Design de Software

Worksheet 2

2025/26

1. Technical debt is a relevant concept in software engineering.

   a. Explain what it consists of and give an example.
   b. What are the implications of technical debt for software systems and their development over time?
   c. Some developers are beginning to use AI-generated code in their projects. In what ways could the use of AI-generated code increase technical debt in software systems?

2. Consider the roles that different forms of prototype could perform (if any) in the development of the following software systems:

   a. an interactive word processor;
   b. a web-based e-commerce site dedicated to selling sheet music of all types;
   c. a bank ATM for dispensing cash and providing receipts;
   d. a mobile social media application for sharing short videos;
   e. an open-source data visualization library.

   In each case, which group of people would be involved with reviewing any prototypes that were produced and what forms might a prototype usefully take? Which form of development process would be more suitable for each case?

3. For every behaviour or functionality desired in a software system, numerous solutions exist. Take, for instance, the system responsible for calculating the income tax each Portuguese taxpayer must pay every fiscal year (IRS).

   a. How will these solutions differ?
   b. Which solution should we opt for?
   c. To what extent does design differ from a search process?