TableView and DelegateChooser

new in 5.12

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`ecloud` on `#qt-labs`, `#qt-quick` etc.

About me

- Qt user since ~2004
- The Qt Company - Oslo since 2011
- Pointing devices: touch, Wacom tablets
- Qt Quick Input Handlers
- Linux/X11 and macOS
- QtPDF
- Qt Quick Controls and Dialogs

Agenda

- Review of Qt Quick Controls 1.x TableView
- Introduction to Qt Quick TableView
- Comparison of model-view relationships
- Demo & walkthrough: refactoring of qps
- Remaining work

Qt Quick Controls 1.x TableView

advantages:

looks native on desktop

TableColumn API

disadvantages:

performance (too many Items and Loaders)

loads all columns when instantiating a row

depends on data roles in the model

architecture:

QML declarations define the columns

PID	User	Pri	NI	Size	RSS	CPU	Memory	Time	Policy	Command	Current wor
1	root	20	0	220 MiB	6 MiB	0.00	3 MiB	35s	TS	systemd	-
2	root	20	0	0 bytes	0 bytes	0.00	0 bytes	1.1m	TS	kthreadd	-
4	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	kworker/0:0H	-
6	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	mm_percpu_wq	-
7	root	20	0	0 bytes	0 bytes	0.00	0 bytes	10s	TS	ksoftirqd/0	-
8	root	20	0	0 bytes	0 bytes	0.00	0 bytes	3.1m	TS	rcu_sched	-
9	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	rcu_bh	-
10	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.37s	FI	migration/0	-
11	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.45s	FI	watchdog/0	-
12	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/0	-
13	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/1	-
14	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.43s	FI	watchdog/1	-
15	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.52s	FI	migration/1	-
16	root	20	0	0 bytes	0 bytes	0.00	0 bytes	10s	TS	ksoftirqd/1	-
18	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	kworker/1:0H	-
19	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/2	-
20	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.44s	FI	watchdog/2	-
21	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.36s	FI	migration/2	-
22	root	20	0	0 bytes	0 bytes	0.00	0 bytes	9.95s	TS	ksoftirqd/2	-
24	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	kworker/2:0H	-
25	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/3	-
26	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.50s	FI	watchdog/3	-
27	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.35s	FI	migration/3	-
28	root	20	0	0 bytes	0 bytes	0.00	0 bytes	23s	TS	ksoftirqd/3	-
30	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	kworker/3:0H	-
31	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/4	-
32	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.46s	FI	watchdog/4	-
33	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.36s	FI	migration/4	-
34	root	20	0	0 bytes	0 bytes	0.00	0 bytes	9.87s	TS	ksoftirqd/4	-
36	root	0	-20	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	kworker/4:0H	-
37	root	20	0	0 bytes	0 bytes	0.00	0 bytes	0.00s	TS	cpuhp/5	-
38	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.44s	FI	watchdog/5	-
39	root	-100	0	0 bytes	0 bytes	0.00	0 bytes	0.37s	FI	migration/5	-
40	root	20	0	0 bytes	0 bytes	0.00	0 bytes	9.84s	TS	ksoftirqd/5	-

The New Qt Quick TableView

advantages:

instantiates only the visible delegates

pools and reuses delegate instances

suitable for models that work with QTableView

disadvantages:

isn't a drop-in replacement for QQC1 TableView

architecture:

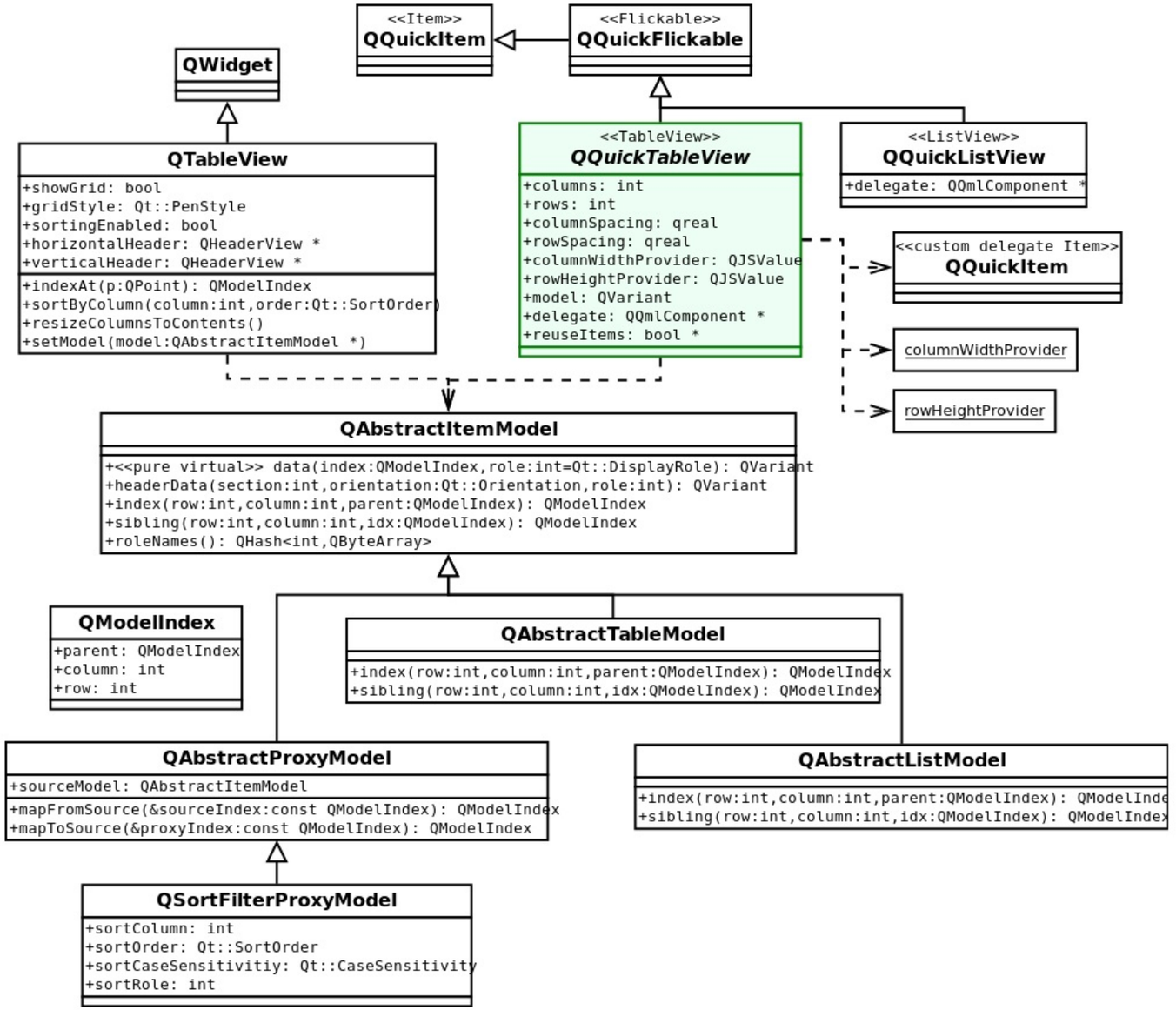
like a 2-dimensional ListView

model (or proxy) defines columns, not data roles

styling is entirely up to you (as with ListView)

