

sample_report

Design Description

chall

sample_report: Design Description

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Chapter 1. Model Version

Version: 1.0

Last modified: Mon Apr 21 09:34:58 2025

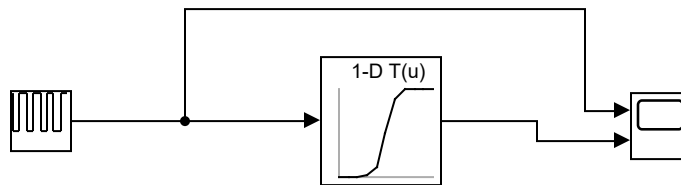
Checksum: 3454262922 3382664289 1278606462 2076575836

Chapter 2. Root System

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Figure 2.1. practice



Blocks

Parameters

"1-D Lookup Table" (Lookup_n-D)

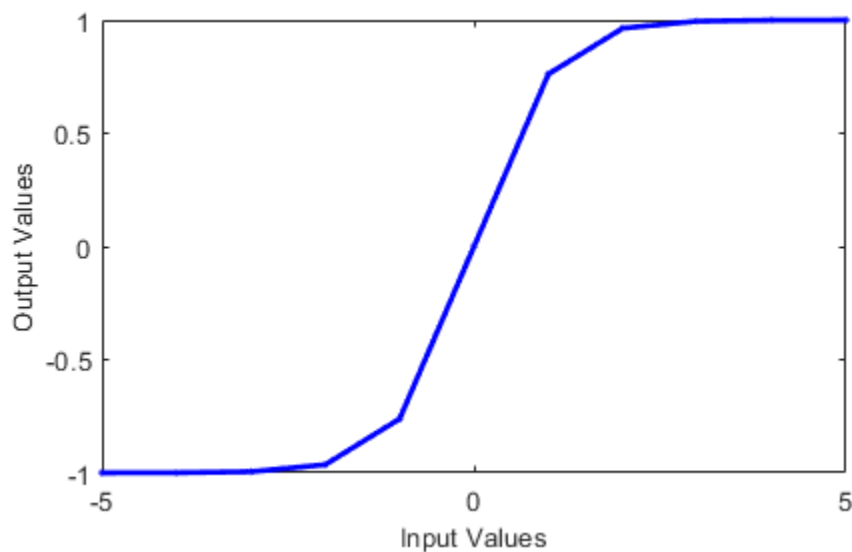
Table 2.1. "1-D Lookup Table" Parameters

Parameter	Value
Number of table dimensions	1
Data specification	Table and breakpoints
Breakpoints specification	Explicit values
Breakpoints for dimension 1 source	Dialog
Breakpoints for dimension 1	[-5:5]
Breakpoints First Point for dimension 1	1
Breakpoints Spacing for dimension 1	1
Tunable size for dimension 1	-1
Tunable size for dimension 2	-1

Parameter	Value
Tunable size for dimension 3	-1
Tunable size for dimension 4	-1
Tunable size for dimension 5	-1
Tunable size for dimension 6	-1
Tunable size for dimension 7	-1
Tunable size for dimension 8	-1
Tunable size for dimension 9	-1
Tunable size for dimension 10	-1
Tunable size for dimension 11	-1
Tunable size for dimension 12	-1
Tunable size for dimension 13	-1
Tunable size for dimension 14	-1
Tunable size for dimension 15	-1
Tunable size for dimension 16	-1
Tunable size for dimension 17	-1
Tunable size for dimension 18	-1
Tunable size for dimension 19	-1
Tunable size for dimension 20	-1
Tunable size for dimension 21	-1
Tunable size for dimension 22	-1
Tunable size for dimension 23	-1
Tunable size for dimension 24	-1

Parameter	Value
Tunable size for dimension 25	-1
Tunable size for dimension 26	-1
Tunable size for dimension 27	-1
Tunable size for dimension 28	-1
Tunable size for dimension 29	-1
Tunable size for dimension 30	-1
Breakpoints minimum for dimension 1	[]
Breakpoints maximum for dimension 1	[]
Breakpoints data type for dimension 1	Inherit: Same as corresponding input
Index search method	Binary search
Begin index search using previous index result	off
Use one input port for all inputs (u)	off
Table data source	Dialog
Table data	tanh([-5:5])
Table minimum	[]
Table maximum	[]
Table data type	Inherit: Same as output
Intermediate results data type	Inherit: Same as output
Interpolation method	Linear Lagrange
Extrapolation method	Linear
Diagnostic for out-of-range input	None
Remove protection against out-of-range input in generated code	off
Use last table value for inputs at or above last breakpoint	off

Parameter	Value
Apply full precision fixed-point algorithm when possible	off
Apply more accurate and efficient rounding when possible	off
Sample time (-1 for inherited)	-1
Internal rule priority	Speed
Require all inputs (u) to have the same data type	on
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as first input
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Simplest
Saturate on integer overflow	off
Fraction data type	Inherit: Inherit via internal rule
Support tunable table size in code generation	off
Maximum indices for each dimension	[]
Support tunable size	off

Figure 2.2. 1-D Lookup Table**Table 2.2. 1-D Lookup Table (:,:)**

-5	-0.9999
-4	-0.9993
-3	-0.9951
-2	-0.9640
-1	-0.7616
0	0
1	0.7616
2	0.9640
3	0.9951
4	0.9993
5	0.9999

"Repeating Sequence Stair" (SubSystem)

Table 2.3. "Repeating Sequence Stair" Parameters

Parameter	Value
SimulinkmasksVectorOfOutputValues_MP	[1 2 1 2 1 2 1 2].'
SimulinkmasksSampleTime_MP	1
SimulinkmasksOutputMinimum_MP	[]

