



Running tasks in parallel: ParallelTaskCollection

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Basic use of ParallelTaskCollection

```
from gc3libs.workflow \
    import ParallelTaskCollection

class MyTasks (ParallelTaskCollection) :
    # ...
    def __init__(self, ...):
        app1 = AnApp(...)
        app2 = AnotherApp(...)
        # ...
        appN = YetAnotherApp(...)
        ParallelTaskCollection.__init__(
            self, [app1, app2, ..., appN])
```

A `ParallelTaskCollection` runs a list of tasks, submitting at the same time as many as possible.

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            self, [app1, app2, ..., appN])
```

Initialize a `ParallelTaskCollection`
with a list of tasks to run.

Running tasks in sequence

```
class MyScript(SessionBasedScript):  
    # ...  
    def new_tasks(self, extra):  
        tasks_to_run = [  
            MyTasks(...)  
        ]  
        return tasks_to_run
```

You can then run the entire collection by returning it from `new_tasks()`, or by using it as a step in an outer `SequentialTaskCollection`.

Detour: random colors

ImageMagick allows specifying colors also by the syntax `xc:#rgb` where *r*, *g*, and *b* are 2-digit hexadecimal numbers ranging from `00` to `ff`.

For example, `#ffa500` is the “orange” color.

You can generate these color specifications randomly from Python by combining **string formatting** and the **randint** function:

```
from random import randint

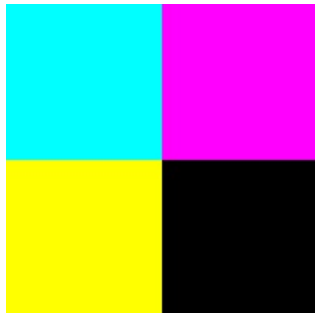
r = randint(0, 255)
g = randint(0, 255)
b = randint(0, 255)
color = ("xc:#%02x%02x%02x" % (r, g, b))
```

Exercise 9.A: Write a `ParallelTaskCollection` class `RandomlyColorize` that is initialized with two parameters: an image file name `img` and a number `N`.

The `RandomlyColorize` collection then consists of `N` instances of the `ColorizeApp`, each initialized with the same image file name `img` and three random colors.

Detour: image montage

```
$ montage cyan.jpg magenta.jpg yellow.jpg black.jpg \  
-tile 2x2 -geometry +0+0 cmyk.jpg
```



Write your own “Warholize” workflow!

Exercise 9.B: Write a `WarholizeScript` session-based script.

The script takes any number of image file names as arguments; each image undergoes the following processing steps:

1. Conversion to grayscale;
2. From the grayscaled version, N^2 randomly-colored new images are formed;
3. These N^2 tiles are arranged in a $N \times N$ grid, which is the final result of the processing pipeline.

A command-line option `--size` allows one to set the value of N , with default $N = 2$.