
Avoiding Useless Rules *Automatically*

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BACKGROUND: ACCUMULATED-PERSISTENCE

The “useless runes” tool is based on **accumulated-persistence**.

Time for a **demo**....

DOCUMENTATION

See `:DOC useless-runes` in the current online manual.

The new `:useless-runes` option is also mentioned in `:DOC certify-book`.

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Why only 25%? See `:DOC accumulated-persistence-subtleties` for how enabled useless runes can be useful for preventing a “bad” rule from firing. So we only disable about 1/4 of the most useless for each event.

PRELIMINARY RESULTS (2)

```
;;; Normal: old code  
142927.203u 2570.727s 5:31:28.11 731.5%
```

```
;;; Normal: new code -- no measurable overhead  
143574.018u 2408.210s 5:31:07.26 734.7%
```

```
;;; Write (ACL2_USELESS_RUNES=write)  
;;; -- added 11% to Normal  
158734.908u 2772.066s 6:07:27.82 732.5%
```

```
;;; Read (ACL2_USELESS_RUNES=25)  
;;; -- cut 21% (wall-clock), 24% (u+s) from Normal  
108499.233u 2330.404s 4:22:26.36 703.8%
```

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Biggest “Log Speedup”: **96.7%** cut in time for
`workshops/2017/sumners/support/bakery.cert`:

Normal: 1907.96 seconds

Read (25%): 62.15 seconds

And for standalone (unloaded sole ACL2 process) run, **96.6%** cut:

Normal: 1020.90 seconds

Read (25%) 34.93 seconds

PRELIMINARY RESULTS (4)

Top 25% of one entry in

books/workshops/2017/sumners/support/bakery@useless-runes.lsp:

```
((25398767 72668 (:REWRITE BNL<-IS-NOT=-NSTB))
 (21869792 13110 (:DEFINITION O-P))
 (15505711 43988 (:DEFINITION BNL<))
 (14339931 1841085
   (:REWRITE ISECT-AUX-SDIFF-AUX-PROP2))
 (14119916 185556 (:DEFINITION BNLP))
 (13817776 312012 (:REWRITE BPLP-BNLP))
 (12988391 278400 (:DEFINITION BPLP))
 (12936450 39330 (:DEFINITION O<))
 (12919770 430659 (:DEFINITION SETP))
 (11024656 93137 (:REWRITE BNL<-TOTAL))
 (10500172 93137 (:REWRITE BNL<-TRANS))
 (7650237 1011 (:DEFINITION ==-BUT))
 (5167908 1291977 (:REWRITE <<-TRICHOTOMY))
 (3875931 3875931 (:TYPE-PRESCRIPTION SETP))
 (3687202 90269 (:REWRITE O<=-IS-REALLY-O<=))
 (3014613 3014613 (:TYPE-PRESCRIPTION <<))
 (2602920 453783 (:REWRITE ZP-OPEN)))
```

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Thank you.