms of Use" and "Accessibility: accessibility.mit.edu".

ボタンのTextも変更

The screenshot displays the MIT App Inventor web interface. At the top, a blue banner contains the title "ボタンのTextも変更". Below it, the browser address bar shows the URL "ai2.appinventor.mit.edu/#5785722125615104". The interface includes a top navigation bar with options like "Projects", "Connect", "Build", "Settings", "Help", "My Projects", "View Trash", "Guide", "Report an Issue", "English", and "akiyolab6@gmail.com". On the left, a component palette lists various widgets, with "Label" highlighted. The central canvas shows a mobile app preview with a button labeled "OK" and a label below it with the text "Text for Label2". On the right, the "Properties" panel for the selected button is visible, with a red arrow pointing to the "Button1" component in the canvas. In the "Properties" panel, the "Text" property is highlighted with a red box and contains the value "OK".

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab6@gmail.com

Button1

Label2

数当てゲーム

1~100までの数字を入力してください

OK

Text for Label2

FontBold

FontItalic

FontSize

14.0

FontTypeface

default...

Height

Automatic...

Width

Automatic...

Image

None...

Shape

default

ShowFeedback

Text

OK

TextAlignment

Rename Delete

Media

Upload File ...

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ラベル2のTextも変更

ai2.appinventor.mit.edu/#5785722125615104

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab6@gmail.com

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

数当てゲーム
1~100までの数字を入力してください
OK
判定結果

Button1
Label2

FontBold
FontItalic
FontSize
14.0
FontTypeface
default...
HTMLFormat
HasMargins
Height
Automatic...
Width
Automatic...
Text
判定結果
TextAlignment
left: 0
TextColor

Rename Delete

Media
Upload File ...

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「ブロックエディタ」を起動する

The screenshot displays the MIT App Inventor web interface. At the top, a blue banner contains the title 「ブロックエディタ」を起動する. Below the banner is the browser address bar showing the URL ai2.appinventor.mit.edu/#5785722125615104. The main interface is divided into several sections:

- Navigation Bar:** Includes MIT APP INVENTOR logo, Project, Connect, Build, Settings, Help, My Projects, View Trash, Guide, Report an Issue, English, and a user profile (akiyolab6@gmail.com).
- Project Bar:** Shows the project name 'Kazuate' and buttons for Screen1, Add Screen..., Remove Screen, Project Properties, and Publish to Gallery. A red arrow points to the 'Blocks' button on the right.
- Palettes:**
 - User Interface:** Lists various UI components like Button, CheckBox, CircularProgress, DatePicker, Image, Label (highlighted), LinearProgress, ListPicker, ListView, Notifier, PasswordTextBox, and Slider.
 - All Components:** Shows a tree view of the current screen: Screen1 containing Label1, TextBox1, Button1, and Label2 (highlighted).
- Viewer:** Displays a mobile phone mockup with the following content:
 - Header: 数当てゲーム
 - Text: 1~100までの数字を入力してください
 - Input: A text box.
 - Button: OK
 - Label: 判定結果 (highlighted with a yellow box)
- Properties:** Shows the properties for the selected 'Label2 (Label)' component, including Appearance settings like BackgroundColor, FontBold, FontItalic, FontSize (14.0), FontTypeface (default...), HTMLFormat, HasMargins (checked), Height (Automatic...), and Width.

At the bottom of the interface, there are links for Privacy Policy and Terms of Use, and Accessibility: accessibility.mit.edu.