Parameter	Value
SimulinkmasksOutputMaximum_MP	[]
SimulinkmasksOutputDataType_MP	double
SimulinkmasksLockOutputDataTypeAgainstFxpTools_MP	off

Block Execution Order

1. FixPt Constant [8] (Constant)
2. Constant [18] (Constant)
3. Vector [16] (Constant)
4. Output [12] (UnitDelay)
5. Output [15] (MultiPortSwitch)
6. 1-D Lookup Table [2] (Lookup_n-D)
7. Scope [7] (Scope)
8. FixPt Sum1 [9] (Sum)
9. FixPt Switch [18] (Switch)

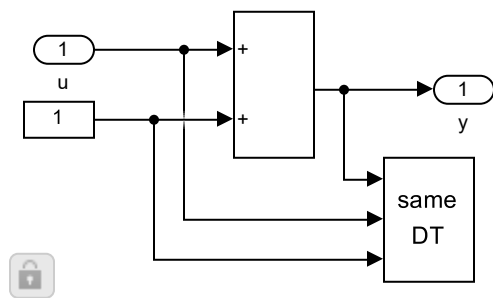
Chapter 3. Subsystems

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Increment Real World

Figure 3.1. practice/Repeating Sequence Stair/LimitedCounter/Increment Real World



Blocks

Parameters

"FixPt Constant" (Constant)

Table 3.1. "FixPt Constant" Parameters

Parameter	Value
Constant value	1
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against	off

Parameter	Value
changes by the fixed-point tools	
Sample time	inf
Frame period	inf

"FixPt Data Type Duplicate" (DataTypeDuplicate)

Table 3.2. "FixPt Data Type Duplicate" Parameters

Parameter	Value
Number of input ports	3

"FixPt Sum1" (Sum)

Table 3.3. "FixPt Sum1" Parameters

Parameter	Value
Icon shape	rectangular
List of signs	++
Apply over	All dimensions
Dimension	1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	on
Lock data type settings against changes by the fixed-point tools	on
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"u" (Inport)**Table 3.4. "u" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	-1
Minimum	[]
Maximum	[]
Data type	Inherit: auto

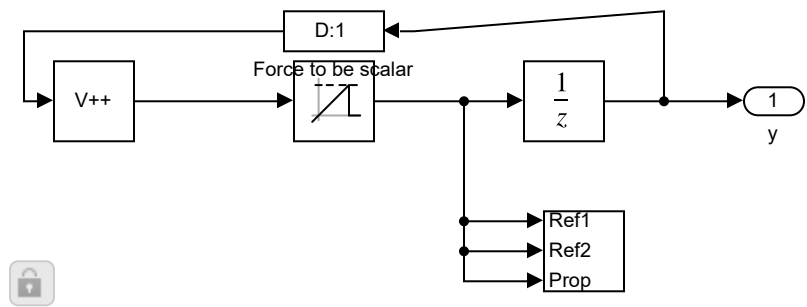
"y" (Outport)**Table 3.5. "y" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1
Ensure outport is virtual	off
Output when disabled	held

Parameter	Value
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

LimitedCounter

Figure 3.2. practice/Repeating Sequence Stair/LimitedCounter



Blocks

Parameters

"Data Type Propagation" (S-Function)

Table 3.6. "Data Type Propagation" Parameters

Parameter	Value
Simulink-masksx1Propagated-DataType_MP	Specify via dialog
Simulink-masksx11PropagatedDataTypeeeg-Fixdt116Fixdtsingle_MP	uint(nbits)
Simulink-masksx2PropagatedScaling_MP	Specify via dialog
Simulink-masksx21Propagated	1

Parameter	Value
gatedScalingSlopeEg29OrSlopeBiasEg1253_MP	

"Force to be scalar" (SignalSpecification)

Table 3.7. "Force to be scalar" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1

"Output" (UnitDelay)

Table 3.8. "Output" Parameters

Parameter	Value
Initial condition	0.0
Input processing	Elements as channels (sample based)
Sample time (-1 for inherited)	tsamp
State name must resolve to Simulink signal object	off

"Wrap To Zero" (SubSystem)

Table 3.9. "Wrap To Zero" Parameters

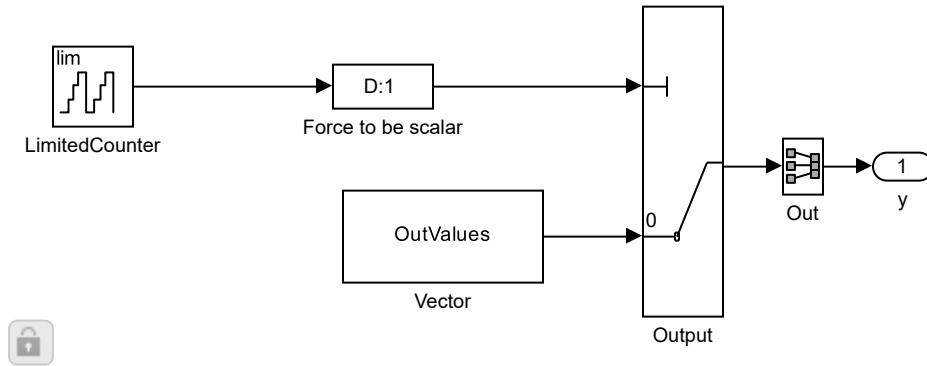
Parameter	Value
SimulinkmasksThreshold_MP	threshold

"y" (Outport)**Table 3.10. "y" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1
Ensure outport is virtual	off
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Repeating Sequence Stair

Figure 3.3. practice/Repeating Sequence Stair



Blocks

Parameters

"Force to be scalar" (SignalSpecification)

Table 3.11. "Force to be scalar" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1

