ArtCeleration Mid-progress Report

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1 Functionality

1.1 Library

At first, the Artlib will create a transformRequest using requestTransform method. The Activity MainViewer would call this method to send the image data to the library if spinner listener monitored the select information from the user.Artlib will create a memFile with the name called "somename" with a particular length.The image will write bytes into the memFile. The ParcelFileDescriptor will create a pfd to store the image bytes inside the memFile. The pfd will be stored into data bundle. Also need to create another Messenger object for getting the message reply back from the service. The data bundle will be sent within the message by the messenger to the service.

1.2 Service

Artlib sends the source image to the service. Then the image will be processed in the service (the image process is not in this first checkpoint). The service will use another memory file to send back the data to the library using the similar method mentioned in the previous subsection. To achieve the FIFO requirement of image processing, we'll use Runnable to create another thread, so that the image process thread and the request accepting thread will not block each other. But we couldn't finish this at checkpoint 1.

2 Project Experience Description

2.1 Goals

For the checkpoint1 of assignment2, our goal is to build the library and service to allow the activity to send image data to the background and send it back to the UI after the image procession completed. The library will use requestTransform to receive data when the user activates the spinner. Then the image will go into the service as data bundle message. The library will receive the processed data with a new MemoryFile. The activity will eventually get the message by the TransformHandler.

2.2 Design

For the checkpoint1: we have four component communicating with each other. They are Artlib, ArtTransformService, MainViewer, and ArtView respectively. Artlib is the library; ArtTransformService is the service working in the background. MainViewer and ArtView together constitute the activity.
Describe your application components, including any activities or classes.

- In the ArtLib:
  - onServiceConnected()
  - onServiceDisconnected()
  - void init()
  - getTransformsArray()
  - getTestsArray()
  - registerHandler()
  - requestTransform()
  - MemoryFile:
    memFile will store the image in the library and called "somename"
  - ParcelFileDescriptor:
    ParcelFileDescriptor will parcel the image data with the pathname into pfd
  - dataBundle.putParcelable("pfd", pfd):
    dataBundle will bundle all the data for the image as the message sending to the service

- In the ArtTransFormService:
  - class ArtTransformHandler extends Handler:
    Register the messenger of receiving image
  - class ArtTransformHandler extends Handler:
    Register the messenger of sending the processed image

Describe interfaces between application components.

ArtLib: in this class, we created two messengers to send and receive an image from the service. RequestTransform passes the source image() method. We created a MemoryFile for sharing an image between library and service. The ParcelFileHandler obtains the MemoryFile object file descriptor. The message sent through the data bundle to the service.

ArtTransformService: In this class, we use two handlers. The first one is to receive data from the library side while the second one is to send the processed image using MemoryFile.

2.3 Strategy

- **How did your team manage a division of labor?** We worked on the project together. Yitao focused more on the data transfer from different components. Miao worked more on the lab report.

- **Describe challenges encountered along the way**

  - **Part 1**
    We encountered difficulties when we were dealing with data communication between different components. It took us some time to understand the data flow between the client and the service.

2.4 Describe ways in which you would improve the assignment

It would be better if the tutorial covers more about data communication between activity, service, and library.