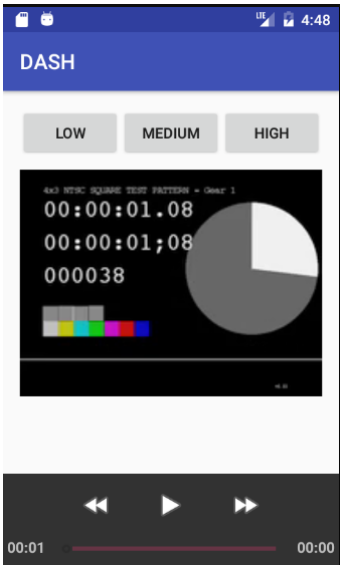
DASH (Dynamic Adaptive Streaming over HTTP) streaming system

Goals:

1. Upload a MP4 video at least 3 mins to a web server.
2. Split the MP4 file into streamlets, i.e., 10 second long video files.
3. Transcode the streamlets into 3 different streamlets (e.g., low, medium, high quality).
4. Create a playlist (.m3u8) on the web server.
5. Implement a simple Android DASH media player to play your video.
6. Users can switch among quality levels using your GUI.



A simple DASH player & web interface.

Notes:

- On the web server, write scripts in the **Python** or **PHP** language to
  1) Allow users to upload the video.
  2) Split the video into streamlets.
  3) Transcode the streamlets to 3 different qualities.
  4) Generate the playlists (.m3u8) on the web server.
- Use **FFmpeg** to transcoder.
- Use **Java** and Android Studio IDE to write your Android App.
- You need to know some basic Linux commands: ls, mv, cd, chmod, …

You need to submit a .zip file that contains the following files to the FTP

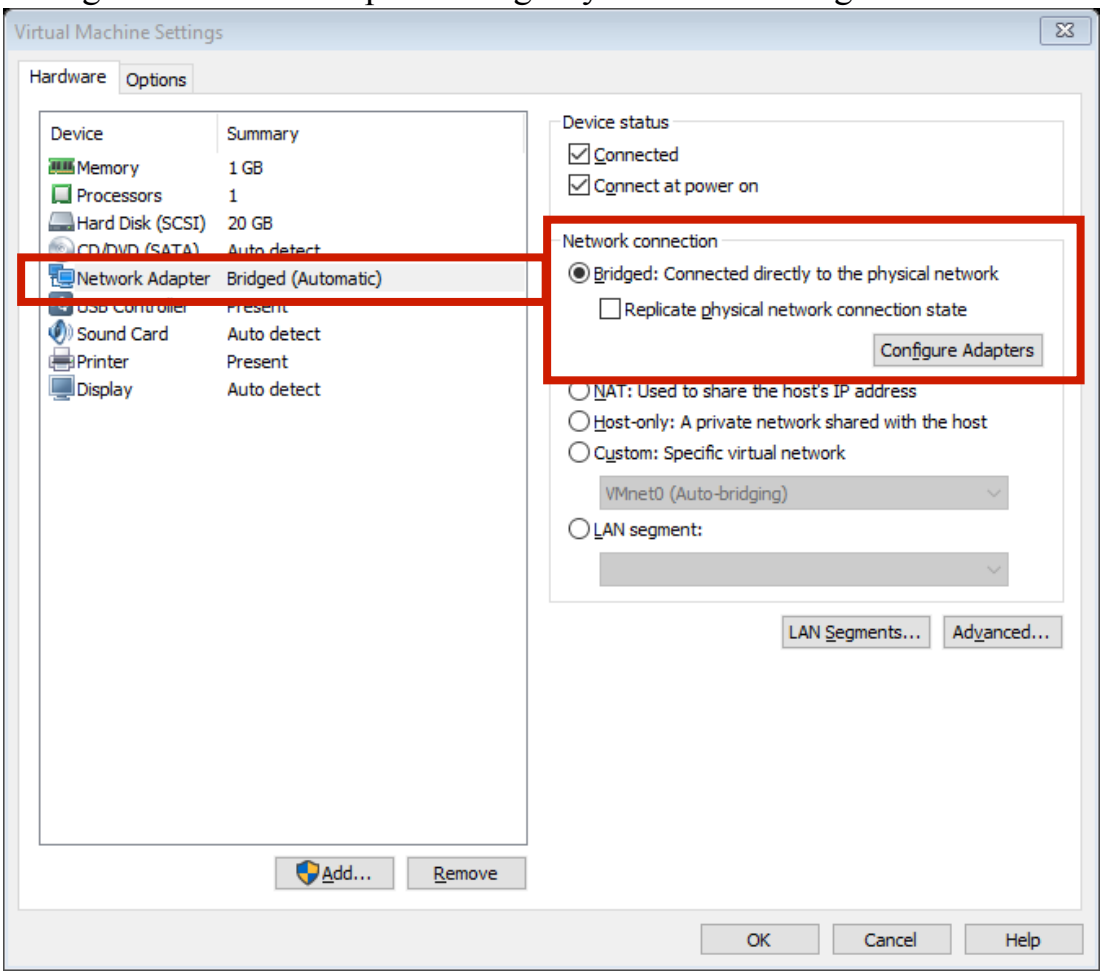
(The information of FTP will be posted on Facebook.)

