#### 9.3.3.1 Derivation process for ctxIdx

Inputs to this process are binIdx, maxBinIdxCtx, ctxIdxTable, and ctxIdxOffset.

Output of this process is ctxIdx.

Table 9‑51 shows the assignment of ctxIdx increments (ctxIdxInc) to binIdx for all ctxIdxTable and ctxIdxOffset.

The ctxIdx to be used with a specific binIdx is specified by first determining the ctxIdxTable and ctxIdxOffset associated with the given bin string or part thereof. The ctxIdxOffset is listed in Table 9‑51, the ctxIdx for a binIdx is the sum of ctxIdxOffset and ctxIdxInc, which is found in Table 9‑51. When more than one value is listed in Table 9‑51 for a binIdx, the assignment process for ctxIdxInc for that binIdx is further specified in the subclauses given in parenthesis of the corresponding table entry.

All bins with binIdx greater than maxBinIdxCtx are parsed using the value of ctxIdx being assigned to binIdx equal to maxBinIdxCtx.

All entries in Table 9‑51 labelled with "na" correspond to values of binIdx that do not occur for the corresponding ctxIdxOffset.

Table 9‑31 – Values of variable m and n for inter\_pred\_flag ctxIdx

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Initialisation variables** | **inter\_pred\_flag ctxIdx** | | | |
| **0** | **1** | **2** |  |
| **m** | -29 | -45 | 36 |  |
| **n** | 131 | 147 | 111 |  |

Table 9‑44 – Values of variable m and n for coeff\_abs\_level\_greater1\_flag ctxIdx

