Language Design: Internals of Kotlin

Kickoff

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SS 2023
Section 1

Organization
Schedule

Jan. 31st  Pre-course meeting
Apr. 3rd   Kick-off meeting with topic revealing
Apr. 11th  Submission of topic ratings
Today    Introductory meeting
Until May 12th  At least 1 individual meeting
  (contact your supervisor to set a date, send any references you want to discuss in advance)
Jun. 14th  Draft paper submission
Jun. 19th  Review submission
Jun. 28th  Final paper submission
Jul. 12th  Talks
Deliverables and Grading

- Report (40%)
  - 5-7 pages
  - use the provided double-column \LaTeX-template

- Presentation (40%)
  - 20-25 min

- 2 Reviews (20%)

- We will use grading rubrics (and let you know beforehand)
- It is mandatory to be present during the 2-3 days of presentations
Section 2

Literature
Citable Literature

**Good to use**
- Papers (conf./journal)
- Books, book chapters
- Published articles
- Manuals

**Try to avoid**
- Websites, Blog articles
- Wikipedia
- Advertisements
- Lecture slides and notes
- Source code
Finding literature

- Kotlin KEEP
- Starting points: DBLP, IEEExplore, ACM DL, Google Scholar, ...
  - Select appropriate keywords
  - Many papers/books accessible freely via the library / TUM VPN/Proxy
- Graph algorithms
  - Publications of the same author(s)
  - Publications at the same venue
  - Cites ... (listed references)
  - Cited by ...
- Relevant conferences: POPL, PLDI, ICFP, OOPSLA, (TACAS, CAV)
- Another starting point: your advisor
How to read a paper

Run 1:
   ▶ Abstract
   ▶ What does the paper present? (technique/tool/…)

Run 2:
   ▶ Abstract + Introduction + Conclusion
   ▶ Skim the rest, no details

Run 3:
   ▶ Full text in detail
How to read a paper

▶ Keep notes and questions as you read
▶ While reading, try out concepts/codes, recompute/check examples
  ▶ annotate/highlight the paper, on whatever suits you
  → do not blindly accept everything for granted
▶ Try to summarise it with your own words
  ▶ don’t copy or look at the abstract
▶ Make a list of contributions & limitations
▶ What are the key ideas and insights?
  ▶ may not be the same!
▶ What is new?
  ▶ you don’t have the background, but try to ‘derive’ from the paper/related work itself
Section 3

Scientific Writing
Writing Style

  (→ online access via https://opac.ub.tum.de)
- Factual, precise, focused
  - Stay on topic, no storytelling, ...
  - Limit to important and necessary topics
  - Don’t omit necessary prerequisites
- Hold back on baseless opinions and presumptuous phrasing ("it is well established, that")
- Avoid forward references
- Avoid *I*, prefer *we* (or passive voice)
- 'We' only describes the authors, not the reader
Citing

- All work that is not yours must be cited
  - Clearly describe the source
  - But: no wrong/inaccurate attributions

- Citing styles:
  - Literal (direct) quote
  - Indirect quote (rephrase) ← strongly preferred

- Exception: foundations can be assumed
  (generally first few Bachelor semesters)
The x86 architecture defines the register CR2 [1].

Valgrind [1] is a tool for run-time instrumentation.

Other approaches [1,2,3] . . .

The x86 architecture defines the register CR2. It can be used with the instruction MOV. [1]

Valgrind~\cite{nethercote2007} is a tool for run-time instrumentation.

Other approaches~\cite{foo,bar,baz} \dots
Seminar Report

- like a *Review Paper*

- Abstract: brief summary of the area, problem, approach
- Introduction: problem statement, motivation, ...
- Background: required prerequisites
- Main part: summarize/explain different approaches, show applications/examples, evaluation, comparison, discussion
- Summary and outlook
Section 4

Reviews
Review

- short summary 1-2 paragraphs
- obligatory: positive feedback
- if necessary: negative critical feedback
  - in a constructive form,
  - if feasible with suggestions for improvement

→ do not shy away from critical feedback, as long as you stay factual
Section 5

Presentation
Content Selection

Presentation for the audience!

▶ What do you want the audience to take away? (Not: what can I talk about!)
▶ What are the key points?
▶ How much content fits into the time slot?

! Do not be afraid to reduce the amount of content, however:
  ▶ make sure that you mention at least some crucial contribution
  ▶ do not conceal problematic content
  ▶ introduce background information *by need*, not for the sake of it
For example:

- **Motivation**
  - Why is the topic relevant? Consider an eye-opening example

- **Background**
  - Consider referencing information from previous talks

- **Concept**
  - Use good/helpful examples, preferably *running examples*

- **Evaluation**
  - How good is the described concept?
  - Critical discussion of the topic

- **Conclusions and outlook**
Media

- **Slides**
  - For illustration purposes during the talk
  - Good to prepare elaborate examples and diagrams
  - Backup slides as preparation for questions

- **Whiteboard, blackboard**
  - Sticky place for permanently needed information
  - Helps to retrace the development of an example/diagram/code/algorithm execution
  - Answering questions
  - Spontaneously involve the audience

- **Hardware, demonstration projects, etc.**

- **Check possibilities in advance**
Title page: Title, name, institution, date, location

On every other slide: number and title

One topic per slide

Avoid text
  • \( \leq 10 \) lines

Prefer graphics/illustrations
  • You may copy figures from the paper

No unused points
  • Cover everything on the slides in your talk (i.e. not only mention but explain)
  • If not covered, remove!
Slides: Colors

- Few colors
  - Use colors sparingly, but systematically

- Sufficient contrast
  - Dark on white
  - Be careful with gradients

- Use special effects **only** when necessary
  - No annoying backgrounds (wave textures, etc.)
  - Animations only with sufficiently added value
Before the Talk

- Prepare slides, practice live examples/demonstrations, etc.
- Do a timed dry-run
  - Always recommended
  - Helps with uncertainty and time estimation
- Prepare on-site
  - Laptop, Beamer, laser pointer, clock, etc.
Talking Style

- Speak freely, with elevated volume
- Don't go too fast/slow
- Stay in contact with the audience
  - Eye contact, position, body posture, gestures etc.
  - Do not drink in the middle of a sentence, wait e.g. until a slide changes
- Usually at least 1 minute per slide
- Stay in time limit
  - Optional slides can fill time
  - Regularly consult a watch
- Stay calm, without radiating boredom or disdain