Kashish Sharma
GSOC MIT App Inventor
Ios versions of Android components.

Design Challenge-

Part 1:

After conducting some research, it appears that the 'useFront' property of the Camera component in App Inventor stopped working due to changes made in the Android operating system.
Starting from Android 5.0 Lollipop, Google introduced changes to the camera APIs in the Android operating system, which made it necessary for camera apps to implement their own camera controls. Specifically, camera apps were required to request permission to access the camera hardware and then implement their own UI controls for capturing and displaying images.
In the case of App Inventor, the 'useFront' property relied on the Android operating system to provide the default behavior of opening the front-facing camera when the Camera component was initialized. However, due to the changes in the camera APIs in Android 5.0 and later, this default behavior was no longer supported. Instead, camera apps had to implement their own UI controls to switch between the front and rear cameras.
As a result, the 'useFront' property in App Inventor stopped working because it relied on the default camera behavior provided by the Android operating system, which was no longer available.
To work around this issue, App Inventor developers can implement their own UI controls for switching between the front and rear cameras. Alternatively, they can use a third-party extension that provides this functionality.

Part 2:

To allow the Camera component in App Inventor to take pictures automatically without user intervention, we would need to introduce a new property or method that allows the app developer to specify the frequency or interval at which pictures are taken.
One possible approach is to introduce a new property called 'autoCaptureInterval' to the Camera component. This property would allow the developer to specify the time interval (in seconds) between automatic captures. For example, if the developer sets the autoCaptureInterval to 5 seconds, the Camera component would automatically take a new picture every 5 seconds until the app developer stops the automatic capture.
To implement this feature, we would need to modify the existing Camera component in App Inventor. Specifically, we would need to add a new timer that triggers the camera capture

event at the specified interval. This timer would need to be started when the user enables automatic capture by setting the autoCaptureInterval property, and stopped when the user disables automatic capture.
In terms of the implementation details, we would need to modify the following files in the App Inventor source tree:

1. Camera.java: This file defines the Camera component in App Inventor. We would need to add a new property called 'autoCaptureInterval' to this file, and modify the existing capturePicture method to support automatic capture. Here's an example of how the modified capturePicture method might look like:

```
public void capturePicture() {
  if (mCamera != null) {
    // Check if automatic capture is enabled
    if (mAutoCaptureInterval > 0) {
      // Set up a timer to capture pictures automatically
      mAutoCaptureTimer = new Timer();
      mAutoCaptureTimer.schedule(new TimerTask() {
        @Override
        public void run() {
          // Capture a new picture
          mCamera.takePicture(null, null, mPictureCallback);
        }
      }, 0, mAutoCaptureInterval * 1000);
    } else {
      // Take a single picture
      mCamera.takePicture(null, null, mPictureCallback);
    }
  }
}
```