"LimitedCounter" (SubSystem)**Table 3.12. "LimitedCounter" Parameters**

Parameter	Value
SimulinkmasksUpperLimit_MP	nn
SimulinkmasksSampleTime_MP	tsamp

"Out" (SignalConversion)**Table 3.13. "Out" Parameters**

Parameter	Value
Output	Signal copy
Data type	Inherit: auto
Exclude this block from 'Block reduction' optimization	off

"Output" (MultiPortSwitch)**Table 3.14. "Output" Parameters**

Parameter	Value
Data port order	Zero-based contiguous
Number of data ports	1
Data port indices (e.g. {1,2,3} {1,[2,3]})	{1,2,3}
Data port for default case	Last data port
Diagnostic for default case	Error
Require all data port inputs to have the same data type	off
Output minimum	OutMin
Output maximum	OutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

Parameter	Value
Saturate on integer overflow	off
Sample time (-1 for inherited)	tsamp
Allow different data input sizes (Results in variable-size output signal)	off

"Vector" (Constant)

Table 3.15. "Vector" Parameters

Parameter	Value
Constant value	OutValues
Interpret vector parameters as 1-D	on
Output minimum	OutMin
Output maximum	OutMax
Output data type	OutDataTypeStr
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"y" (Outport)

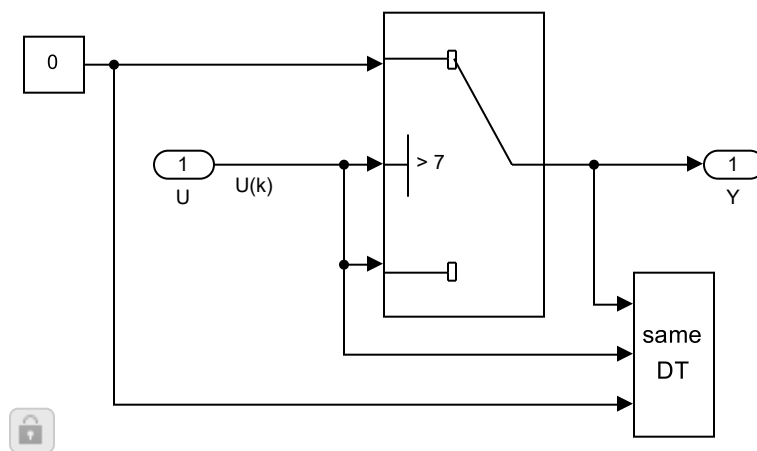
Table 3.16. "y" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	OutMin
Maximum	OutMax
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off

Parameter	Value
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1
Ensure output is virtual	off
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Wrap To Zero

Figure 3.4. practice/Repeating Sequence Stair/LimitedCounter/Wrap To Zero



Blocks

Parameters

"Constant" (Constant)

Table 3.17. "Constant" Parameters

Parameter	Value
Constant value	0
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"FixPt Data Type Duplicate1" (DataTypeDuplicate)

Table 3.18. "FixPt Data Type Duplicate1" Parameters

Parameter	Value
Number of input ports	3

"FixPt Switch" (Switch)

Table 3.19. "FixPt Switch" Parameters

Parameter	Value
Criteria for passing first input	$u_2 > \text{Threshold}$
Threshold	Threshold
Require all data port inputs to have the same data type	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against	off

Parameter	Value
changes by the fixed-point tools	
Integer rounding mode	Floor
Saturate on integer overflow	off
Enable zero-crossing detection	off
Sample time (-1 for inherited)	-1
Allow different data input sizes (Results in variable-size output signal)	off

"U" (Inport)

Table 3.20. "U" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	-1
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Y" (Outport)

Table 3.21. "Y" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off

Parameter	Value
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1
Ensure outport is virtual	off
Output when disabled	held
Initial output	0
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Chapter 4. System Design Variables

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Design Variable Summary

Table 4.1. Functions used in Design Variable Expressions

Function Name	Parent Blocks	Calling character vector
tanh	1-D Lookup Table [2]	tanh([-5:5])

Chapter 5. Requirements

practice does not contain requirements traceability links.

Chapter 6. System Model Configuration

Source: Model
Source Name: practice

Table 6.1. practice Configuration Set

Property	Value
Description	
Components	[practice Configuration Set.Components(1) [23], practice Configuration Set.Components(2) [24], practice Configuration Set.Components(3) [25], practice Configuration Set.Components(4) [27], practice Configuration Set.Components(5) [30], practice Configuration Set.Components(6) [31], practice Configuration Set.Components(7) [32], practice Configuration Set.Components(8) [33], practice Configuration Set.Components(9) [35]]
Name	Configuration

Table 6.2. practice Configuration Set.Components [23](1)

Property	Value
Name	Solver
Description	
Components	
StartTime	0.0
StopTime	10.0
AbsTol	auto
AutoScaleAbsTol	on
FixedStep	auto
InitialStep	auto
MaxOrder	5
ZcThreshold	auto
ConsecutiveZCsStepRelTol	10*128*eps
MaxConsecutiveZCs	1000
ExtrapolationOrder	4
NumberNewtonIterations	1
MaxStep	auto

MinStep	auto
MaxConsecutiveMinStep	1
RelTol	1e-3
EnableMultiTasking	off
AllowMultiTaskInputOutput	off
ConcurrentTasks	off
SolverName	VariableStepAuto
SolverType	Variable-step
SolverJacobiMethodControl	auto
DaesscMode	auto
ShapePreserveControl	DisableAll
ZeroCrossControl	UseLocalSettings
ZeroCrossAlgorithm	Nonadaptive
SolverResetMethod	Fast
PositivePriorityOrder	off
AutoInsertRateTranBlk	off
SampleTimeConstraint	Unconstrained
InsertRTBMode	Whenever possible
SampleTimeProperty	
DecoupledContinuousIntegration	off
MinimalZcImpactIntegration	off
ODENIntegrationMethod	ode3
EnableFixedStepZeroCrossing	off
MaxZcPerStep	2
MaxZcBracketingIterations	10

