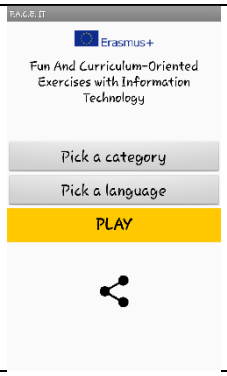
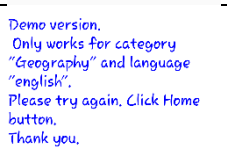
Explaining the concept

You will create the very first version (v1) of the “F.A.C.E. IT” Quiz app(lication).
The user will choose a *category* and a *language* to play the Quiz.
He/She will proceed through the questions by choosing an answer (correct or wrong).
At the end the final score will be shown.

- This will be the initial user interface.
- At the top there is an “Erasmus+” logo with the title of the Quiz application.
- Below, a list picker for categories and one for languages.
- …followed by a “Play” button to start the game.
- At the bottom, a Share Application icon.



- Since we have to keep it simple the Quiz app will be limited to 1 category (Geography) and 1 language (English).
- Should someone pick a different set (category, language) a message should inform him/her about the only option available.



- The user has to choose the only working combination of “Geography” and “english”. After choosing a language an icon with the country flag will appear next to it.
- Pressing the “PLAY” button will start the game.

- The second screen will appear.
- At the top it will inform the user about the current *language* and *category*.
- The score will be set initially to zero (0).
- The question will be in blue color.
- The answers will be buttons to click on.
- At the bottom there will be an “Erasmus+” logo and a “Home” button to start over.

• After clicking on an answer,
  ○ …the correct answer will be highlighted in green,
  ○ …the score will be updated with +1 for correct answering or nothing and
  ○ …the “NEXT” button will appear at the bottom.
	

• We will provide <u>only</u> 2 questions • …to keep it as simple as possible.	
• At the end the final score will be displayed. • The user will have to click the “Home” button to start over again.	

Let’s start!

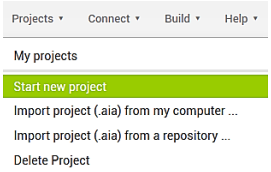
Worksheet 5 (Part A)

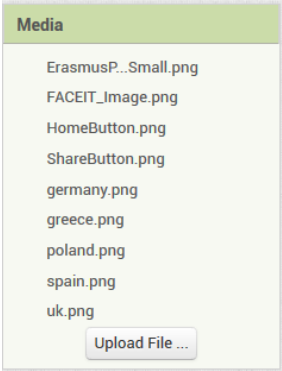
Creating the user interface of the Quiz app

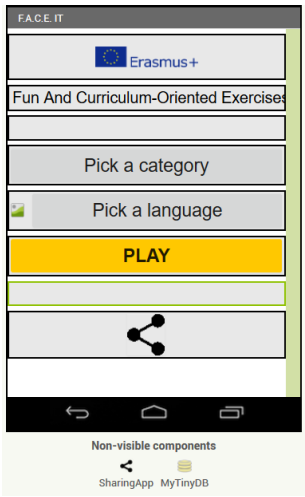
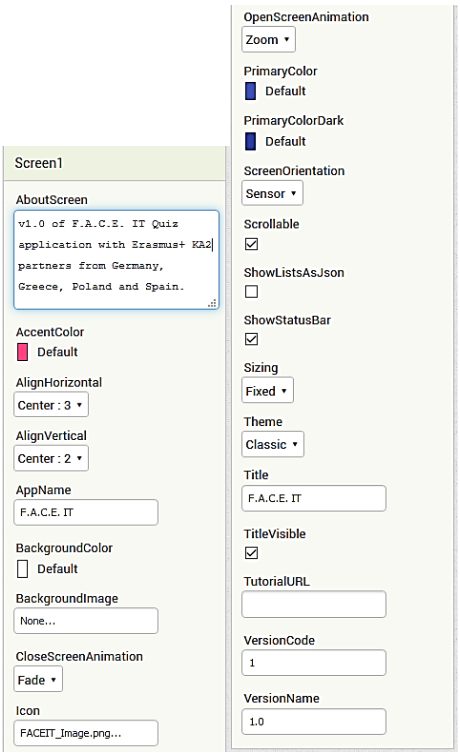
Activity: You will create a simple **user interface** for the Quiz app which will allow the user to choose the **category** of the questions and the **language**.

Time: **30** Minutes

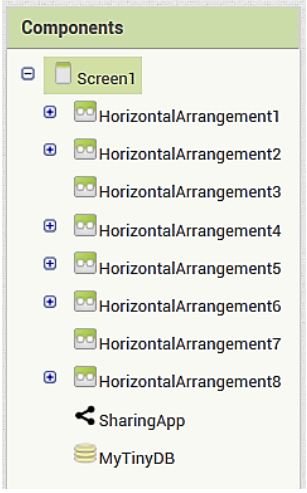
Follow your facilitator and complete the tasks below (put a mark if completed).
Don't hesitate to ask if there is something you are not sure of.

TASK	DONE?
Connecting to AppInventor • Open a browser, e.g. Firefox, Chrome, MS Edge, Safari. • In the address bar of your browser type http://ai2.appinventor.mit.edu . • Sign in with your Google Account. • After this you're presented with the AppInventor environment.	
Starting a new project • From the menu click "Projects" and then choose "Start New Project". • Enter the project name, **`FACE_IT_v1`**, and then click OK. 	

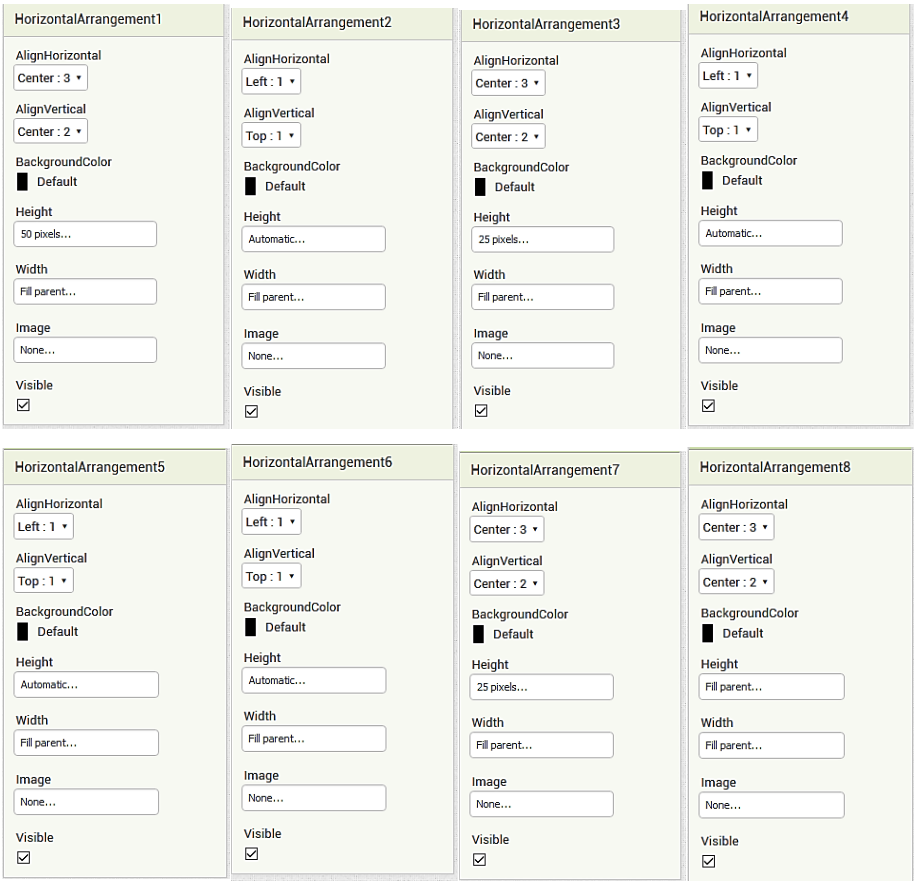
Uploading images to AppInventor
• You will need 9 pictures for this version of the app.
• The images are in a zipped file format located in the Twinspace Material folder.
  ○ Sign in to your Twinspace account.
  ○ Follow the path "Material → Files → DE-Workshops" and download the file "QuizAppImages.zip" or directly under http://twinspace.etwinning.net/files/collabspace/1/21/721/44721/files/b3f920b7.zip
  ○ After downloading unzip the files at your Desktop.
• Upload each one of the files to your AppInventor project.
NOTE: You cannot upload all files at once.
• After completing your Media section should look like this
 	