1	root	20	0	220 MiB	6 MiB	0.0%	0.0%	35s	TS	systemd	-
2	root	20	0	0 bytes	0 bytes	0.0%	0.0%	1.1m	TS	kthreadd	-
4	root	0	-20	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	kworker/0:0H	-
6	root	0	-20	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	mm_percpu_wq	-
7	root	20	0	0 bytes	0 bytes	0.0%	0.0%	10s	TS	ksoftirqd/0	-
8	root	20	0	0 bytes	0 bytes	0.0%	0.0%	3.1m	TS	rcu_sched	-
9	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	rcu_bh	-
10	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.37s	FI	migration/0	-
11	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.45s	FI	watchdog/0	-
12	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	cpuhp/0	-
13	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	cpuhp/1	-
14	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.43s	FI	watchdog/1	-
15	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.52s	FI	migration/1	-
16	root	20	0	0 bytes	0 bytes	0.0%	0.0%	10s	TS	ksoftirqd/1	-
18	root	0	-20	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	kworker/1:0H	-
19	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	cpuhp/2	-
20	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.44s	FI	watchdog/2	-
21	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.36s	FI	migration/2	-
22	root	20	0	0 bytes	0 bytes	0.0%	0.0%	9.95s	TS	ksoftirqd/2	-
24	root	0	-20	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	kworker/2:0H	-
25	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	cpuhp/3	-
26	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.50s	FI	watchdog/3	-
27	root	-100	0	0 bytes	0 bytes	0.0%	0.0%	0.35s	FI	migration/3	-
28	root	20	0	0 bytes	0 bytes	0.0%	0.0%	23s	TS	ksoftirqd/3	-
30	root	0	-20	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	kworker/3:0H	-
31	root	20	0	0 bytes	0 bytes	0.0%	0.0%	0.00s	TS	cpuhp/4	-

