Orange Juice Data Analysis

Food industry is concerned with bacteria `CRA8132`, known to alter the taste of several products. Understanding the conditions in which it evolves could help to design better food packaging.

Researchers of a well-known company want to model the growth of this bacteria as a function of covariates typically involved in the production process. As a worst case scenario, they focus on orange juice, known to have high contamination risk. Among these covariates, they select pH, temperature, soluble solids concentration (mostly sugar in fruit juice) and *Lactococcus Lactis*, an antimicrobial agent. Conditioning on these variables, they want to know if the bacteria has been growing or not after two weeks, without specifying how much.

Variable description:

- `pH`: pH index.
- `LL` : *Lactococcus Lactis* concentration in $[IU/mL]$.
- `Temp` : Temperature in $[C]$ degrees.
- `Brix` : Soluble solid concentration in $[Brix]$ scale.
- `CRA8132` : Growth response (0 = No Growth, 1 = Growth).

Analyze the dataset `orange-juice.dat` to disentangle the relationship between the covariates and growth of `CRA8132`, and prepare a report to bring to the exam. Your report should contain R outputs without comment, but with systematic references. It has to be at most 8 pages long, with at least 10 pt font.