

Semester 1 2024  
Astroinformatics I  
**Graded Practice 2**

- Content: Application of what has been learned in class.
- Finished code, plots (if applicable to the tasks) and a short report in English summarizing your work is to be submitted at the end of our second session this week to this e-mail address: `nina.hernitschek@uantof.cl`
- You are allowed to work at this in between of our sessions, i.e. at home.
- Connecting to the internet is allowed.
- Working together/ sharing solutions is not allowed.
- If no programming lang secified chose what you think works best (i.e. Shell Script or Python).

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**Task 1**

Use the CSV files you generated from the FITS files in practice 1. Write shell scripts to modify them in the following way:

1. Change delimiter from `","` to `" "`.
2. Change the file extension from `".csv"` to `".lc"`.
3. Remove all columns that are not part of a light curve plot.

**Task 2**

Spectra of stars are classified according to the letters O,B,A,F,G,K, and M. These correspond to the following temperature ranges (in degrees K):

O: 30000 - 60000 G: 5000 - 6000

B: 10000 - 30000 K: 3500 - 5000

A: 7500 - 10000 M: 2000 - 3500

F: 6000 - 7500

Write a program which takes the temperature as a command line argument and prints out the spectral class. Print a suitable message if the temperature is out of range.

**Task 3**

Given the year, month and day of the month, the Julian day is calculated as follows:

$$\text{Julian} = (36525 \cdot \text{year}) / 100 + (306001 \cdot (\text{month} + 1)) / 10000 + \text{day} + 1720981$$
 where month is 13 for Jan, 14 for Feb, 3 for Mar, 4 for Apr etc. For Jan and Feb, the year is reduced by 1.

1. Write a script which asks for the day, month and year and calculates the Julian day. All variables must be of integer type. What is the Julian day for 7 Jun 2008?.