TASK	Screenshot
• This is a screenshot of the user interface of your **`Screen1`** which you will design.	
• Edit the **`Screen1`** properties as shown. **NOTE**: The screenshots are splitted in two halfs. AboutScreen: "v1.0 of F.A.C.E. IT Quiz application with Erasmus+ KA2 partners from Germany, Greece, Poland and Spain."	

- The interface consists of
  8 `HorizontalArrangements`,
  1 `SharingApp` and
  1 `TinyDB`.



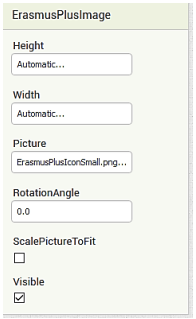
- Check and edit the properties of all **8 `HorizontalArrangements`** as shown.



HorizontalArrangement1

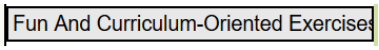
- From the Palette "User Interface", drag the **`Image`** component onto your **`HorizontalArrangement1`**.

- Rename it to **ErasmusPlusImage** and
- …edit the properties as shown:



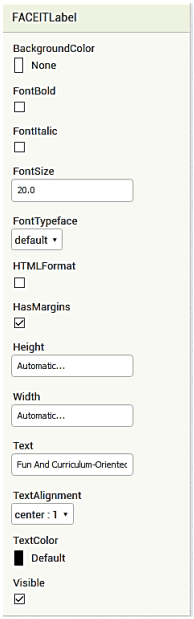
HorizontalArrangement2

- From the Palette "User Interface", drag the **`Label`** component onto your **`HorizontalArrangement2`**.



- Rename it to **FACEITLabel** and
- …edit the properties as shown:

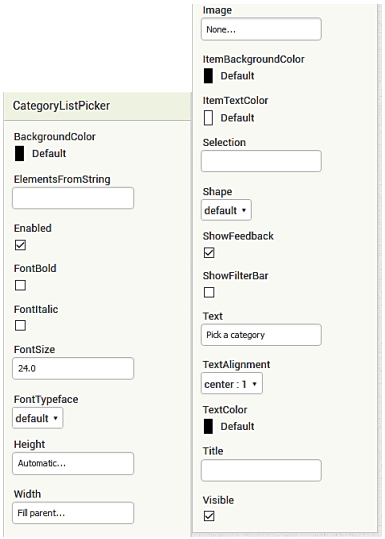
  Text property is
  "*Fun And Curriculum-Oriented Exercises with Information Technology*"



HorizontalArrangement4

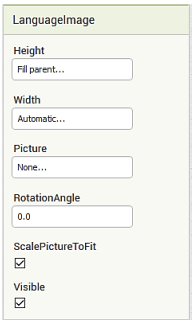
- From the Palette "User Interface", drag the **`ListPicker`** component onto your **`HorizontalArrangement4`**.

- Rename it to **CategoryListPicker** and
- …edit the properties as shown:

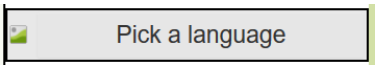


HorizontalArrangement5

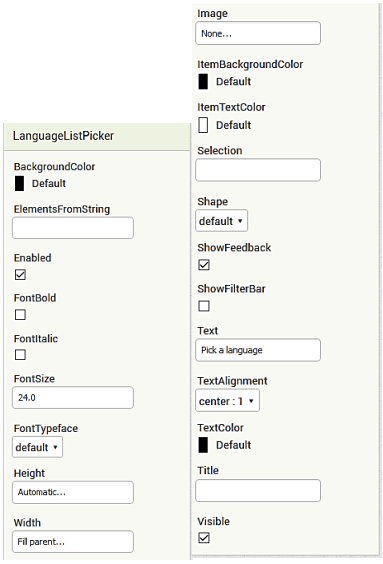
- From the Palette "User Interface", drag the **`Image`** component onto your **`HorizontalArrangement5`**.
- Rename the **`Image`** to **LanguageImage** and
- …edit the properties as shown.



- From the Palette "User Interface", drag the **`ListPicker`** component onto your **`HorizontalArrangement5`**.



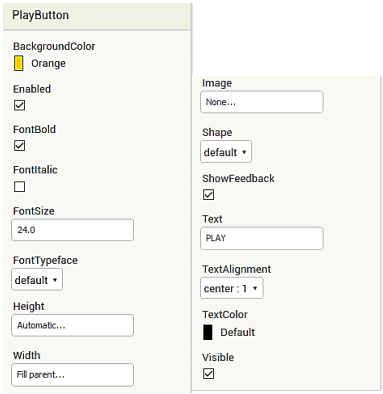
- Rename the **`ListPicker`** to **LanguageListPicker** and
- …edit the properties as shown.



HorizontalArrangement6

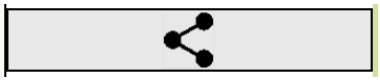
- From the Palette "User Interface", drag the **`Button`** component onto your **`HorizontalArrangement6`**.

- Rename the **`Button`** to **PlayButton** and
- …edit the properties as shown.

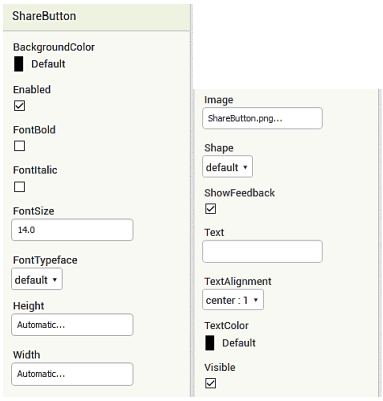


HorizontalArrangement8

- From the Palette "User Interface", drag the **`Button`** component onto your **`HorizontalArrangement8`**.

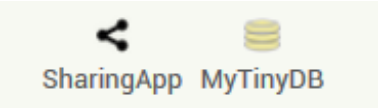


- Rename the **`Button`** to **ShareButton** and
- …edit the properties as shown.



Non-visible components

- From the Palette "Social" choose the component **`SharingApp`** and drag it to the interface.
- From the Palette "Storage" choose the component **`TinyDB`** and drag it to the interface. Rename to **`MyTinyDB`**.

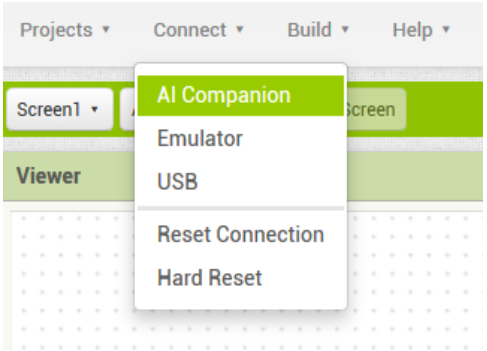


Testing the app

TIP: Before testing the app you should download the "MIT AI2 Companion" from Google Play.

