Voice Calculator

MIT App Inventor

Introduction

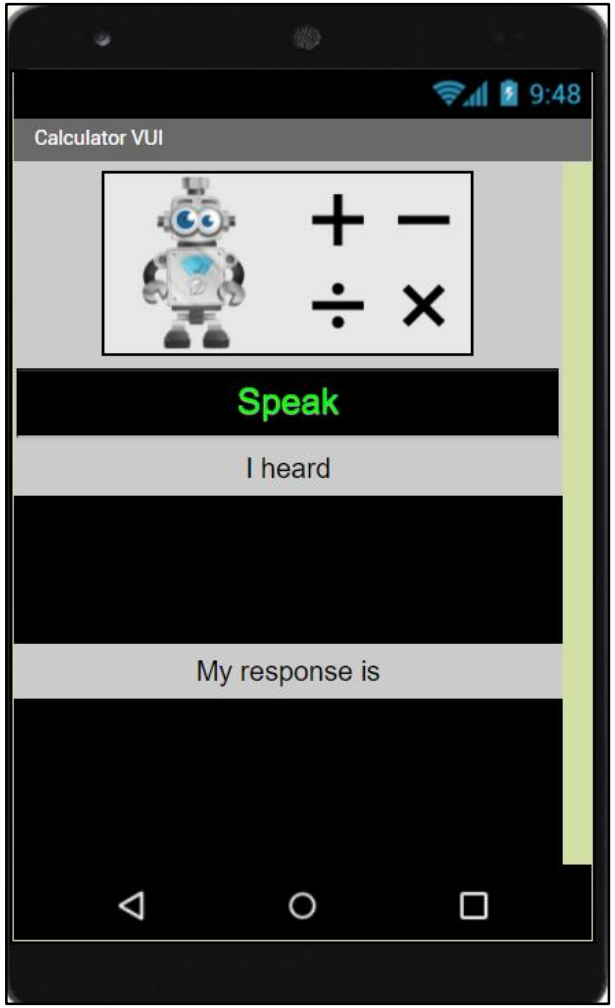
Automatic Speech Recognition is one of the most famous topics in Machine Learning. We've already seen famous conversational AI agents such as Alexa and Siri. They actually interpret what you are saying and grasp your intent. Then they give an appropriate and meaningfully respond to you.

In this project, we will build a simple voice-activated calculator app that takes speech as input and returns speech and text as output. Inputs include integers and basic mathematical operators, while outputs are the result of the operation uttered by the user.

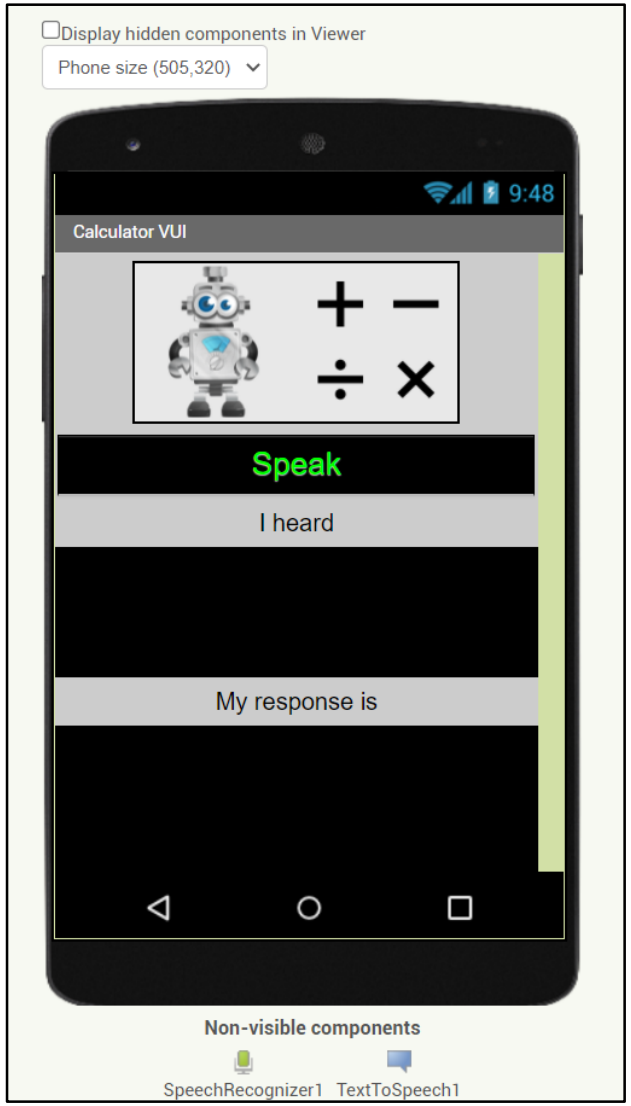
Aim of task:

- How to design a simple AI system that can understand the intent of the user in a verbally stated calculation question and respond appropriately.
- Learn how to build a voice user interface (VUI) calculator.
- How to work with Speech Recognizer and Text to Speech function in MIT app inventor.
- Basic mathematical calculation like: addition, subtraction, multiplication and division.

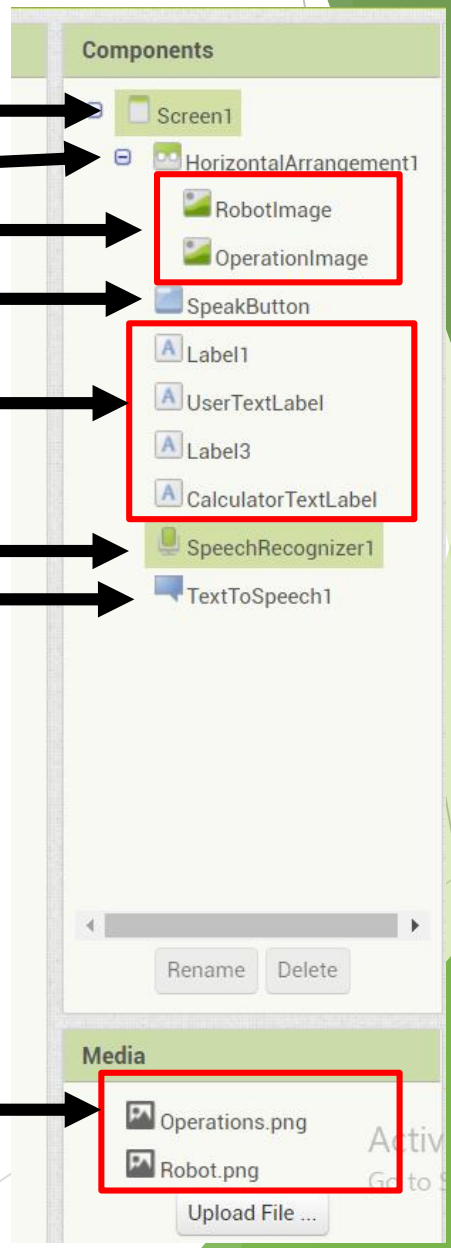
The App overview
(the final designed map image or Final app picture)