正解を入れるための変数ansを作成する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

initialize global name to → initialize global name to

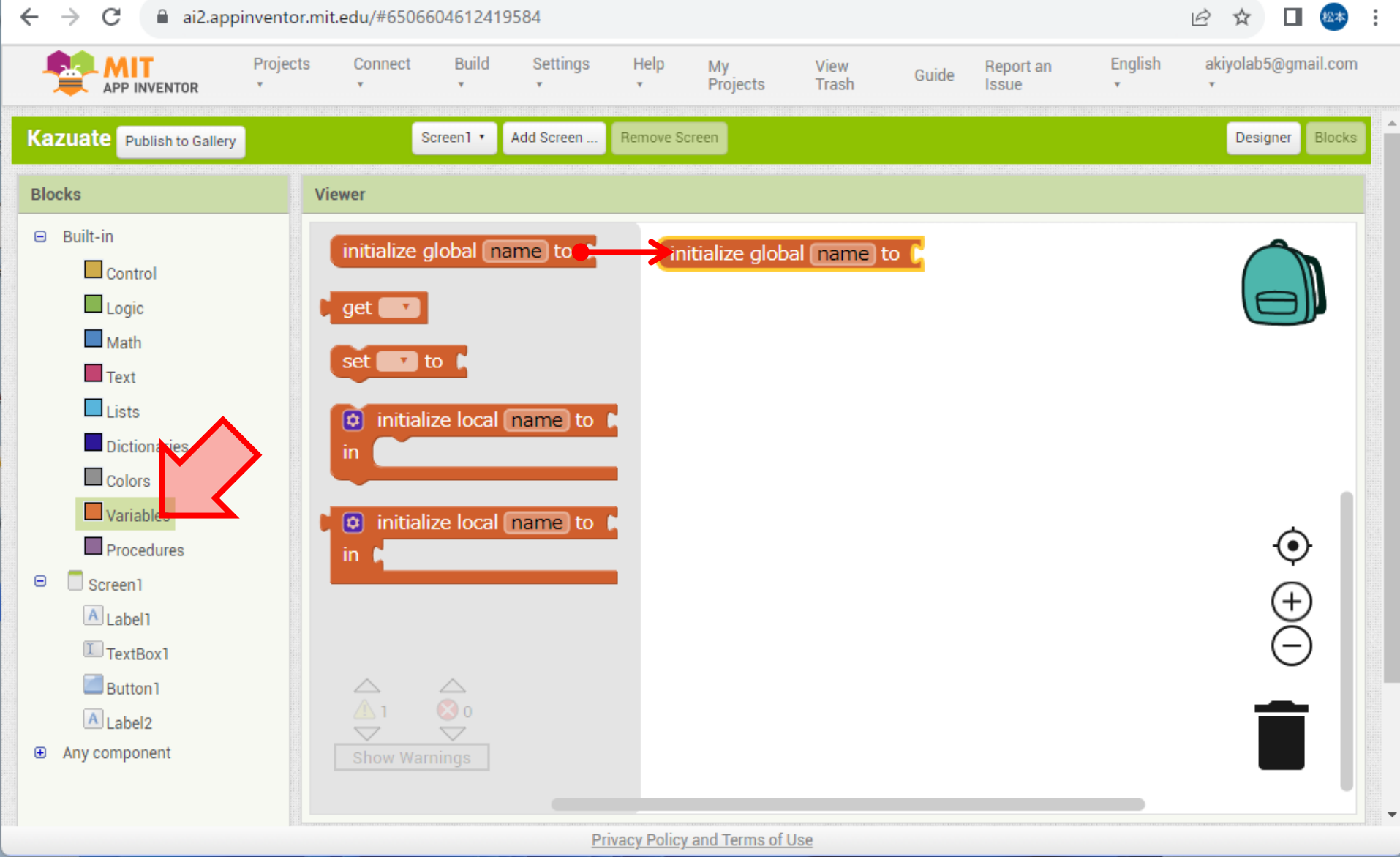
get

set to

initialize local name to in

initialize local name to in

Show Warnings



正解を入れるための変数ansを作成する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

initialize global name to

initialize global ans to

get

set to

initialize local name to in

initialize local name to in

Show Warnings

「ans」と入力

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the title '正解を入れるための変数ansを作成する'. Below it, the browser address bar shows the URL 'ai2.appinventor.mit.edu/#6506604612419584'. The interface includes a navigation bar with 'Kazuate', 'Publish to Gallery', 'Screen1', 'Add Screen...', and 'Remove Screen'. The main workspace is divided into 'Blocks' and 'Viewer'. The 'Blocks' panel on the left shows a tree view with 'Built-in' and 'Screen1' categories. The 'Viewer' panel on the right shows a sequence of code blocks: 'initialize global name to', 'initialize global ans to', 'get', 'set to', 'initialize local name to in', and another 'initialize local name to in'. A blue dashed arrow points from the text '「ans」と入力' to the 'ans' field in the 'initialize global ans to' block. A teal backpack icon is visible in the top right corner of the viewer area. At the bottom, there is a 'Show Warnings' button and a 'Privacy Policy and Terms of Use' link.

変数ansに正解の乱数をセットする

ai2.appinventor.mit.edu/#6506604612419584



Projects

Connect

Build

Settings

Help

My Projects

View Trash

Guide

Report an Issue

English

akiyolab5@gmail.com

Kazuate Publish to Gallery

Screen1

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Built-in

Control

Logic

Math

Text

Lists

Dictionaries

Colors

Variables

Procedures

Screen1

Label1

TextBox1

Button1

Label2

Any component

Viewer

bitwise and

random integer from 1 to 100

random fraction

random set seed to

min

arithmetic mean (average)

mode of a list

square root

absolute

initialize global ans to random integer from 1 to 100



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ボタンがクリックされたら

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the title "ボタンがクリックされたら". Below it is a browser address bar with the URL "ai2.appinventor.mit.edu/#6506604612419584". The navigation bar includes "Projects", "Connect", "Build", "Settings", "Help", "My Projects", "View Trash", "Guide", "Report an Issue", "English", and "akiyolab5@gmail.com". The main workspace is divided into three sections: "Blocks", "Viewer", and "Designer".

