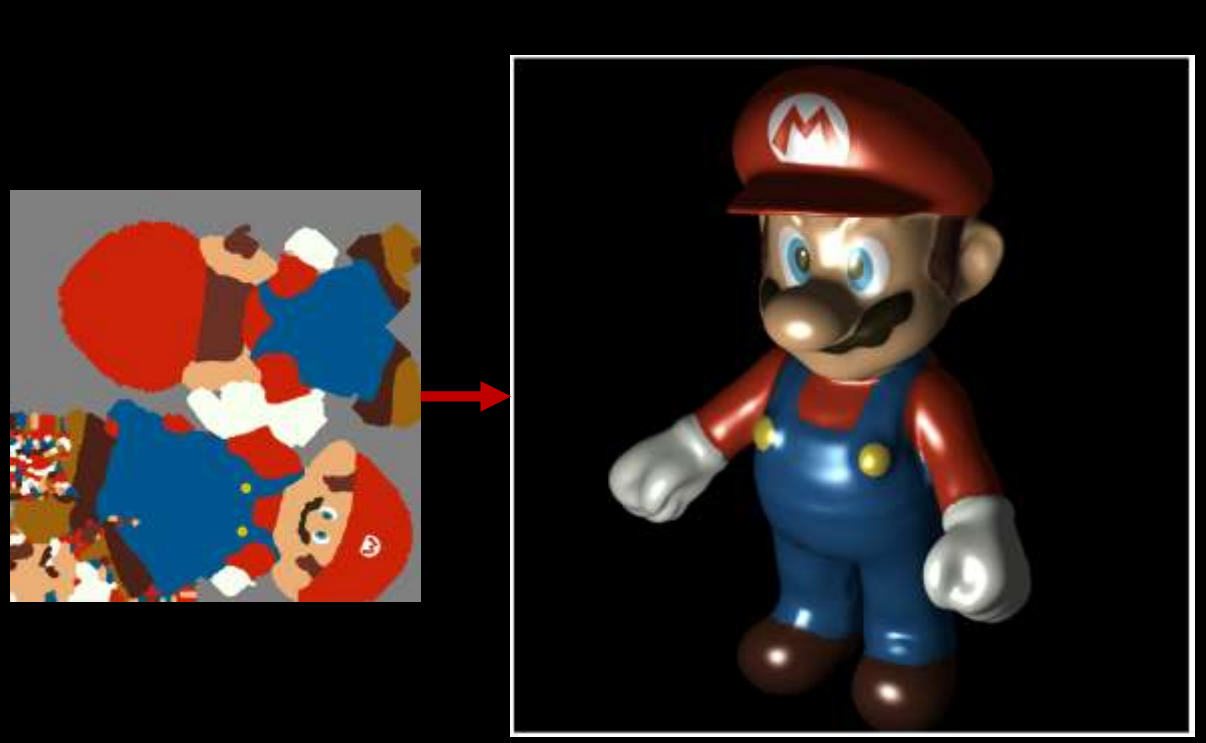
Lab 7

- Download the lab8 template
  - WebGL.js is the same as WebGL.js in Ex08-3 (sonic)
- Let's firstly use texture image, marioD.jpg, to color the mario
- Then,
  - Replace mario's blue cloth to LV one
  - Decorate mario's red hat and red cloth with "hearts"
- https://www.youtube.com/watch?v=76lZnT39CNI&ab_channel=Ko-ChihWang



The First Task

- You can simply modify the
  - object file name
  - content of the variable, “imgNames”
  - content of the variable, “objCompImgIndex”
  - and, the value of the variable “objScale”
- in WebGL.js to get this result

- Then, the challenge comes

The Second Task

- 1.
  - You should load the other two texture images, “LVTexture.jpg” and “heart.jpg”
  - Create texture objects for them
- 2.
  - In this task, you need the three texture objects (marioD, LVTexture, heart) at the same time
  - **So, before drawing (call gl.drawArrays()), you should assign them to three different texture units, such as, gl.TEXTURE0, gl.TEXTURE1 and gl.TEXTURE2**
  - **In the fragment shader, you also need three sampler2D variables for these three textures**

The Second Task

- 3. To “replace mario’s blue cloth to LV one”
  - you should identify the fragment which supposed be colored by blue
  - then, you color the fragment using the color from the LV texture (look up the texture color using the same texture coordinate) instead of blue color
  - This is a condition I suggest to identity the blue cloth
    - **distance(colorFromMarioDImage, vec3(0.0, 0.0, 1.0)) < 0.6**

The Second Task

- 4. Decorate mario's red hat and red cloth with "hearts"
  - Idea:
    - if you find a fragment which should be colored by red (this means the fragment belongs to the hat and the red cloth region)
    - If you use the same texture coordinate to look up "heart texture" and the color from "heart texture" is white, this fragment belongs to "heart contour"
    - If a fragment belongs to red hat/cloth and heart contour, use the color mixed by marioD texture and heart texture to color the fragment
    - Otherwise, you still use the color (red) from marioD to color the hat and cloth
- This is the equation I suggest to mix the two colors (the fragment inside both red hat/cloth and white heart contour)
  - **colorFromMarioD * 0.4 + colorFromHeartTexture * 0.6**
- To identify red cloth and hat
  - I suggest this equation: **distance(colorFromMarioDImage, vec3(1.0, 0.0, 0.0)) < 0.3**
- To identify heart contour
  - I suggest this equation: **distance(colorFromHeartTexture, vec3(1.0, 1.0, 1.0)) < 0.7**

What You Should Do for “Submission”

Submission Instruction

- Create a folder
  - Put the html and js files in the folder
  - Zip the folder
  - Rename the zip file to your student ID
    - For example, if your student ID is “40312345s”, rename the zip file to “40312345s.zip”
  - Submit the renamed zip file to Moodle

- Make sure
  - you put all files in the folder to zip
  - You submit the zip file with correct name
- You won’t get any point if
  - the submitted file does not follow the naming rule,
  - TA cannot run your code,
  - or cannot unzip your zip file.