# Exam - Time series forecasting

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| | A | B | C |
|---|---|---|---|
| 1 | Timestamp | Power (kW) | Temp (C°) |
| 2 | 1/1/2010 1:15 | 165,1 | 10,6 |
| 3 | 1/1/2010 1:30 | 151,6 | 10,6 |
| 4 | 1/1/2010 1:45 | 146,9 | 10,6 |
| 5 | 1/1/2010 2:00 | 153,7 | 10,6 |
| 6 | 1/1/2010 2:15 | 153,8 | 10,6 |
| 7 | 1/1/2010 2:30 | 159,0 | 10,6 |
| 8 | 1/1/2010 2:45 | 157,7 | 10,6 |
| 9 | 1/1/2010 3:00 | 163,2 | 10,6 |
| 10 | 1/1/2010 3:15 | 151,7 | 10,0 |
| 11 | 1/1/2010 3:30 | 148,7 | 10,0 |
| 12 | 1/1/2010 3:45 | 155,1 | 10,0 |
| 13 | 1/1/2010 4:00 | 161,5 | 10,0 |
| 14 | 1/1/2010 4:15 | 161,5 | 10,0 |

Figure 1: `Elec-train.xlsx`

The file `Elec-train.xlsx` contains electricity consumption (kW) and outdoor air temperature for one building. These quantities are measured every 15 minutes, from 1/1/2010 1:15 to 2/16/2010 23:45. In addition, outdoor air temperature are available for 2/17/2010.

The goal is to forecast **electricity consumption (kW) for 2/17/2010** and then to get the best possible forecast. So you have to test all the models we saw during the course, to tune them and compare them correctly.

You should return two forecasts, with and without using the outdoor temperature, in one Excel file entitled `YourName.xlsx`, with **exactly** two column and 96 rows, containing the forecasts for 2/17/2010: the first column for the forecast without using temperature, the second one using temperature.

In addition to your forecast, you should also return a short reports (entitled `YourName.pdf`) explaining how you have proceeded and containing the R codes you used.

The grading will take into account:

- the quality of your methodology (50%)
- the quality of your forecast (30%)
- the quality of your report and the respect of the exam instructions (20%)