8.2 Using Filters to impart contextual information

You can also add contextual information to log output using a user-defined `Filter`. `Filter` instances are allowed to modify the `LogRecords` passed to them, including adding additional attributes which can then be output using a suitable format string, or if needed a custom `Formatter`.

For example in a web application, the request being processed (or at least, the interesting parts of it) can be stored in a threadlocal (`threading.local`) variable, and then accessed from a `Filter` to add, say, information from the request - say, the remote IP address and remote user's username - to the `LogRecord`, using the attribute names 'ip' and 'user' as in the `LoggerAdapter` example above. In that case, the same format string can be used to get similar output to that shown above. Here's an example script:

```
import logging
from random import choice

class ContextFilter(logging.Filter):
    """
    This is a filter which injects contextual information into the log.

    Rather than use actual contextual information, we just use random
    data in this demo.
    """

    USERS = ['jim', 'fred', 'sheila']
    IPS = ['123.231.231.123', '127.0.0.1', '192.168.0.1']

    def filter(self, record):

        record.ip = choice(ContextFilter.IPS)
        record.user = choice(ContextFilter.USERS)
        return True

if __name__ == '__main__':
    levels = (logging.DEBUG, logging.INFO, logging.WARNING, logging.ERROR, logging.
↪CRITICAL)
    logging.basicConfig(level=logging.DEBUG,
                        format='%(asctime)-15s %(name)-5s %(levelname)-8s IP:
↪%(ip)-15s User: %(user)-8s %(message)s')
    a1 = logging.getLogger('a.b.c')
    a2 = logging.getLogger('d.e.f')

    f = ContextFilter()
    a1.addFilter(f)
    a2.addFilter(f)
    a1.debug('A debug message')
    a1.info('An info message with %s', 'some parameters')
    for x in range(10):
        lvl = choice(levels)
        lvlname = logging.getLevelName(lvl)
        a2.log(lvl, 'A message at %s level with %d %s', lvlname, 2, 'parameters')
```

which, when run, produces something like:

```
2010-09-06 22:38:15,292 a.b.c DEBUG    IP: 123.231.231.123 User: fred     A debug␣
↪message
2010-09-06 22:38:15,300 a.b.c INFO     IP: 192.168.0.1     User: sheila   An info␣
↪message with some parameters
2010-09-06 22:38:15,300 d.e.f CRITICAL IP: 127.0.0.1       User: sheila   A␣
↪message at CRITICAL level with 2 parameters
2010-09-06 22:38:15,300 d.e.f ERROR    IP: 127.0.0.1       User: jim      A␣
↪message at ERROR level with 2 parameters
2010-09-06 22:38:15,300 d.e.f DEBUG    IP: 127.0.0.1       User: sheila   A␣
↪message at DEBUG level with 2 parameters
```

(continues on next page)