Project part in Designer section



- Screen 1
- Layout Arrangement
- Image *2
- Button
- Label *4
- Speech Recognizer
- Text To Speech
- Uploaded Images



Objects and Steps

1. First in screen 1, set background color – Light Gray, align horizontal – center and title – Calculator VUI
2. Open Horizontal Arrangement for layout section.
3. Then add two image block from User Interface. Rename them RobotImage and OperationImage respectively.
4. Then set height and width – 100 pixels and picture – robot.png and operations.png respectively.
5. Then add a button from user interface. Rename it as SpeakButton. Set background color – black, height – 10 percent. Width – fill parent, font size –24, text – Speak, text color – green.

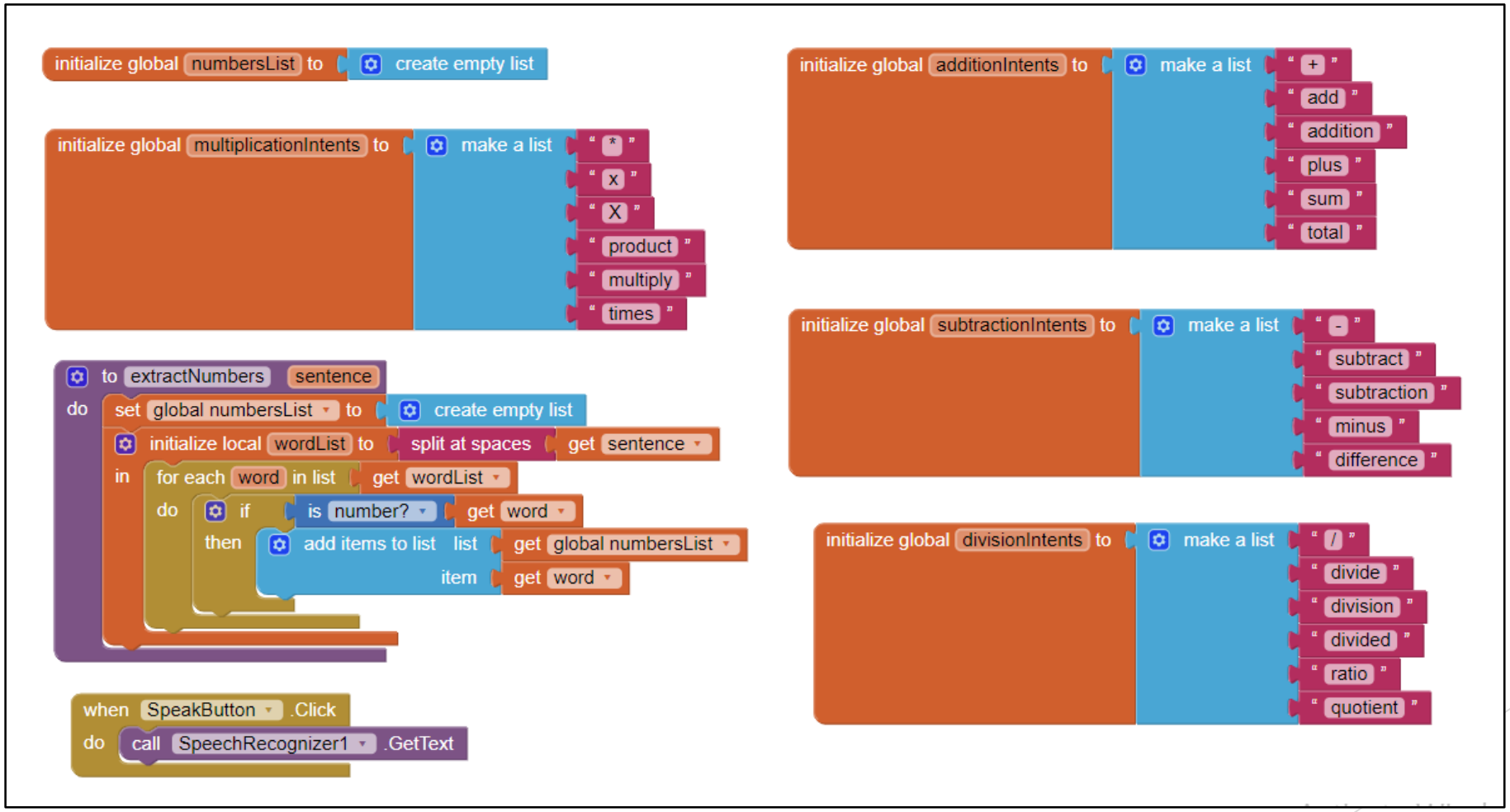
Objects and Steps

6. Then add four labels from user interface one-by-one. Rename 2nd label and 4th label as UserTextLabel and CalculatorTextLabel respectively.
7. For label 01, set background color – none, font size – 18 and text – I heard
8. For UserTextLabel, set background color – black, font size – 24, height – 20 percent, width – fill parent, text – (blank) and text color – green.
9. For label 03, set background color – none, font size – 18 and text – My response is
10. For CalculatorTextLabel, set background color – black, font size – 24, height– 30 percent, width – fill parent, text – (blank) and text color – green.