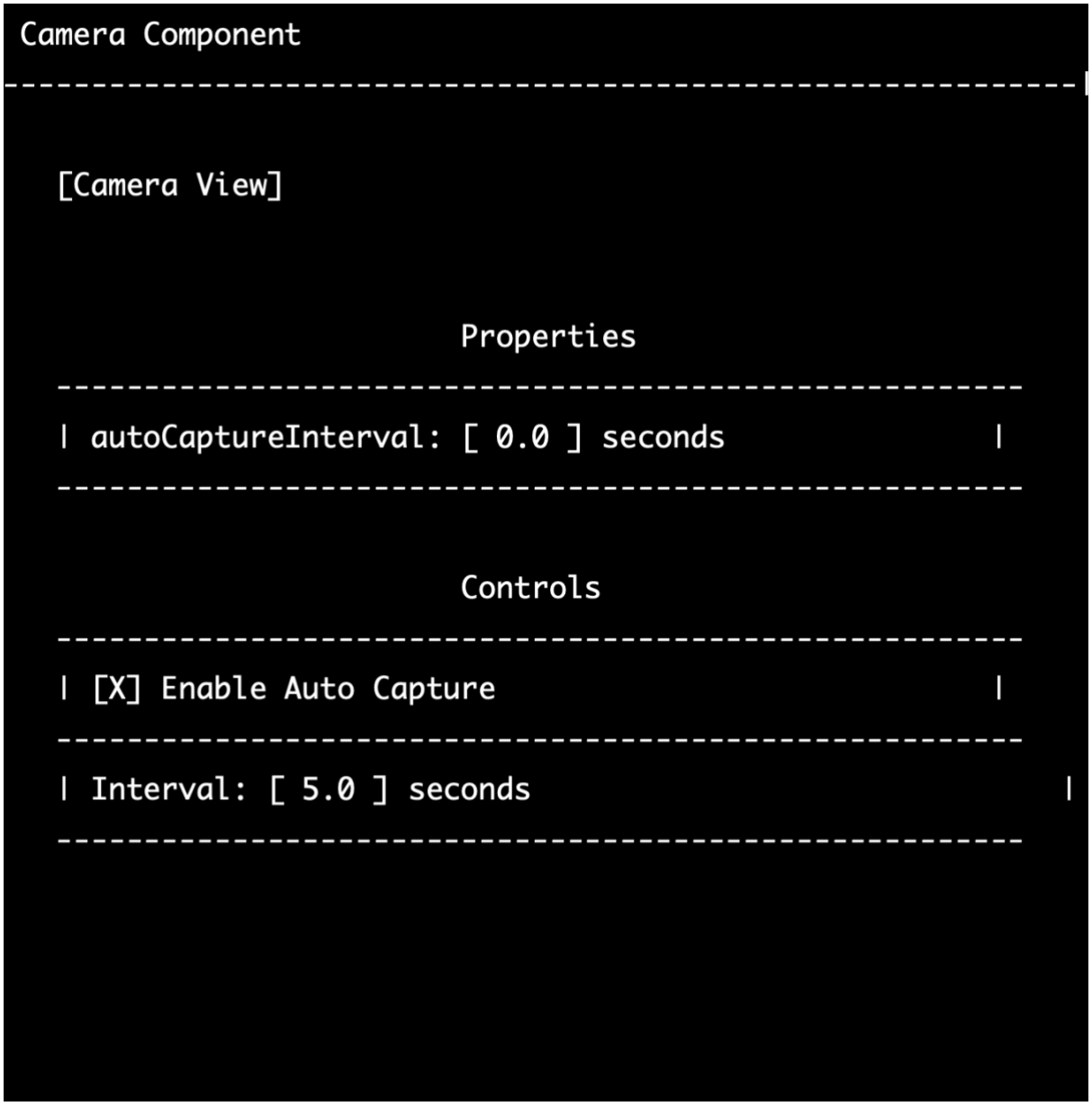
2. Camera.aidl: This file defines the interface for the Camera component. We would need to add a new method called 'setAutoCaptureInterval' to this file to allow the app developer to set the autoCaptureInterval property.
3. CameraComponent.java: This file provides the implementation for the Camera component in App Inventor. We would need to add a new method called 'setAutoCaptureInterval' to this file to handle the new autoCaptureInterval property.
4. CameraBlocks.java: This file provides the block definitions for the Camera component in App Inventor. We would need to add a new block for the 'autoCaptureInterval' property to this file.

Once these modifications are made, the Camera component in App Inventor would be able to capture pictures automatically at the specified interval, allowing app developers to build more advanced camera applications.

To implement the 'autoCaptureInterval' property for the Camera component in App Inventor, we would need to add a new property to the Camera component UI. Here's a possible design for how this property could be added:

1. In the Camera component palette, add a new property called 'autoCaptureInterval' with a default value of '0' (indicating that automatic capture is disabled).
2. When the 'autoCaptureInterval' property is selected in the properties panel, show a text box where the app developer can enter the desired interval between captures (in seconds).
3. Add a new button or toggle switch in the Camera component UI that allows the app developer to enable or disable automatic capture. When the button/switch is turned on, the Camera component will start capturing pictures automatically at the specified interval. When the button/switch is turned off, automatic capture will be disabled.
4. When the 'autoCaptureInterval' property is set to a non-zero value, display a label in the Camera component UI that shows the current interval between captures.

Here's a possible design for how this UI could look like:



In this design, the 'autoCaptureInterval' property is shown in the properties panel with a text box where the app developer can enter the interval between captures. The 'Enable Auto Capture' button allows the app developer to enable or disable automatic capture, and the 'Interval' label shows the current interval between captures when automatic capture is enabled.

Overall, this UI design should be intuitive and easy to use, allowing app developers to quickly and easily add automatic capture functionality to their camera applications.