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Initialisation variables** | **coeff\_abs\_level\_greater1\_flag ctxIdx** | | | | | | | | | | | | | | |
| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **m** | -9 | -16 | -11 | -9 | -7 | -5 | -5 |  |  |  | 7 | -3 |  |  |  |
| **n** | 84 | 60 | 59 | 61 | 65 | 79 | 68 |  |  |  | 92 | 70 |  |  |  |
|  | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** |
| **m** | -6 | -12 | -12 | -13 | -11 | -3 | -5 |  |  |  | -5 | -3 |  |  |  |
| **n** | 62 | 39 | 48 | 53 | 55 | 63 | 58 |  |  |  | 78 | 64 |  |  |  |
|  | **30** | **31** | **32** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **42** | **43** | **44** |
| **m** | 3 | 20 | 16 | 16 | 9 | 4 | 2 |  |  |  | 10 | 17 |  |  |  |
| **n** | 62 | -11 | 9 | 19 | 38 | 64 | 54 |  |  |  | 62 | 36 |  |  |  |
|  | **45** | **46** | **47** | **48** | **49** | **50** | **51** | **52** | **53** | **54** | **55** | **56** | **57** | **58** | **59** |
| **m** | 0 | 17 | 14 | 8 | 6 | 5 | 9 |  |  |  | -3 | -8 |  |  |  |
| **n** | 47 | -20 | -7 | 8 | 19 | 46 | 31 |  |  |  | 66 | 69 |  |  |  |
|  | **60** | **61** | **62** | **63** | **64** | **65** | **66** | **67** | **68** | **69** | **70** | **71** | **72** | **73** | **74** |
| **m** | 0 | 8 | -2 | -3 | -1 | -1 | 4 |  |  |  | 2 | 7 |  |  |  |
| **n** | 62 | 21 | 40 | 43 | 47 | 68 | 42 |  |  |  | 72 | 48 |  |  |  |
|  | **75** | **76** | **77** | **78** | **79** | **80** | **81** | **82** | **83** | **84** | **85** | **86** | **87** | **88** | **89** |
| **m** | 2 | -6 | -4 | -4 | -1 | 1 | 5 |  |  |  | -3 | 3 |  |  |  |
| **n** | 43 | 24 | 25 | 27 | 27 | 54 | 32 |  |  |  | 70 | 50 |  |  |  |
|  | **90** | **91** | **92** | **93** | **94** | **95** | **96** | **97** | **98** | **99** | **100** | **101** | **102** | **103** | **104** |
| **m** | 7 | 24 | 17 | 18 | 13 | -28 | -3 |  |  |  | -18 | -12 |  |  |  |
| **n** | 56 | -14 | 4 | 9 | 23 | 114 | 55 |  |  |  | 107 | 100 |  |  |  |
|  | **105** | **106** | **107** | **108** | **109** | **110** | **111** | **112** | **113** | **114** | **115** | **116** | **117** | **118** | **119** |
| **m** | -7 | 11 | -16 | 23 | 28 | 7 | 11 |  |  |  | 2 | 24 |  |  |  |
| **n** | 62 | 8 | 54 | -25 | -27 | 42 | 14 |  |  |  | 60 | 10 |  |  |  |
|  | **120** | **129** | **130** | **131** | **132** | **133** | **134** | **135** | **136** | **137** | **138** | **139** | **140** | **141** | **142** |
| **m** | 0 | 8 | -2 | -3 | -1 | -1 | 4 |  |  |  | 2 | 7 |  |  |  |
| **n** | 62 | 21 | 40 | 43 | 47 | 68 | 42 |  |  |  | 72 | 48 |  |  |  |
|  | **135** | **136** | **137** | **138** | **139** | **140** | **141** | **142** | **143** | **144** | **145** | **146** | **147** | **148** | **149** |
| **m** | 2 | -6 | -4 | -4 | -1 | 1 | 5 |  |  |  | -3 | 3 |  |  |  |
| **n** | 43 | 24 | 25 | 27 | 27 | 54 | 32 |  |  |  | 70 | 50 |  |  |  |
|  | **150** | **151** | **152** | **153** | **154** | **155** | **156** | **157** | **158** | **159** | **160** | **161** | **162** | **163** | **164** |
| **m** | 7 | 24 | 17 | 18 | 13 | -28 | -3 |  |  |  | -18 | -12 |  |  |  |
| **n** | 56 | -14 | 4 | 9 | 23 | 114 | 55 |  |  |  | 107 | 100 |  |  |  |
|  | **165** | **166** | **167** | **168** | **169** | **170** | **171** | **172** | **173** | **174** | **175** | **176** | **177** | **178** | **179** |
| **m** | -7 | 11 | -16 | 23 | 28 | 7 | 11 |  |  |  | 2 | 24 |  |  |  |
| **n** | 62 | 8 | 54 | -25 | -27 | 42 | 14 |  |  |  | 60 | 10 |  |  |  |

Table 9‑45 – Values of variable m and n for coeff\_abs\_level\_greater2\_flag ctxIdx