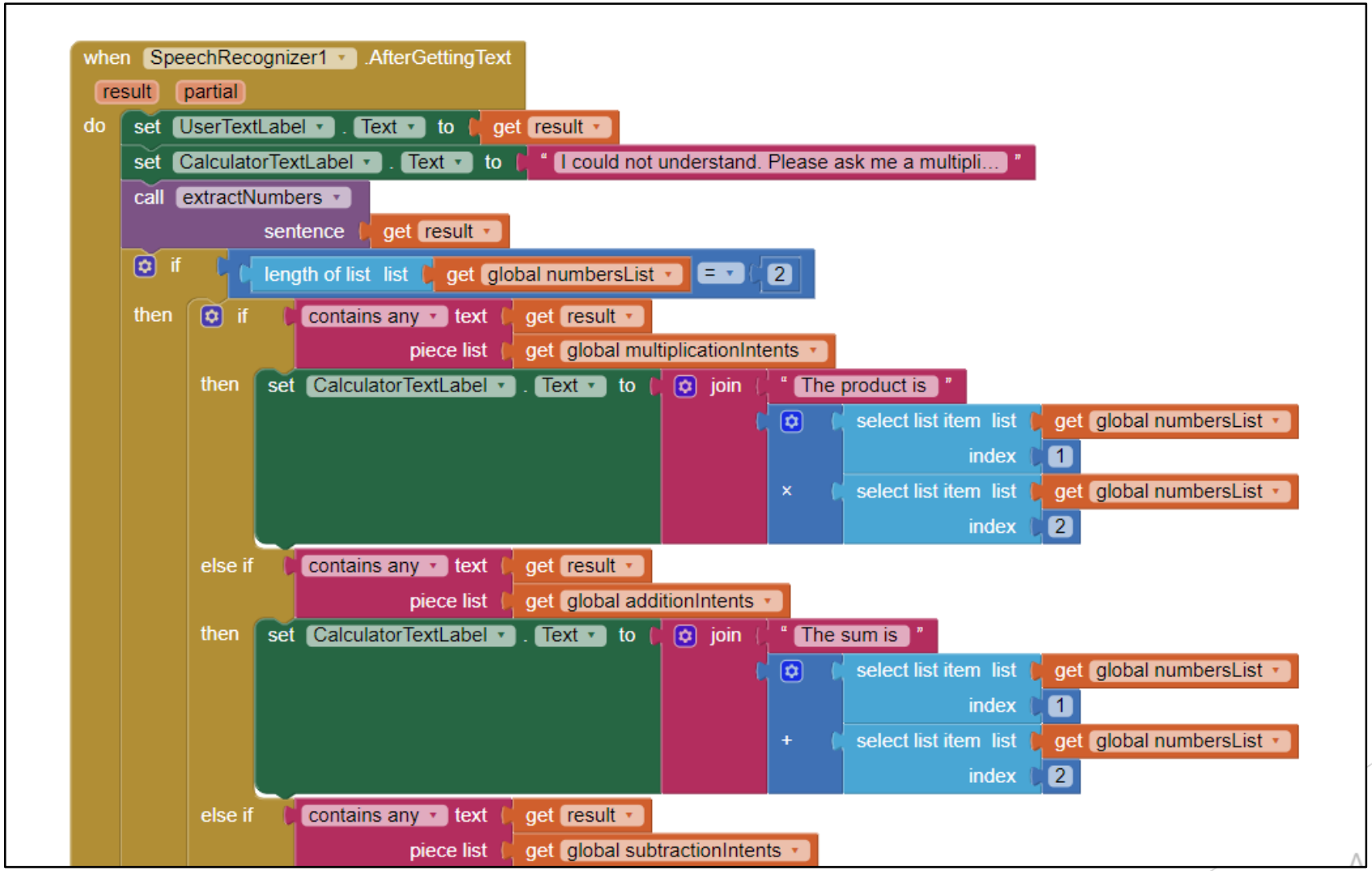
Objects and Steps

11. Now drag Speech Recognizer and Text to Speech to the screen 01 from Media section.
12. Speech Recognizer and Text to Speech function both are non-visible component of the screen.
13. Now template design is finished.
14. Then go to the block section and add following blocks.
15. After that, save the project and Connect AI companion to check the app’s performance.

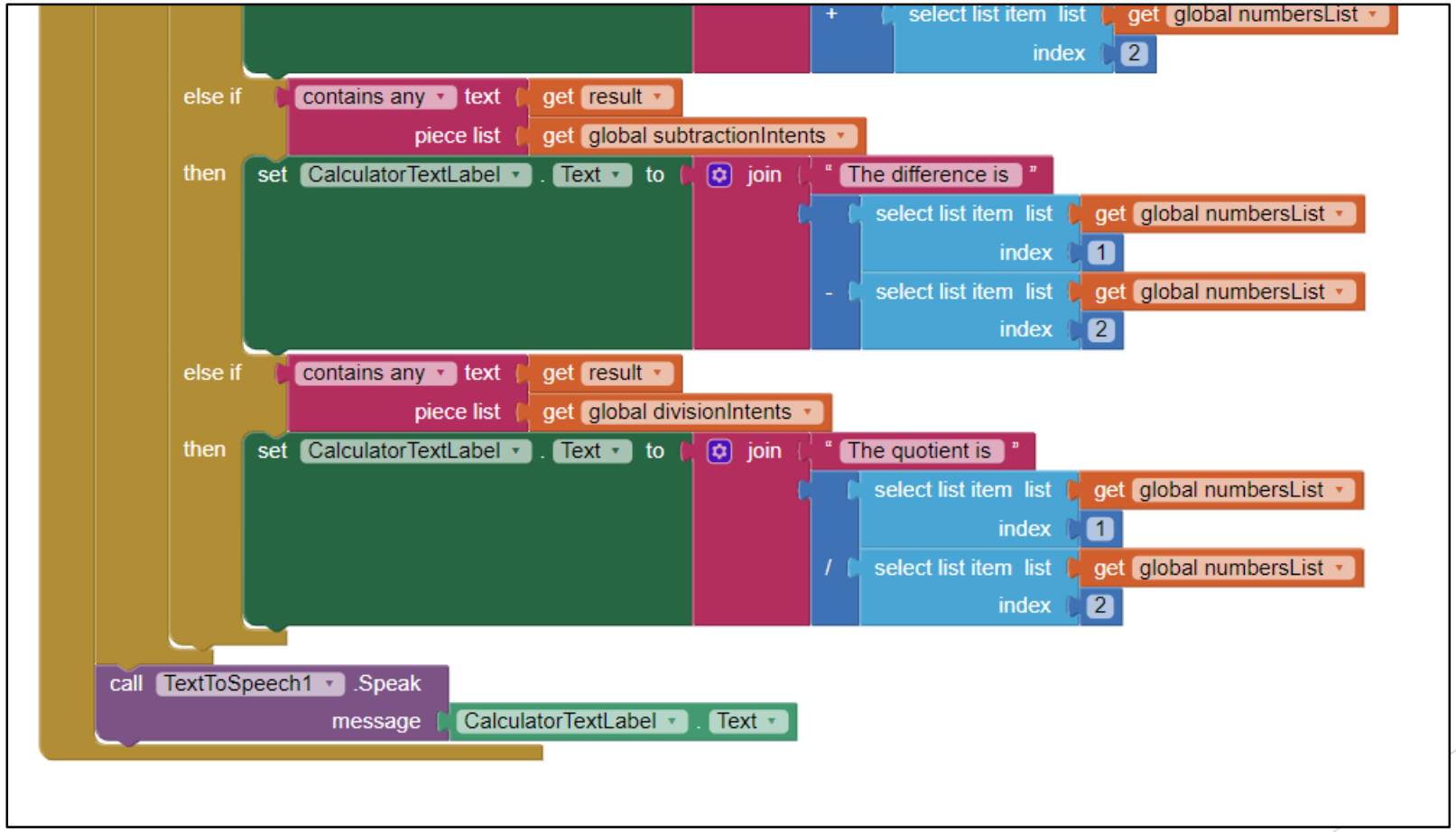
Inside App inventor (Blocks Tab)



