CLAIMS

1. A method of processing video data, comprising:

determining, for a conversion between a video comprising a picture which is divided into one or more subpictures and a bitstream of the video, a position of a subpicture of the one or more subpictures based on a first syntax element and a second syntax element included in the bitstream; and

performing the conversion based on the determining,

wherein the first syntax element indicates a horizontal position of a top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the first syntax element is derived to be Ceil(Log2(S1)) bits,

wherein the second syntax element indicates a vertical position of the top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the second syntax element is derived to be Ceil(Log2(S2)) bits,

wherein S1 and S2 are greater than 0, and CtbSizeY denotes a size of a coding tree block, and

wherein S1 is equal to (S3 + CtbSizeY-1) / CtbSizeY, and S2 is equal to (S4 + CtbSizeY-1) / CtbSizeY, wherein S3 is a value of a syntax element included in a sequence parameter set and specifying a maximum width of a decoded picture referring to the sequence parameter set in units of luma samples, and wherein S4 is a value of a syntax element included in the sequence parameter set and specifying a maximum height of a decoded picture referring to the sequence parameter set in units of luma samples.

2. The method of claim 1, wherein a third syntax element is included in the bitstream to specify a width of the subpicture in unit of CtbSizeY and a length of the third syntax element is derived to be Ceil(Log2(S1)) bits, and

wherein a fourth syntax element is included in the bitstream to specify a height of the subpicture in unit of CtbSizeY and a length of the fourth syntax element is derived

to be Ceil(Log2(S2)) bits.

3. The method of claim 1 or 2, wherein S3 and S4 are an integer multiple of Max(8, MinCbSizeY), respectively.

4. The method of any one of claims 1-3, wherein the bitstream conforms to a format rule which specifies that different subpictures have different subpicture ID values.

5. The method of claim 4, wherein when a value of one or more syntax elements is equal to 0, a default value is assigned to the subpicture ID value of the subpicture,

wherein when the value of the one or more syntax elements is equal to 0, a subpicture ID mapping is not explicitly signalled, neither in the sequence parameter set nor in the picture parameter set.

6. The method of claim 5, wherein when the value of the one or more syntax elements is equal to 0, a fifth syntax element specifying ID of the subpicture is not included in a picture parameter set and a sixth syntax element specifying ID of the subpicture is not included in a sequence parameter set.

7. The method of claim 5, wherein the subpicture is an i-th subpicture in the picture and the default value is equal to i, and

wherein i is an integer smaller than a number of subpictures in the picture.

8. The method of any one of claims 1-7, wherein the conversion includes encoding the picture into the bitstream.

9. The method of any one of claims 1-7, wherein the conversion includes decoding the picture from the bitstream.

10. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

determine, for a conversion between a video comprising a picture which is divided into one or more subpictures and a bitstream of the video, a position of a subpicture of the one or more subpictures based on a first syntax element and a second syntax element included in the bitstream; and

perform the conversion based on the determining,

wherein the first syntax element indicates a horizontal position of a top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the first syntax element is derived to be Ceil(Log2(S1)) bits,

wherein the second syntax element indicates a vertical position of the top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the second syntax element is derived to be Ceil(Log2(S2)) bits,

wherein S1 and S2 are greater than 0, and CtbSizeY denotes a size of a coding tree block, and

wherein S1 is equal to (S3 + CtbSizeY-1) / CtbSizeY, and S2 is equal to (S4 + CtbSizeY-1) / CtbSizeY, wherein S3 is a value of a syntax element included in a sequence parameter set and specifying a maximum width of a decoded picture referring to the sequence parameter set in units of luma samples, and wherein S4 is a value of a syntax element included in the sequence parameter set and specifying a maximum height of a decoded picture referring to the sequence parameter set in units of luma samples.