Table 6.3. practice Configuration Set.Components [23](2)

Property	Value
Name	Data Import/Export
Description	
Components	
Decimation	1
ExternalInput	[t, u]
FinalStateName	xFinal
InitialState	xInitial
LimitDataPoints	off
MaxDataPoints	1000
LoadExternalInput	off
LoadInitialState	off

SaveFinalState	off
SaveOperatingPoint	off
SaveFormat	Dataset
SaveOutput	on
SaveState	off
SignalLogging	on
DSMLogging	on
StreamToWks	on
InspectSignalLogs	off
SaveTime	on
ReturnWorkspaceOutputs	on
StateSaveName	xout
TimeSaveName	tout
OutputSaveName	yout
SignalLoggingName	logsout
DSMLoggingName	dsmout
OutputOption	RefineOutputTimes
OutputTimes	[]
ReturnWorkspaceOutputsName	out
Refine	1
LoggingToFile	off
DatasetSignalFormat	timeseries
LoggingFileName	out.mat
LoggingIntervals	[-inf, inf]

Table 6.4. practice Configuration Set.Components [23](3)

Property	Value
Name	Optimization
Description	
Components	
BlockReduction	on
BooleanDataType	on
ConditionallyExecuteInputs	on
DefaultParameterBehavior	Tunable
InlineParams	off
UseDivisionForNetSlopeComputation	off
GainParamInheritBuiltInType	off
UseFloatMulNetSlope	off
InheritOutputTypeSmallerThanSingle	off

DefaultUnderspecifiedDataType	double
UseSpecifiedMinMax	off
InlineInvariantSignals	off
OptimizeBlockIOStorage	on
BufferReuse	on
ReuseModelBlockBuffer	on
GlobalBufferReuse	on
GlobalVariableUsage	None
StrengthReduction	off
AdvancedOptControl	
ExpressionFolding	on
BooleansAsBitfields	off
BitfieldContainerType	uint_T
BitwiseOrLogicalOp	Same as modeled
EnableMemcpy	on
MemcpyThreshold	64
PassReuseOutputArgsAs	Structure reference
PassReuseOutputArgsThreshold	12
LocalBlockOutputs	on
RollThreshold	5
StateBitsets	off
DataBitsets	off
ActiveStateOutputEnumStorageType	Native Integer
ZeroExternalMemoryAtStartup	on
ZeroInternalMemoryAtStartup	on
InitFltsAndDblsToZero	off
NoFixptDivByZeroProtection	off
EfficientFloat2IntCast	off
EfficientMapNaN2IntZero	on
LifeSpan	auto
EvaldLifeSpan	Inf
ClockResolution	-1
MaxStackSize	Inherit from target
BufferReusableBoundary	on
RemoveLocalVariableInitialization	on
SimCompilerOptimization	off
AccelVerboseBuild	off
OptimizeBlockOrder	off
OptimizeDataStoreBuffers	on

BusAssignmentInplaceUpdate	on
DifferentSizesBufferReuse	off
UseRowMajorAlgorithm	off
OptimizationLevel	level2
OptimizationPriority	Balanced
OptimizationCustomize	on
LabelGuidedReuse	off
MultiThreadedLoops	off
AutoScheduleForLoops	off
DenormalBehavior	GradualUnderflow
EfficientTunableParamExpr	off

Table 6.5. practice Configuration Set.Components [23](4)

Property	Value
Name	Diagnostics
Description	
Components	
RTPrefix	error
ConsistencyChecking	none
ArrayBoundsChecking	none
SignalInfNanChecking	none
StringTruncationChecking	error
SignalRangeChecking	none
ReadBeforeWriteMsg	UseLocalSettings
WriteAfterWriteMsg	UseLocalSettings
WriteAfterReadMsg	UseLocalSettings
AlgebraicLoopMsg	warning
ArtificialAlgebraicLoopMsg	warning
SaveWithDisabledLinksMsg	warning
SaveWithParameterizedLinksMsg	warning
CheckSSInitialOutputMsg	on
UnderspecifiedInitializationDetection	Simplified
MergeDetectMultiDrivingBlocksExec	error
SignalResolutionControl	UseLocalSettings
BlockPriorityViolationMsg	warning
MinStepSizeMsg	warning
TimeAdjustmentMsg	none
MaxConsecutiveZCsMsg	error
MaskedZcDiagnostic	warning

IgnoredZcDiagnostic	warning
SolverPrmCheckMsg	none
InheritedTsInSrcMsg	warning
MultiTaskDSMMsg	error
MultiTaskCondExecSysMsg	error
MultiTaskRateTransMsg	error
SingleTaskRateTransMsg	none
TasksWithSamePriorityMsg	warning
SigSpecEnsureSampleTimeMsg	warning
CheckMatrixSingularityMsg	none
IntegerOverflowMsg	warning
Int32ToFloatConvMsg	warning
ParameterDowncastMsg	error
ParameterOverflowMsg	error
ParameterUnderflowMsg	none
ParameterPrecisionLossMsg	warning
ParamSuppressDoubleToSinglePrecision-LossMsg	off
ParamPrecisionLossAbsoluteDiffThreshold	0.0
ParamPrecisionLossRelativeDiffThreshold	0.0
ParamOverflowErrorThreshold	OneBit
ParameterTunabilityLossMsg	warning
FixptConstUnderflowMsg	none
FixptConstOverflowMsg	none
FixptConstPrecisionLossMsg	none
UnderSpecifiedDataTypeMsg	none
UnnecessaryDatatypeConvMsg	none
VectorMatrixConversionMsg	none
FcnCallInpInsideContextMsg	error
SignalLabelMismatchMsg	none
UnconnectedInputMsg	none
UnconnectedOutputMsg	none
UnconnectedLineMsg	none
UseOnlyExistingSharedCode	error
SFcnCompatibilityMsg	none
FrameProcessingCompatibilityMsg	error
UniqueDataStoreMsg	none
BusObjectLabelMismatch	warning
RootOutportRequireBusObject	warning

