

Supplementary Information for Large Language Models for Code Linting: How Far Are We?

A Detailed Checkstyle’s Results for Individual Sub-Rules

Table 1 presents the detailed Checkstyle results, including TP, FP, FN, Precision, Recall, and F1 for each sub-rule, together with the corresponding rule name and relation type.

Table 1: Per-sub-rule results: mapping each rule and sub-rule to its relation type and PRF metrics.

Rule	SubRule	Relation	TP	FP	FN	Precision	Recall	F1
Rule001_2-1 _File_name	SR01_FileNameMatches ClassName	Containment Relation	18	0	8	1.000	0.692	0.818
Rule002_2-2 _File_encodi ng_UTF-8	SR01_UTF8	Property Restriction Relation	0	0	3	0.000	0.000	0.000
Rule003_2-3 -1_Whitespa ce_character s	SR01_Only0x20	Property Restriction Relation	9	0	0	1.000	1.000	1.000
Rule004_2-3 -2_Special_e scape_seque nces	SR01_SpecialEscape	Property Restriction Relation	16	0	0	1.000	1.000	1.000
Rule005_2-3 -3_Non-ASC II_character s	SR01_NonAsciiCharacte r	Property Restriction Relation	0	0	0	1.000	1.000	1.000
	SR02_EasierToRead	Property Restriction Relation	0	0	0	1.000	1.000	1.000
	SR03_AvoidEscapedUni codeCharactersOutsideS tringLiteralsAndComme nts	Containment Relation	0	0	0	1.000	1.000	1.000
Rule006_3_S ource_file_st ructure	SR01_FileComponentOr der	Order Rela tion	2	0	2	1.000	0.500	0.667
	SR02_OneBlankLineSep arating	Separation Relation	10	2	2	0.833	0.833	0.833
Rule007_3-2 _Package_st atement	SR01_PackageStatemen tLength	Quantity Restriction Relation	0	0	0	1.000	1.000	1.000
	SR02_PackageStatemen tNoLineWrap	Containment Relation	3	0	0	1.000	1.000	1.000
Rule008_3-3 -1_No_wildc ard_imports	SR01_NoWildcardImpor t	Containment Relation	2	0	0	1.000	1.000	1.000
Rule009_3-3 -2_No_line wrapping	SR01_ImportStatement Length	Quantity Restriction Relation	0	0	0	1.000	1.000	1.000
Rule009_3-3 -2_No_line wrapping	SR02_ImportStatement NoLineWrap	Containment Relation	3	0	0	1.000	1.000	1.000
Rule010_3-3 -3_Ordering _and_spacin g	SR01_ImportsSeparatin g	Separation Relation	17	0	0	1.000	1.000	1.000
Rule010_3-3 -3_Ordering _and_spacin g	SR02_ImportsOrder	Order Rela tion	5	0	0	1.000	1.000	1.000
Rule011_3-3 -4_No_static _import_for_ classes	SR01_NoStaticNestedCl assImport	Containment Relation	0	0	1	0.000	0.000	0.000

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Rule	SubRule	Relation	TP	FP	FN	Precision	Recall	F1
Rule012_3-4-1_Exactly_one_top-level_class_declaration	SR01_OneTopLevelClasses	Quantity Restriction Relation	7	0	7	1.000	0.500	0.667
Rule013_3-4-2-1_Overloads_never_split	SR01_OverloadsNeverSplit	Separation Relation	2	0	0	1.000	1.000	1.000
Rule014_3-5-1_Ordering_and_spacing_of_module_directives	SR01_ModuleDirectives Order	Order Relation	0	0	3	0.000	0.000	0.000
	SR02_OneBlankLineSeparatingDirectives	Separation Relation	0	0	3	0.000	0.000	0.000
Rule015_4-1-1_Use_of_optional_braces	SR01_NeedBraces	Accompany Relation	5	0	0	1.000	1.000	1.000
	SR02_OtherBracesOptional	Accompany Relation	0	0	0	1.000	1.000	1.000
Rule016_4-1-2_Nonempty_blocks_K&R_style	SR01_NoLineBreakBeforeOpeningBrace	Accompany Relation	17	0	0	1.000	1.000	1.000
	SR02_LineBreakAfterOpeningBrace	Accompany Relation	16	0	3	1.000	0.842	0.914
	SR03_LineBreakBeforeClosingBrace	Accompany Relation	16	0	0	1.000	1.000	1.000
	SR04_LineBreakAfterClosingBrace	Accompany Relation	16	1	3	0.941	0.842	0.889
	SR05_BreakBeforeScopeBlock	Accompany Relation	0	0	0	1.000	1.000	1.000
Rule017_4-1-3_Empty_blocks_maybe_concise	SR01_ConciseForNonMultiblock	Property Restriction Relation	0	3	5	0.000	0.000	0.000
Rule018_4-2_Block_indentation_+2_spaces	SR01_OpenBlockIndentation	Quantity Restriction Relation	88	0	0	1.000	1.000	1.000
	SR02_EndedBlockIndentation	Quantity Restriction Relation	44	0	0	1.000	1.000	1.000
Rule019_4-3_One_statement_per_line	SR01_OneStatementPerLine	Quantity Restriction Relation	2	0	7	1.000	0.222	0.364
Rule020_4-4_Column_limit_100	SR01_LineLength	Quantity Restriction Relation	1	0	0	1.000	1.000	1.000
	SR02_SpecialLineLength	Quantity Restriction Relation	0	4	0	0.000	0.000	0.000
Rule021_4-5-1_Where_to_break	SR01_BreakBeforeNonAssignmentOperator	Accompany Relation	16	0	0	1.000	1.000	1.000
	SR02_BreakAfterAssignmentOperator	Accompany Relation	0	0	0	1.000	1.000	1.000
	SR03_NameAttachToParenthesis	Separation Relation	6	0	0	1.000	1.000	1.000
	SR04_CommaAttachToTokenPrecedes	Separation Relation	16	0	0	1.000	1.000	1.000
	SR05_NoArrowBreak	Accompany Relation	0	0	10	0.000	0.000	0.000
Rule022_4-5-2_Indent_continuation_lines_at_least_+4_spaces	SR01_WrappingIndentation	Quantity Restriction Relation	71	2	10	0.973	0.876	0.922
	SR02_SameIndentationForParallelElement	Quantity Restriction Relation	0	0	39	0.000	0.000	0.000
Rule023_4-6-1_Vertical_Whitespace	SR01_EmptyLineSeparatingConsecutiveMembers	Separation Relation	5	2	0	0.714	1.000	0.833

