ImageJ Macro Programming

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Conditional Tests

The folder Data\Images contains 4 files: blobs.gif, boats.gif, bridge.gif and clown.jpg

The following code opens all the files

```
myFolder = getDirectory("Select the folder");
myListOfFiles = getFileList(myFolder);
for (i = 0; i < myListOfFiles.length; i++){
    print("Processing file = " + myListOfFiles[i]);
   inputPath = myFolder + myListOfFiles[i];
  open(inputPath);
}
```

The limitation: you cannot choose to only open the gif files

The solution: test if the file is a gif or not before opening the file

Conditional execution *if*

```
if (condition){                    //the condition is evaluated
        statement 1;               //if the condition is true statement 1 are executed
        }
statement 2;                       //the statement 2 is always executed
```

{ } are used to group together multiple statement as one

Example: modify the value of x to see what happens

```
x = 1;
if(x == 1){
        print("It is true!");
        }
print("end");
```

Conditional execution *if*

```
if (condition = is the file a gif file?){        //the condition "is the file a gif file?" is evaluated
        open the file;                           //if the condition (a gif file) is true the file is open
        }
print(something);                                //the statement 2 is always executed
```

EndsWith() to select

The file name is in the form of name.extension

blobs.gif

clown.jpg

Lest use **endsWith(string, suffix)**
Returns *true* (1) if *string* ends with *suffix*. See also: startsWith, indexOf, substring, matches. https://imagej.nih.gov/ij/developer/macro/functions.html#endsWith

```
endsWith(blobs.gif, ".gif");          //returns 1/true
endsWith(clown.jpg, ".jpg");          //returns 0/false
```

Exercice #1

```
// Pseudo-code of the exercice
// open one image manually (blobs, boats, bridge or clown)
// retrieve the title of the open image. Tip: use getTitle()
// test if the file is a gif. If true print "it is a gif”
```

Conditional execution, *if* … *else* statements

```
if (condition) {                    //the condition is evaluated
        statement 1;                //if the condition is true statement 1 is executed
        }
else {
        statement 2;                //if the condition is false statement 2 is executed
        }
```

Conditional execution, *if … else* statements

```
newImage("My image", "8-bit black", 640, 480, 1);
x = getNumber("Enter value to add", 5);
if (x == 0) {
        showMessage("Adding zero would have no effect");
        }
else {
        print("Adding " + x + " to all pixel values. ");
        run("Add...", "value=" + x);
}
```

if, if … else curly brackets or no curly brackets

```
newImage("My image", "8-bit black", 640, 480, 1);
x = getNumber("Enter value to add", 5);
if (x == 0)                          //{} are not required when using single statement
        showMessage("Adding zero would have no effect");
else                                 //{} are not required when using single statement
        run("Add...", "value=" + x);
```

No advisable = may lead to error when modifying the code later

Exercice #2

```
// Pseudo-code of the exercice
// open one image manually (blobs, boats, bridge or clown)
// retrieve the title of the open image. Tip: use getTitle()
// use if…else to test if the file is a gif. If true print "it is a gif”
```

if, if … else: testing for file type

```
path = File.openDialog("Select a file");
if (endsWith(path,".tif")){
        open(path);
        }
else {
        print(path+ " is not a tif file");
        }
```

Exercice #3

1 - Create an array containing all the files of the "Data\Images" folder

2 - Print the length of this array

3 - Print all the files name contained in that folder

4 - Open the images files of that folder only if they are .gif

Exercice #3b

5 - Open the images files of that folder only if they are .jpg

Tip #1: use the built-in functions ***getDirectory***, ***getFileList, open(), endsWith()***

Tip #2: the path to each file is ***directory+file name***

Exercice #1: solution

```
// Pseudo-code of the exercice
// open one image manually (blobs, boats, bridge or clown)
// retrieve the title of the open image. Tip: use getTitle()
// test if the file is a gif. If true print "it is a gif”
print("\\Clear");
print("*** start macro ***");
fileName = getTitle();
if (endsWith(fileName, ".gif")){
        print(fileName+" is a gif file");
}
print("*** end macro ***");
```

Exercice #2: solution

```
// Pseudo-code of the exercice
// open one image manually (blobs, boats, bridge or clown)
// retrieve the title of the open image. Tip: use getTitle()
// test if the file is a gif. If true print "it is a gif”
print("\\Clear");
print("*** start macro ***");
fileName = getTitle();
if (endsWith(fileName, ".gif")){
        print(fileName+" is a gif file");
}
else {
        print(fileName+" is not a gif file");
}
print("*** end macro ***");
```