In the "Blocks" section, the "Built-in" category is expanded, and "Button1" is highlighted with a red arrow. In the "Viewer" section, a "when Button1 .Click" block is selected, and a red arrow points to its "do" block. The "do" block contains an "initialize global ans to random integer from 1 to 100" block. The "Designer" section shows a simple app interface with a teal backpack icon and a trash can icon.

MIT APP INVENTOR

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

when Button1 .Click do

when Button1 .GotFocus do

initialize global ans to random integer from 1 to 100

when Button1 .LongClick do

when Button1 .LostFocus do

when Button1 .TouchDown do

when Button1 .TouchUp do

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プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

initialize global ans to random integer from 1 to 100

when Button1.Click do

- if then else if then else

for each number from 1 to 5 by 1 do

プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

decimal 0

=

initialize global ans to random integer from 1 to 100

when Button1 .Click do

- if
- then
- else if
- then
- else

bitwise and

プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584



Projects

Connect

Build

Settings

Help

My Projects

View Trash

Guide

Report an Issue

English

akiyolab5@gmail.com

Kazuate Publish to Gallery

Screen1

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Viewer

Built-in

Control

Logic

Math

Text

Lists

Dictionaries

Colors

Variables

Procedures

Screen1

Label1

TextBox1

Button1

Label2

Any component

initialize global ans to random integer from 1 to 100

when Button1 .Click

do

if

then

else if

then

else

=

≠

<

≤

>

≥

「<」に変更



2



0

Show Warnings

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プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

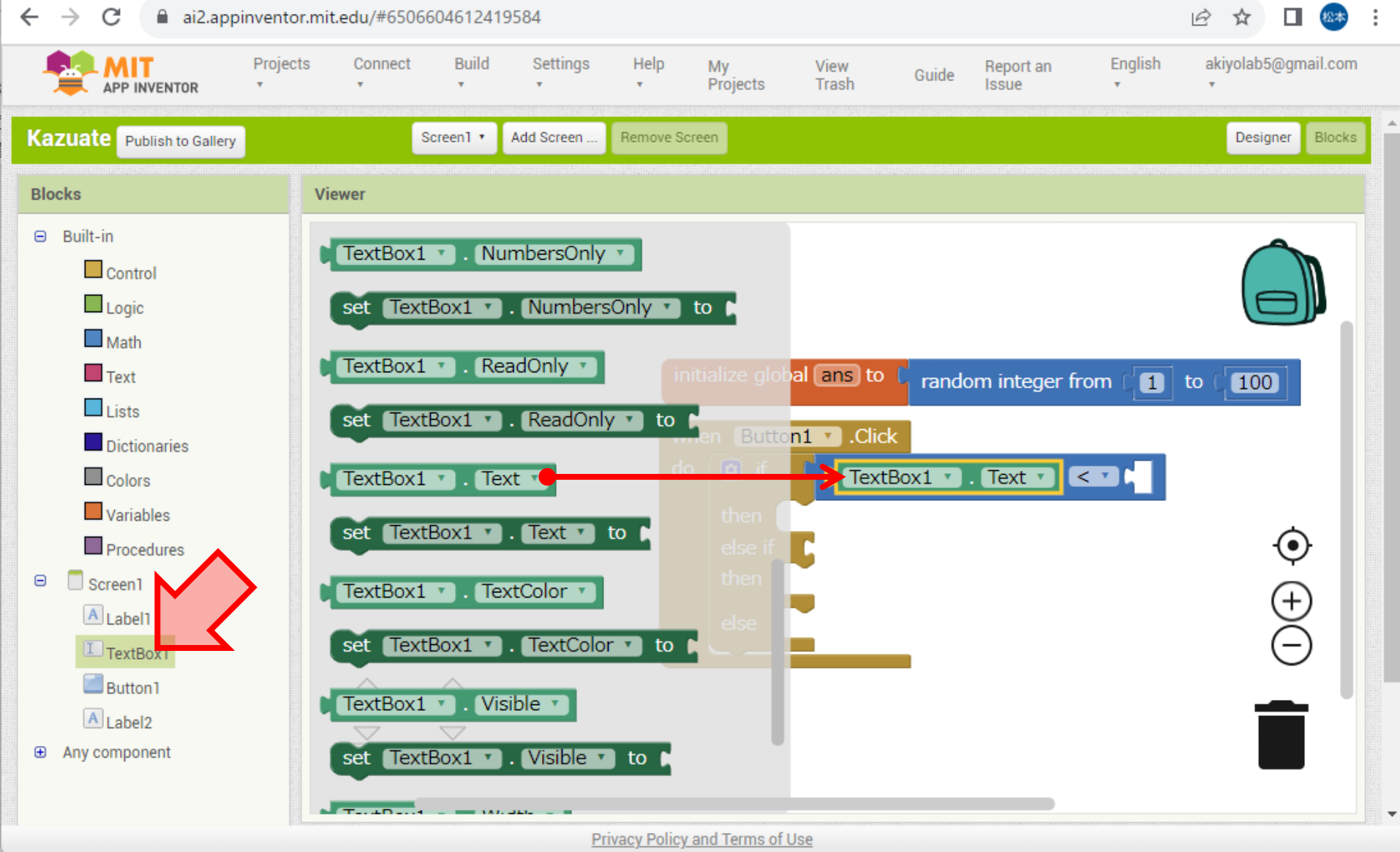
Kazuate Publish to Gallery Screen1 Add Screen... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

```
TextBox1 . NumbersOnly
set TextBox1 . NumbersOnly to
TextBox1 . ReadOnly
set TextBox1 . ReadOnly to
initialize global ans to random integer from 1 to 100
when Button1 . Click
do if TextBox1 . Text <
then
else if
then
else
set TextBox1 . Text to
TextBox1 . TextColor
set TextBox1 . TextColor to
TextBox1 . Visible
set TextBox1 . Visible to
```



プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

initialize global name to

get

set to

initialize local name to in

initialize local name to in

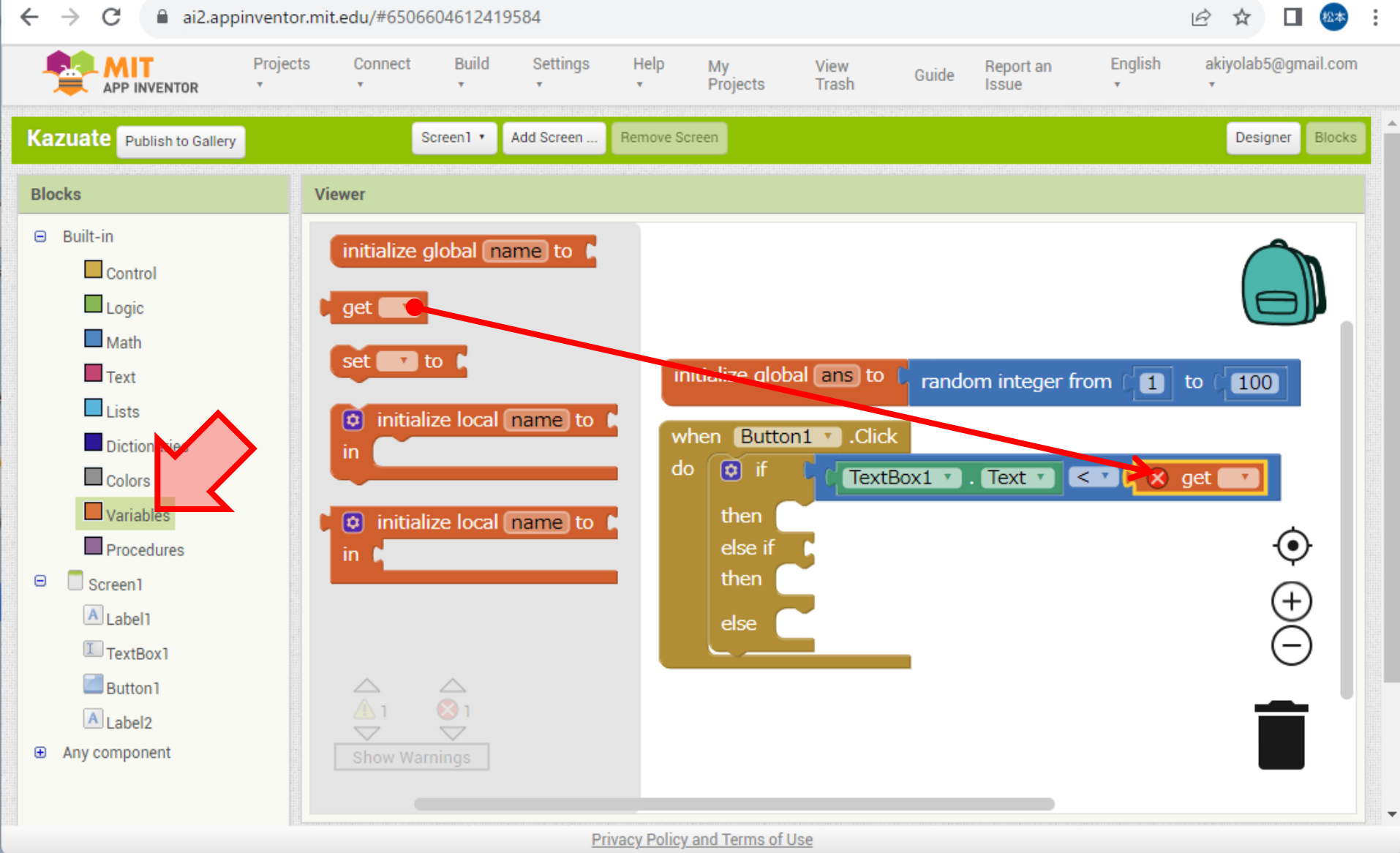
when Button1 .Click do

- if
- then
- else if
- then
- else

random integer from 1 to 100

TextBox1 . Text < get

Show Warnings



プレイヤーが入力した値と正解を比較する

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the title "プレイヤーが入力した値と正解を比較する". Below it, the browser address bar shows "ai2.appinventor.mit.edu/#6506604612419584". The interface includes a navigation bar with "Kazuate", "Publish to Gallery", "Screen1", "Add Screen...", "Remove Screen", "Designer", and "Blocks".

The left sidebar shows a "Blocks" panel with categories: Built-in, Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures. Under "Variables", a variable named "ans" is visible.

The main "Viewer" area displays the following code blocks:

- initialize global ans to** random integer from 1 to 100
- when Button1 .Click** do
 - if** TextBox1 . Text < get global ans
 - then
 - else if
 - then
 - else

「ans」
に変更

比較した結果を表示する

ai2.appinventor.mit.edu/#6506604612419584

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

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

```
set Label2 . HasMargins to  
Label2 . Height  
set Label2 . Height to  
set Label2 . HeightPercent to  
initialize global ans to random integer from 1 to 100  
when Button1 . Click  
do  
  TextBox1 . Text < get global ans  
  set Label2 . Text to  
  Label2 . TextColor  
  set Label2 . TextColor to  
  Label2 . Visible  
  set Label2 . Visible to  
  Label2 . Width
```


プレイヤーが入力した値と正解を比較する

ai2.appinventor.mit.edu/#6506604612419584



Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

Kazuate Publish to Gallery

Screen1 Add Screen... Remove Screen

Designer Blocks

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

```
initialize global ans to random integer from 1 to 100
when Button1 . Click
do
  if TextBox1 . Text < get global ans
  then set Label2 . Text to ""
  else if
  then
  else
```

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比較した結果を表示する

The screenshot shows the MIT App Inventor interface. The top navigation bar includes the MIT App Inventor logo, a 'Publish to Gallery' button, and buttons for 'Screen1', 'Add Screen...', and 'Remove Screen'. The right side of the navigation bar has 'Designer' and 'Blocks' buttons. The left sidebar shows a 'Blocks' palette with categories like Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures. Under 'Text', there are components for Label1, TextBox1, Button1, and Label2. The main 'Viewer' area displays a code block with the following logic:

```
initialize global ans to random integer from 1 to 100
when Button1.Click
do
  if TextBox1.Text < get global ans
  then set Label2.Text to "小さいです"
```

A blue dashed arrow points from the Japanese text 「小さいです」と入力 (Input "small") to the text value in the code block. At the bottom of the page, there is a 'Show Warnings' button and a 'Privacy Policy and Terms of Use' link.

同じようなブロックが必要なので増殖する

ai2.appinventor.mit.edu/#6506604612419584



Projects

Connect

Build

Settings

Help

My Projects

View Trash

Guide

Report an Issue

English

akiyolab5@gmail.com

Kazuate Publish to Gallery

Screen1

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Viewer

Built-in

Control

Logic

Math

Text

Lists

Dictionaries

Colors

Variables

Procedures

Screen1

Label1

TextBox1

Button1

Label2

Any component



Show Warnings

initialize global ans to random integer from 1 to 100

when Button1 .Click

do if TextBox1 .Text < get global ans

then "小さいです"

else

then

else

Duplicate

Add Comment

External Inputs

Collapse Block

Disable Block

Add to Backpack (0)

Delete 3 Blocks

Download Blocks as PNG

Help

Do It

Privacy Policy and Terms of Use

スライド 6 枚目を参考に完成させる

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the text "スライド 6 枚目を参考に完成させる". Below this is the browser address bar with the URL "ai2.appinventor.mit.edu/#6506604612419584". The interface includes a navigation bar with "Kazuate", "Publish to Gallery", "Screen1", "Add Screen...", and "Remove Screen" buttons. The "Designer" and "Blocks" tabs are visible. On the left, the "Blocks" palette shows categories like Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures. The "Viewer" area displays a code block: "initialize global ans to random integer from 1 to 100". Below it is a "when Button1.Click" block containing an "if" block. The "if" block has two conditions: "TextBox1.Text < get global ans" (then "set Label2.Text to '小さいです'") and "TextBox1.Text > get global ans" (then empty). A blue dashed arrow points to the ">" operator with the text "「>」に変更". The bottom of the interface shows "Show Warnings" and "Privacy Policy and Terms of Use" links.

