Testing Linked Dyalog APL Workspaces (a work in progress)

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About

Testing Linked Workspaces:

- recap WS-structure und builder
- validate and manage test results
- automated test series

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Necessary tools:

- recap file management (TortoiseSVN)
- test case format (Array Notation)
- test case management (DB2)

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Outline

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Outline of section on framework and structure

In this section we outline:

Framework code management and WS structure

Build WS build for coding and debugging

Open open questions and problems

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Target WS framework

What is the framework for coding, debugging,. . . ?

- workspaces
  - Linked (text file based)
  - modular design, “cooperating”
- coding
  - clear and clean distinction code vs. debug
  - decouple code, “save”, test and deploy
- external tools
  - versioning in Tortoise SVN
  - test case management in DB2

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Schematic workspace structure

What is the high level WS structure?

- objects
  - no vars/fns/ops under #
  - main ns <**nsmn**>
  - playground ns **test**
  - building instructions **build**
  - some reserved nss **globals**, **temp**, . . .
  - foreign nss <**nsfnX**>
- sources
  - "own" nss primarily from working copy
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▸ WS structure ▸ WS build structure

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WS builds for different purposes

Do I need one WS or many?

- coding needs bi-directionally Linked nss
- debugging should use one-directionally Linked nss
- also use multi-WS debugging
- sometimes use not Linked working copy
- offer use of official checkout as untested deployment

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▸ setup for code ▸ setup for debug ▸ standard setup

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Questions and problems

What can be done better?

- replace loading WS with scripting?
- wanted numbered WS logs, maybe named logs through scripting?
- in work
  - occasionally code instability (auto format), especially when code+debug mixed
  - occasionally listeners instability, possibly when coding while running obj for debug
  - cannot grow warm with some aspects of Editor. . .

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Outline of section on test and deployment

In this section we outline:

- Framework: test construction, validation and repetition
- Examples: target, check and deployment
- Open: open questions and problems

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Target test framework

What is the framework for debugging, testing,. . . ?

- debug and remember it
  - build test cases, try them out
  - when OK save arguments and results as target (SOLL)
- deploy if sure everything is OK
  - run all test cases, then `)SAVE WS`
  - document comparison between actual (IST) and target for IDP audit
- check when Dyalog or environment changes
  - run at least tests on base utilities when environment changes
  - document comparison for release audit

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"Unit" tests and period system time tables

What kind of tests are used?

- "unit" test cases
  - want defined in- and output
  - but output too large to explicitly write down
- structure
  - use **build.check** to collect test case
  - one fn for each ns
  - one `:CASE` for each obj
  - remove/replace non-deterministic results prior to saving
- save in DB2
  - period system time very useful concept
  - implicitly hidden also useful
- (partly) show in Excel (for "externals")

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"Unit" tests and period system time tables

What kind of tests are used?

- "unit" test cases
  - want defined in- and output
  - but output too large to explicitly write down
- structure
  - use **build.check** to collect test case
  - one fn for each ns
  - one `:CASE` for each obj
  - remove/replace non-deterministic results prior to saving
- save in DB2
  - period system time very useful concept
  - implicitly hidden also useful
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Staged comparison

All or nothing approach not practical

- test case description as key
- non-identifiable cases?
- try also identification through object call?
- different object calls?
- different results?
- different sorting?

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Use comparison in function

Implement in #.div.buld.CHECK

- validation
  - separate modi
  - throw error if deviation above threshold
  - special modus for description change
- check
  - comparison creates flagged results

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WS LATEX

Test interface between Dyalog and LaTeX

- ns **tex** is main ns of LATEX
- ns **tex.imp** contains objs for importing TeX files
- ARG_ANALYSIEREN parses arguments of an LaTeX macro
- CMD_ANALYSIEREN parses document concerning a list of LaTeX macros

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Argument parsing ARG_ANALYSIEREN

Test parsing of arguments

- in- and output of fn small, could be written down
- contains range of checks on arguments (also to be tested)
- fn meant as subfunction
- needed because of recursion (`\section{Abschnitt}` vs. `\rbw[\alter[0]][np]`)

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Self test of #.div.buld.CHECK

Check check function itself

- create temporal namespaces
- populate with test function, test cases and corresponding list
- use separate DB2 creator

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Questions and problems

What can be done better?