AssertControl	UseLocalSettings
AllowSymbolicDim	on
ModelReferenceVersionMismatchMessage	none
ModelReferenceIOMismatchMessage	none
UnknownTsInhSupMsg	warning
ModelReferenceDataLoggingMessage	warning
ModelReferenceNoExplicitFinalValueMsg	none
ModelReferenceSymbolNameMessage	warning
StateNameClashWarn	none
OperatingPointInterfaceChecksumMismatchMsg	warning
NonCurrentReleaseOperatingPointMsg	error
PregeneratedLibrarySubsystemCodeDiagnostic	warning
SubsystemReferenceDiagnosticForUnitTest	error
InitInArrayFormatMsg	warning
StrictBusMsg	ErrorLevel1
BusNameAdapt	WarnAndRepair
NonBusSignalsTreatedAsBus	none
SFUnusedDataAndEventsDiag	warning
SFUnexpectedBacktrackingDiag	error
SFInvalidInputDataAccessInChartInitDiag	warning
SFNoUnconditionalDefaultTransitionDiag	error
SFTransitionOutsideNaturalParentDiag	warning
SFUnreachableExecutionPathDiag	warning
SFUndirectedBroadcastEventsDiag	warning
SFTransitionActionBeforeConditionDiag	warning
SFOutputUsedAsStateInMooreChartDiag	error
SFTemporalDelaySmallerThanSampleTimeDiag	warning
SFSelfTransitionDiag	warning
SFExecutionAtInitializationDiag	warning
IntegerSaturationMsg	warning
AllowedUnitSystems	all
UnitsInconsistencyMsg	warning
AllowAutomaticUnitConversions	on
RCSCRenamedMsg	warning
RCSCObservableMsg	warning
ForceCombineOutputUpdateInSim	off
UnderSpecifiedDimensionMsg	none

DebugExecutionForFMUViaOutOfProcess	off
ArithmeticOperatorsInVariantConditions	error
VariantConditionMismatch	none
InheritVATfromSVC	warning
VariantConfigNotUsedByTopModel	warning
ParamWriterValidationControl	UseLocalSettings

Table 6.6. practice Configuration Set.Components [23](5)

Property	Value
Name	Hardware Implementation
Description	
Components	
ProdBitPerChar	8
ProdBitPerShort	16
ProdBitPerInt	32
ProdBitPerLong	32
ProdBitPerLongLong	64
ProdBitPerFloat	32
ProdBitPerDouble	64
ProdBitPerPointer	64
ProdBitPerSizeT	64
ProdBitPerPtrDiffT	64
ProdLargestAtomicInteger	Char
ProdLargestAtomicFloat	Float
ProdIntDivRoundTo	Zero
ProdEndianness	LittleEndian
ProdWordSize	64
ProdShiftRightIntArith	on
ProdLongLongMode	off
ProdHWDeviceType	Intel->x86-64 (Windows64)
TargetBitPerChar	8
TargetBitPerShort	16
TargetBitPerInt	32
TargetBitPerLong	32
TargetBitPerLongLong	64
TargetBitPerFloat	32
TargetBitPerDouble	64
TargetBitPerPointer	32
TargetBitPerSizeT	32

TargetBitPerPtrDiffT	32
TargetLargestAtomicInteger	Char
TargetLargestAtomicFloat	None
TargetShiftRightIntArith	on
TargetLongLongMode	off
TargetIntDivRoundTo	Undefined
TargetEndianess	Unspecified
TargetWordSize	32
TargetPreprocMaxBitsSint	32
TargetPreprocMaxBitsUint	32
TargetHWDeviceType	Specified
TargetUnknown	off
ProdEqTarget	on
UseEmbeddedCoderFeatures	on
UseSimulinkCoderFeatures	on
HardwareBoardFeatureSet	EmbeddedCoderHSP

Table 6.7. practice Configuration Set.Components [23](6)

Property	Value
Name	Model Referencing
Description	
Components	
UpdateModelReferenceTargets	IfOutOfDateOrStructuralChange
EnableRefExpFcnMdlSchedulingChecks	off
CheckModelReferenceTargetMessage	error
EnableParallelModelReferenceBuilds	off
ParallelModelReferenceErrorOnInvalid-Pool	on
ParallelModelReferenceMATLABWorkerInit	None
ModelReferenceNumInstancesAllowed	Multi
PropagateVarSize	Infer from blocks in model
ModelDependencies	
ModelReferencePassRootInputsByReference	on
ModelReferenceMinAlgLoopOccurrences	off
PropagateSignalLabelsOutOfModel	on
SupportModelReferenceSimTargetCustom-Code	off
UseModelRefSolver	off

Table 6.8. practice Configuration Set.Components [23](7)