Connect your smartphone or tablet from the Connect menu at the top of your screen.

1. Connect your smartphone on the Wi-Fi network.
2. Choose AI Companion from the Connect menu
3. A unique app code appears in both QR and text form.
4. On your phone start the MIT AI2 Companion app.
5. Either type the app code and click "Connect with Code" or click "Scan the QR Code" and point your phone at the QR code on your computer screen.



Try your app by pressing the buttons.

Worksheet 5 (Part B)

Programming the user interface (`Screen1`)

Activity: You will program the components of the user interface in order to add interactivity to your application.

Time: **20** Minutes

Follow your facilitator and complete the tasks below (put a mark if completed).
Don't hesitate to ask if there is something you are not sure of.

TASK	Screenshot

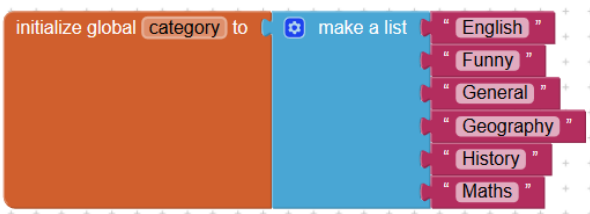
Blocks editor

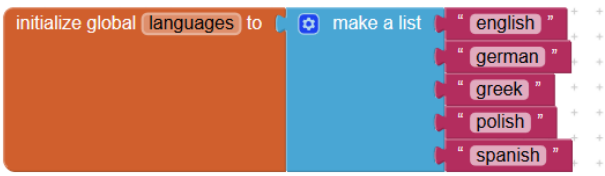
Switch to the BLOCKS editor (upper right corner).

Initializing

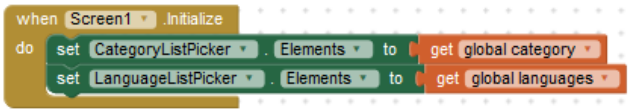
We initialize two variables as lists

- **`category`** to accommodate a list with the choices "English", "Funny", "General", "Geography", "History", and "Maths" and
- **`language`** to accommodate a list with the choices "english", "german", "greek", "polish" and "spanish".



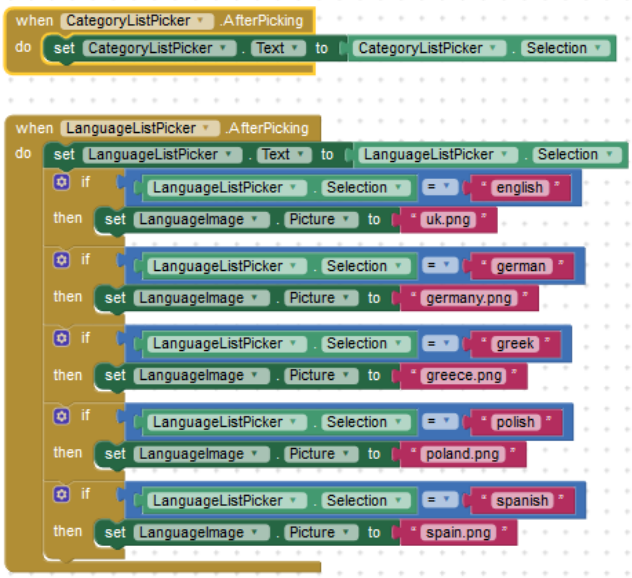


…and when **`Screen1`** is loaded both lists get their elements from their respective variables.



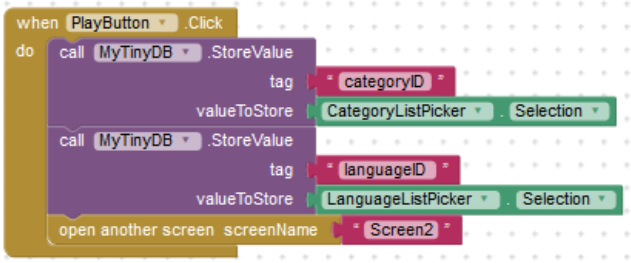
Picking elements from lists

- After the user picks a category we change the Text property of **`CategoryListPicker`** to reflect the user selection.
- Likewise, after picking a language we change the Text property of **`LanguageListPicker`** to reflect the user selection. Also, we set a picture of the respective country flag by changing the Picture property of **`LanguageImage`** as shown.



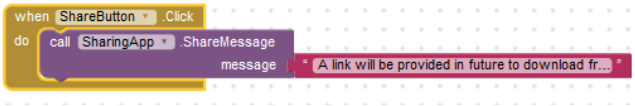
Playing

- The user has made a choice of category and language.
- Those values have to be passed on to a new screen to load the appropriate questions.
- For this purpose, we take advantage of the Database component **`TinyDB`** to share those values between two screens.



Sharing the application

- Last, we want to offer the opportunity to share the application through social media.
- At this point, we haven't yet any functional link to Google Play.
- That's why we'll show only a message with the text "*A link will be provided in future to download from Google Play.*"



Testing the app

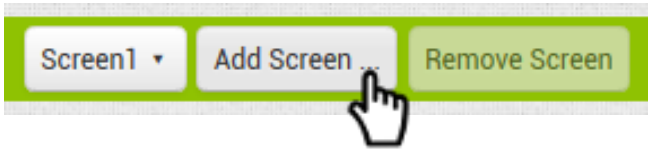
- Up until this point you've created the first screen (**`Screen1`**) and added functionality to its componets. Before proceeding with the next task you should test your app.

Worksheet 5 (Part C)

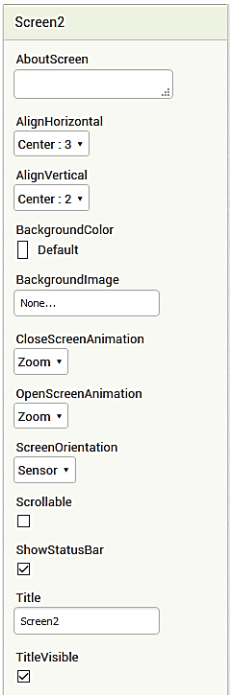
Creating the Question interface

Activity: You will create a second screen for the interface of the questions.
Time: **30** Minutes

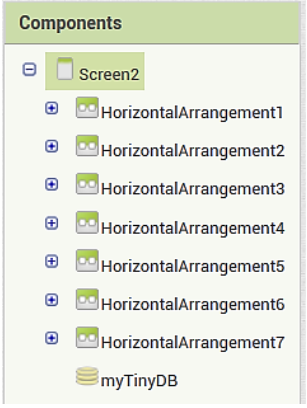
Follow your facilitator and complete the tasks below (put a mark if completed).
Don't hesitate to ask if there is something you are not sure of.

TASK	DONE?
Adding a Screen Click on the **`Add Screen`** button and add a new screen with the name **`Screen2`**.  	