- went to *CLOB(4M)*, but cannot select
- use pseudo UTF-16 encoding to circumvent
- format via Array Notation, but some problems with cycle
- result too long, even up to WS FULL
- also deploy other WS forms (runtime, dll,...)?

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Conclusion

Open problems:

- scripting and multiple logs
- code stability and Editor behaviour (getting better)
- bigger arguments/results in DB2 (almost solved)
- format of test cases and Array Notation (some points remaining)
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begin

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Overview of examples and illustrations

- WS structure
- WS build structure
- setup for code
- setup for debug
- standrad setup

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Schematic structure of workspace

#.<nsmn>	code proper of workspace
#.build	building instructions and tests cases
#.test	alternatives, ideas,. . .
#.<nsfnX>	imported foreign namespace[s]

#.temp	temporary, for example during build
#.globals	global object, for example COM

◂ Schematic workspace structure

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Schematic structure of namespace #.build.prms

nsl	source and target of relevant namespaces
wsn	target name of deployed workspace
lx	latent expression of deployed workspace
nsmn	main "own" namespace of workspace

prvdr	DB2 provider for test case management
sqlid	DB2 SQLID for test case management
xln	Excel target for test validation documentation

◂ Schematic workspace structure

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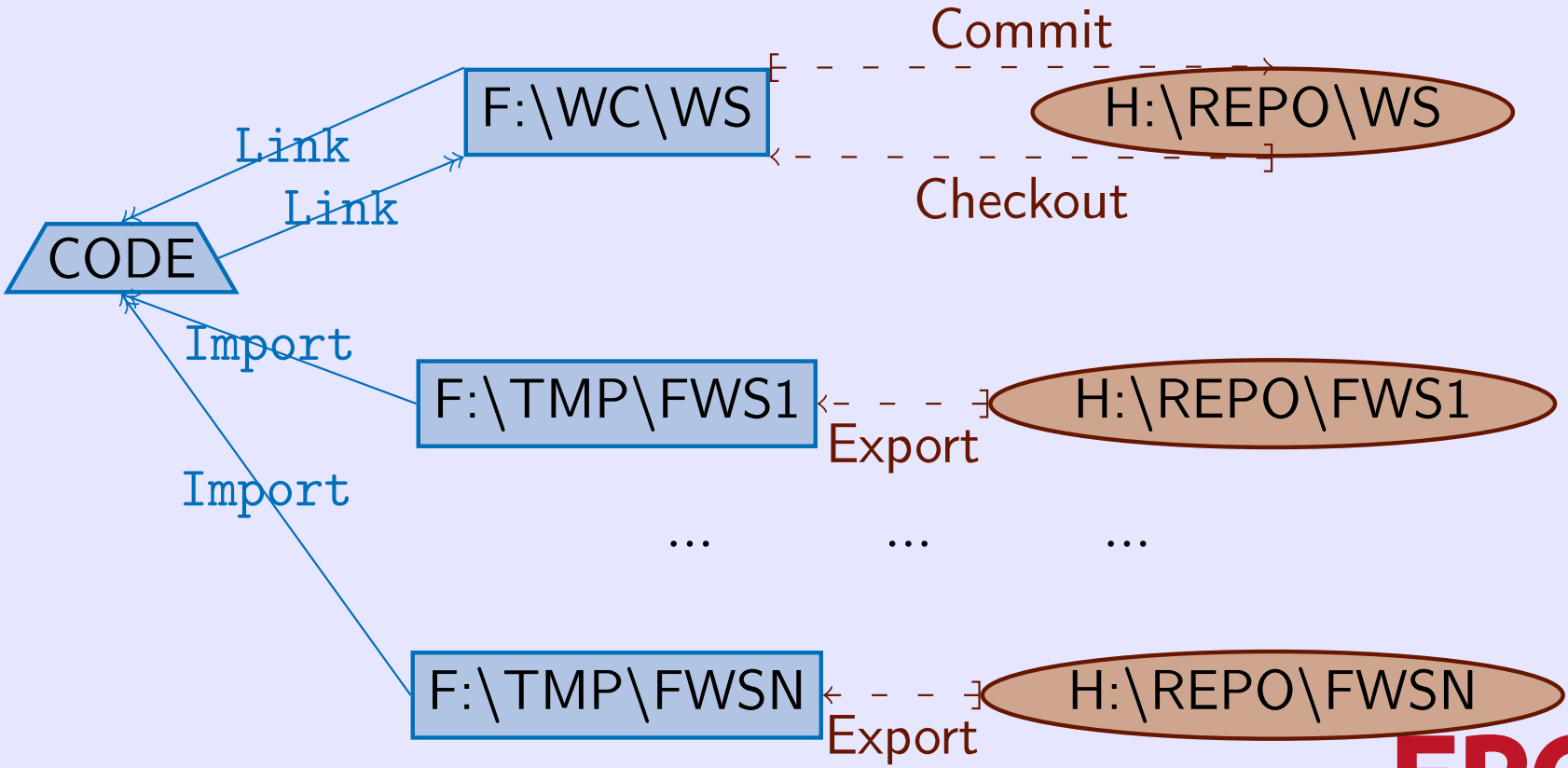
Code workspace