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Initialisation variables** | **coeff\_abs\_level\_greater2\_flag ctxIdx** | | | | | | | | | | | | | | |
| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **m** | -11 | -4 | -4 | -3 | -5 | -6 | -4 | -5 | -3 | -3 | -7 | -6 | -7 | -7 | -8 |
| **n** | 68 | 67 | 73 | 75 | 87 | 66 | 68 | 74 | 73 | 83 | 79 | 81 | 84 | 85 | 99 |
|  | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** |
| **m** | -9 | -6 |  |  |  | -2 | -2 |  |  |  | -6 | -2 |  |  |  |
| **n** | 50 | 73 |  |  |  | 52 | 65 |  |  |  | 73 | 75 |  |  |  |
|  | **30** | **31** | **32** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **42** | **43** | **44** |
| **m** | -5 | 1 | 4 | 5 | 3 | 0 | 2 | 1 | 4 | 2 | 5 | 4 | 2 | 1 | 4 |
| **n** | 33 | 58 | 61 | 64 | 78 | 55 | 58 | 63 | 62 | 78 | 53 | 62 | 65 | 68 | 78 |
|  | **45** | **46** | **47** | **48** | **49** | **50** | **51** | **52** | **53** | **54** | **55** | **56** | **57** | **58** | **59** |
| **m** | -11 | -2 |  |  |  | 5 | 9 |  |  |  | 5 | -60 |  |  |  |
| **n** | 47 | 60 |  |  |  | 35 | 44 |  |  |  | 45 | 169 |  |  |  |
|  | **60** | **61** | **62** | **63** | **64** | **65** | **66** | **67** | **68** | **69** | **70** | **71** | **72** | **73** | **74** |
| **m** | -18 | -7 | -3 | 1 | 2 | -6 | -4 | -2 | -1 | -1 | -2 | -3 | 0 | 5 | 4 |
| **n** | 71 | 66 | 68 | 66 | 72 | 59 | 62 | 64 | 66 | 78 | 63 | 68 | 64 | 58 | 72 |
|  | **75** | **76** | **77** | **78** | **79** | **80** | **81** | **82** | **83** | **84** | **85** | **86** | **87** | **88** | **89** |
| **m** | -7 | 1 |  |  |  | -4 | 2 |  |  |  | -2 | -1 |  |  |  |
| **n** | 43 | 56 |  |  |  | 51 | 56 |  |  |  | 58 | 67 |  |  |  |
|  | **90** | **91** | **92** | **93** | **94** | **95** | **96** | **97** | **98** | **99** | **100** | **101** | **102** | **103** | **104** |
| **m** | 6 | 2 | 4 | -1 | -4 | -52 | 3 | -2 | -6 | -26 | 3 | -1 | 4 | -7 | -26 |
| **n** | 31 | 56 | 63 | 76 | 91 | 136 | 53 | 64 | 80 | 122 | 58 | 66 | 54 | 79 | 124 |
|  | **105** | **106** | **107** | **108** | **109** | **110** | **111** | **112** | **113** | **114** | **115** | **116** | **117** | **118** | **119** |
| **m** | -51 | -28 |  |  |  | 18 | 8 |  |  |  | 61 | 0 |  |  |  |
| **n** | 122 | 137 |  |  |  | 17 | 47 |  |  |  | -73 | 64 |  |  |  |
|  | **120** | **129** | **130** | **131** | **132** | **133** | **134** | **135** | **136** | **137** | **138** | **139** | **140** | **141** | **142** |
| **m** | -18 | -7 | -3 | 1 | 2 | -6 | -4 | -2 | -1 | -1 | -2 | -3 | 0 | 5 | 4 |
| **n** | 71 | 66 | 68 | 66 | 72 | 59 | 62 | 64 | 66 | 78 | 63 | 68 | 64 | 58 | 72 |
|  | **135** | **136** | **137** | **138** | **139** | **140** | **141** | **142** | **143** | **144** | **145** | **146** | **147** | **148** | **149** |
| **m** | -7 | 1 |  |  |  | -4 | 2 |  |  |  | -2 | -1 |  |  |  |
| **n** | 43 | 56 |  |  |  | 51 | 56 |  |  |  | 58 | 67 |  |  |  |
|  | **150** | **151** | **152** | **153** | **154** | **155** | **156** | **157** | **158** | **159** | **160** | **161** | **162** | **163** | **164** |
| **m** | 6 | 2 | 4 | -1 | -4 | -52 | 3 | -2 | -6 | -26 | 3 | -1 | 4 | -7 | -26 |
| **n** | 31 | 56 | 63 | 76 | 91 | 136 | 53 | 64 | 80 | 122 | 58 | 66 | 54 | 79 | 124 |
|  | **165** | **166** | **167** | **168** | **169** | **170** | **171** | **172** | **173** | **174** | **175** | **176** | **177** | **178** | **179** |
| **m** | -51 | -28 |  |  |  | 18 | 8 |  |  |  | 61 | 0 |  |  |  |
| **n** | 122 | 137 |  |  |  | 17 | 47 |  |  |  | -73 | 64 |  |  |  |

9.3.2.7 Binarization process for pred\_type

Input to this process is a request for a binarization for the syntax element pred\_type and a variable cLog2CUSize specifying the current CU size.

Output of this process is the binarization of the syntax element.

The binarization for pred\_type is given by Table 9‑48 depending on slice type and the size of the coding unit.

