# Multimedia Data Modelling

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Exercise
FINAL EXAM SIMULATION

Write a python program consisting of the following methods:

1. **merge**(*im1, im2, tp, ptOut*): taken as input two images (im1, im2) the method <u>**returns a new image**</u> consisting of half *im1* and half *im2*. The merge occurs according to one of the following types defined by *tp* (this value is chosen by the operator before calling the merge method):
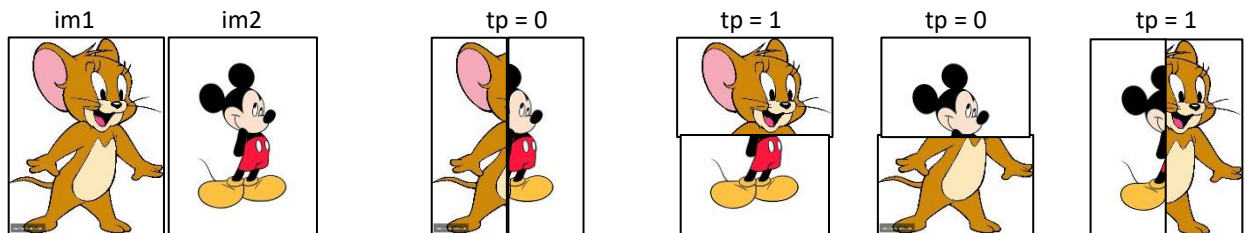
    | im1 | im2 | | tp = 0 | tp = 1 | tp = 0 | tp = 1 |

    In addition, the method, will save the image in a predefined directory (ptOut) with a new name chosen specifically by the user (the operation of putting the name must be provided within the method).

2. **conv**(*im, coordinates, kernel, ptOut*): the method **returns a ne w image** to which a convolution operation is applied only in the region defined in coordinates. In addition, the method, will save the image in a predefined directory (ptOut) with a new name chosen specifically by the user (the operation of putting the name must be provided within the method).

3. **blocks**(*im*): the method divides the image into non-overlapping blocks of size 8x8. At each block calculate the histogram and display it.

The python program will have to be structured in order to call one of the previous methods until the letter *q* is inserted (in which case the program terminates its execution). The paths *ptIn1, ptIn2* of the two images *image1, image2* and the output path *ptout* where to save the results of some operation must be inserted initially (before any method is called). At each iteration a user can choose which method to call and which image to process (depending on the method to be called). Methods 1 and 2, which return the result of the appropriate operation, will overwrite the current contents of *image1*.

ESSENTIAL ELEMENTS TO RESPECT
-   use OPENCV only to read images.
-   all methods must be defined via *def:*

    > *def name (……):*
    >   *……*
    >   *…..*
    >   *return …*   *# optional*

-   READ THE TEXT CAREFULLY: for example, if a method is expected to return a value, then it must return a value.
-   Before writing code, it is strongly recommended to design the program structure on paper and reason about the text!!!

During the final test, each method implemented is worth a maximum of 10 points.
Those who solve by the end of the lesson will get the bonus