Inft1004 Visual Programming – Lab for week 7 and 8

1. Do the quiz for week 7. (Under the "Assessment/Quizzes" folder on blackboard)

NOTE: E – Easy, M – Medium, H – Hard, T – Tricky

2. (E) Write a function that splits the following string into a list of its 9 parts.

   `"abc.def.ghi.jkl.mno.pqr.stu.vwx.yz"`

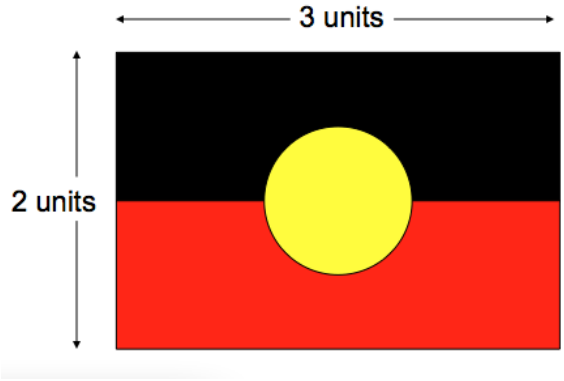
   (Test it by printing each part of the list)

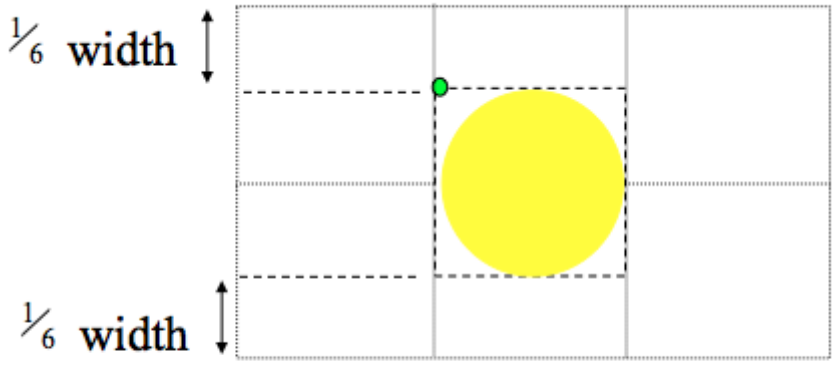
   (Hint: This should use the "split" function that works with strings)

3. (E) Write and test a function that draws the French Flag. You may need to find out the correct colours and something about the size of the French flag by looking online.

   (Hint: See Mod7.1 of lecture 7 for some help with how to draw flags)

4. (M) Write and test a function that draws the Aboriginal Flag





The Aboriginal flag is 3 units wide and 2 units high (whatever unit we choose to use)

5. (H) Write a function called…. `drawShips(shipList)`

   The parameter will be a list of ships and other information. The list will look something like this….

```
[["Seawise Giant", "Oil tanker", 458], ["Barzan", "Container ship",
400], ["Pioneering Spirit", "Crane vessel", 382], ["Valemax", "Bulk
carrier", 360], ["Oasis of the Seas", "Cruise ship", 362], ["Queen Mary
2", "Ocean liner", 345]]
```

   Notice it is actually a list of lists. Each element in the main list contains a list that has a ship's name, the ship's type and the length (in metres) of the ship. (Be careful if you copy this – JES might give odd syntax warnings as it may not recognise some of the pdf characters such as "). The list will need to be on a single line in JES.

   In this case you can access various elements of the list like this…

```
shipList[0][0] would be "Seawise Giant"
shipList[0][1] would be "Oil tanker"
shipList[0][2] would be 458
shipList[4][2] would be 362
shipList[5][1] would be "Ocean liner"
```

   The function uses the information in the list to create simple pictures of the ships and returns this picture. The picture should be a square that is 620 pixels wide and high. It would be sensible to use the length of the ships to determine how long the ships are – so that you can compare them.

   You might want to use JES functions like addText(), addRect(), addRectFille or addLine() to draw your ships. The ships should be the same height and spaced evenly. They don't need to be too ship like – even a box might be a good simple start. Leave a border around the edge of the picture of 10 pixels. It might be nice to label the centre of each ship with either it's name or type. Something like this would be OK.

   You are advised to also write a test function that calls this function with a few different lists of ships. You will have to decide if there is a minimum width or height that you need to draw the ships.

6. (T) Write a function called

   `printBuildings(tallBuildingFilename, informationType)`

   This function will read a list of information from a ".csv" file. This is a comma separated value file that contains information about tall buildings. I've created one that is included in this lab – it is called "buildingHeightsWindows.csv". It is actually saved from excel as a Windows comma separated value file.

Rank	Building	City	Country	Height (m)	Floors	Built
1	Burj Khalifa	Dubai	UAE	828	163	2010
2	Shanghai Tower	Shanghai	China	632	128	2015
3	Abraj Al-Bait Clock Tower	Mecca	Saudi Arabia	601	120	2012
4	Ping An Finance Centre	Shenzhen	China	599	115	2016
5	Lotte World Tower	Seoul	South Korea	555	123	2016
6	One World Trade Center	New York City	United States	541	104	2014
7	CTF Finance Centre	Guangzhou	China	530	111	2016
8	Taipei 101	Taipei	Republic of Ch	508	101	2004
9	Shanghai World Financial Center	Shanghai	China	492	101	2008
10	International Commerce Centre	Hong Kong	China	484	118	2010

This function reads the information in the file called "`tallBuildingFilename`" and then prints the information. The information printed will depend on the value of the parameter called "`informationType`"

If the value is 1 it print all the building names and their city and country in rank order. For example…

Burj Khalifa, Dubai, UAE

Shanghai Tower, Shanghai, China

Abraj Al-Bait Clock Tower, Mecca, Saudi Arabia

Etc

If the value is 2 it should print the name of all the building and their heights (in rank order)

If the value is 3 it should print the name of the buildings and the number of floors (in rank order)

If the value is 4 it should print the year the building was built, followed by the name of the building. For this type the list should be printed in year order, starting with the earliest buildings first. (Hint: you may need to sort the list first)