Table 9‑48 – Binarization for pred\_type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Slice type** | **Value of pred\_type** | **PredMode** | **PartMode** | **Bin string** | | |
| cLog2CUSize >  Log2MinCUSize | cLog2CUSize = = Log2MinCUSize | |
| cLog2CUSize = = 3 &&  !inter\_4x4\_enabled\_flag | cLog2CUSize > 3 | |  inter\_4x4\_enabled\_flag |
| I | 0 | MODE\_INTRA | PART\_2Nx2N | - | 1 | 1 |
| 1 | MODE\_INTRA | PART\_NxN | - | 0 | 0 |
| P/B | 0 | MODE\_INTER | PART\_2Nx2N | 1 | 1 | 1 |
| 1 | MODE\_INTER | PART\_2NxN | 011 | 01 | 01 |
| 2 | MODE\_INTER | PART\_Nx2N | 001 | 001 | 001 |
| 4 | MODE\_INTER | PART\_2NxnU | 0100 | - | - |
| 5 | MODE\_INTER | PART\_2NxnD | 0101 | - | - |
| 6 | MODE\_INTER | PART\_nLx2N | 0000 | - | - |
| 7 | MODE\_INTER | PART\_nRx2N | 0001 | - | - |
| 3 | MODE\_INTER | PART\_NxN | - | - | 0001 |
| 4 | MODE\_INTRA | PART\_2Nx2N | 000 | 000 0 | 0000 0 |
| 5 | MODE\_INTRA | PART\_NxN | - | 000 1 | 1. 1 |