11. The apparatus of claim 10, wherein a third syntax element is included in the bitstream to specify a width of the subpicture in unit of CtbSizeY and a length of the third syntax element is derived to be Ceil(Log2(S1)) bits, and

wherein a fourth syntax element is included in the bitstream to specify a height

of the subpicture in unit of CtbSizeY and a length of the fourth syntax element is derived to be Ceil(Log2(S2)) bits.

12. The apparatus of claim 10 or 11, wherein S3 and S4 are an integer multiple of Max(8, MinCbSizeY), respectively.

13. The apparatus of any one of claims 10-12, wherein the bitstream conforms to a format rule which specifies that different subpictures have different subpicture ID values.

14. The apparatus of claim 13, wherein when a value of one or more syntax elements is equal to 0, a default value is assigned to the subpicture ID value of the subpicture,

wherein when the value of the one or more syntax elements is equal to 0, a subpicture ID mapping is not explicitly signalled, neither in the sequence parameter set nor in the picture parameter set.

15. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

determine, for a conversion between a video comprising a picture which is divided into one or more subpictures and a bitstream of the video, a position of a subpicture of the one or more subpictures based on a first syntax element and a second syntax element included in the bitstream; and

perform the conversion based on the determining,

wherein the first syntax element indicates a horizontal position of a top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the first syntax element is derived to be Ceil(Log2(S1)) bits,

wherein the second syntax element indicates a vertical position of the top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the second syntax

element is derived to be Ceil(Log2(S2)) bits,

wherein S1 and S2 are greater than 0, and CtbSizeY denotes a size of a coding tree block, and

wherein S1 is equal to (S3 + CtbSizeY-1) / CtbSizeY, and S2 is equal to (S4 + CtbSizeY-1) / CtbSizeY, wherein S3 is a value of a syntax element included in a sequence parameter set and specifying a maximum width of a decoded picture referring to the sequence parameter set in units of luma samples, and wherein S4 is a value of a syntax element included in the sequence parameter set and specifying a maximum height of a decoded picture referring to the sequence parameter set in units of luma samples.

16. The non-transitory computer-readable storage medium of claim 15, wherein a third syntax element is included in the bitstream to specify a width of the subpicture in unit of CtbSizeY and a length of the third syntax element is derived to be Ceil(Log2(S1)) bits, and wherein a fourth syntax element is included in the bitstream to specify a height of the subpicture in unit of CtbSizeY and a length of the fourth syntax element is derived to be Ceil(Log2(S2)) bits.

17. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

determining, for the video comprising a picture which is divided into one or more subpictures, a position of a subpicture of the one or more subpictures based on a first syntax element and a second syntax element included in the bitstream; and

generating the bitstream based on the determining,

wherein the first syntax element indicates a horizontal position of a top-left coding tree unit of the subpicture in unit of CtbSizeY and a length of the first syntax element is derived to be Ceil(Log2(S1)) bits,

wherein the second syntax element indicates a vertical position of the top-left

coding tree unit of the subpicture in unit of CtbSizeY and a length of the second syntax element is derived to be Ceil(Log2(S2)) bits,

wherein S1 and S2 are greater than 0, and CtbSizeY denotes a size of a coding tree block, and

wherein S1 is equal to (S3 + CtbSizeY-1) / CtbSizeY, and S2 is equal to (S4 + CtbSizeY-1) / CtbSizeY, wherein S3 is a value of a syntax element included in a sequence parameter set and specifying a maximum width of a decoded picture referring to the sequence parameter set in units of luma samples, and wherein S4 is a value of a syntax element included in the sequence parameter set and specifying a maximum height of a decoded picture referring to the sequence parameter set in units of luma samples.

18. The non-transitory computer-readable recording medium of claim 17, wherein a third syntax element is included in the bitstream to specify a width of the subpicture in unit of CtbSizeY and a length of the third syntax element is derived to be Ceil(Log2(S1)) bits, and wherein a fourth syntax element is included in the bitstream to specify a height of the subpicture in unit of CtbSizeY and a length of the fourth syntax element is derived to be Ceil(Log2(S2)) bits.