1. A report.
2. Android source code.
3. Web site source code

Deadline: Mar.30(四) 23:59:59

Guides:

1. If you don't have your own server, you can use **VMware Workstation player** to host your server. And you have to run the Android emulator on the same PC to connect the VM.
2. Change the network adapter setting of your VM to Bridge.



3. You can install **Ubuntu 16.04** (or other OS you are familiar with) on your server.
4. Install Web server (**Apache2**, **Nginx** or others)
5. Install **PHP** or **Python**

```
sudo apt-get install apache2 php libapache2-mod-php
```

The example commands use on Ubuntu 16.04. (Apache2 and PHP 7.0.15)

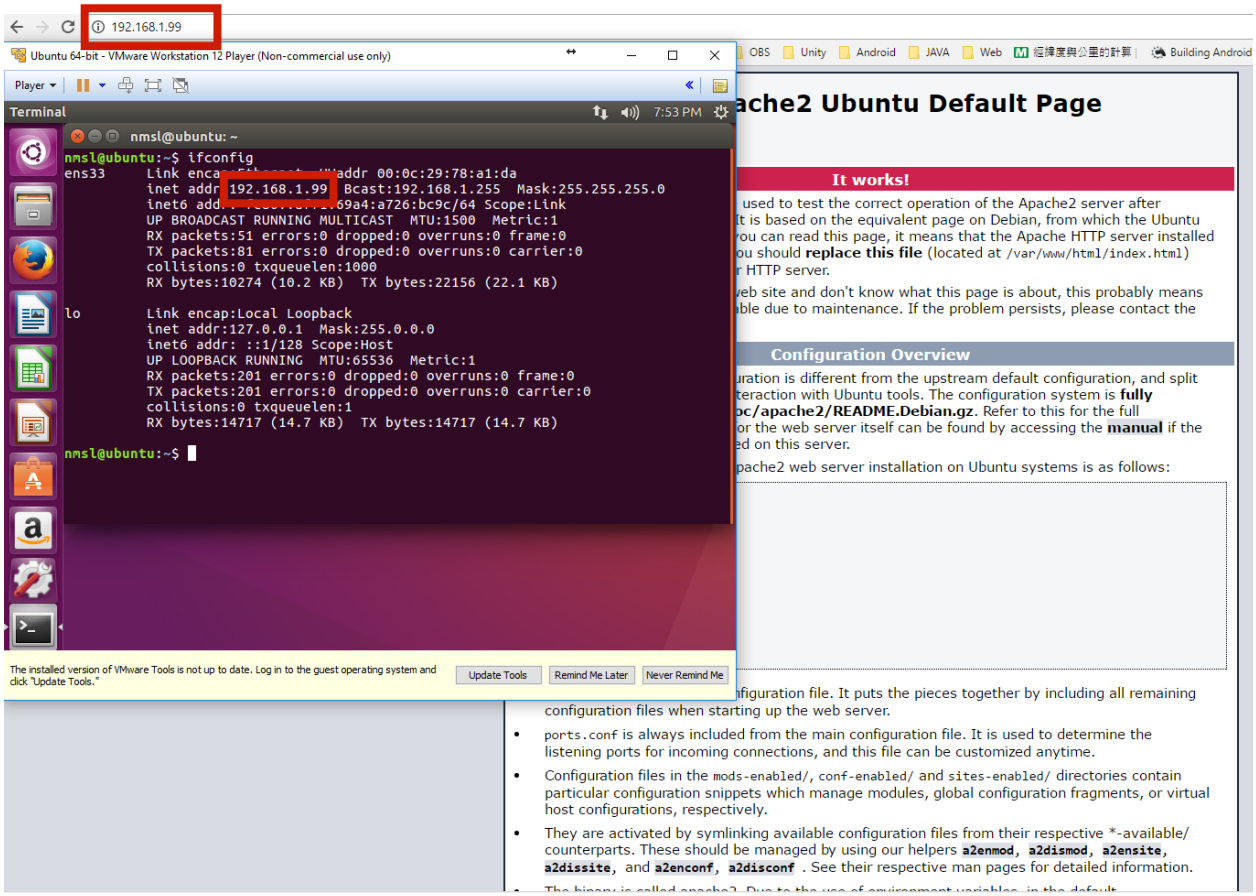
6. Install **FFmpeg**

```
sudo apt-get install ffmpeg
```