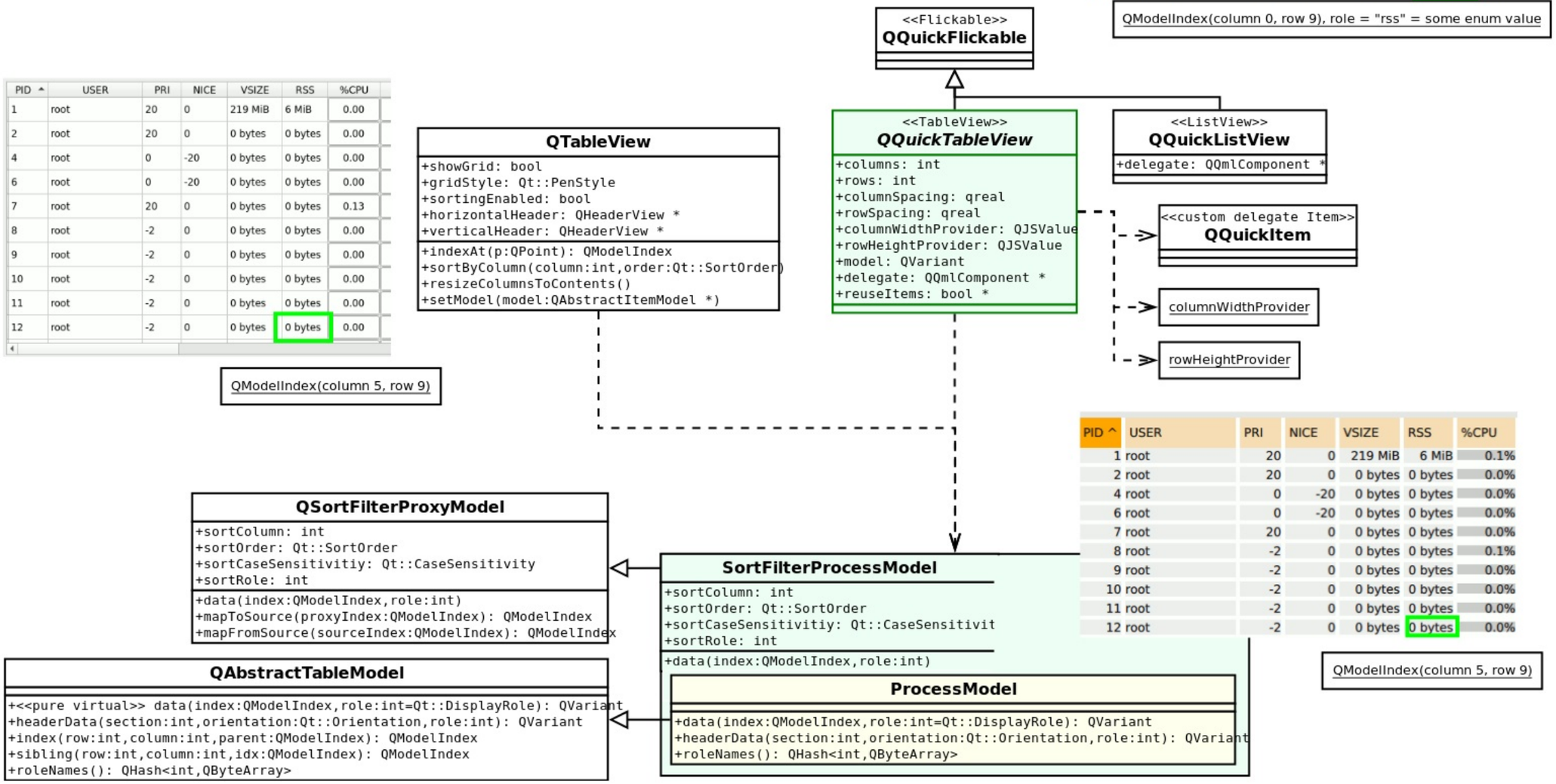
Class Diagram



Three Views Sharing a Model

pid	user	pri	nice	size	rss	cpu
26777	rutledge	20	0	6 GiB	2 GiB	0.00
31036	rutledge	20	0	4 GiB	1 GiB	8.64
28778	rutledge	20	0	22 GiB	934 MiB	0.89
4161	rutledge	20	0	912 MiB	663 MiB	0.00
31880	rutledge	20	0	3 GiB	465 MiB	0.13
28945	rutledge	20	0	3 GiB	396 MiB	0.00
29153	rutledge	20	0	3 GiB	352 MiB	0.13
26798	rutledge	20	0	505 MiB	340 MiB	0.00
10915	rutledge	20	0	309 MiB	135 MiB	0.00
1033	influxdb	20	0	2 GiB	114 MiB	0.00