完成したらビルドする

The screenshot shows the MIT App Inventor web interface. At the top, a blue banner contains the text "完成したらビルドする" (Build after completion). Below this, the browser address bar shows the URL "ai2.appinventor.mit.edu/#6506604612419584". The navigation bar includes "Projects", "Connect", "Build", "Settings", "Help", "My Projects", "View Trash", "Guide", "Report an Issue", "English", and "akiyolab5@gmail.com". The main interface is divided into "Blocks" and "Viewer" sections. The "Blocks" section on the left lists various components like Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures, along with a "Screen1" section containing "Label1", "TextBox1", "Button1", and "Label2". The "Viewer" section on the right displays a visual representation of the app with a backpack icon and a code block. The code block consists of an "initialize global" block setting "ans" to a "random integer from 1 to 100", followed by a "when Button1.Click" event handler. Inside this event handler, there is a "do" block containing an "if" statement: "if TextBox1.Text < get global ans, then set Label2.Text to '小さいです'"; an "else if" statement: "else if TextBox1.Text > get global ans"; and an "else" block. A red arrow points to the "Build" menu, which is open, showing options for "Android App (.apk)" and "Android App Bundle (.aab)". Another red arrow points to the "Help" menu. At the bottom of the interface, there is a "Show Warnings" button and a "Privacy Policy and Terms of Use" link.

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

Kazuate Publish to Gallery Screen Android App (.apk) Android App Bundle (.aab) Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

```
initialize global ans to random integer from 1 to 100
```

```
when Button1.Click do if TextBox1.Text < get global ans then set Label2.Text to "小さいです" else if TextBox1.Text > get global ans then else
```

Show Warnings

Privacy Policy and Terms of Use

生成されたアプリをPCにダウンロードする

ai2.appinventor.mit.edu/#6506604612419584

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English akiyolab5@gmail.com

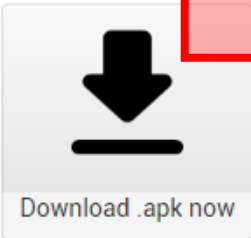
Kazuate Publish to Gallery Screen1 Add Screen... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Dictionaries
 - Colors
 - Variables
 - Procedures
- Screen1
 - Label1
 - TextBox1
 - Button1
 - Label2
- Any component

Viewer

Android App for Kazuate



Download .apk now

Click the button to download the app, right-click on it to copy a download link, or scan the code with a barcode scanner to install.
Note: this link and barcode are only valid for 2 hours. See [the FAQ](#) for info on how to share your app with others.

