Report on Identified Refactoring Opportunities for SC/ST Refactoring

Each of the identified control-fields represents an SC/ST refactoring opportunity.

Statistics on Identified Control-Fields:

1. No. of Classes (IPC): 1731
2. Classes Qualified for Refactoring (QC): 66
3. %QC: 3.813%
4. No. of Fields in All Classes (IF): 4836
5. Indentified Control Fields (CF): 112
6. %CF: 2.316%
7. No. of Control-Fields for SC Refactoring: 20
8. No. of Control-Fields for ST Refactoring: 92
9. No. of Control-Fields Associated with More Than 15 Conditional-Statements: 9
10. No. of Control-Fields Associated with 11 to 15 Conditional-Statements: 2
11. No. of Control-Fields Associated with 6 to 10 Conditional-Statements: 8
12. No. of Control-Fields Associated with 2 to 5 Conditional-Statements: 93

Identified Control-Fields. A control-field is denoted as <C, f>, where 'f' is a field of a class with fully-qualified name 'C'. Uses = Number of conditional-statements associated with a control-field.

Uses	Replace Type Code with Subclass (SC)
24	<cck.util.Option.Bool, value>
8	<avrora.sim.output.EventGen, enabled>
5	<avrora.monitors.InterruptMonitor.Mon, show>
4	<avrora.monitors.InterruptMonitor.Mon, invokeOnly>
3	<avrora.sim.mcu.DefaultMCU.Pin, outputDir>
	<avrora.monitors.PacketMonitor.Mon, showPackets>
	<avrora.sim.radio.CC1000Radio.SerialConfigurationInterface, writeCommand>
	<avrora.monitors.SnifferMonitor.Mon, showTransmitted>
	<avrora.monitors.SnifferMonitor.Mon, showReceived>
	<avrora.monitors.PacketMonitor.Mon, cc2420radio>
2	<avrora.monitors.SnifferMonitor.Mon, Print>
	<avrora.syntax.Module.Seg, acceptsData>
	<avrora.sim.clock.BarrierSynchronizer.SynchEvent, removed>
	<cck.elf.ELFDataInputStream, bigEndian>
	<avrora.sim.platform.sensors.AccelSensor, on>
	<avrora.syntax.SyntacticOperand.Expr, simplified>
	<avrora.monitors.CallTimeMonitor.CallTimeMon, ignore_interrupts>
	<avrora.sim.util.MemPrint, log>
	<avrora.stack.StateTransitionGraph.Edge, type>
	<jintgen.isdl.InstrDecl, pseudo>

Uses	Replace Type Code with State (ST)
66	<jintgen.isdl.parser.ISDLParser,jj_ntk>
40	<avrora.syntax.atmel.AtmelParser,jj_ntk>
35	<jintgen.isdl.parser.ISDLParserTokenManager,curChar>
30	<cck.text.Verbose.Printer, enabled>
23	<avrora.syntax.objdump.ObjDumpParser,jj_ntk>
19	<avrora.syntax.objdump.ObjDumpParserTokenManager,curChar>
	<avrora.syntax.atmel.AtmelParserTokenManager,curChar>
17	<avrora.syntax.atmel.AtmelParser, jj_la>
12	<avrora.test.probes.ProbeParserTokenManager,curChar>
11	<avrora.stack.StateCache.Set, delegating>
9	<avrora.syntax.objdump.ObjDumpParserTokenManager,jjmatchedPos>
8	<avrora.sim.Simulation, running>
7	<cck.text.Status, ENABLED>
6	<avrora.sim.radio.CC1000Radio.MainRegister, corePd>
	<avrora.sim.AtmelInterpreter, C>
	<avrora.sim.util.Mem16, state>
	<avrora.test.probes.ProbeParser,jj_ntk>
5	<avrora.sim.radio.CC1000Radio.MainRegister, biasPd>
	<avrora.arch.avr.AVRState, C>
	<avrora.sim.AtmelInterpreter, nextPC>
	<avrora.sim.radio.Medium.TXRX, activated>
	<avrora.sim.mcu.RegisterSet.Field,value>
	<avrora.syntax.atmel.AtmelParserTokenManager,jjmatchedPos>