QModelIndex(column 0, row 9), role = "rss" = some enum value

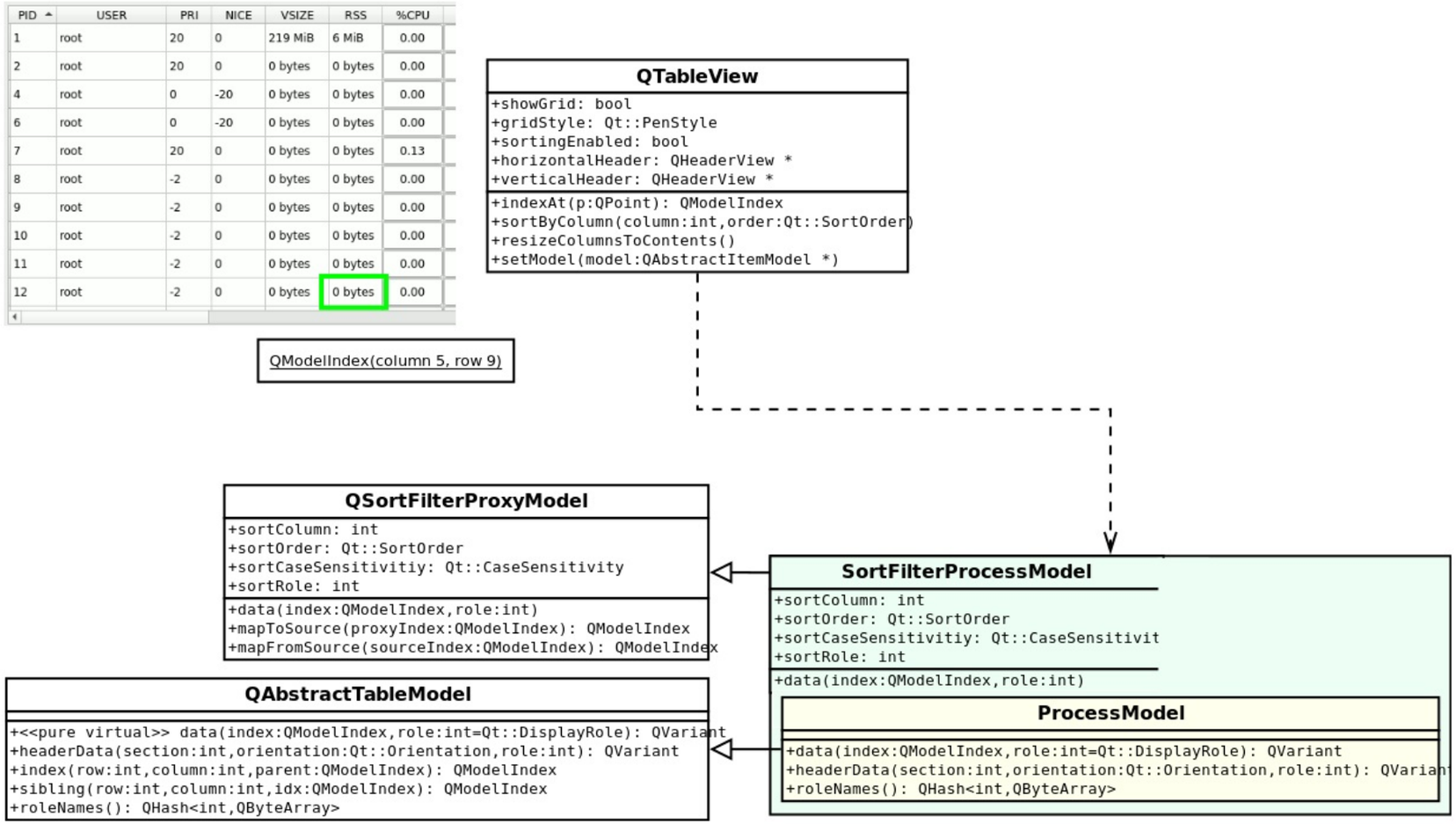


PID	USER	PRI	NICE	VSIZE	RSS	%CPU
1	root	20	0	219 MiB	6 MiB	0.00
2	root	20	0	0 bytes	0 bytes	0.00
4	root	0	-20	0 bytes	0 bytes	0.00
6	root	0	-20	0 bytes	0 bytes	0.00
7	root	20	0	0 bytes	0 bytes	0.13
8	root	-2	0	0 bytes	0 bytes	0.00
9	root	-2	0	0 bytes	0 bytes	0.00
10	root	-2	0	0 bytes	0 bytes	0.00
11	root	-2	0	0 bytes	0 bytes	0.00
12	root	-2	0	0 bytes	0 bytes	0.00

