9. Advanced Design Lab

Oscar Nierstrasz
Andrei Chis

Based on material by Jorge Ressia
What is good design?
What is "Good Design"?

- Efficiency
- Model Reality
- User Knowledge
- Foundation
- Easy to debug
- Documentation
- Tests
- Coding Style
- Conventions
- Naming
- Robust
- Logical Structure
- Easy to add/remove
- Intrinsic Design
- Distributed responsibility
- Absence of class walls
- DBC
- Good housekeeping
- Robust
Task: Model a system that prints invoices for the customers of a Telco.

- There are 3 different types of calls: *local*, *national* and *international*.
- The cost of an international call is 2CHF per minute.
- The cost of a national call is 1.50CHF per minute.
- The cost of a local call depends if it was made during peak hour or not.
  - Peak hour cost is 1CHF per minute
  - Off-peak cost is 0.50CHF per minute.

Print the invoice of Andrei who made a 2 minutes national call, a 10 minutes international call, 3 local calls at peak time of 2 minutes each, and a local call at off-peak time lasting 20 minutes.
-There are 3 different types of calls: *local*, *national* and *international*.

-The cost of an international call is:
  -Peak hour cost is 2CHF per minute.
  -Off-peak cost is 1.50CHF

-The cost of a national call is:
  -Peak hour: 1.50CHF per minute.
  -Off-peak cost is 1.25CHF per minute

-The cost of a local call is:
  -Peak hour cost is
    -1CHF per minute in the weekend
    -0.90CHF per minute in the workweek
  -Off-peak cost is 0.50CHF per minute.
- There are 4 different types of calls: local, national, international and EU.
- The cost of an EU call is 0.1 per minute.
- The cost of an international call (not EU) is:
  - Peak hour cost is 2CHF per minute.
  - Off-peak cost is 1.50CHF.
- The cost of a national call is:
  - Peak hour: 1.50CHF per minute.
  - Off-peak cost is 1.25CHF per minute.
- The cost of a local call is:
  - Peak hour cost is 0.90 CHF.
  - Off-peak cost is 0.50CHF per minute.
  - In the same canton the cost is always 0.45.
- Easter discounts for local calls
  - 20% off one week before and after Easter
  - 30% off during the Easter day

- Favourite number
  - free on weekend
  - 50% off for all local calls otherwise
Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)

You are free to:
  **Share** — copy and redistribute the material in any medium or format
  **Adapt** — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

**Attribution** — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

**ShareAlike** — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.

No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

http://creativecommons.org/licenses/by-sa/4.0/