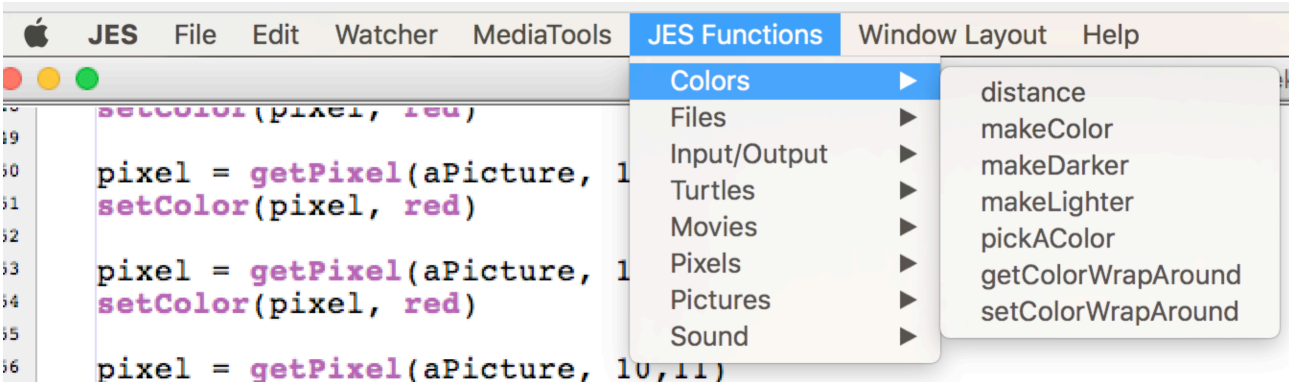
Inft1004 Visual Programming – Lab for week 3

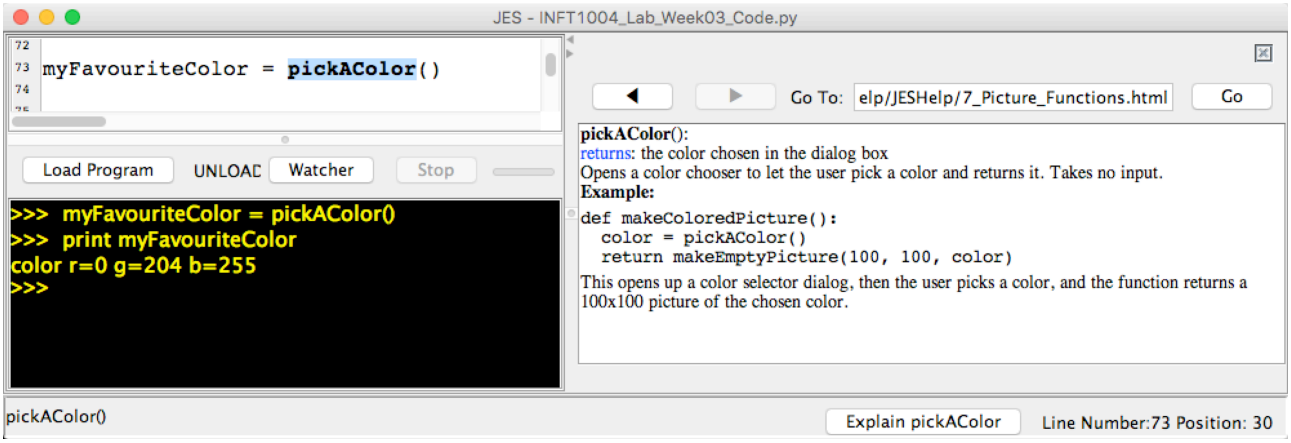
1. Do the quiz for week 3. (Under the "Assessment/Quizzes" folder on blackboard)

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

2. (E) In the lectures we set some pixels to be yellow to make a line. Write a similar function that lets the user pick a file and then make a picture from the file. Finally it should draw a red cross somewhere on the picture. At the end of the function explore the picture so you can test it.
3. (M) Create a similar function to question 2 but now you want to be a bit clever and draw the cross in the middle of the picture. (HINT. You will need to work out the centre using the width and height of the picture)
4. (E) Look at the JES menu item called "JES Functions/Color". Try the pickAColor function in the command window. (It works a bit like pickAFile but lets you pick a color).



If you need some help with understanding this – try typing the function name into the program window of JES. Then select the name "pickAColor" and you should see the button at the bottom of JES change to read "Explain pickAColor". Click on this button and a help window will pop up and describe the function. Try the function out using the command window of JES.



5. (M) Write a similar function to question 3 that draws a cross on the centre of a picture. However, this function should have 2 parameters, a picture and a colour. So when the use calls the function they give it a picture and a colour. It should be defined something like this…

```
def drawCross(aPicture, aColour):
```

The function should first duplicate the picture (You will need to use the JES function called "duplicatePicture" – you can find this on the JES menu under "JES Functions/Pictures". Once you have duplicated the picture the function should draw the cross at the centre location and in the correct colour. Finally it should return the duplicated picture with the coloured cross on it.

To test this function write a second function that has no parameters and ….

Lets the user pick a file (assigning it to a variable – called `file`)

Creates a picture from the file (assigning it to a variable – called `picture`)

Lets the user pick a colour (assigning it to a variable – called `favouriteColour`)

Calls the draw cross function (assigned the returned picture to variable – called `newPicture`

Lets the user explore the `newPicture`

6. (M) Write a function that is a lot like the function in question 5. It draws a cross on a picture at a specified location. It should have 4 parameters, a picture, a colour and an xPosition and yPosition. These two positions tell the function where the centre of the cross should be.

   It should return a copy of the picture with the appropriate colour cross on it. (So you call the function, with a picture and a colour and the result will be a new (duplicate) picture with the specified colour cross on it). Test the function as you did in question 5.

7. (M) Write a function called

   ```
   addFour(number1, number2, number3, number4)
   ```

   that takes 4 numbers as **arguments** and then adds those four numbers together and **returns** the result as a number.

8. (H) Write a function that can be used to test the function in Q7. It should call the addFour function a number of times (3 times say) and prints out a nice message to show the results. A nice message might look like….

   ```
   addFour(12.3, 1.2, 10.1, -1.0) = 22.6
   addFour(14.3, 2.2, 8.0, 1.3) = 25.8
   addFour(-2, 4, 11, 2) = 15
   ```

   (HINT: you will need to concatenate (add/join) a number of strings together to achieve this and you will need to use the `str` function to convert any numbers into strings before concatenating them.

   (T) If you want to try something harder – try using a `for` loop for testing this – although we haven't really covered this yet. You can use the JES function "requestNumber" if you like. You will have to look it up or use the built in help system.