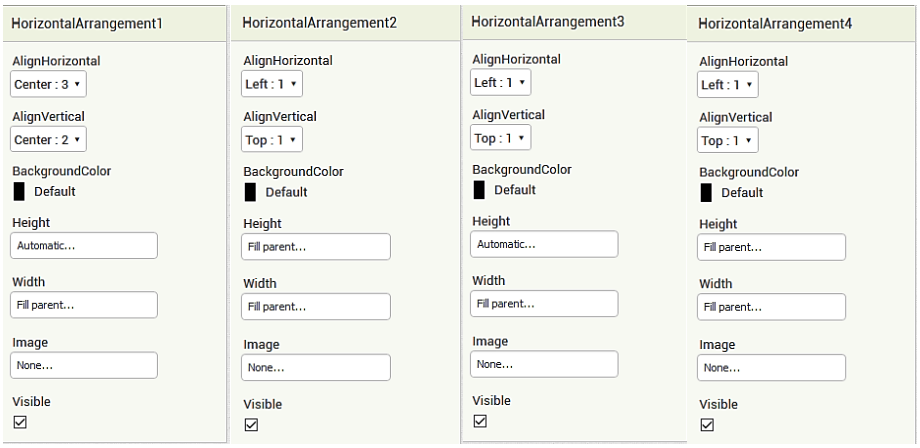
TASK	Screenshot
• This is a screenshot of the interface of your **`Screen2`** which you will design.	

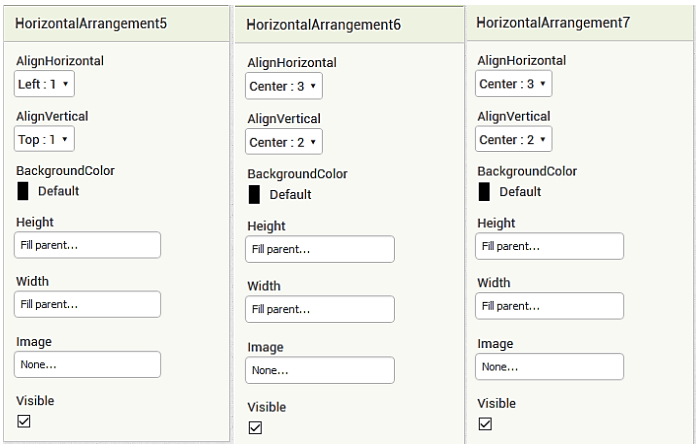
• Edit the **`Screen2`** properties as shown.	

- The interface consists of **7 `HorizontalArrangements`** and **1 `TinyDB`**.



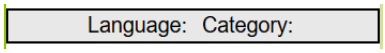
- Check and edit the properties of all **7 `HorizontalArrangements`** as shown.





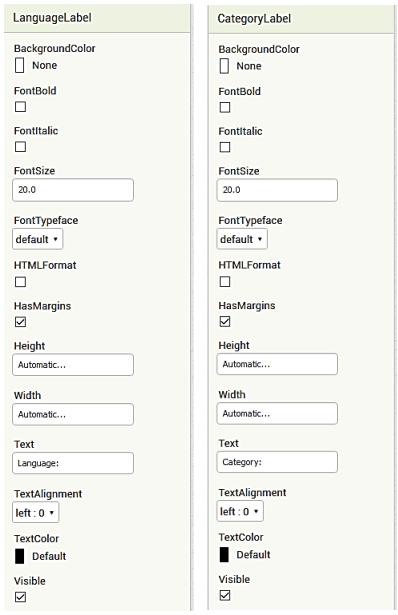
HorizontalArrangement1

- From the Palette "User Interface", drag two **`Label`** components onto your **`HorizontalArrangement1`**.



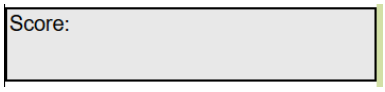
- Rename the first label to **LanguageLabel** and
- …edit the properties as shown.

- Rename the second label to **CategoryLabel** and
- …edit the properties as shown.

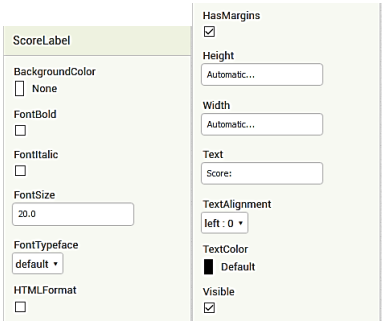


HorizontalArrangement2

- From the Palette "User Interface", drag a **`Label`** component onto your **`HorizontalArrangement2`**.



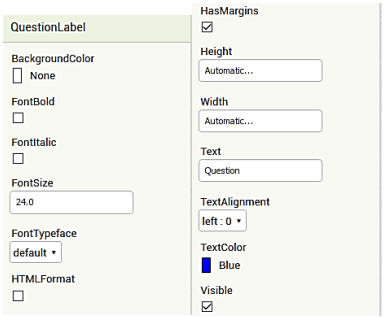
- Rename the label to **ScoreLabel** and
- …edit the properties as shown.



HorizontalArrangement3

- From the Palette "User Interface", drag a **`Label`** component onto your **`HorizontalArrangement3`**.

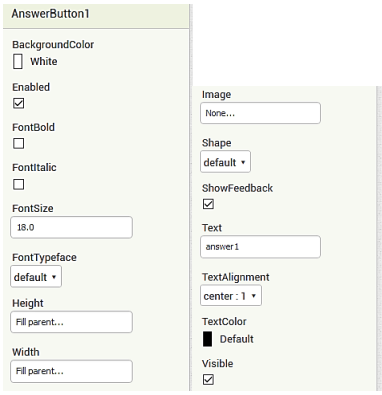
- Rename the label to **QuestionLabel** and
- …edit the properties as shown.



HorizontalArrangement4

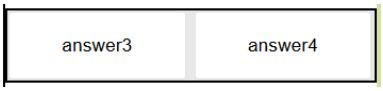
- From the Palette "User Interface", drag two **`Button`** components onto your **`HorizontalArrangement4`**.

- Rename the first button to **AnswerButton1** and
- …the second button to **AnswerButton2**.
- Edit the properties as shown.

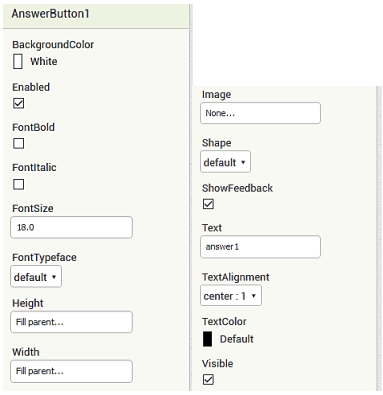


HorizontalArrangement5

- From the Palette "User Interface", drag two **`Button`** components onto your **`HorizontalArrangement5`**.



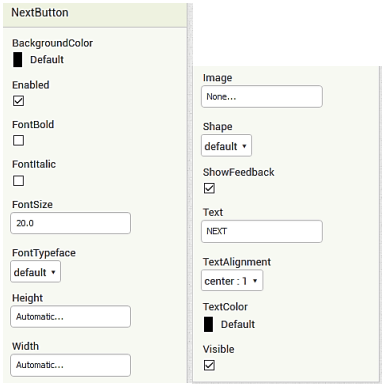
- Rename the first button to **AnswerButton3** and
- …the second button to **AnswerButton4**.
- Edit the properties as shown.



HorizontalArrangement6

- From the Palette "User Interface", drag a **`Button`** component onto your **`HorizontalArrangement6`**.

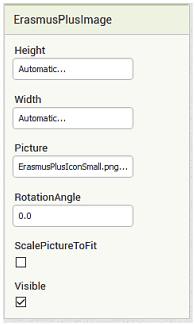
- Rename the button to **NextButton** and
- …edit the properties as shown.



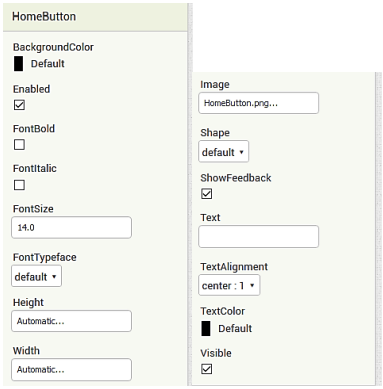
HorizontalArrangement7

- From the Palette "User Interface", drag an **`Image`** and a **`Button`** component onto your **`HorizontalArrangement7`**.

