How to automate runs of checkpatch, sparse, smatch, “checkdoc” ++

https://lkml.org/lkml/2017/12/16/135
https://patchwork.kernel.org/patch/10174967/

Knut Omang,  Testing & Fuzzing workshop,
Linux Plumbers Conference’18
Why, problems & how

Why:
- Make sure static checking tools gets run early - reduce review noise, avoid regressions

Problems:
- False negatives, differing policies, valid exceptions
- ~ All-or-nothing => nothing
- make C={1,2} not general enough for any tool
- Different tools, deviating output formats - unification?

How:
- Generalize make C={1,2}
- Support suppression syntax
- Parse tool output to unify/group

Implementation:
- Inspired by checkpatch –show-types:
  - Symbolic name + suppression opt
- Implements similar types for generic checkers
  - by simple regex syntax in config file
- Python script
  - V2 – v1: shell script, checkpatch only
  - Inspired by lkml exchanges!
  - Generic checker, specific checker subclasses
  - Address missing suppression features in other tools, make it more ‘neat’ to work with as well.
- TBD: Statistics, advanced smatch, coccinelle
Before & after (sparse example)

```
ovo ~/build/kernel/master> make C=2 CF="-D__linux__ -Dlinux -D__STDC__ -Dunix -D_unix__ -Wsparse=all" M=drivers/net/wireless/ath/ar5523
   CHECK /home/knuto/src/kernel/master/drivers/net/wireless/ath/ar5523/ar5523.c:925:14: warning: symbol '__ret' shadows an earlier one
/home/knuto/src/kernel/master/drivers/net/wireless/ath/ar5523/ar5523.c:925:14: originally declared here
/home/knuto/src/kernel/master/include/linux/slab.h:332:43: warning: dubious: x & !y
/home/knuto/src/kernel/master/include/linux/slab.h:332:43: warning: dubious: x & !y
/home/knuto/src/kernel/master/include/linux/slab.h:332:43: warning: dubious: x & !y
   Building modules, stage 2.
   MODPOST 1 modules
ovo ~/build/kernel/master>
```

```
ovo ~/build/kernel/runchecks> make C=2 CF="--color -n -w --run sparse" M=drivers/net/wireless/ath/ar5523
/home/knuto/src/kernel/runchecks/drivers/net/wireless/ath/ar5523/ar5523.c:925:14: originally declared here
/home/knuto/src/kernel/runchecks/include/net/mac80211.h:2402:9: SPARSE:RETURN_VOID: warning: returning void-valued expression
/home/knuto/src/kernel/runchecks/include/net/mac80211.h:2402:9: SPARSE:RETURN_VOID: warning: returning void-valued expression
/home/knuto/src/kernel/runchecks/include/net/mac80211.h:2402:9: SPARSE:RETURN_VOID: warning: returning void-valued expression
   Building modules, stage 2.
   MODPOST 1 modules
ovo ~/build/kernel/runchecks>
```
Configuration + suppressions

scripts/runchecks.cfg:

```
# Configuration + suppressions

scripts/runchecks.cfg

in the ar5523 directory:

```

checker sparse

```