Dismiss

Show Warnings

integer from 1 to 100

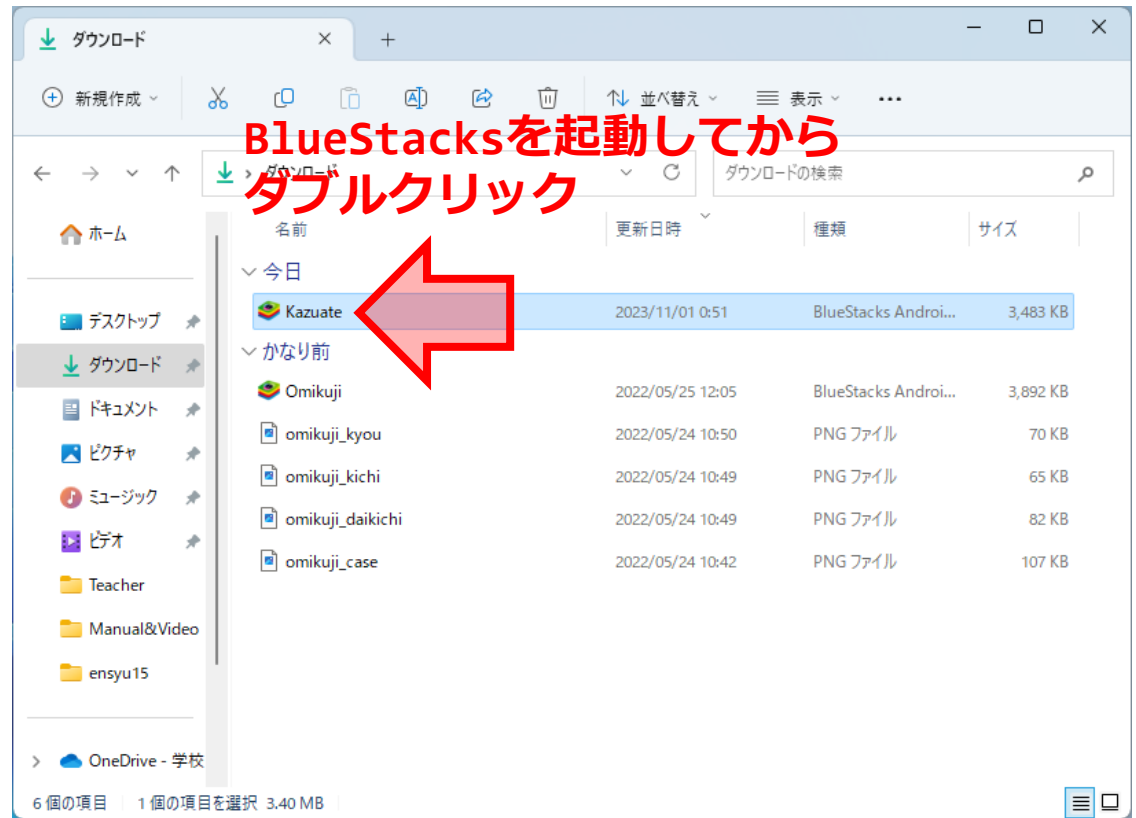
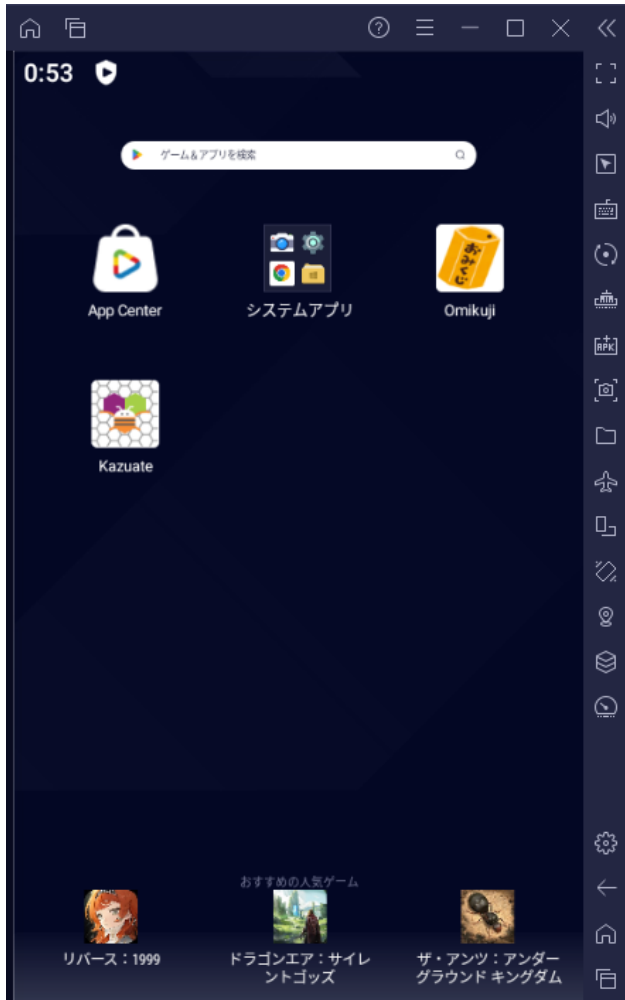
get global ans

小さいです

get global ans

Privacy Policy and Terms of Use

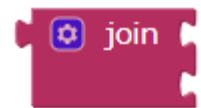
アプリをエミュレータで起動する



数あてゲームを拡張する

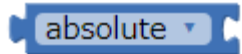
数あてゲームを拡張する

- 当たるまでの入力回数をカウントし、正解したときに「○回で正解」と表示されるようにする
 - 変数countを作る
 - ボタンがクリックされるたびにcountに1を足す
 - ヒント：「1を足す」やり方は3回目の授業を思い出す
 - 正解したときには変数countと"回で正解"を連結してlabel2のTextにセットする
 - ヒント：連結にはjoinというブロックを使う
- 正解したときに画像が表示されるようにする（好きな画像で良い）
 - ヒント：画像の入れ方は前回のおみくじを参考にする



数あてゲームのゲーム性を向上

数あてゲームのゲーム性を向上

- 結局7回で正解にたどり着いてしまい面白くないのでルールを以下のように変更する
 - プレイヤーが入力した値と正解を比較し、
差が16以上なら「とおい」、
差が6～15なら「ちかい」、
差が1～5なら「おいしい」と表示されるようにする
 - ヒント：絶対値を求めるブロックabsoluteを使うと良い（使わなくてもできる） 

振り返りを提出

- 16:20になったら作業を終わりにし（まだ作業中であっても一度中断）、manabaの「小テスト」から「振り返り課題」を提出する。
- 本日の振り返り課題は、実行画面のアップロードがあるため、エミュレータで実行した人はPCから、スマホで実行した人はそのスマホからmanabaにアクセスして提出する。
- 振り返り課題を提出したら終わってよい。ただし作業がまだ残っている場合は次週の授業開始前までに終わらせておく。

数あてゲームはどこまでできましたか。(選択必須)

