Inft1004 Visual Programming – Lab for week 4

1. Do the quiz for week 4. (Under the "Assessment/Quizzes" folder on blackboard)

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

2. (E) Write a function called

   `calculateWaterBill(litresUsed)`

   It calculates your water bill based on the number of litres of water you have used. The calculation is very simple. It is the number of litres times $0.07 (so 7 cents a litre) plus an additional service charge of $78.

   The function should return the price of a water bill. Make sure you test the function carefully.

3. (E) Write a function that uses the **requestString** function to get three animals from the user (eg. donkey, giraffe, lion). You can do this with a for loop or just ask the user 3 times to input an animal (I would try both ways).

   The function should return the three animals as a list. These will actually just be strings. You will need to create an empty list and then use the append function to add each animal (string) to the list. When you print the list to test it should look something like…

   ['donkey', 'giraffe', 'lion']

   (M) (if you like you can try sorting this list – look at the functions for lists).

4. (M) Write a function that takes a picture as an argument. It should duplicate the picture, before processing all the pixels to make a negative of the picture. It should return the negative. (See the lecture for hints).

5. (M) Write a function that takes a picture as an argument. It should duplicate the picture, before processing all the pixels to make a grey-scale picture. It should return the grey-scale image and you may want to explore it to check it worked (See the lecture for hints).

6. (H) Write a function that draws a rectangle on a picture. The rectangle should be 21 pixels high and 21 pixels wide and located in the approximate centre of the picture. The function should take 2 parameters, a picture and a colour. It should **return** a copy of the picture with the appropriate colour rectangle on it.

   Write a second function that lest you test the first function. This first function should pick a file, and make a picture of it. It should also either use `makeColor` or `pickAColor` to get an appropriate colour for drawing a rectangle. This test function should then call the first function, saving the returned image as well as showing it on screen.

   HINT: You can use the **addRectFilled**(picture, startX, startY, width, height, color) function that comes with JES to do this. Look up the JES help system to find out more about this function.