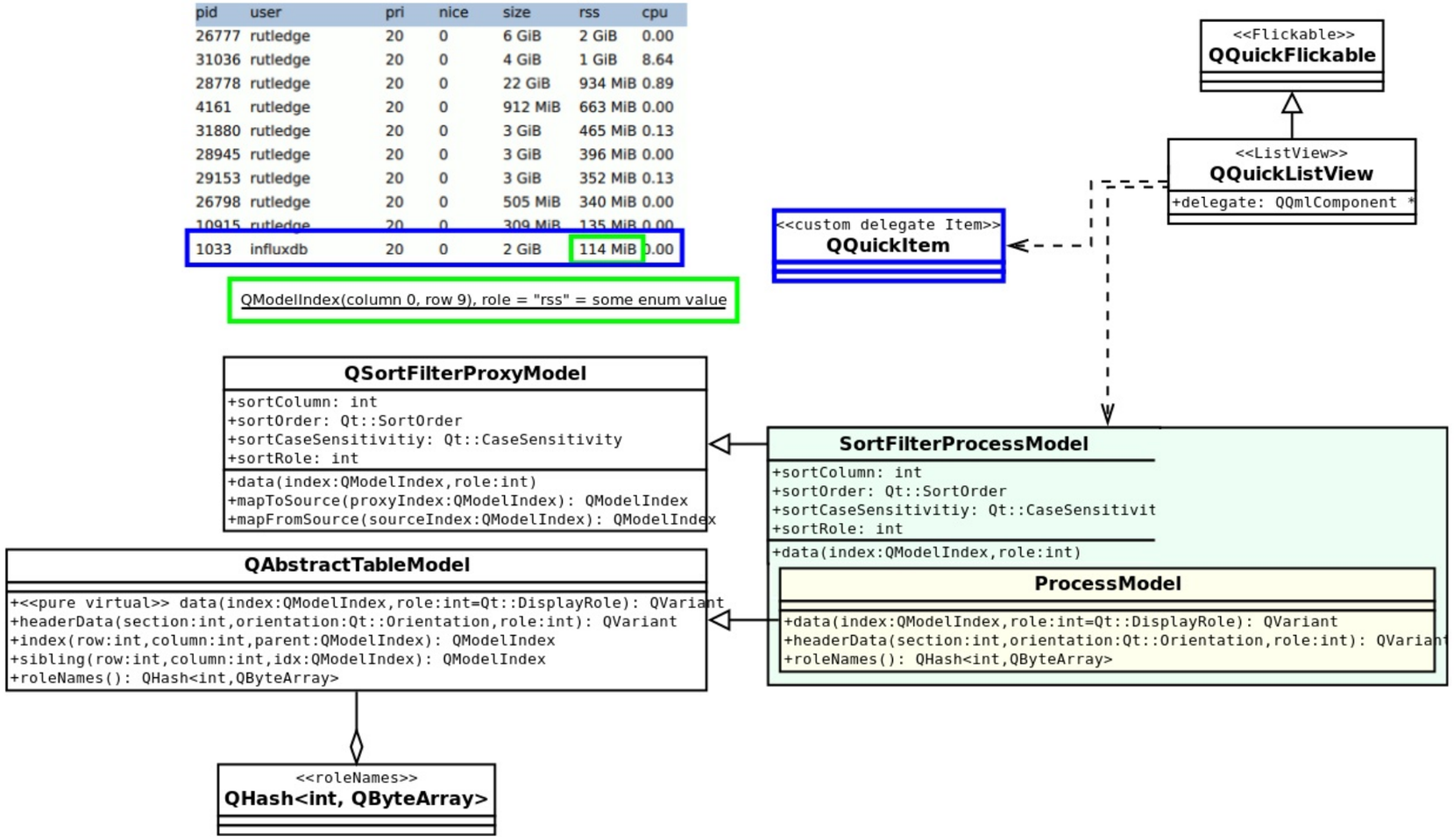
PID ^	USER	PRI	NICE	VSIZE	RSS	%CPU
1	root	20	0	219 MiB	6 MiB	0.1%
2	root	20	0	0 bytes	0 bytes	0.0%
4	root	0	-20	0 bytes	0 bytes	0.0%
6	root	0	-20	0 bytes	0 bytes	0.0%
7	root	20	0	0 bytes	0 bytes	0.0%
8	root	-2	0	0 bytes	0 bytes	0.1%
9	root	-2	0	0 bytes	0 bytes	0.0%
10	root	-2	0	0 bytes	0 bytes	0.0%
11	root	-2	0	0 bytes	0 bytes	0.0%
12	root	-2	0	0 bytes	0 bytes	0.0%

QModelIndex(column 5, row 9)