1.1

1. アプリを実行するところまで1度もいかなかった
2. 基本の数あてゲームまでは完成して実行できた(スライド38枚目)
3. 拡張するところまでできた(当たるまでの回数を表示/画像表示)
4. ゲーム性を向上するところまでできた

上の質問で2~4を選択した人は実行画面をアップロードしてください。

1.2 選択されていません

上の質問で1を選択した人は状況を詳しく説明してください。

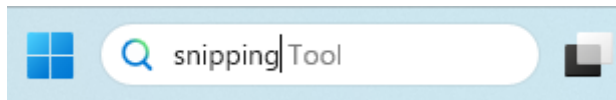
1.3

ここで提出するのはapkファイルではないし、作業中のAppInventorの画面でもない。あくまで「実行画面のスクショ」なので気を付けること。プレイして正解にたどりついた画面でスクショしよう。

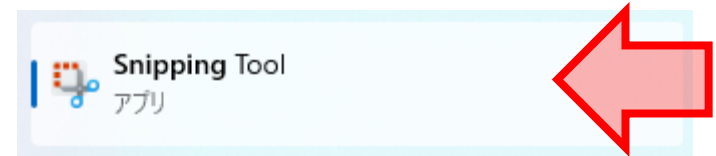
スクリーンショットの撮り方

- PC

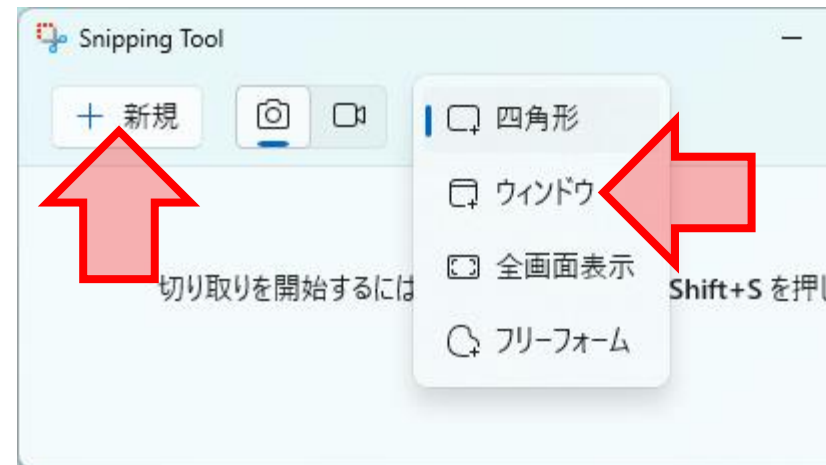
① WindowsアクセサリのSnipping Toolを起動



snippingと入力して検索



② [ウィンドウ] を選択
[+新規] をクリック

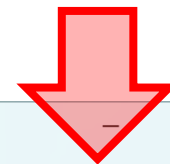


③ BlueStacksの画面をクリック

スクリーンショットの撮り方

- PC

- ④ 保存



A screenshot of the Windows Snipping Tool application. The window title is "Snipping Tool". The menu bar includes "新規" (New), "カメラ" (Camera), "スクリーンショット" (Screenshot), "スクリーンショットの範囲" (Screenshot Area), "スクリーンショットの形状" (Screenshot Shape), "スクリーンショットのサイズ" (Screenshot Size), "スクリーンショットの位置" (Screenshot Position), "スクリーンショットの向き" (Screenshot Orientation), "スクリーンショットの色" (Screenshot Color), "スクリーンショットの背景色" (Screenshot Background Color), "スクリーンショットの透明度" (Screenshot Transparency), "スクリーンショットの描画" (Screenshot Drawing), "スクリーンショットの消去" (Screenshot Erase), "スクリーンショットの塗りつぶし" (Screenshot Fill), "スクリーンショットの拡大縮小" (Screenshot Zoom), "スクリーンショットの移動" (Screenshot Move), "スクリーンショットの削除" (Screenshot Delete), "スクリーンショットの保存" (Screenshot Save), "スクリーンショットの印刷" (Screenshot Print), "スクリーンショットの共有" (Screenshot Share), "スクリーンショットのヘルプ" (Screenshot Help). The main area shows a screenshot of a game window titled "数当てゲーム" (Number Guessing Game). The game text says "1~100までの数字を入力してください" (Please enter a number between 1 and 100). A text input field contains the number "1". Below the input field is an "OK" button. The game text also says "小さいです" (Too small). The Snipping Tool toolbar is visible on the right side of the screenshot.

スクリーンショットの撮り方

- Android端末
 - 「電源ボタン」と「音量小ボタン」同時押し
(シャッター音が鳴るまで数秒間押し続ける)
「フォト」の「ライブラリ」の中に保存される
- iPhone/iPad
 - 電源ボタンとホームボタン (ホームボタンが無い場合はサイドボタンとボリューム大ボタン)
同時押し
「写真」の「アルバム」の中に保存される