Own working copy is Linked bi-directionaly, Rest Imported:



◂ WS build for coding

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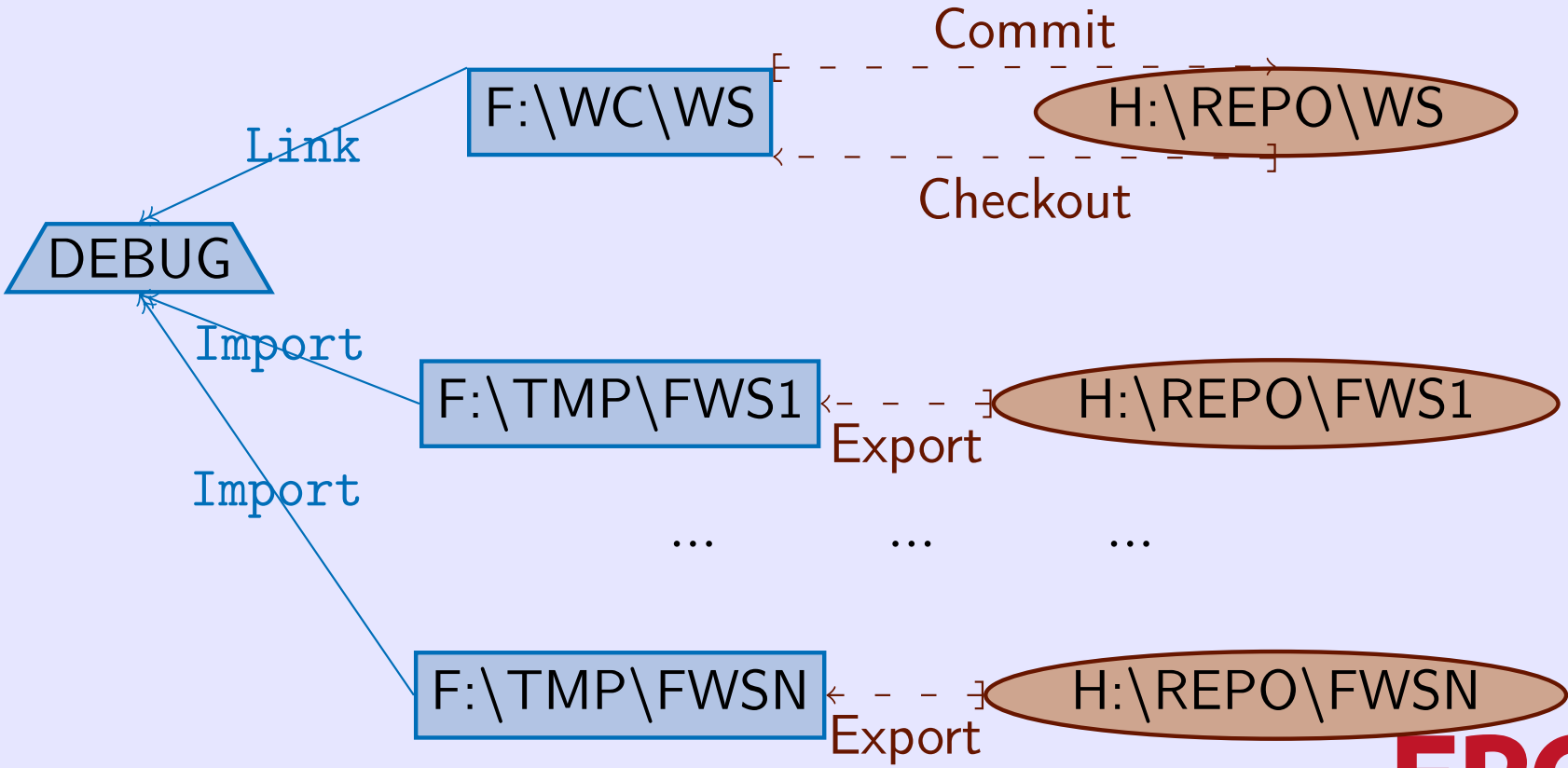
Debug workspace

