

# State of TCL

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# Timeline

## Release cycle:

- 8.4: 2 releases / year (2002-2013)
- 8.5: 2 releases /year (2007-2016)
- 8.6: 1 release / year (2012-2022)
- 8.7: 1 alpha release / 2 years (2017-2021)

## Last releases:

- 8.6.13: 2022-11-22
- 8.7a5: 2021-06-18

# Bundled packages

- > Released with Tcl/Tk releases
- > Current versions in 8.6.13
  - Itcl 4.2.3
  - Sqlite3 3.40.0
  - Tdbc 1.1.5: core/mysql/odbc/postgres/sqlite3
  - Thread: 2.8.8

# New work since 8.6

Behind each item is an effort of individuals or groups which are often months of work.

-> Thank you all, you are awesome !

Some parts from the following slides are from Ashoks blog:

<https://www.magicsplat.com/blog/tags/tcl-8-7/>

# New commands

- **"Regsub -command" (Feb 2017):**  
`% proc enc {ch} {format %%%02X [scan $ch %c]}  
% regsub -command -all {[^0-9A-Za-z]} "X-Y+Z" enc  
X%2DY%2BZ`
- **List:** `lpop`, `lremove`, `lsearch -stride`, `ledit`
- **Sequence data type:** `lseq 3 -> 0 1 2`  
No memory consumption if not shimmered to other types
- **Array/Dict:** `array default`, `array for`, `Dict`, `dict`  
`getdefault`
- **String:** `string is dict`, `lt`, `le`, `gt`, `ge`, `string insert`
- `clock add weekdays (Mo-Fr, in contrast to days (Mo-Su))`
- **Remove "case" command, remove Tcl\_Backslash...** (TIP 485)

# Program flow

- Evaluate in coroutine context: `coroinject`, `coroprobe`
- Command type introspection by `info commandtype`
- `vwait` event type filtering and timeout
- More exact execution time measurement with `timerate`
- Package names in lowercase
- Package file introspection (TIP 459)
- `Tcl::build-info`

# Numbers

- Prefix "0d" for decimal
- "012" not octal
- Floating point classification: `fpclassify`, `isinf()`, `isnan()`, `isnormal()`, `issubnormal()`, `isunordered()`
- Underscore in constants: `0b1111_1111_1111_1110`
- Comment in expressions
- Binary scan for 0 terminated data
- Sublists are internally optimized by an abstraction layer
- Remove "tcl\_precision"
- "int()" does not wrap-around, it is like "entier()" now.

# File names

- Unix: file name `//server/d` is not collapsed to `/server/d`
- Tempdir handling: `file tempdir`
- Remove tilde expansion from file names
- `glob` **always** `-nocomplain`
- Use lossless profile for file names on Linux to access files which are found by `glob` (not jet voted)



# I/O

- ZIP virtual file system, read, write, mount, even if appended to library or executable
- Buildin Starkit functionality: TCL/Tk Library is now appended to libtcl/libtk as zip
- Serial interface `-closemode`, Terminal `-inputmode`
- Fix error on closing vfs channel (TIP220)
- Socket options: `-nodelay`, `-keepalive`
- Cookie support for the http package
- Process control: `process status/list`
- Linux: replace `select` by `epoll/kqueue`
- Extended `file stat/lstat`
- `-eofchar` not for write mode and not activated by default

# OO

- `private` variables and methods
- `method -export/-unexport` to overwrite default export rules
- Slot (Execution order) modifiers: `-prepend`, `-remove`
- Class variables and methods
- Singleton
- Abstract classes
- Classes with default commands: `definitionnamespace`
- Easy method callback with `"callback"`
- Current class with `"self"` and `"myclass"`
- Properties similar to `fconfigure`
- `Msgcat` for OO


# Encoding

- Remove encoding `"identity"`
- TCL 8.7: use surrogates for "emojis" (TIP389), is in TCL8.6.11
- Depreciate ambiguous encoding "unicode" and use `"utf-16"`, `"utf-16le"`, `"utf-16be"`, `"ucs-2"`, `"ucs-2le"`, `"ucs-2be"`, `"CESU-8"`.
- Encoding profiles to handle errors: `tcl8`, `strict`, `replace`. Default not yet decided. Profile `"lossless"` not yet voted.
- `"source"` uses `"utf-8"`
- C-API: Get terminator size of an encoding
- Encoding error reporting of channels is an open issue.