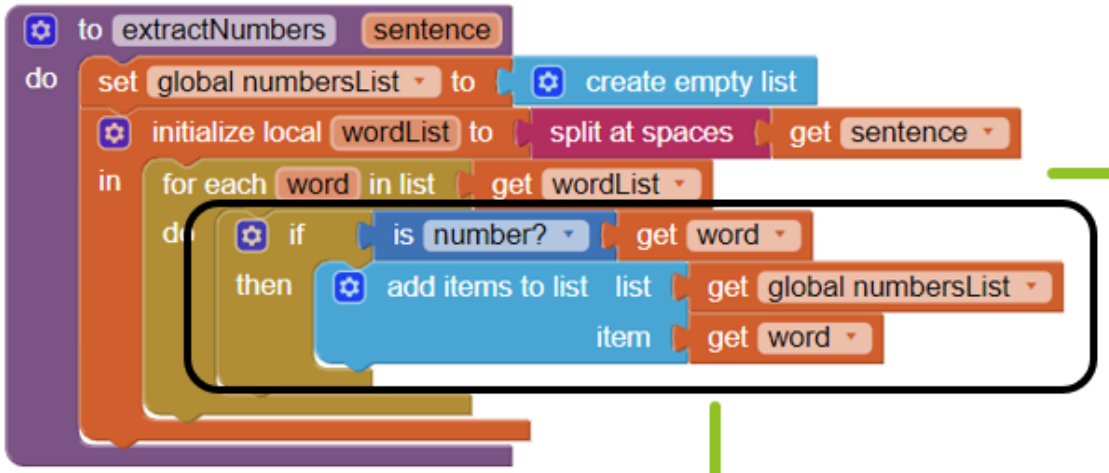
Inside App inventor (Blocks Tab)



Inside App inventor (Blocks Tab)



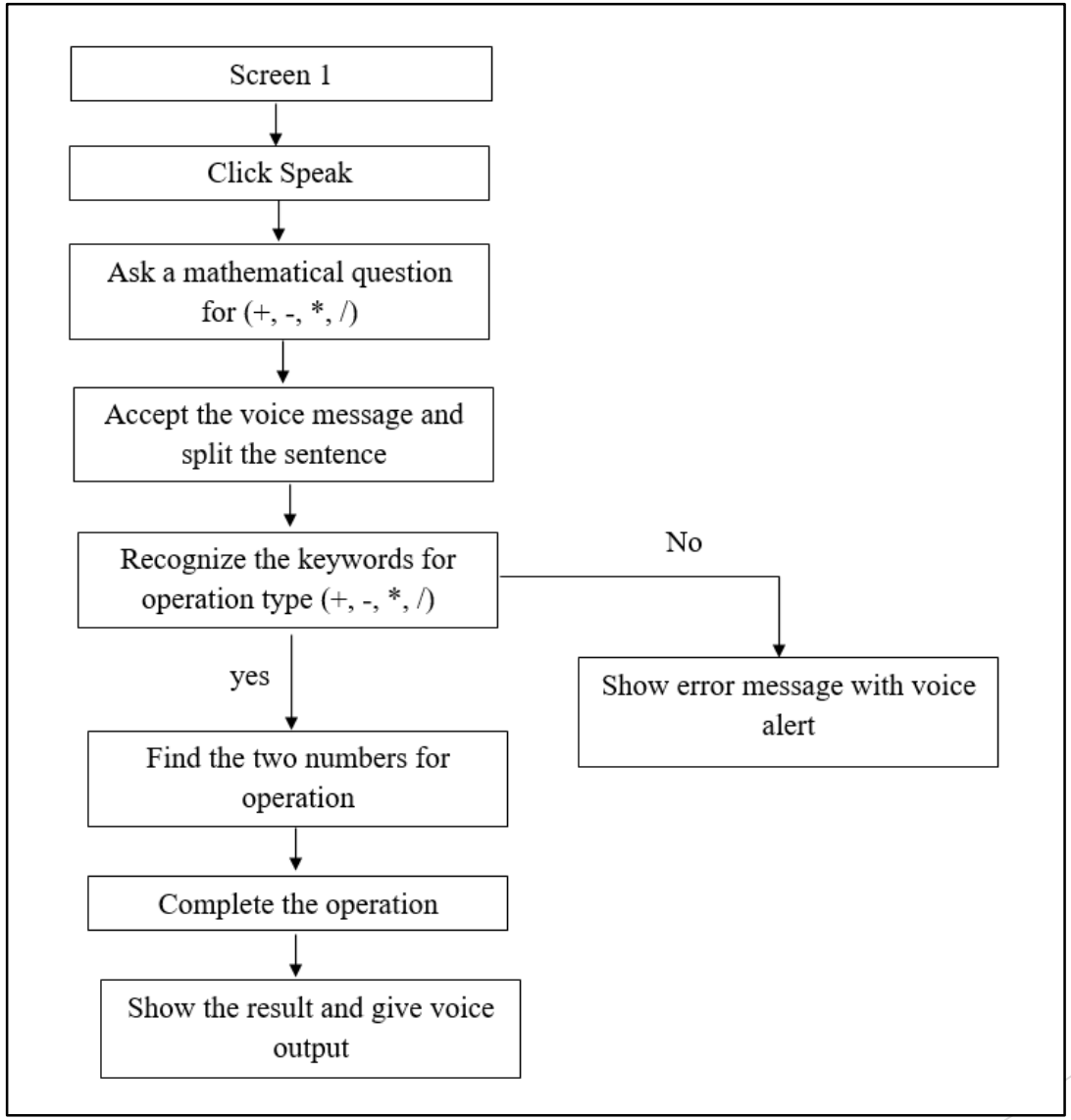
What is 6 times 7?