Own working copy is Linked uni-directionaly, Rest Imported:



◂ WS build for debugging

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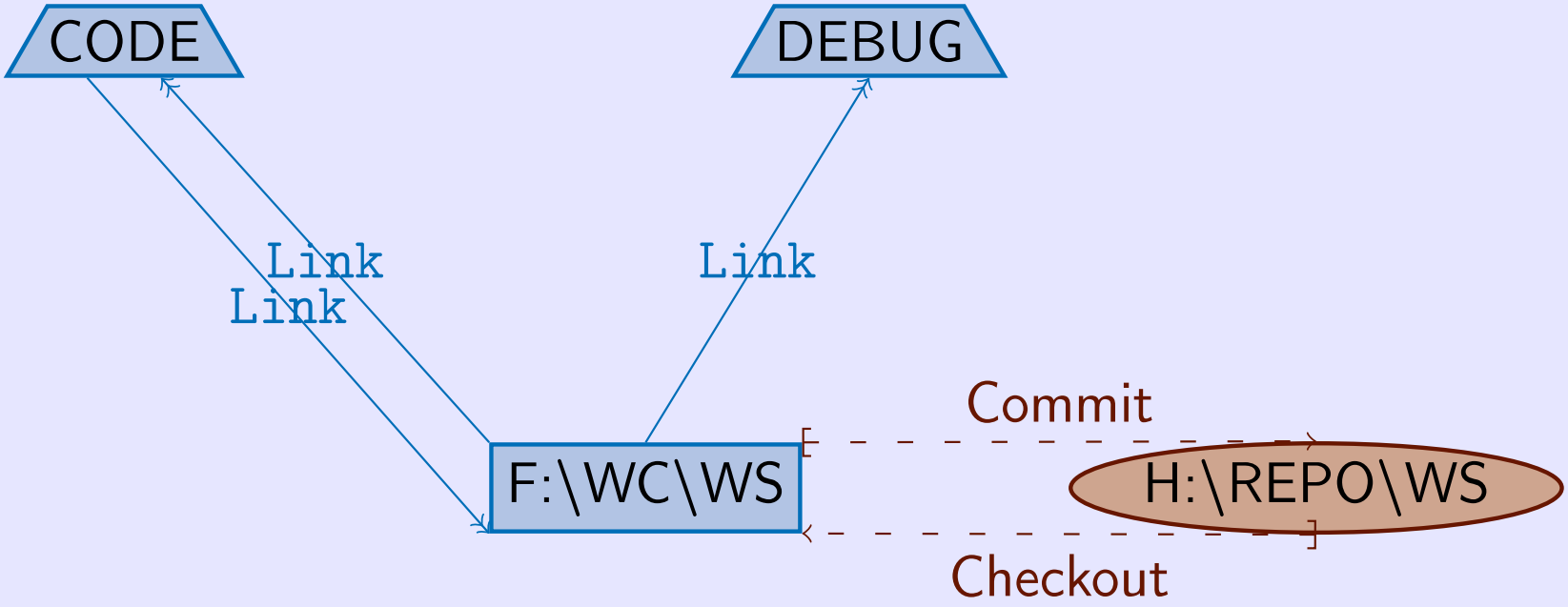
Code and debug workspace

Usual work setup, two WS in tandem:



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