- Rename the image to **ErasmusPlusImage** and
- …edit the properties as shown.

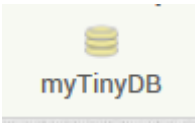


- Rename the button to **HomeButton** and
- …edit the properties as shown.



Non-visible components

- From the Palette "Storage" choose the component **`TinyDB`** and drag it to the interface. Rename to **`MyTinyDB`**.



Testing the app

- Up until this point you've created successfully the design of the second screen (**`Screen2`**). Before proceeding with the next task you should test your app.

Worksheet 5 (Part D)

Programming the Question interface (`Screen2`)

Activity: You will program the components of the Question interface in order to pick the right list of user's choice of category and language. Then to proceed through the questions, to evaluate the user's answer, to update the score and finally to show a message of the final score.

Time: **45** Minutes

Follow your facilitator and complete the tasks below (put a mark if completed).
Don't hesitate to ask if there is something you are not sure of.

TASK	Screenshot

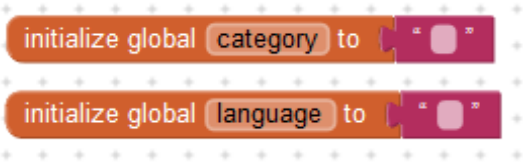
Blocks editor

Switch to the BLOCKS editor (upper right corner).

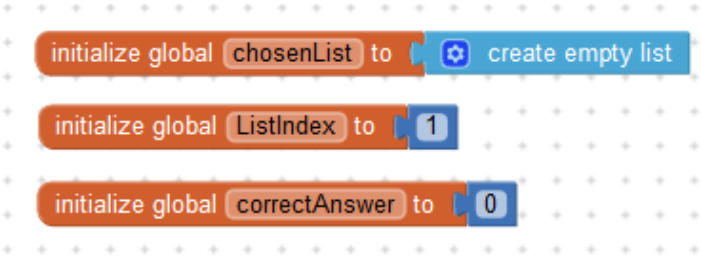
Initializing

We will use a set of variables which have to be initialized with a proper value before using.

- Variables **`category`** and **`language`** will hold the shared values of the user's choice of category and language from **`Screen1`**. Initially they will hold an empty text string.



- The variable **`chosenList`** will be used to load the appropriate Question-Answers of the user's choice. Initially it will hold an empty list.
- The variable **`ListIndex`** will point to the elements in the list and the variable **`correctAnswer`** will hold the correct answer for every question.



- The variable **`score`** will hold the current score of the user. Initially it is set to **0**.
- The variable **`userAnswer`** will be used to compare user's choice with the **`correctAnswer`**. Both of them are initially set to **0**.

Initializing the Question interface

- The Question interface (**`Screen2`**) gets the values of the **`category`** and the **`language`** from the shared Database **`myTinyDB`**.
- Also, sets the labels of **`CategoryLabel`** and **`LanguageLabel`** respectively to inform the user during the game.

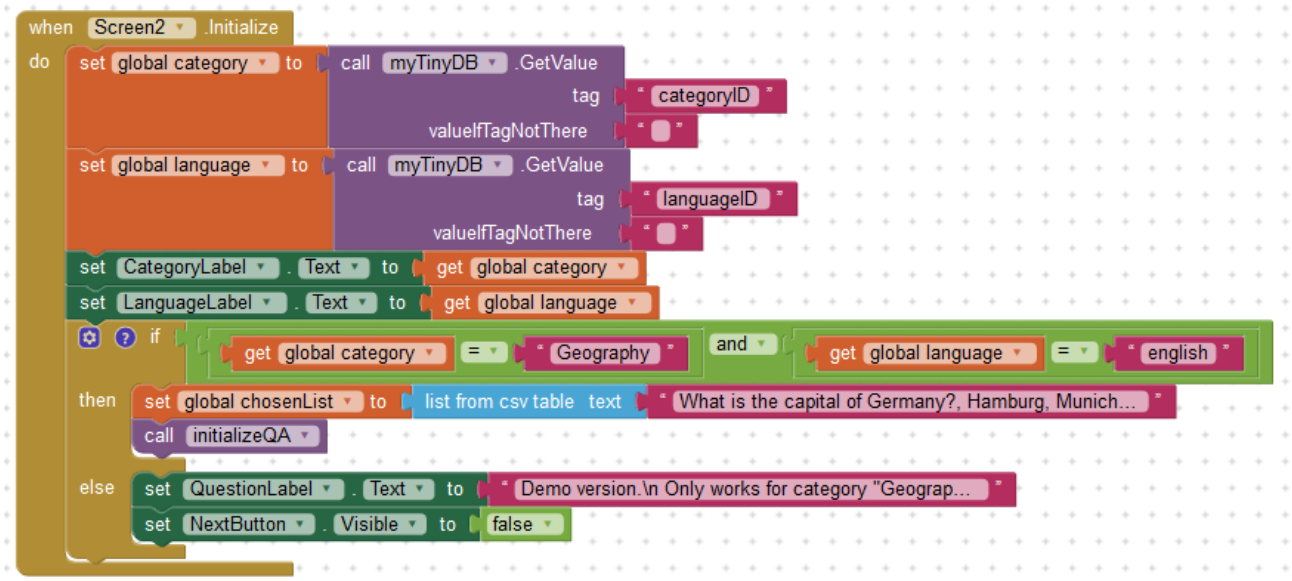
  IMPORTANT: In order to keep it simple we will create a quiz with <u>only</u> 2 questions and for 1 category in 1 language. For this purpose we have chosen *Geography* and *english*.

- If the criteria of "Geography" and "english" are met, the **`chosenList`** is loaded with the appropriate list from a csv (comma separated value) table.
- You have to fill the data of the csv table in the text field as follows
  What is the capital of Germany?, Hamburg, Munich, Berlin, Hannover, 3\n
  Which is the largest river in Germany?, Elbe, Danube, Rhine, Amazon, 2\n

  Pay attention to the punctuation, such as the comma (**,**) and the question mark (**?**).
  Each question ends with a new line character "**\n**".