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Rule	SubRule	Relation	TP	FP	FN	Precision	Recall	F1
	SR02_OptionalEmptyLine	Separation Relation	0	0	0	1.000	1.000	1.000
	SR03_MultiEmptyLine	Quantity Restriction Relation	0	0	0	1.000	1.000	1.000
Rule024_4-6-2_Horizontal_whitespace	SR01_SpaceBetweenReservedWordAndOpenParenthesis	Separation Relation	3	3	25	0.500	0.107	0.176
	SR02_SpaceBetweenCloseBraceAndReservedWord	Separation Relation	0	2	6	0.000	0.000	0.000
	SR03_SpaceBeforeOpenBrace	Accompany Relation	9	0	20	1.000	0.310	0.474
	SR04_SpaceAroundOperator	Accompany Relation	24	4	17	0.857	0.585	0.696
	SR05_SpaceAfterSeparator	Accompany Relation	8	0	11	1.000	0.421	0.593
	SR06_MultiSpaceAroundComment	Separation Relation	0	0	5	0.000	0.000	0.000
	SR07_SpaceBetweenTypeAndVariable	Separation Relation	3	0	18	1.000	0.143	0.250
	SR08_InsideBraces	Accompany Relation	0	0	0	1.000	1.000	1.000
	SR09_SpaceBetweenTypeAnnotationAndSpecialSignals	Separation Relation	0	0	8	0.000	0.000	0.000
	SR10_SpaceAtTheStartOrEnd	Accompany Relation	0	0	0	1.000	1.000	1.000
Rule025_4-8-1_Enum_classes	SR01_BlankLineAfterCommaInEnum	Accompany Relation	0	0	0	1.000	1.000	1.000
Rule026_4-8-2-1_One_variable_per_declaration	SR01_OneVariablePerDeclaration	Quantity Restriction Relation	2	0	0	1.000	1.000	1.000
Rule027_4-8-3-2_No_C_style_array_declarations	SR01_NoCStyle	Order Relation	4	0	0	1.000	1.000	1.000
Rule028_4-8-4-1_Indentation	SR01_SwitchIndentation	Quantity Restriction Relation	17	0	0	1.000	1.000	1.000
Rule029_4-8-4-2_Fall-through_commented	SR01_FallThroughCommentInOldStyleSwitch	Accompany Relation	4	0	0	1.000	1.000	1.000
Rule030_4-8-4-3_Presence_of_the_default_label	SR01_SwitchNeedDefault	Containment Relation	6	2	4	0.750	0.600	0.667
Rule031_4-8-5-1_Type_uses_annotations	SR01_TypeAnnotationPlace	Order Relation	0	0	5	0.000	0.000	0.000
Rule032_4-8-5-2_Class_annotations	SR01_ClassModulePackageAnnotationPlace	Order Relation	0	0	4	0.000	0.000	0.000
	SR02_ClassModulePackageAnnotationNum	Quantity Restriction Relation	2	0	2	1.000	0.500	0.667
	SR03_NoIndentationWhenBreak	Quantity Restriction Relation	1	0	2	1.000	0.333	0.500
Rule033_4-8-5-3_Method_and_constructor_annotations	SR01_MethodAnnotationPlace	Order Relation	0	0	4	0.000	0.000	0.000
	SR02_MethodAnnotationNum	Quantity Restriction Relation	2	0	0	1.000	1.000	1.000
	SR03_MethodAnnotationSpecialCase	Accompany Relation	2	0	0	1.000	1.000	1.000
Rule034_4-8-5-4_Field_annotations	SR01_FieldAnnotationPlace	Order Relation	0	0	2	0.000	0.000	0.000