WordList
What
is
6
times
7

numbersList
6
7

Program flow chart



Component List

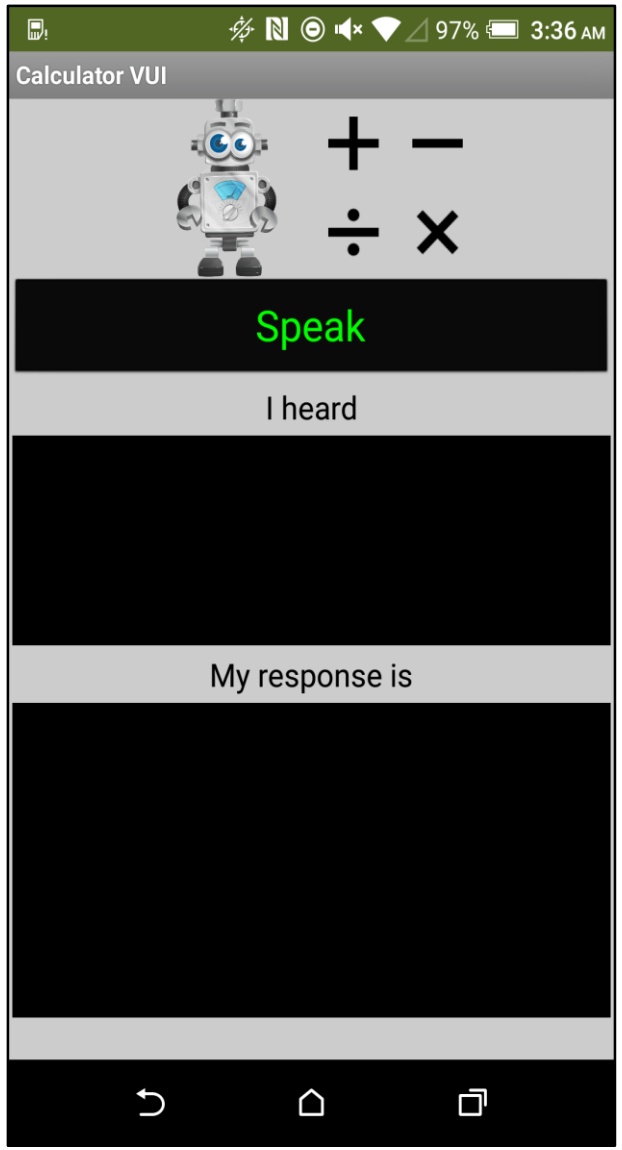
1. **List of the Design section components**

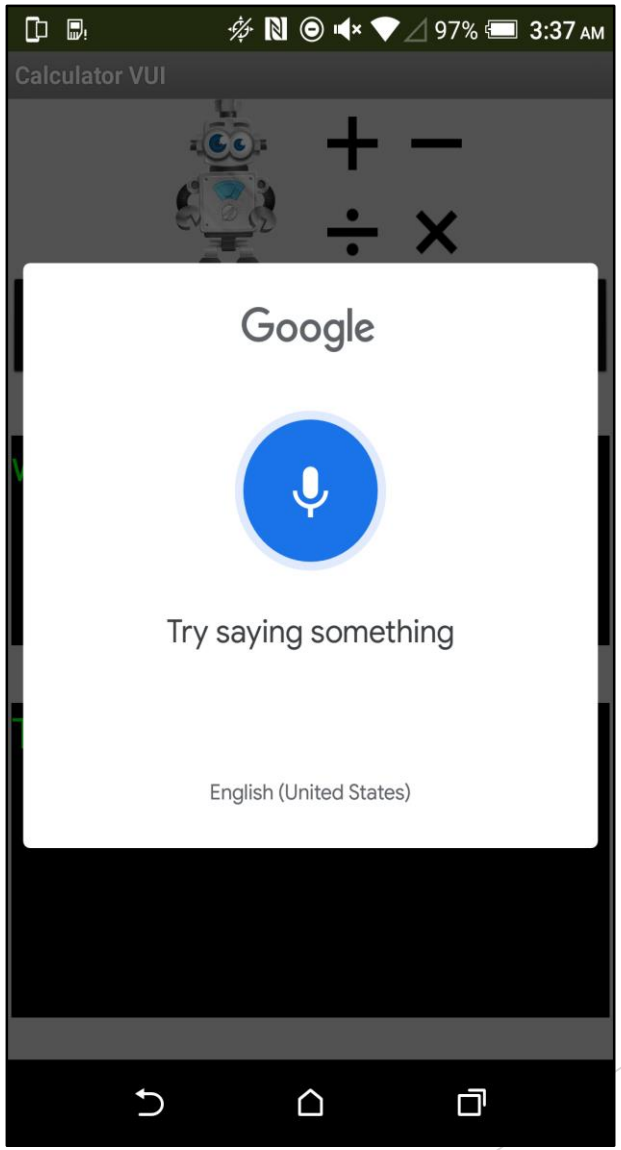
   1. Horizontal Arrangement
   2. Image
   3. Button
   4. Label
   5. Speech Recognizer
   6. Text to Speech

1. **List of the Block Section components**

   1. Speak Button
   2. User Text Label
   3. Calculator Text Label
   4. Speech Recognizer
   5. Text to Speech
   6. Control
   7. Math
   8. Text
   9. List
   10. Variables
   11. Procedures

Demo App working from mobile





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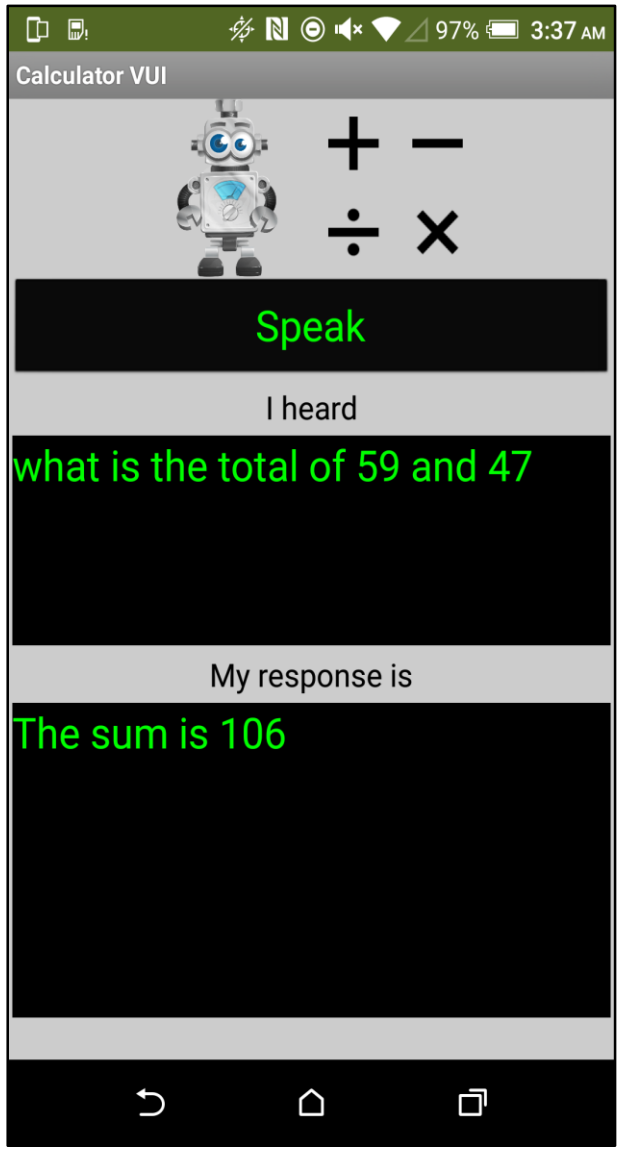

