

Arbeitsblatt 06 _ Guess The Number

Lösung: chances to win

Chance to win using binary split:

 $P = \frac{1}{100} + \frac{1}{50} + \frac{1}{25} + \frac{1}{12.5} = \dots$

The best is to code that. For example below in Matlab (not compact code, but easy to follow:)

```
clear all, close all,clc
a = 100./2.^[0:1:9]
b = zeros(1,10);
for i=1:10
    if i==1
       b(i) = 1/a(i);
    else
       b(i) = b(i-1) + 1/a(i);
    end
end
```

a =100.000050.000025.000012.50006.25003.12501.56250.78130.39060.1953

The chances to win with 1 till 10 throughs are:

Therefore for a fair game, the user needs to have 6 chances.

Below we show some possible implementations. Not all of them have 6 chances, but this can be easily changed!



Variation-1 : Basic	Display hidden components in Viewer	C Screen1
Characterisitcs:	جيا ۽ 9:48 Screenl Guess the number between 1-100 that i picked	TextBoxEnterValue
 Unlimited number of guesses. User feedback (too high, too low, right) with notifier. Restart button, renew random number to be guessed. 	enter restart	DuttonRestart
		< Rename Delete
initialize global NumberPicked to	*	Media
+ + + + + + + + + + + + + + + + + + + +		Upload File
• initialize global NumberGuessed to [0]		
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when Screen1 .Initialize		+ + + + ·
do set global NumberPicked v to C random	integer from (1 to (100 + +	* * * * *
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when ButtonRestart .Click		+ + + + ·
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+ de set global Number letter i to random	integer from (11 to (100) + +	* * * * * *
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when ButtonEnter .Click + + + + + +	* * * * * * * * * * * * *	* * * * *
	oxEnterValue • . Text •	* * * * *
call Notifier1 .ShowAlert	• • • • • • • • • • • • • • • •	+ + + + ·
notice (💽 join (" The number you guessed is: " + +	+ + + + ·
	get global NumberGuessed •	* * * * *
	umberGuessed v	<u></u>
then 💿 if 🔤 get global NumberGu	iessed 🔽 🧲 🚺 get (global NumberPic	ked 🔻
then call Notifier1 .ShowAlert	* * * * * * * * * * * * *	* * * *
notice	Too low * + + + + + +	+ + + + ·
else if get global NumberGu	iessed 🔪 🏱 🔽 🚽 get global NumberPic	ked 🔻
then call Notifier1 .ShowAlert		
notice	(" Too high " * * * * * * * *	+ + + + -
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else call Notifier1 .ShowAlert		* * * * * *
notice	Congratulations! You got it right! "	* * * * *
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else call Notifier1 .ShowAlert	* * * * * * * * * * * * * *	* * * * * *
notice () " P	Please enter an integer number "	+ + + +
set TextBoxEnterValue T. Text T to	" " *********	+ + + + ·
		+ + + + ·

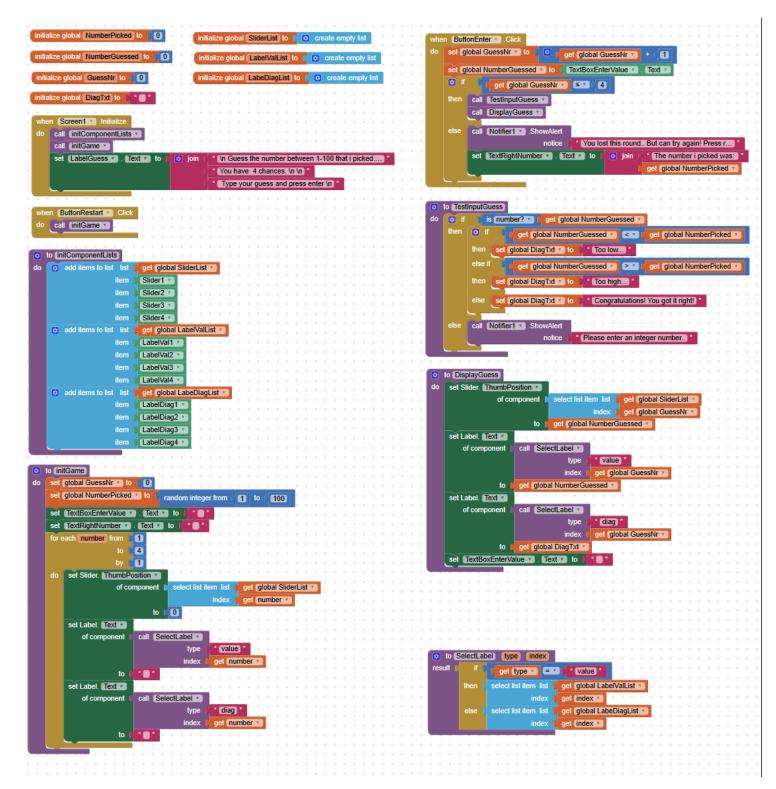
Variation-2: Mid-Complex. Half-Brute-Force with Any-Component