Uses	Replace Type Code with State (ST)
4	<avrora.sim.radio.CC1000Radio.MainRegister, rxtx>
	<avrora.sim.radio.CC1000Radio.MainRegister, fsPd>
	<avrora.arch.msp430.MSP430State, Z>
	<jintgen.isdl.parser.ISDLParserTokenManager, jjmatchedPos>
	<avrora.sim.AtmelInterpreter, sleeping>
	<avrora.arch.msp430.MSP430State, C>
	<avrora.sim.AtmelInterpreter, N>
	<avrora.sim.AtmelInterpreter, S>
	<avrora.sim.AtmelInterpreter, H>
	<avrora.sim.AtmelInterpreter, I>
	<avrora.sim.AtmelInterpreter, T>
	<avrora.sim.AtmelInterpreter, V>
	<avrora.sim.AtmelInterpreter, Z>
	<avrora.sim.radio.Medium.Receiver, locked>
	<avrora.arch.msp430.MSP430Operand,op_type>
3	<avrora.sim.radio.CC1000Radio.MainRegister, txPd>
	<avrora.stack.StateCache.State, isExplored>
	<avrora.arch.avr.AVRState, V>
	<avrora.arch.avr.AVRState, S>
	<avrora.arch.avr.AVRState, T>
	<avrora.arch.avr.AVRState, Z>
	<avrora.stack.StateCache.Set, empty>
	<avrora.arch.avr.AVRState, H>
	<avrora.arch.avr.AVRState, N>
	<avrora.arch.avr.AVRState, I>
	<avrora.sim.util.Mem16, count>
	<avrora.sim.util.Mem8, count>
	<avrora.sim.mcu.EEPROM, writeEnable>
	<avrora.sim.FiniteStateMachine, curState>
	<avrora.stack.Analyzer, TRACE>
	<jintgen.isdl.parser.ISDLParserTokenManager, jjmatchedKind>
	<avrora.sim.platform.ExternalFlash,dfOpcode>
	<avrora.arch.avr.AVROperand,op_type>
	<avrora.sim.radio.CC2420Radio.Receiver,state>

Uses	Replace Type Code with State (ST)
2	<avrora.sim.mcu.ATMegaTimer, countUp>
	<avrora.syntax.Module, caseSensitivity>
	<avrora.monitors.PacketMonitor.Mon, bufferPos>
	<avrora.sim.radio.CC1000Radio.MainRegister, rxPd>
	<avrora.sim.mcu.Timer8Bit, period>
	<cck.text.Printer, first>
	<avrora.sim.radio.CC2420Radio, configRAMBank>
	<jintgen.gen.disassembler.Decoder, chained>
	<avrora.stack.isea.ISEAbstractState.Element, read>
	<jintgen.isdl.OperandTypeDecl.Accessor, polymorphic>
	<avrora.sim.util.MemTimer, timer_state>
	<avrora.stack.StateCache.State, onFrontier>
	<cck.parser.AbstractParseException, specialConstructor>
	<avrora.sim.mcu.SPI.SPCRReg, prev_spie>
	<cck.text.Terminal, htmlColors>
	<avrora.monitors.TraceMonitor.Mon, nesting>
	<cck.util.Util.Error, STACKTRACES>
	<avrora.sim.energy.EnergyControl, active>
	<jintgen.gen.disassembler.Decoder, multiple>
	<avrora.sim.radio.CC1000Radio.SPITicker, activated>
	<cck.text.Printer, begLine>
	<avrora.sim.mcu.ATMegaTimer, timerEnabled>
	<avrora.sim.mcu.ADC.ControlRegister, converting>
	<avrora.sim.mcu.SPI.TransferEvent, transmitting>
	<cck.text.Status, TIMING>
	<avrora.gui.GraphEvents.MyVector, current>
	<cck.test.TestEngine, VERBOSE>
	<cck.stat.MinMaxMean, someData>
	<cck.text.Terminal, useColors>
	<avrora.sim.platform.ExternalFlash, isReading>
	<avrora.syntax.atmel.AtmelParserTokenManager, jjmatchedKind>
	<avrora.syntax.objdump.ObjDumpParserTokenManager, jjmatchedKind>
	<avrora.test.probes.ProbeParserTokenManager, jjmatchedKind>
	<avrora.sim.platform.ExternalFlash, isSelected>

Uses	Replace Type Code with State (ST)
	<avrora.sim.radio.CC2420Radio,configCommand>

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