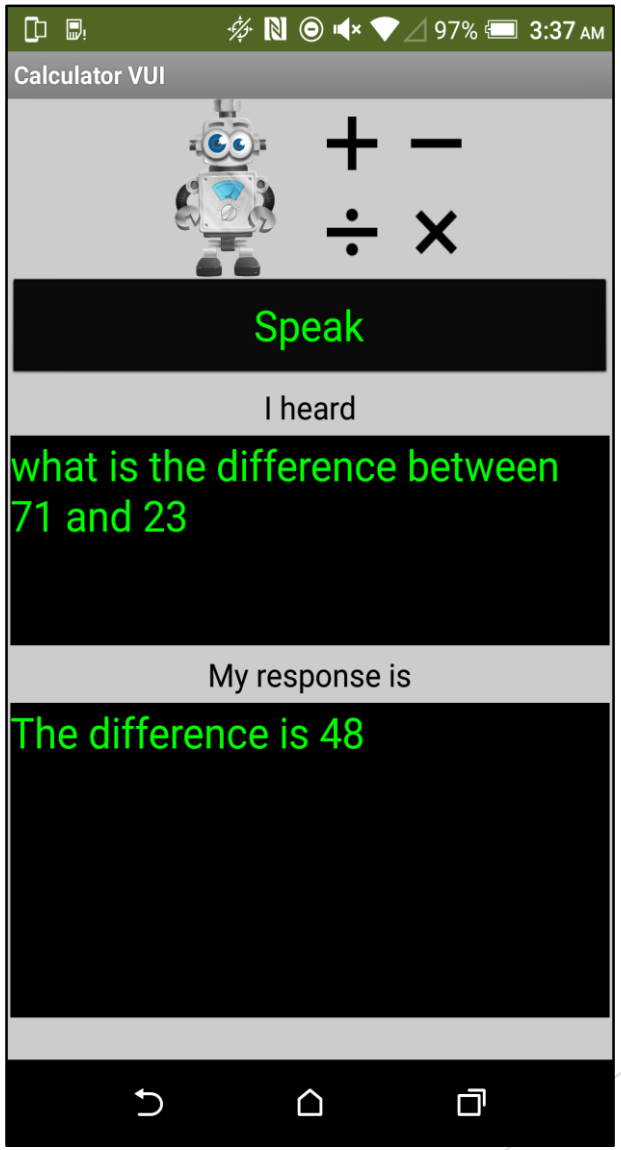

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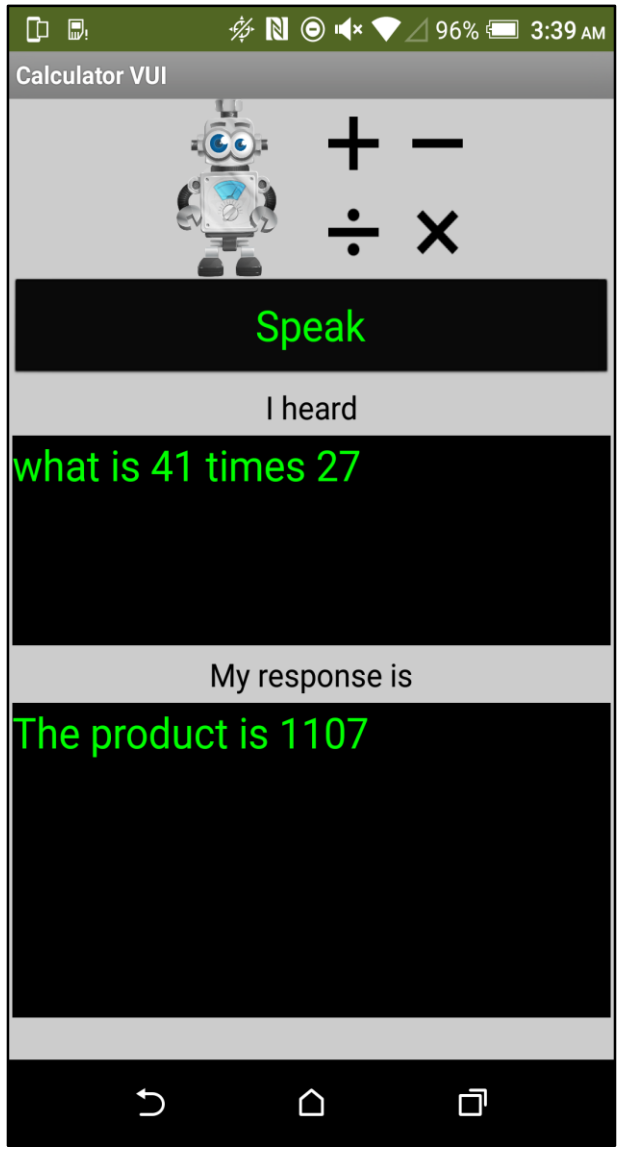

