**Session 2 Exercises**

1. If you haven't already done so, reproduce the sketch to move a coloured sphere around the screen using the code from the lecture notes. You can do this by first copying the code below:

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| --- |
| // Draws a small image at the current mouse position.  // Jo Wood, 26th January, 2016    PImage img;    void setup()  {    size(400,320);      // Load the image from a local file.    img =loadImage("sphere.png");      // Position image so it is centred at the given coordinates.    imageMode(CENTER);  }    void draw()  {    background(255);      // Draw the image centred on the current mouse position.    image(img,mouseX,mouseY);  } |

1. Then, you will need to download the file [sphere.png](http://staff.city.ac.uk/~jwo/datavis/session02/imageSketch2/data/sphere.png) (*right-click and Save as...*) and drag it into your sketch before running it.   
     
   Modify it so that it displays some other (small) image found on the web. You should be able to specify the URL of the image directly in your Processing code rather than download it to your computer.
2. Following the tasks in the purple boxes in the lecture notes, reproduce the dental health sketch by copying the relevant code from the notes into Processing. You will also need to save and drag the files [worldCountries.png](http://staff.city.ac.uk/~jwo/datavis/session02/map1/data/worldCountries.png), [countryLocations.tsv](http://staff.city.ac.uk/~jwo/datavis/session02/map2/data/countryLocations.tsv) and [badTeeth.tsv](http://staff.city.ac.uk/~jwo/datavis/session02/map2/data/badTeeth.tsv) into your sketch.   
     
   Experiment with the code that controls the appearance of each data item (currently red transparent circles) to see if you can make any of the patterns in global dental health clearer.
3. ***Data Challenge:*** Using the dental health sketch as a template, create a new sketch that will show some interesting and unexpected patterns from the [GapMinder](http://www.gapminder.org/data/" \t "_blank) dataset. This will involve choosing an indicator name that you would like to explore, opening the spreadsheet associated with that indicator, and saving it as a *tab delimited file* with the extension .tsv. If your downloaded table contains gaps in the column of data you wish to display, you should either delete these rows, or replace the blank cells with 0s.   
     
   You should save the cleaned file in the data/ folder of your sketch (or simply drag it into the sketch if you prefer).   
     
   You may also have to experiment with your symbolisation to maximise the clarity of the visualization. If you find anything interesting, you may wish to post your maps on the Moodle discussion board with a short comment on the patterns you have found.

**Check on Learning Outcomes**

To ensure that you have achieved the outcomes associated with this session, consider the following, which allow you to evaluate your progress.

 Can I drag and drop an image or text file into Processing and use it in my sketch?  
 Could I find at least 5 sources of interesting data on the web that might be visualized?  
 Can I create method and sketch variables of type float, String and PImage?  
 Can I use the Table class to read tabular data from a text file?  
 Can I produce a map of some tabular data found on the internet?