Property	Value
Name	Simulation Target
Description	
Components	
SimCustomSourceCode	
SimCustomHeaderCode	
SimCustomInitializer	
SimCustomTerminator	
SimReservedNameArray	
SimUserSources	
SimUserIncludeDirs	
SimUserLibraries	
SimUserDefines	
SimCustomCompilerFlags	
SimCustomLinkerFlags	
SFSimEnableDebug	off
SFSimEcho	on
SimCtrlC	on
SimIntegrity	on
SimUseLocalCustomCode	on
SimParseCustomCode	on
SimAnalyzeCustomCode	off
SimDebugExecutionForCustomCode	off
SimGenImportedTypeDefs	off
CompileTimeRecursionLimit	50
EnableRuntimeRecursion	on
EnableImplicitExpansion	on
MATLABDynamicMemAlloc	on
MATLABDynamicMemAllocThreshold	65536
UsePrecompiledLibraries	Prefer
LegacyBehaviorForPersistentVarInContinuousTime	off
CustomCodeFunctionArrayLayout	
DefaultCustomCodeFunctionArrayLayout	NotSpecified
CustomCodeUndefinedFunction	FilterOut
CustomCodeGlobalsAsFunctionIO	off
DefaultCustomCodeDeterministicFunctions	None

CustomCodeDeterministicFunctions	
SimHardwareAcceleration	generic
SimTargetLang	C
GPUAcceleration	off
SimGPUMallocThreshold	200
SimGPUStackLimitPerThread	1024
SimGPUErrorChecks	off
SimGPUCustomComputeCapability	
SimGPUCompilerFlags	
SimDLTargetLibrary	mkldnn
SimDLAutoTuning	on

Table 6.9. practice Configuration Set.Components [23](8)

Property	Value
Name	Code Generation
Description	Generic Real-Time Target
SystemTargetFile	grt.tlc
EmbeddedCoderDictionary	
HardwareBoard	None
ShowCustomHardwareApp	off
ShowEmbeddedHardwareApp	off
TLCOptions	
GenCodeOnly	off
MakeCommand	make_rtw
GenerateMakefile	on
PackageGeneratedCodeAndArtifacts	off
PackageName	
TemplateMakefile	grt_default_tmf
PostCodeGenCommand	
GenerateReport	off
RTWVerbose	on
RetainRTWFile	off
ProfileTLC	off
TLCDebug	off
TLCCoverage	off
TLCAssert	off
BuiltinFFTWCallback	off
RTWUseLocalCustomCode	on
RTWUseSimCustomCode	off

CustomSourceCode	
CustomHeaderCode	
CustomInclude	
CustomSource	
CustomLibrary	
CustomDefine	
CustomBLASCallback	
CustomLAPACKCallback	
CustomFFTCallback	
CustomInitializer	
CustomTerminator	
Toolchain	Automatically locate an installed toolchain
BuildConfiguration	Faster Builds
CustomToolchainOptions	
IncludeHyperlinkInReport	off
LaunchReport	off
PortableWordSizes	off
CreateSILPILBlock	None
CodeExecutionProfiling	off
CodeExecutionProfileVariable	executionProfile
CodeProfilingSaveOptions	SummaryOnly
CodeProfilingInstrumentation	off
CodeStackProfiling	off
CodeStackProfileVariable	stackProfile
CodeCoverageSettings	practice Configuration Set.Components(8).CodeCoverageSettings [37]
SILPILDebugging	off
RemoveFixptWordSizeChecks	off
DataTypeReplacement	CoderTypedefs
CoderTypedefsCompatibility	off
TargetLang	C
GenerateGPUCode	None
HalideCodeGeneration	off
GenerateTraceInfo	off
GenerateTraceReport	off
GenerateTraceReportSl	off
GenerateTraceReportSf	off
GenerateTraceReportEml	off
GenerateWebview	off

GenerateCodeMetricsReport	off
GenerateCodeReplacementReport	off
RTWCompilerOptimization	off
ObjectivePriorities	
RTWCustomCompilerOptimizations	
CheckMdlBeforeBuild	Off
GPUKernelNamePrefix	
GPUDeviceID	-1
GPUMallocMode	discrete
GPUMallocThreshold	200
GPUEnableMemoryManager	off
GPUStackLimitPerThread	1024
GPUcuBLAS	on
GPUcuSOLVER	on
GPUcuFFT	on
GPUErrorChecks	off
GPUComputeCapability	5.0
GPUCustomComputeCapability	
GPUCompilerFlags	
GPUMaximumBlocksPerKernel	0
DLTargetLibrary	none
DLAutoTuning	on
DLDataType	fp32
DLArmComputeVersion	20.02.1
DLArmComputeArch	unspecified
DLLearnablesCompression	None
LargeConstantGeneration	KeepInSourceFiles
LargeConstantThreshold	131072
Components	[practice Configuration Set.Components(8).Components(1) [37], practice Configuration Set.Components(8).Components(2) [38]]

Table 6.10. practice Configuration Set.Components [23](9)

Property	Value
Description	Simulink Coverage Configuration Component
Components	
Name	Simulink Coverage
CovEnable	off

CovScope	EntireSystem
CovIncludeTopModel	on
RecordCoverage	off
CovPath	/
CovSaveName	covdata
CovCompData	
CovMetricSettings	dwe
CovFilter	
CovHTMLOptions	
CovNameIncrementing	off
CovForceBlockReductionOff	on
CovEnableCumulative	on
CovSaveCumulativeToWorkspaceVar	off
CovSaveSingleToWorkspaceVar	off
CovCumulativeVarName	covCumulativeData
CovCumulativeReport	off
CovSaveOutputData	on
CovOutputDir	slcov_output/\$ModelName\$
CovDataFileName	\$ModelName\$_cvdata
CovReportOnPause	on
CovModelRefEnable	off
CovModelRefExcluded	
CovExternalEMLEnable	on
CovSFCnEnable	on
CovBoundaryAbsTol	1.0000e-05
CovBoundaryRelTol	0.0100
CovUseTimeInterval	off
CovStartTime	0
CovStopTime	0
CovMetricStructuralLevel	Decision
CovMetricLookupTable	off
CovMetricSignalRange	off
CovMetricSignalSize	off
CovMetricObjectiveConstraint	off
CovMetricSaturateOnIntegerOverflow	off
CovMetricRelationalBoundary	off
CovLogicBlockShortCircuit	off
CovUnsupportedBlockWarning	on
CovMcdcMode	Masking