The example commands use on Ubuntu 16.04. (FFmpeg version: 2.8.11)

7. You should be able to see the default web page on your PC.

Use ifconfig command to check the IP of your VM.

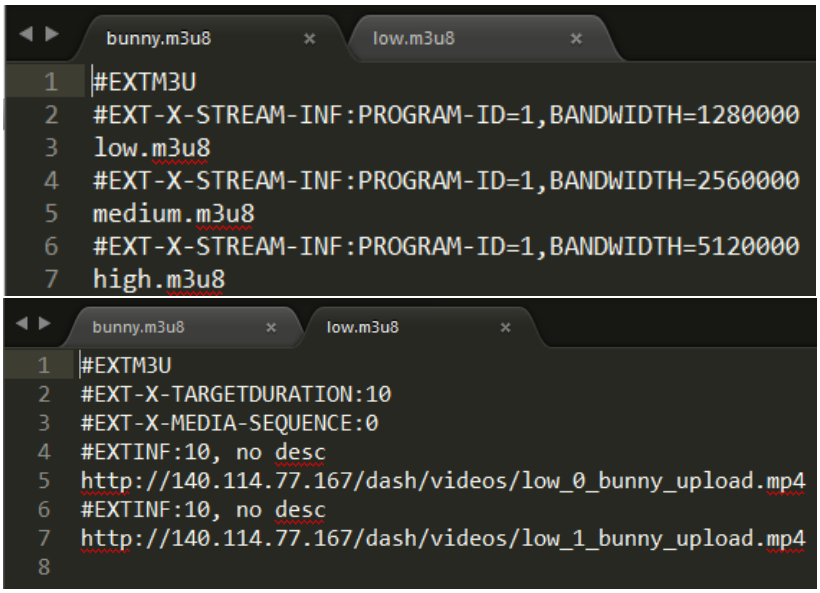


8. For php to execute FFmpeg commands, you can see here:
   https://trac.ffmpeg.org/wiki/PHP

9. Your DASH media player need to read the .m3u8 playlist.
   For .m3u8 format, you can see here:
   https://developer.apple.com/library/content/technotes/tn2288/_index.html

Hint:

- There are some samples of playlists on our server. You can use it to test your program.
  http://140.114.77.167/dash/playlists/bunny.m3u8
  http://140.114.77.167/dash/ playlists /low.m3u8
- The playlists may not work on some players because the HLS (Http Live Streaming) is not support mp4 files. So you are going to build your own player.



Grading policy:

- (1 point) User can upload the video via your web site.
- (1 point) Your web scripts can split a video into streamlets.
- (1 point) Your web scripts can transcode the video into three qualities.
- (1 point) Your web scripts can generate playlists file in .m3u8 format.
- (2 point) Your Android app can read the playlists via internet.
- (2 point) Your Android app can play streamlets automatically.
- (2 point) Your Android app allows users to switch the quality.