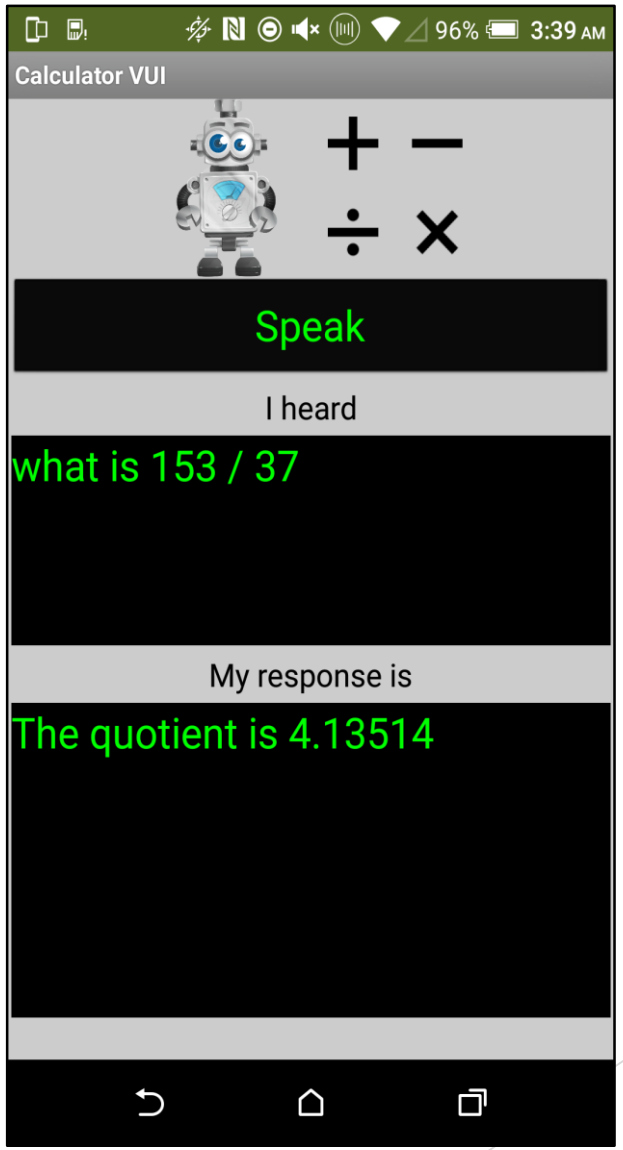

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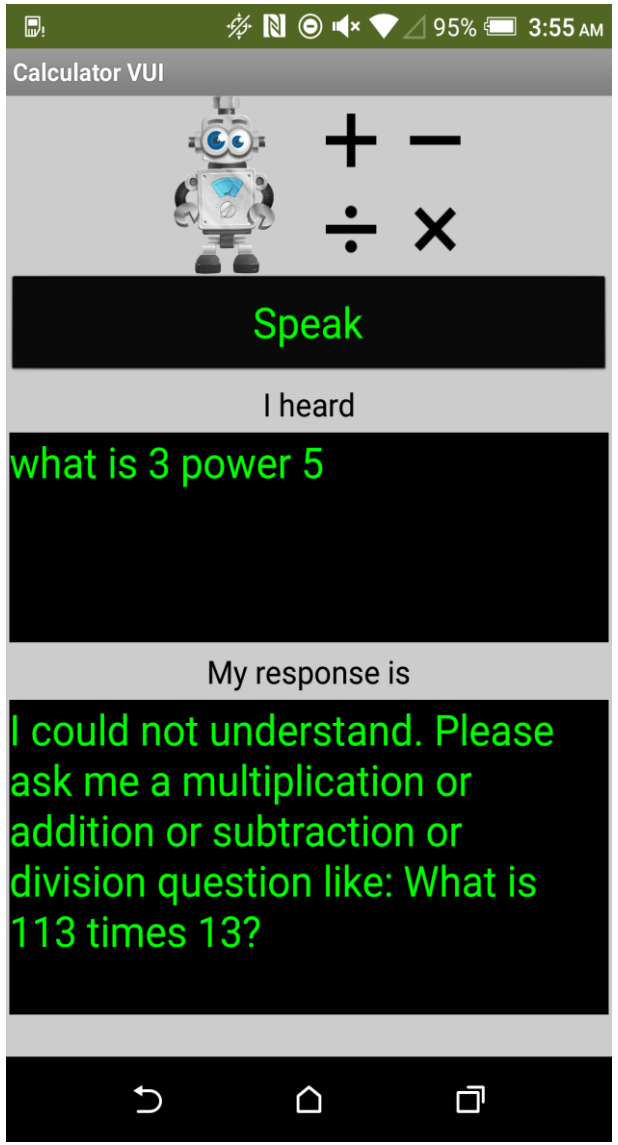
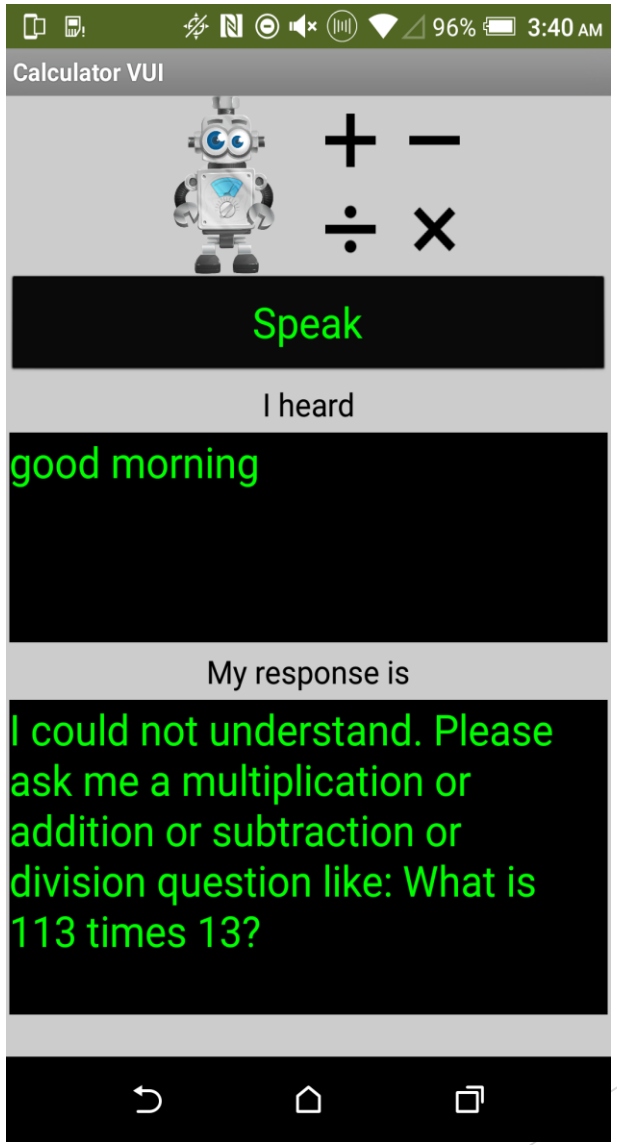
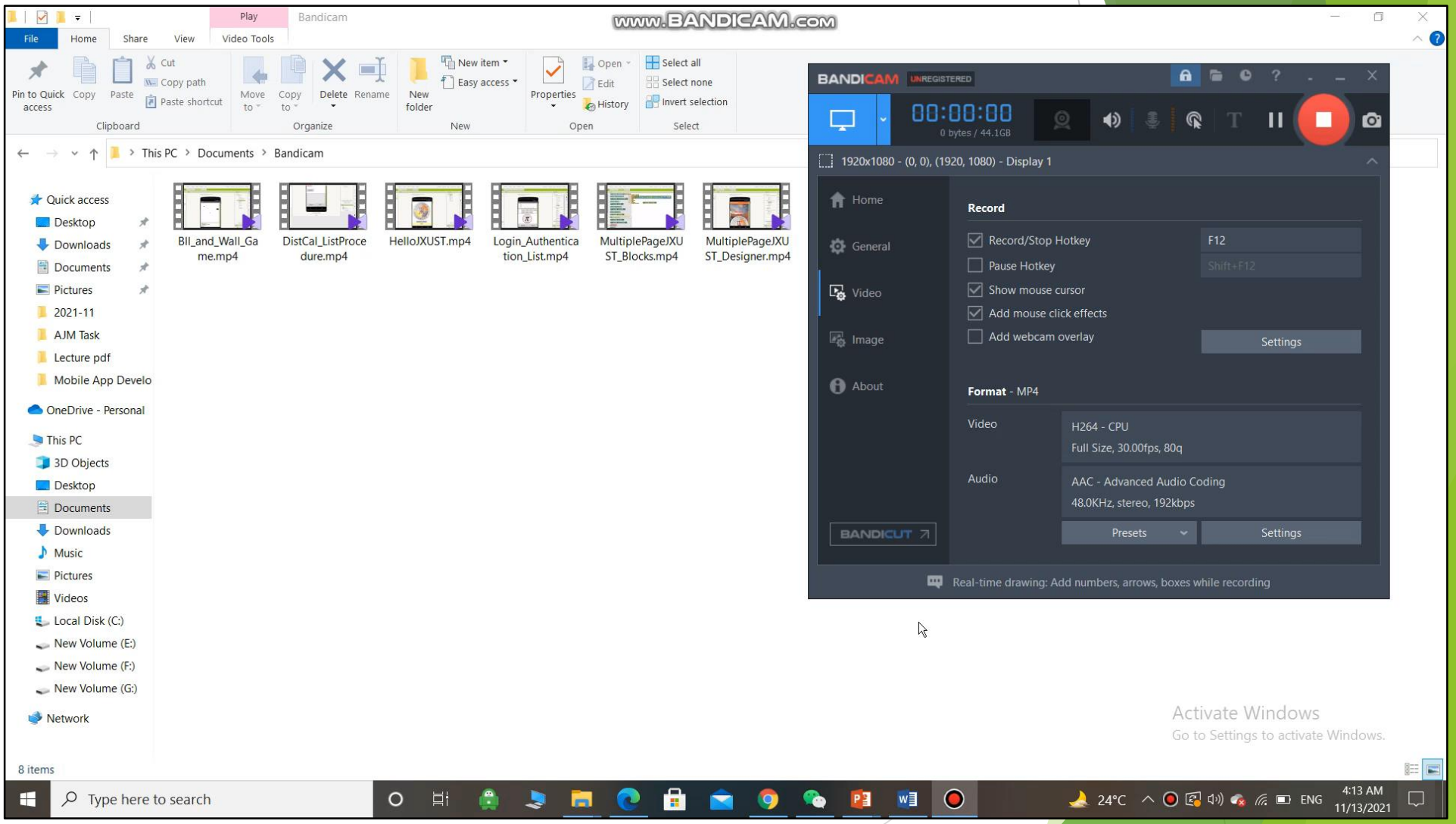