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Rule	SubRule	Relation	TP	FP	FN	Precision	Recall	F1
	SR02_FieldAnnotationNum	Quantity Restriction Relation	0	0	0	1.000	1.000	1.000
Rule035_4-8-6-1_Block_comment_style	SR01_BlockIndentation	Quantity Restriction Relation	2	0	0	1.000	1.000	1.000
	SR02_MultiLineComment	Accompany Relation	0	0	0	1.000	1.000	1.000
	SR03_NoDrawnBoxes	Containment Relation	0	0	3	0.000	0.000	0.000
Rule036_4-8-7_Modifiers	SR01_ModierOrderOnClassAndMember	Order Relation	6	2	6	0.750	0.500	0.600
	SR02_ModierOrderOnRequires	Order Relation	0	0	1	0.000	0.000	0.000
Rule037_4-8-8_Numeric_Literals	SR01_NoLowerL	Containment Relation	4	0	0	1.000	1.000	1.000
Rule038_5-2-1_Package_names	SR01_PackageNaming	Containment Relation	3	0	0	1.000	1.000	1.000
Rule039_5-2-2_Class_names	SR01_ClassNaming	Property Restriction Relation	9	1	0	0.900	1.000	0.947
	SR02_ClassNameNoun	Property Restriction Relation	0	0	1	0.000	0.000	0.000
Rule040_5-2-3_Method_names	SR01_MethodNaming	Property Restriction Relation	7	4	0	0.636	1.000	0.778
Rule040_5-2-3_Method_names	SR02_MethodNameVerb	Property Restriction Relation	0	0	1	0.000	0.000	0.000
Rule041_5-2-4_Constant_names	SR01_ConstantNaming	Property Restriction Relation	5	5	5	0.500	0.500	0.500
Rule042_5-2-5_Non-constant_field_names	SR01_NoneConstantFieldNaming	Property Restriction Relation	6	1	6	0.857	0.500	0.632
	SR02_FieldNameNoun	Property Restriction Relation	0	0	4	0.000	0.000	0.000
Rule043_5-2-6_Parameter_names	SR01_ParameterNaming	Property Restriction Relation	5	1	0	0.833	1.000	0.909
	SR02_AvoidSingleCharParameter	Quantity Restriction Relation	3	0	0	1.000	1.000	1.000
Rule044_5-2-7_Local_variable_names	SR01_LocalVariableNaming	Property Restriction Relation	6	1	1	0.857	0.857	0.857
Rule045_5-2-8_Type_variable_names	SR01_TypeVariableNaming	Property Restriction Relation	9	0	0	1.000	1.000	1.000
Rule046_6-1_@Override_always_used	SR01_OverrideAnnotation	Accompany Relation	0	0	3	0.000	0.000	0.000
	SR02_OmitOverrideAnnotationWhenDeprecated	Accompany Relation	0	0	0	1.000	1.000	1.000
Rule047_6-2_Caught_exceptions_not_ignored	SR01_NoEmptyCaught	Containment Relation	2	0	0	1.000	1.000	1.000
Rule048_6-3_Static_members_qualified_using_classes	SR01_StaticClassUsage	Property Restriction Relation	0	0	2	0.000	0.000	0.000
Rule049_6-4_Finalizers_not_used	SR01_NoFinalizers	Containment Relation	1	0	0	1.000	1.000	1.000
Rule050_7-1-1_General_form	SR01_JavadocForm	Accompany Relation	5	0	7	1.000	0.417	0.588

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Rule	SubRule	Relation	TP	FP	FN	Precision	Recall	F1
Rule051_7-1-2_Paragraphs	SR01_BlankLinePosition	Separation Relation	2	0	0	1.000	1.000	1.000
	SR02_Paragraphs	Accompany Relation	6	0	0	1.000	1.000	1.000
Rule052_7-1-3_Block_tags	SR01_BlockTagOrder	Order Relation	4	0	0	1.000	1.000	1.000
	SR02_NoEmptyDescriptionInBlockTag	Containment Relation	5	0	0	1.000	1.000	1.000
	SR03_LineBreakInBlockTag	Quantity Restriction Relation	4	0	0	1.000	1.000	1.000
Rule053_7-2-The_summary_fragment	SR01_SummaryFragmentFormat	Containment Relation	2	0	2	1.000	0.500	0.667
	SR02_SummaryFragmentPosition	Accompany Relation	1	0	0	1.000	1.000	1.000
	SR03_VerbOrNounPhrase	Property Restriction Relation	2	0	1	1.000	0.667	0.800
Rule054_7-3-Where_Javadoc_is_used	SR01_JavadocPosition	Accompany Relation	18	14	0	0.562	1.000	0.720
Rule055_7-3-4_Non-required_Javadoc	SR01_WheneverUse	Accompany Relation	0	0	0	1.000	1.000	1.000
Overall			617	54	282	0.920	0.686	0.786