| Table 9‑51 – Assignment of ctxIdxInc to binIdx for all ctxIdxTable and ctxIdxOffset values | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Syntax element** | **ctxIdxTable,  ctxIdxOffset** | | **binIdx** | | | | |
| **0** | **1** | **2** | **3** | **>=4** |
| alf\_cu\_flag |  | 0 | 0 | na | na | na | na |
| 1 | 0 | na | na | na | na |
| 2 | 0 | na | na | na | na |
| split\_coding\_unit\_flag |  | 0 | 0,1,2 (subclause ) | na | na | na | na |
| 3 | 0,1,2 (subclause ) | na | na | na | na |
| 6 | 0,1,2 (subclause ) | na | na | na | na |
| skip\_flag |  | 0 | 0,1,2 (subclause ) | na | na | na | na |
| 3 | 0,1,2 (subclause ) | na | na | na | na |
| cu\_qp\_delta |  | 0 | 0 | na (uses Decode Bypass) | 1 | 2 | 2 |
| 3 | 0 | na (uses Decode Bypass) | 1 | 2 | 2 |
| 6 | 0 | na (uses Decode Bypass) | 1 | 2 | 2 |
| pred\_type |  | 0 | 0 | na | na | na | na |
| 1 | 0 | 1 | 2 | 3 | 4 |
| 5 | 0 | 1 | 2 | 3 | 4 |
| prev\_intra\_luma\_pred\_flag |  | 0 | 0 | na | na | na | na |
| 1 | 0 | na | na | na | na |
| 2 | 0 | na | na | na | na |
| rem\_intra\_luma\_pred\_mode |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 |
| intra\_chroma\_pred\_mode |  | 0 | 0 | 1 | 1 | 1 | na |
| 2 | 0 | 1 | 1 | 1 | na |
| 4 | 0 | 1 | 1 | 1 | na |
| merge\_flag |  | 0 | 0 | na | na | na | na |
| 1 | 0 | na | na | na | na |
| merge\_idx |  | 0 | 0 | 0 | 0 | 0 | na |
| 4 | 0 | 0 | 0 | 0 | na |
| inter\_pred\_flag |  | 0 | Max(cuDepth,2) | na | na | na | na |
| ref\_idx\_l0 |  | 0 | 0 | 1 | 1 | 1 | 1 |
| ref\_idx\_l0, ref\_idx\_l1, ref\_idx\_lc |  | 3 | 0 | 1 | 1 | 1 | 1 |
| abs\_mvd\_greater0\_flag[ ] |  | 0 | 0 | na | na | na | na |
| 1 | 0 | na | na | na | na |
| abs\_mvd\_greater1\_flag[ ] |  | 2 | 0 | na | na | na | na |
| 3 | 0 | na | na | na | na |
| mvp\_idx\_l0 |  | 0 | 0 | 1 | 1 | 1 | 1 |
| mvp\_idx\_l0, mvp\_idx\_l1, mvp\_idx\_lc |  | 2 | 0 | 1 | 1 | 1 | 1 |
| no\_residual\_data\_flag |  | 0 | 0 | na | na | na | na |
| 1 | 0 | na | na | na | na |
| split\_transform\_flag |  | 0 | cuDepth + trafoDepth | na | na | na | na |
| 4 | cuDepth + trafoDepth | na | na | na | na |
| 8 | cuDepth + trafoDepth | na | na | na | na |
| cbf\_luma |  | 0 | ( trafoDepth = = 0 ) | |  ( log2TrafoSize = =  Log2MaxTrafoSize ) ? 1 : 0 | na | na | na | na |
| 2 | ( trafoDepth = = 0 ) | |  ( log2TrafoSize = =  Log2MaxTrafoSize ) ? 1 : 0 | na | na | na | na |
| 4 | ( trafoDepth = = 0 ) | |  ( log2TrafoSize = =  Log2MaxTrafoSize ) ? 1 : 0 | na | na | na | na |
| cbf\_cb, cbf\_cr |  | 0 | trafoDepth | na | na | na | na |
| 4 | trafoDepth | na | na | na | na |
| 8 | trafoDepth | na | na | na | na |
| last\_significant\_coeff\_x, last\_significant\_coeff\_y |  | 0 | 0..30 (subclause ) | | | | |
| 31 | 0..30 (subclause ) | | | | |
| 62 | 0..30 (subclause ) | | | | |
| significant\_coeff\_flag |  | 0 | 0..87 (subclause ) | na | na | na | na |
|  | 0 | 0..87 (subclause ) | na | na | na | na |
|  | 0 | 0..87 (subclause ) | na | na | na | na |
| coeff\_abs\_level\_greater1\_flag |  | 0 | 0..59 (subclause 9.3.3.1.1.5) | na | na | na | na |
| 60 | 0..59 (subclause 9.3.3.1.1.5) | na | na | na | na |
| 120 | 0..59 (subclause 9.3.3.1.1.5) | na | na | na | na |
| coeff\_abs\_level\_greater2\_flag |  | 0 | 0..59 (subclause 9.3.3.1.1.6) | na | na | na | na |
| 60 | 0..59 (subclause 9.3.3.1.1.6) | na | na | na | na |
| 120 | 0..59 (subclause 9.3.3.1.1.6) | na | na | na | na |

###### 9.3.3.1.1.2 Derivation process of ctxIdxInc for the syntax element merge\_index [deleted]

###### 9.3.3.1.1.5 Derivation process of ctxIdxInc for the syntax element coeff\_abs\_level\_greater1\_flag

...

The context index increment ctxIdxInc is derived using the current context set ctxSet and the current context greater1Ctx as follows.

* If ctxSet is equal to 0 or 3

ctxIdxInc = ( ctxSet \* 5 ) + Min( 4, greater1Ctx ) (9‑70)

* Otherwise,

ctxIdxInc = ( ctxSet \* 5 ) + Min( 1, greater1Ctx ) (9‑71)

9.3.3.1.1.6 Derivation process of ctxIdxInc for the syntax element coeff\_abs\_level\_greater2\_flag

...

The context index increment ctxIdxInc is derived using the current context set ctxSet and the current context greater2Ctx as follows.

* If ctxSet is greater than 2

ctxIdxInc = ( ctxSet \* 5 ) + Min( 4, greater2Ctx ) (9‑77)

* If ctxSet is greater than 2

ctxIdxInc = ( ctxSet \* 5 ) + Min( 1, greater2Ctx ) (9‑78)