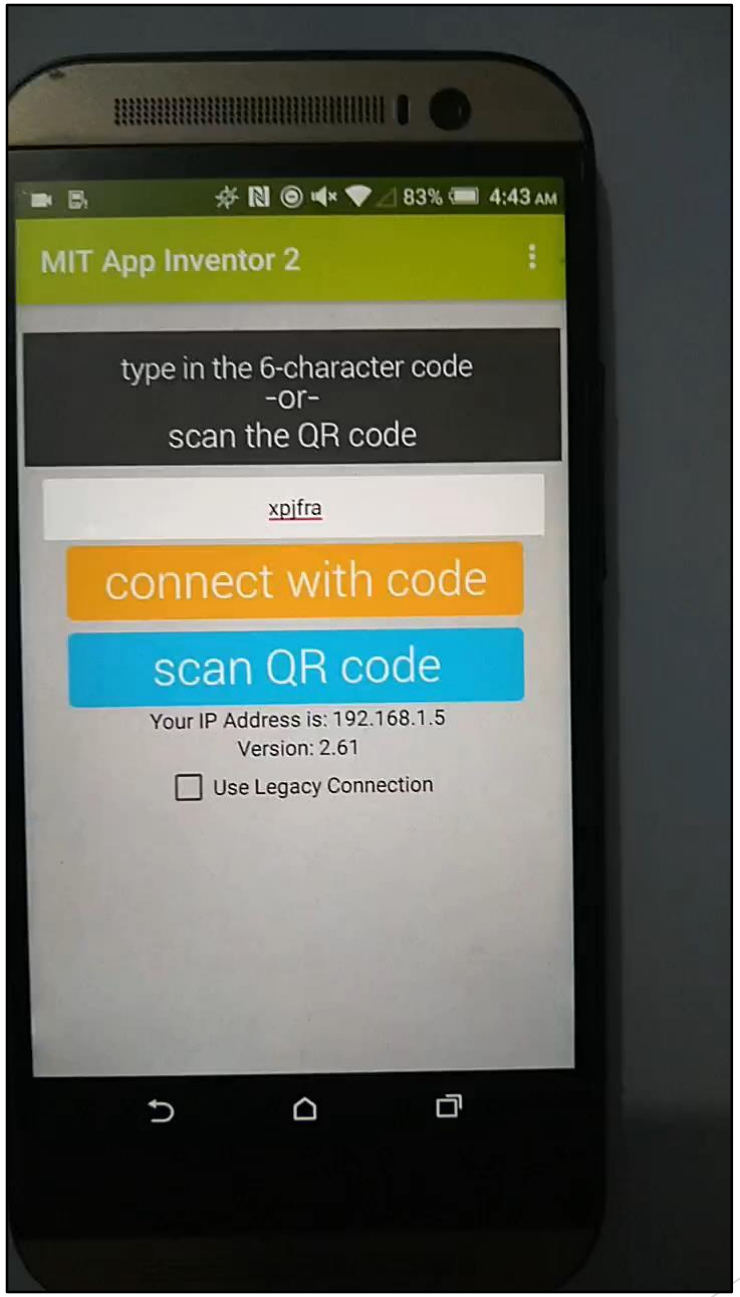


Final point and result

Design Process Video clip:



Final app Video clip:



Thank You