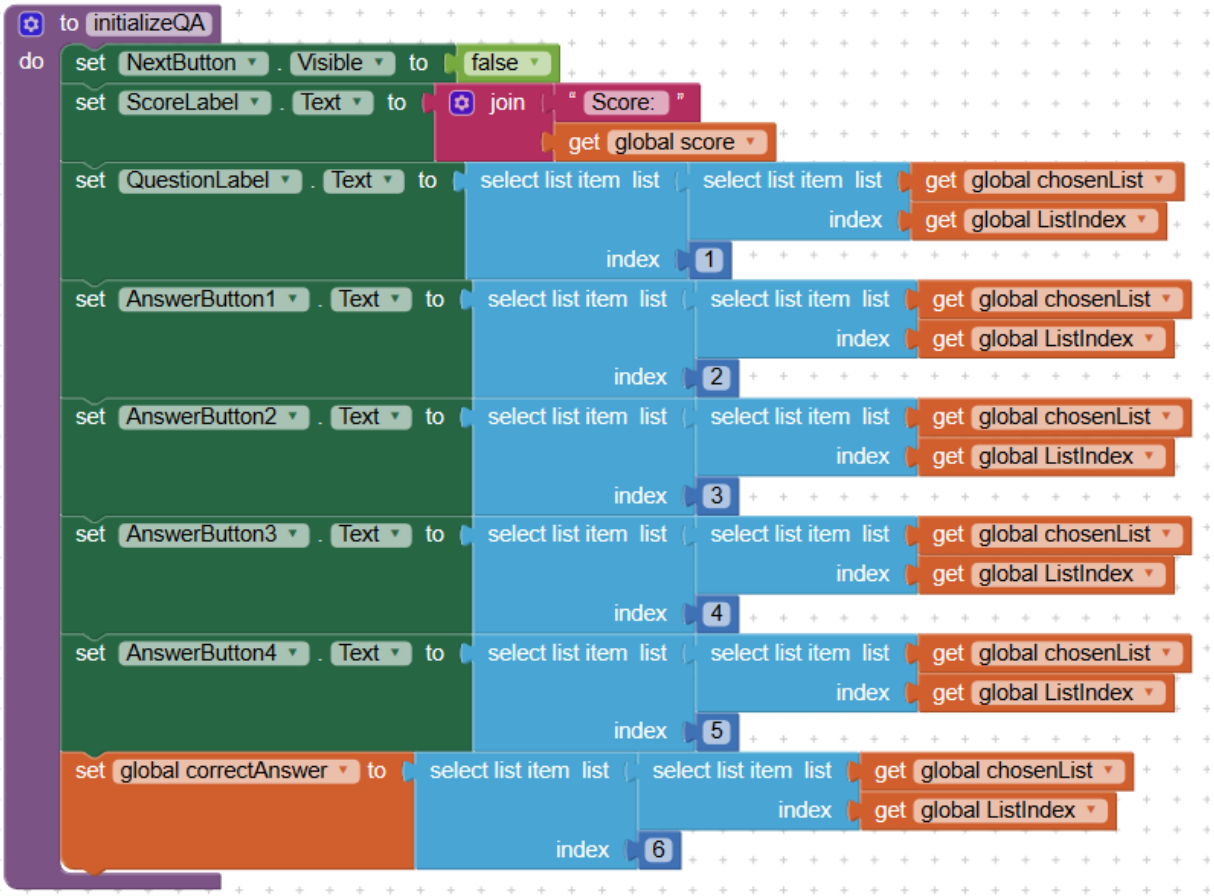
  IMPORTANT: At this point the procedure **`initializeQA`** must be called. Since you haven't created it yet you will add this programming block later on once you've built it.

- If the criteria are not met, a message will inform the user to choose "Geography" and "english". The message will be
  Demo version.\n Only works for category "Geography" and language "english".\nPlease try again. Click Home button.\nThank you.

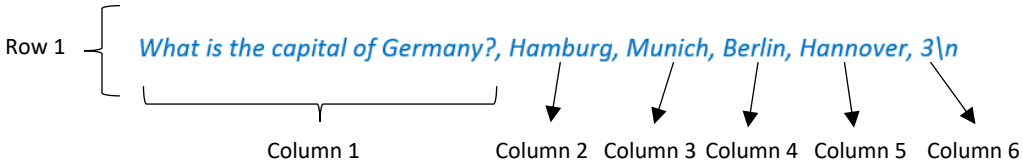


Procedure `initializeQA`

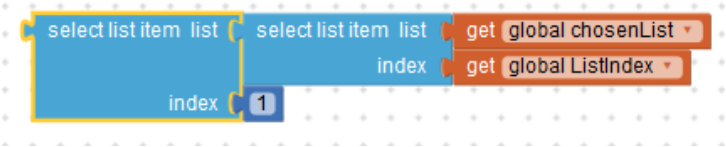
- This procedure will be called each time to set the labels of **`Screen2`** with the content of the next question, the possible answers, and the score respectively.
- In order to avoid an "empty" response from the user the **`NextButton`** is hidden (set to false). It will only be shown once the user makes a choice, i.e. clicks on an **`AnswerButton`**.



NOTE: We use a table for storing our questions, answers and an index to the correct answer. The table consists of rows and columns separated by commas. Each row ends with a new line character "\n".



Column1 holds the question. Columns 2 to 5 the four possible answers. Column 6 the number for the correct answer which for the above example is 3, i.e. "Berlin".

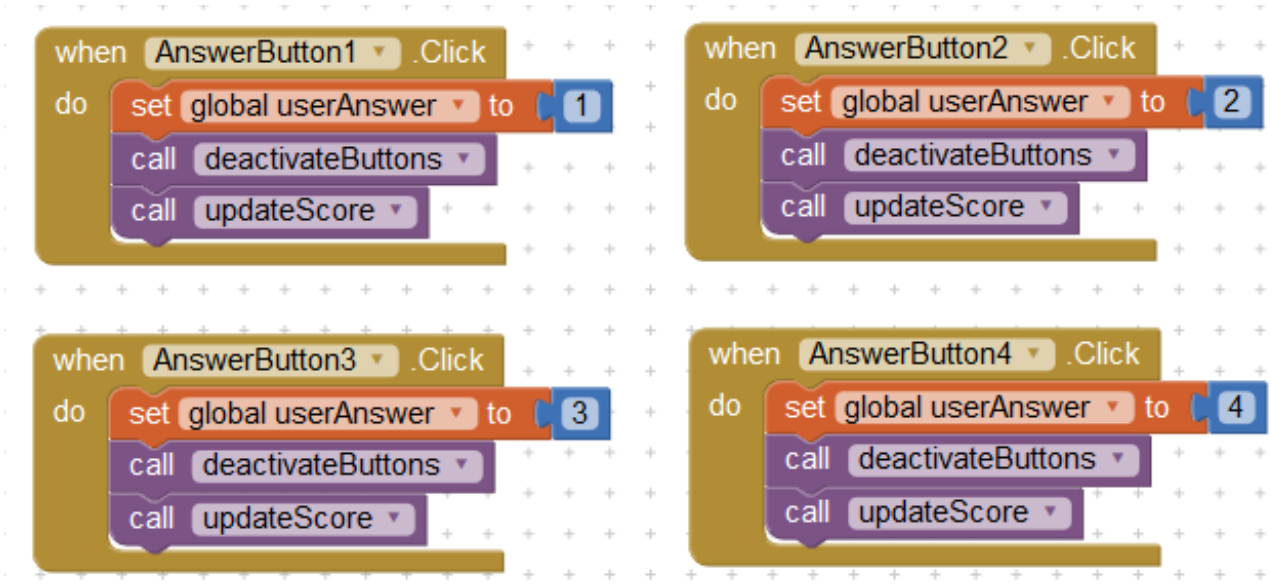


The above programming blocks translate to "*Choose from the current list* (variable chosenList) *and the row* (variable ListIndex) *the value of the first column* (number 1)", i.e. the question.

Adding functionality to the `AnswerButtonX`

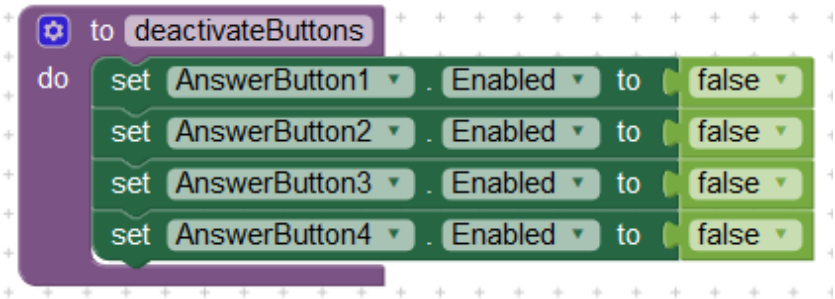
- Once the user clicks on an **`AnswerButton`** his/her choice is marked (**`userAnswer`** set to 1, 2, 3 or 4),
- …all the other buttons are deactivated (procedure **`deactivateButtons`**) to prevent the user from trying many times, and
- …the score is updated accordingly (procedure **`updateScore`**) with +1 if the user chose correctly.

