This homework is for the practice of texture mapping, frame buffer object and environment map.

You will implement a WebGL program to render a scene that contains an environment map, 1 ground, at least 2 3D objects on the ground, 1 quad to show off-screen rendering result and one point light.

Some requirements are the same as that of Homework3. So, you can just extend the code of your Homework3.

Scene:

- 1 point light: you should set a point light and draw a small cube or sphere at its location. (let us be able to see where it is)
- 2 different objects from the external 3D models with nice texture mapping (do not use mario and sonic in the quiz. Try something new). You suppose be able to download 3D models with nice texture images from clara.io.
- 1 ground (e.g. a quad or a big flat cuboid): And, you should put all above 3D objects on this ground correctly.
- Add a background to your scene: using an environment cube map. (You can find some cube maps by Google ”environment cube map”. However, you probably have to crop them by yourself.)
- Add a quad as a screen in your scene (let it float on the ground). Choose a fixed camera view which can cover almost all objects in your scene for off-screen rendering and paste the result from the off-screen rendering on the quad. (this is the practice of frame buffer object)

Illumination:

- You should implement a correct and nice-looking local illumination (ambient+difusse+specular and phong shading) for every objects in your scene.

User Interaction:

- Users can rotate their view direction by pressing and dragging the mouse.
- Users can move forward or back along the view direction by press ”w” and ”s”, respectively.

Submission:

- You have to submit your program to moodle before the deadline. Otherwise, late submission penalty will be applied.

- You have to put all files (index.html, js) in a folder, zip the folder, rename the zip file to your student ID (e.g., 407470888s.zip), and submit this zip file to moodle. Ensure that TA can unzip your zip file and drag index.html to the browser to run without any extra work. If you do not follow this rule, your homework will be penalized.
- **You have to schedule time with TA to demonstrate your homework (you will not receive any points if you don't):**
  - Please book a 5 minutes time slot here before moodle submission deadline: `https://tinyurl.com/ytf5fsav` (Please check and sign up this at this form after 11/18)
  - You are welcome to bring your laptop for this demonstration. **If you will not bring your laptop, make a note when you book the time slot.**
  - make sure you arrive on time
  - TA office: Room 109 Applied Science Building.
  - TA email: 61047061s@gapps.ntnu.edu.tw
  - **If you submit the homework late, you still have to email TA and book a time for demonstration again. Otherwise, you will not receive any points.**