Characteristics:

- Limited and fixed number of guesses. Visualisation with table.
- Initialisation procedure.
- User feedback with slider.
- Labels and sliders blocks are "any-component" blocks, addressed within loop. Interesting to introduce lists and indexing.
- Restart button, renew random number to be guessed.

Display hidden components in Viewer Image: Second state of the second stat	 Screen1 LabelGuess HorizontalArrangement1 TextBoxEnterValue ButtonEnter ButtonRestart TableArrangement1
Guess the Number_mid Guess prompt text comes here enter restart Guess You chose Value And it is Nr.1 0 tbd	ButtonEnter ButtonRestart
Nr.2 I O tbd Nr.4 O tbd	 TextRightNumber Notifier1 LabelGuessNr LabelUChose LabelValue LabelValue LabelNr1 Rene LabelNr2 Media LabelNr3 Slider1 Slider2

Variation 2- Code



Variation 3: Mid-high-Complex. Resizable Lists to select number of guesses

Characteristics:

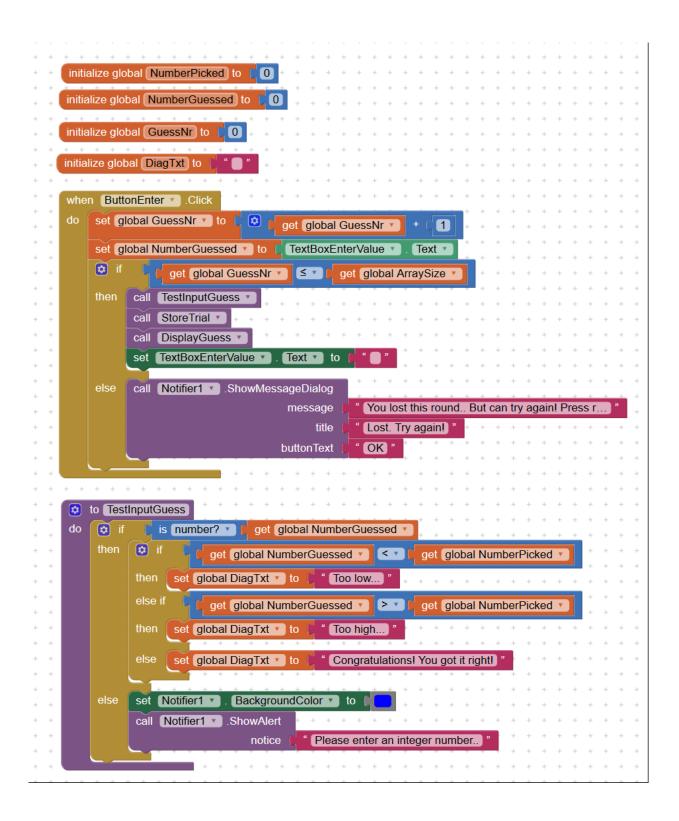
- Number of guesses defined in global constant, and can be easily changed, without requiring any further changes in code.
- Extensive use of procedures. Nice example for "divide and conquer". But since code is flat in AI2, it gets large for a single screen.

Viewer	Components
Display hidden components in Viewer	Screen1
	LabelGuess
	😑 🔤 Horizontal Arrangement 1
چیا 2 9:48 Guess the Number_top	TextBoxEnterValue
Guess prompt text comes here	ButtonEnter
	ButtonRestart
enter restart	TableArrangement1
Trial Your guess And it is	AlbelTrialNr
Your array is displayed here	ALabelUrGuess
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	T txtArrayValues
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Variation 3 : Code Part 1/3

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Variation 3 : Code Part 2/3



Variation 3 : Code Part 3/3