CovExcludeInactiveVariants	off
----------------------------	-----

Table 6.11. practice Configuration
Set.Components(8) [33].CodeCoverageSettings

Property	Value
TopModelCoverage	off
ReferencedModelCoverage	off
CoverageTool	None

Table 6.12. practice Configuration
Set.Components(8).Components [35](1)

Property	Value
Name	Code Appearance
Description	
Components	
ForceParamTrailComments	off
GenerateComments	on
CommentStyle	Auto
IgnoreCustomStorageClasses	on
IgnoreTestpoints	off
MaxIdLength	31
ShowEliminatedStatement	off
OperatorAnnotations	off
SimulinkDataObjDesc	off
SFDataObjDesc	off
MATLABFcnDesc	off
MangleLength	1
SharedChecksumLength	8
CustomSymbolStrGlobalVar	\$R\$N\$M
CustomSymbolStrType	\$N\$R\$M_T
CustomSymbolStrField	\$N\$M
CustomSymbolStrFcn	\$R\$N\$M\$F
CustomSymbolStrFcnArg	rt\$I\$N\$M
CustomSymbolStrBlkIO	rtb_\$N\$M
CustomSymbolStrTmpVar	\$N\$M
CustomSymbolStrMacro	\$R\$N\$M
CustomSymbolStrUtil	\$N\$C
CustomSymbolStrEmxType	emxArray_\$M\$N
CustomSymbolStrEmxFcn	emx\$M\$N

CustomUserTokenString	
CustomCommentsFcn	
DefineNamingRule	None
DefineNamingFcn	
ParamNamingRule	None
ParamNamingFcn	
SignalNamingRule	None
SignalNamingFcn	
InsertBlockDesc	off
AnnotationsInComments	off
InsertPolySpaceComments	off
SimulinkBlockComments	on
BlockCommentType	BlockPathComment
StateflowObjectComments	off
MATLABSourceComments	off
EnableCustomComments	off
InternalIdentifier	Shortened
InlinedPrmAccess	Literals
ReqsInCode	off
UseSimReservedNames	off
ReservedNameArray	
EnumMemberNameClash	error

Table 6.13. practice Configuration Set.Components(8).Components [35](2)

Property	Value
Name	Target
Description	
Components	
IsERTTarget	off
TargetLibSuffix	
TargetPreCompLibLocation	
TargetLangStandard	C99 (ISO)
CodeReplacementLibrary	None
UtilityFuncGeneration	Auto
MultiwordTypeDef	System defined
MultiwordLength	2048
DynamicStringBufferSize	256
GenerateFullHeader	on

InferredTypesCompatibility	off
ExistingSharedCode	
GenerateSampleERTMain	off
GenerateTestInterfaces	off
ModelReferenceCompliant	on
ParMdlRefBuildCompliant	on
CompOptLevelCompliant	on
ConcurrentExecutionCompliant	on
IncludeMdlTerminateFcn	on
CombineOutputUpdateFcns	on
CombineSignalStateStructs	off
GroupInternalDataByFunction	off
SuppressErrorStatus	off
IncludeFileDelimiter	Auto
ERTCustomFileBanners	off
SupportAbsoluteTime	on
LogVarNameModifier	rt_
MatFileLogging	on
MultiInstanceERTCode	off
CodeInterfacePackaging	Nonreusable function
PurelyIntegerCode	off
SupportNonFinite	on
SupportComplex	on
SupportContinuousTime	on
SupportNonInlinedSFcns	on
RemoveDisableFunc	off
RemoveResetFunc	off
SupportVariableSizeSignals	off
ParenthesesLevel	Nominal
CastingMode	Nominal
ModelStepFunctionPrototypeControlCompliant	off
CPPClassGenCompliant	on
GRTInterface	off
GenerateAllocFcn	off
UseToolchainInfoCompliant	on
GenerateSharedConstants	on
LUTObjectStructOrderExplicitValues	Size,Breakpoints,Table
LUTObjectStructOrderEvenSpacing	Size,Breakpoints,Table

ArrayLayout	Column-major
UnsupportedSFcnMsg	error
ERTHeaderFileRootName	\$R\$E
ERTSourceFileRootName	\$R\$E
ERTDataFileRootName	\$R_data
InstructionSetExtensions	{SSE2}
InstructionSetFMA	off
OptimizeReductions	off
IsSLRRTTarget	off
HeaderGuardPrefix	
LogToMDFFile	off
ExtMode	off
ExtModeStaticAlloc	off
ExtModeTesting	off
ExtModeAutomaticAllocSize	on
ExtModeMaxTrigDuration	10
ExtModeStaticAllocSize	1000000
ExtModeTransport	0
ExtModeMexFile	ext_comm
ExtModeMexArgs	
ExtModeIntrflLevel	Level1
RTWCAPISignals	off
RTWCAPIParams	off
RTWCAPISStates	off
RTWCAPIRootIO	off
MultiInstanceErrorCode	Error

Chapter 7. Glossary

Atomic Subsystem. A subsystem treated as a unit by an implementation of the design documented in this report. The implementation computes the outputs of all the blocks in the atomic subsystem before computing the next block in the parent system's block execution order (sorted list).