# C API

- Link C arrays to lists: `Tcl_LinkArray`
- Restore `Tcl_InitSubsystems()` ;
- Removal of VA interface: `Tcl_xxxVA`
- `Tcl_Obj` utility functions for custom types (TIP 445)
- `Tcl_OpenTcpServerEx` (TIP 456)
- Use `"ptrdiff_t"` instead of `"int"` for memory related sizes.  
Many limits change from 31bit to 63bit: string length, list item count  
(main purpose of TCL 9)
- `Tcl_GetIntForIndex` to parse `"end-1"`
- Make `TCL_OBJ_TYPE` extensible by version field.
- Abstract list object type.
- `Tcl_ObjPrintf` formatters and `Tcl_WideInt`
- Remove Obj-type `"int"`, use `"wideint"`,  
`Tcl_GetObjType("int")->NULL`

# Other changes

- 8.5 -> 8.6: Workaround removed:  
after 10 [list [namespace code myproc] "myparam"]
- 8.6.10->8.6.11: Surrogates added to internal string representation -> many problems: sqlite db data incompatible, string length  = 2
- 8.7/9.0 name resolution (TIP 278): stop resolving unqualified variable globally
- sizeof(Tcl\_UniChar) == 4 (TIP497), switchable (TIP542)
- List optimizations: range is O(1), fast prepending
- Remove following special rule for array indexes "A ( ( ) = A ( { ( ) } )" and variable curly braces "\$ { { } } = \$ { \ { } }"
- Bytes are in range 0..255. Higher values cause errors and are not &0xff
- Load dll command creates the name of the init function
- MS-Windows 7 is minimum version

# TCT

- Current TCT: Marc Culler, Jos Decoster , Mo Dejong, Donal Fellows, Alexandre Ferrieux, Brian Griffin, Jeffrey Hobbs, Kevin Kenny, Andreas Kupries, Steve Landers, Jan Nijtmans, Donald Porter, François Vogel, Kevin Walzer  
-> Thank you all !
- TCT reform proposed by Steve Landers to add more people which are currently very active

# Future

- Proposal by May 2023 TCL meetup: Postpone TCL 8.7 to favor TCL9.0
- Open points by Jan:
  - TIP #653: Handling encoding errors for read and gets
  - TIP #657: Make "-profile strict" the default in Tcl 9.0
  - TIP #664: Enable compiler warnings for missing int → Tcl\_Size conversions
  - TIP #665: Remove support for internal utf-16 for Tcl 8.7
  - TIP #666: Change ptrdiff → Tcl\_Size in Tcl 8.7
- My goal is to get TCL 9.0b1 out as soon as possible. Thanks for any support.

# Future

## Open points by Don Porter:

- **limitations on size/range/count arguments:**  
To check on the state of the trunk in this category, go through the routines of the public C interface and find all the arguments and return values that are type 'int' or 'pointer to int'. Examine each one and judge whether it is limiting Tcl's capabilities in a way that is important. I have not done this lately. We may have the trunk in a state where this task is complete. Or we may not. Some audit would be useful. If one is already complete, then a pointer to it.
- **TCL return codes:**  
I suspect a large number of arguments and return values of type 'int' are Tcl return codes with the familiar values TCL\_OK, TCL\_ERROR, etc. I do not think we need to expand the range of valid return codes in Tcl 9.
- **Typedef:**  
I think we might benefit from a typedef  
`typedef int Tcl_Code`  
that marks such features of the public API in a more explicit way.