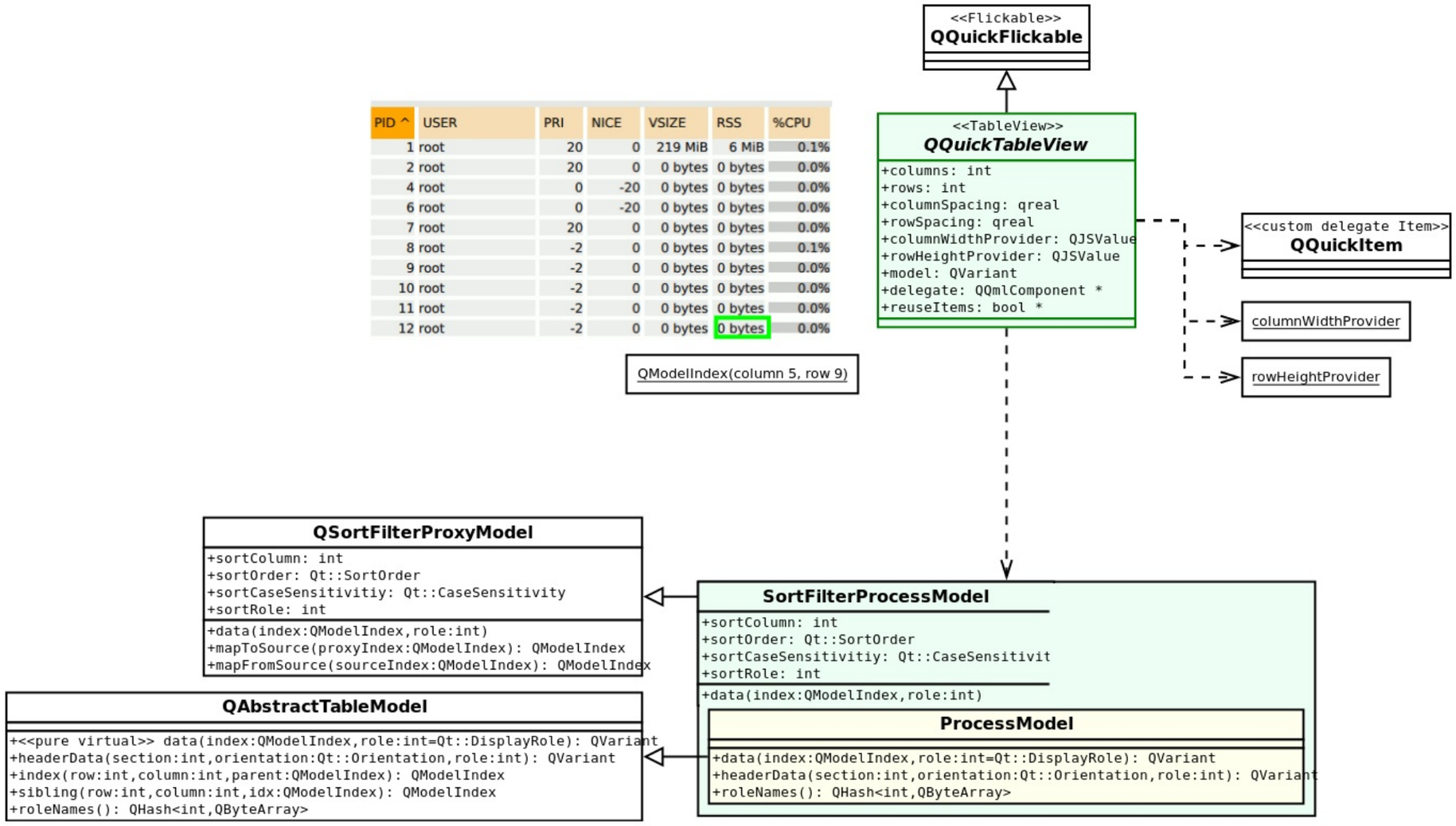
How QTableView accesses the model



How ListView accesses the model



How TableView accesses the model



qps

- Qt 'top' / process explorer application (started ~1997)
- part of LXQt desktop now https://github.com/lxqt/qps
- my fork for this presentation: https://github.com/ec1oud/qps

Stuff left to work on

- Header view
- Resizing columns
- Selection
- Decorations and styling
- QML TableModel (QTBUG-70334)
- QML ProxyModel (QTPM-1327)

TableView and DelegateChooser

new in 5.12

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ecloud on #qt-labs, #qt-quick etc.

This presentation:

https://github.com/ec1oud/qt-presentations/tree/tableview