  IMPORTANT: At this point the procedures **`deactivateButtons`** and **`updateScore`** must be called. Since you haven't created them yet you will add those programming block later on once you've built them.



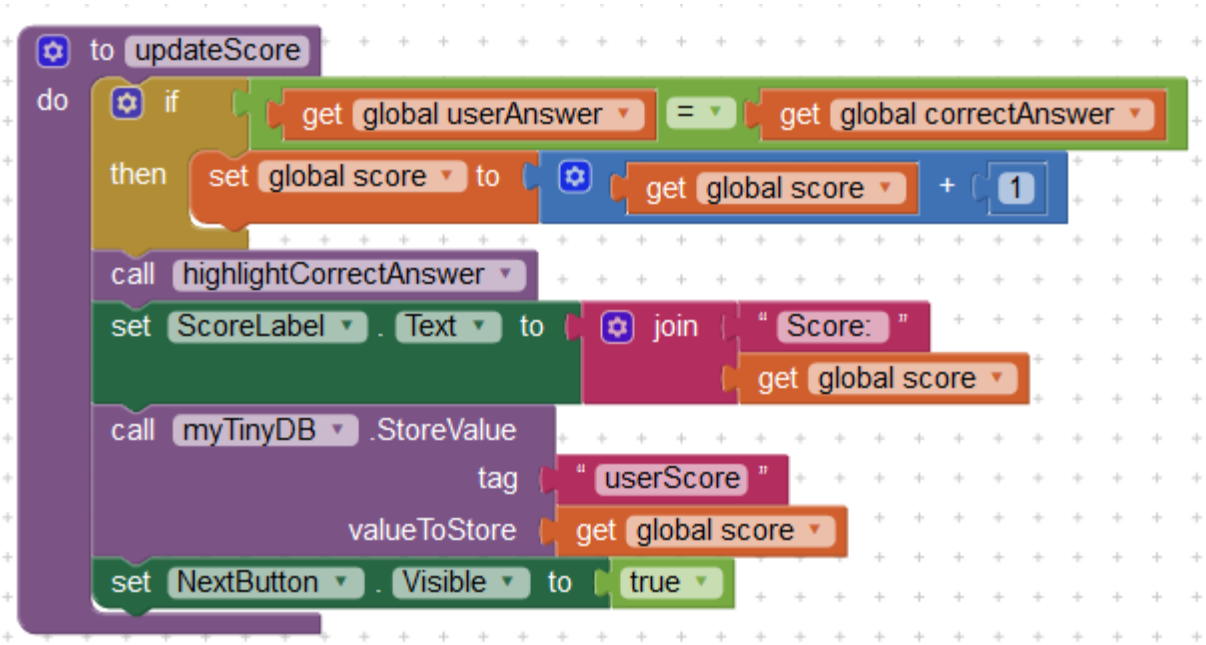
Procedure `deactivateButtons`

To deactivate the buttons we set the **`Enabled`** property to **`false`**.



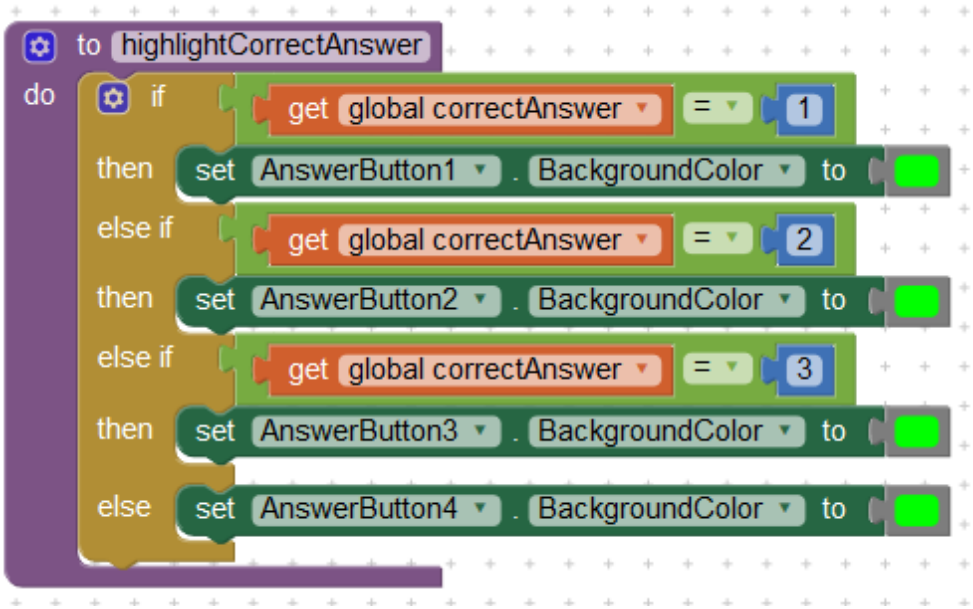
Procedure `updateScore`

- The user's answer is checked against the correct answer. If it is the same (true) the score is updated +1, otherwise not.
- The **`BackgroundColor`** of the correct answer is highlighted in green (procedure **`highlightCorrectAnswer`**).
- The value of the new score is stored in our Database **`TinyDB`**.
- The **`NextButton`** is shown, i.e. set **`Visible`** to **`true`**.



