

Exercises of Bash Scripting

Bash as a programming language

Fibonacci series is defined as follows:

$$\begin{aligned} fib_0 &= 0 \\ fib_1 &= 1 \\ fib_i &= fib_{i-2} + fib_{i-1}, \quad \forall i \geq 2. \end{aligned}$$

Write a Bash script for computing fib_n for a given integer n specified in the standard input (keyboard). The command

```
ratio=$(echo "scale=30; $fn/$f1" | bc)
```

can be used for computing the “ratio” between the last and the last but first values of the series.

Bash scripting invoking other programs

Write a Bash script that generates a new PDF file by collecting the first pages of all PDF files contained in the current directory (i.e. the PDF files in the directory where the script is invoked). Moreover, if the size of the extracted page is larger than 10kb, then the script should attempt the optimization of that page before concatenating with the others.

In order to extract pages from a PDF file, use the program `pdfseparate`, while the program `pdfunite` can be employed for concatenating the extracted (first) pages. If necessary, the optimization of the pages can be performed with the program named `gs` (*ghost-script*):

```
gs -sDEVICE=pdfwrite -dPDFSETTINGS=/default -q -o output.pdf input.pdf
```

Bash scripting and interactions with the OS

Write a Bash script for verifying the following information, concerning the current directory:

- the total number of files (including sub-directories);
- the number of files for which the user has reading and writing rights;
- the number of files for which the user has execution rights;
- the number of sub-directories.