Block Diagram. A Simulink block diagram represents a set of simultaneous equations that relate a system or subsystem's inputs to its outputs as a function of time. Each block in the diagram represents an equation of the form $y = f(t, x, u)$ where t is the current time, u is a block input, y is a block output, and x is a system state (see the Simulink documentation for information on the functions represented by the various types of blocks that make up the diagram). Lines connecting the blocks represent dependencies among the blocks, i.e., inputs whose current values are the outputs of other blocks. An implementation of a design described in this document computes a root or atomic system's outputs at each time step by computing the outputs of the blocks in an order determined by block input/output dependencies.

Block Parameter. A variable that determines the output of a block along with its inputs, for example, the gain parameter of a Gain block.

Block Execution Order. The order in which Simulink evaluates blocks during simulation of a model. The block execution order determined by Simulink ensures that a block executes only after all blocks on whose outputs it depends are executed.

Checksum. A number that indicates whether different versions of a model or atomic subsystem differ functionally or only cosmetically. Different checksums for different versions of the same model or subsystem indicate that the versions differ functionally.

Design Variable. A symbolic (MATLAB) variable or expression used as the value of a block parameter. Design variables allow the behavior of the model to be altered by altering the value of the design variable.

Enumeration Type. Enumerated data is data that is restricted to a finite set of values. An enumerated data type is a MATLAB® class that defines a set of enumerated values. Each enumerated value consists of an enumerated name and an underlying integer which the software uses internally and in generated code.

Signal. A block output, so-called because block outputs typically vary with time.

Virtual Subsystem. A subsystem that is purely graphical, i.e., is intended to reduce the visual complexity of the block diagram of which it is a subsystem. An implementation of the design treats the blocks in the subsystem as part of the first nonvirtual ancestor of the virtual subsystem (see Atomic Subsystem).

Chapter 8. About this Report

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Report Overview

This report describes the design of the practice system. The report was generated automatically from a Simulink model used to validate the design. It contains the following sections:

Model Version. Specifies information about the version of the model from which this design description was generated. Includes the model checksum, a number that indicates whether different versions of the model differ functionally or only cosmetically. Different checksums for different versions indicate that the versions differ functionally.

Root System. Describes the design's root system.

Subsystems. Describes each of the design's subsystems.

Design Variables. Describes system design variables, i.e., MATLAB variables and expressions used as block parameter values.

Enumeration Type. Describes the enumeration types used by this model.

System Model Configuration. Lists the configuration parameters, e.g., start and stop time, of the model used to simulate the system described by this report.

Requirements. Shows design requirements associated with elements of the design model. This section appears only if the design model contains requirements links.

Glossary. Defines Simulink terms used in this report.

Root System Description

This section describes a design's root system. It contains the following sections:

Diagram. Simulink block diagram that represents the algorithm used to compute the root system's outputs.

Description. Description of the root system. This section appears only if the model's root system has a Documentation property or a Doc block.

Interface. Name, data type, width, and other properties of the root system's input and output signals. The number of the block port that outputs the signal appears in angle brackets appended to the signal name. This section appears only if the root system has input or output ports.

Blocks. This section has two subsections:

- **Parameters.** Describes key parameters of blocks in the root system. This section also includes graphical and/or tabular representations of lookup table data used by lookup table blocks, i.e., blocks that use lookup tables to compute their outputs.
- **Block Execution Order.** Order in which blocks must be executed at each time step in order to ensure that each block's inputs are available when it executes.

State Charts. Describes state charts used in the root system. This section appears only if the root system contains Stateflow blocks.

Subsystem Descriptions

This section describes a design's subsystems. Each subsystem description contains the following sections:

Checksum. This section appears only if the subsystem is an atomic subsystem. The checksum indicates whether the version of the model subsystem used to generate this report differs functionally from other versions of the model subsystem. If two model checksums differ, the corresponding versions of the model differ functionally.

Diagram. Simulink block diagram that graphically represents the algorithm used to compute the subsystem's outputs.

Description. Description of the subsystem. This section appears only if the subsystem has a Documentation property or contains a Doc block.

Interface. Name, data type, width, and other properties of the subsystem's input and output signals. The number of the block port that outputs the signal appears in angle brackets appended to the signal name. This section appears only if the subsystem is atomic and has input or output ports.

Blocks. Blocks that this subsystem contains. This section has two subsections:

- **Parameters.** Key parameters of blocks in the subsystem. This section also includes graphical and/or tabular representations of lookup table data used by lookup table blocks, blocks that use lookup tables to compute their outputs.
- **Block Execution Order.** Order in which the subsystem's blocks must be executed at each time step in order to ensure that each block's inputs are available when the block executes. This section appears only if the subsystem is atomic. Note: in Acrobat(PDF) reports, the number in square brackets next to the block name is a hyperlink to the block parameter table. The number has no model significance.

State Charts. Describes state charts used in the subsystem. This section appears only if the root system contains Stateflow blocks.

State Chart Descriptions

This section describes the state machines used by Stateflow blocks to compute their outputs, i.e., Stateflow blocks. Each state machine description contains the following sections:

Chart. Diagram representing the state machine.

States. Describes the state machine's states. Each state description includes the state's diagram and diagrams and/or descriptions of graphical functions, Simulink functions, truth tables, and MATLAB functions parented by the state.

Transitions. Transitions between the state machine's states. Each transition description specifies the values of key transition properties. Appears only if a transition has properties that do not appear on the chart.

Junctions. Transition junctions. Each junction description specifies the values of key junction properties. Appears only if a junction has properties that do not appear on the chart.

Events. Events that trigger state transitions. Each event description specifies the values of key event properties.

Data. Data types and other properties of the Stateflow block's inputs, outputs, and other state machine data.

Targets. Executable implementations of the state machine used to compute the outputs of the corresponding Stateflow block.

MATLAB Supporting Functions. List of functions invoked by MATLAB functions defined in the chart.