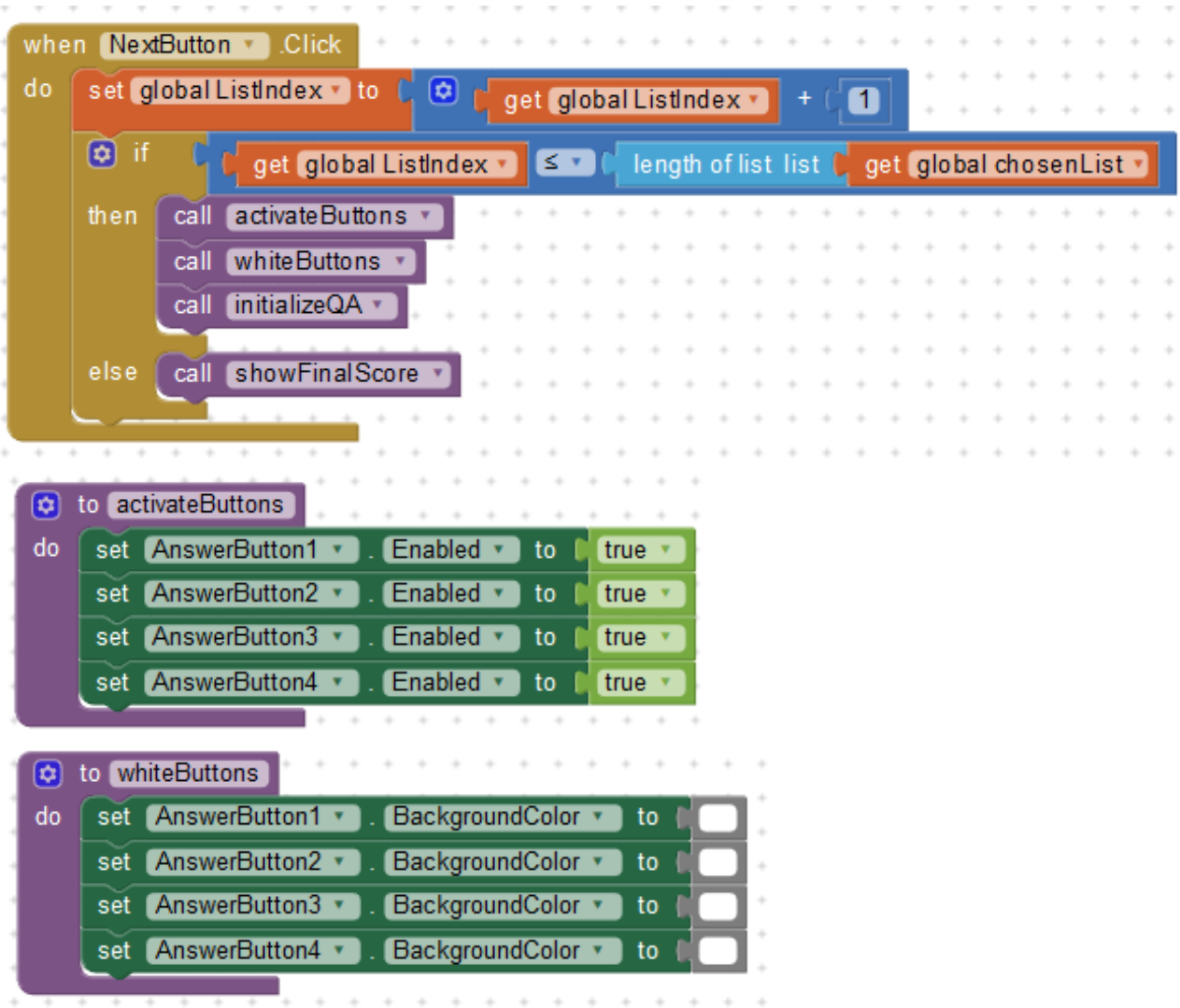
Procedure `highlightCorrectAnswer`

The **`BackgroundColor`** of the correct **`AnswerButton`** is set to green.



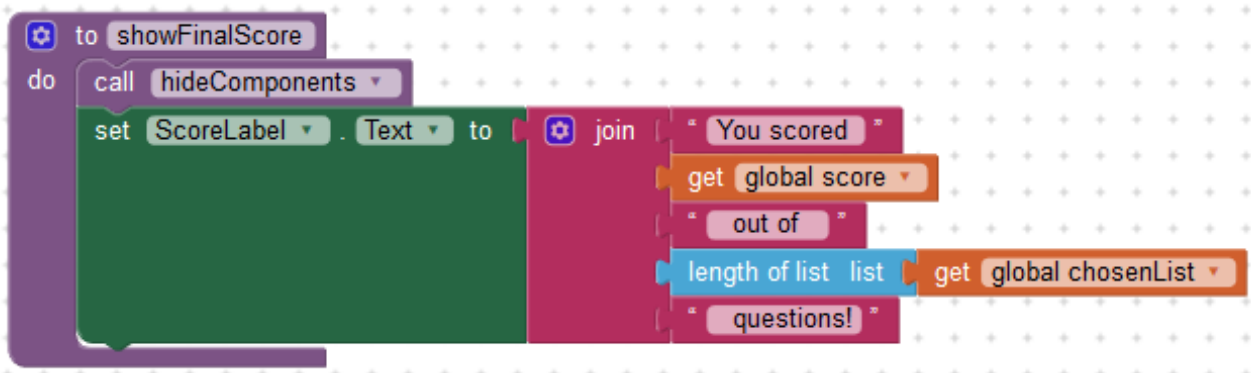
Moving to next question

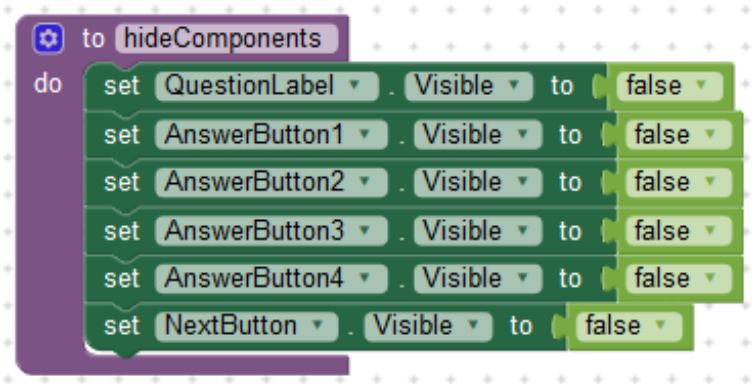
- When the user clicks on the **`NextButton`** the **`ListIndex`** points to the next question,
- …and if it hasn't reached the end of the question list,
- …activates all the buttons (procedure **`activateButtons`**),
- …changes the **`BackgroundColor`** of all the buttons (procedure **`whiteButtons`**),
- …and sets the text of the new question with its respective choices of answers.
- Otherwise, the final score is shown (procedure **`showFinalScore`**).



Show final score

- After completing the quiz challenge for a certain category the user is shown the final score.
- For this purpose, we hide some of the components such as the **`QuestionLabel`**, the **`AnswerButtonsX`** and the **`NextButton`** as shown below (procedure **`hideComponents`**).
- The message is "You scored X out of Y questions!" where X is the user's score and Y the total number of questions.





Testing the app

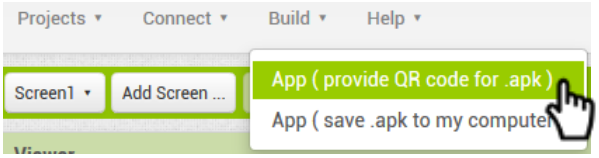
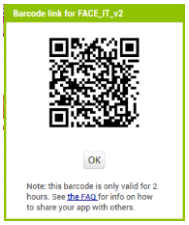
- At this point you've created two screens and added proper functionality to its componets. It's time to test your app check its behaviour. Make adjustments if necessary.

Worksheet 5 (Part E)

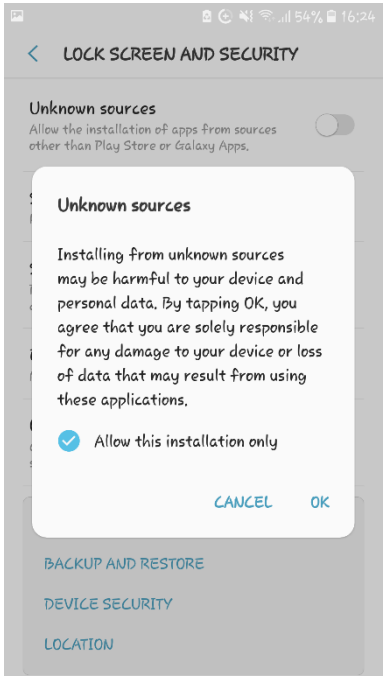
Downloading and installing the Application

Activity: You will download and install your recently-created Quiz App to your smartphone.
Time: **10** Minutes

Follow your facilitator and complete the tasks below (put a mark if completed).
Don't hesitate to ask if there is something you are not sure of.

TASK	DONE?
Before downloading • AppInventor will bundle all your components and programming blocks of your Quiz app into an APK file (Android Package Kit). This package file format is used by the Android operating system for distribution and installation of mobile apps. Just like Windows systems use an .exe file for installing software. • There are two options to install the app to your smartphone: …either through a download link provided by a QR code …or by saving it first on the computer desktop. • We will go for the first option (QR code). Follow the screenshot instructions below  • After selecting the above choice, AppInventor will compile all parts, build the APK file (you will notice the progress bars) and provide the QR Code to download the file like shown below.  **NOTE**: In order to read the above QR code you have to have a "QR Reader". If you don't have any on your smartphone or tablet download one of your choice from Google Play.	

- Your security settings of your smartphone may prevent you from “installing from unknown sources”. For this time only, allow the installation since it’s your app you’ve built.



- After installation you are ready to try your application.