

CLAIMS

1. A method of generating a file for storage of video contents, the method comprising: generating a container box of the file such that the file conforms to a particular file format, wherein generating the container box comprises: generating, in the container box, a SampleGroupDescription box that includes one or more group description entries, wherein each respective group description entry provides descriptions for a respective sample group, the SampleGroupDescription box further including a grouping type syntax element that identifies a type of sample grouping, the grouping type syntax element in the SampleGroupDescription box having a particular value, the container box being a sample table box or a track fragment box, wherein a requirement of the particular file format is that there shall only be one SampleGroupDescription box in the container box with the particular value of the grouping type syntax element; and generating, in the same container box of the file, a plurality of SampleToGroup boxes, each respective SampleToGroup box of the plurality of SampleToGroup boxes including a respective grouping type syntax element having the particular value, each respective SampleToGroup box including one or more sample group entries, each respective sample group entry of the one or more sample group entries comprising a respective sample count syntax element indicating a number of samples in a respective sample group, and each respective sample group entry of the one or more sample group entries comprising a respective group description index syntax element indicating an index of a group description entry in the SampleGroupDescription box that provides a description of the respective sample group, each sample of the respective sample group comprising one or more pictures of the video contents; and outputting the file.

2. The method of claim 1, wherein generating the plurality of SampleToGroup boxes comprises generating the plurality of SampleToGroup boxes such that, for each respective SampleToGroup box of the plurality of SampleToGroup boxes, the respective SampleToGroup box includes a respective grouping type parameter syntax element indicating a sub-type of the type of sample grouping.

3. The method of claim 1, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, each of the multiple SampleToGroup boxes must have a respective version identifier equal to 1.

4. The method of claim 1, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, no two of the multiple SampleToGroup boxes shall have group description index syntax elements having the same value greater than 0.

5. The method of claim 1, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single track or track fragment, no two of the multiple SampleToGroup boxes have the same value of a grouping type parameter syntax element.

6. The method of claim 1, wherein the SampleGroupDescription box is a first SampleGroupDescription box and generating the container box comprises generating a second SampleGroupDescription box in the container box, the second SampleGroupDescription box having a grouping type syntax element different from the particular value.

7. A device for generating a file for storage of video contents, the device comprising: a memory configured to store the file; and one or more processors configured to: generate a container box of the file such that the file conforms to a particular file format, wherein as part of generating the container box, the one or more processors: generate a SampleGroupDescription box that includes one or more group description entries, wherein each respective group description entry provides descriptions for a respective sample group, the SampleGroupDescription box further including a grouping type syntax element that identifies a type of sample grouping, the grouping type syntax element in the SampleGroupDescription box having a particular value, the container box being a sample table box or a track fragment box, wherein the file belongs to a particular file format in which there shall only be one SampleGroupDescription box in the container box with the

particular value of the grouping type syntax element; and generate, in the same container box of the file, a plurality of SampleToGroup boxes, each respective SampleToGroup box of the plurality of SampleToGroup boxes including a respective grouping type syntax element having the particular value, each respective SampleToGroup box including one or more sample group entries, each respective sample group entry of the one or more sample group entries comprising a respective sample count syntax element indicating a number of samples in a respective sample group, and each respective sample group entry of the one or more sample group entries comprising a respective group description index syntax element indicating an index of a group description entry in the SampleGroupDescription box that provides a description of the respective sample group, each sample of the respective sample group comprising one or more pictures of the video contents; and output the file.

8. The device of claim 7, wherein the one or more processors are configured to generate the plurality of SampleToGroup boxes such that, for each respective SampleToGroup box of the plurality of SampleToGroup boxes, the respective SampleToGroup box includes a respective grouping type parameter syntax element indicating a sub-type of the type of sample grouping.

9. The device of claim 7, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, each of the multiple SampleToGroup boxes must have a respective version identifier equal to 1.

10. The device of claim 7, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, no two of the multiple SampleToGroup boxes shall have group description index syntax elements having the same value greater than 0.

11. The device of claim 7, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single track or track fragment, no two of the multiple SampleToGroup boxes have the same value of a grouping type parameter syntax element.

12. The device of claim 7, wherein the device comprises at least one of: an integrated circuit; a microprocessor; or a wireless communication device.

13. The device of claim 7, wherein the SampleGroupDescription box is a first SampleGroupDescription box and generating the container box comprises generating a second SampleGroupDescription box in the container box, the second SampleGroupDescription box having a grouping type syntax element different from the particular value.

14. The device of claim 7, further comprising a camera configured to capture the video content.

15. A device for generating a file for storage of video contents, the device comprising: means for generating a container box of the file such that the file conforms to a particular file format, wherein the means for generating the container box comprises: means for generating a SampleGroupDescription box that includes one or more group description entries, wherein each respective group description entry provides descriptions for a respective sample group, the SampleGroupDescription box further including a grouping type syntax element that identifies a type of sample grouping, the grouping type syntax element in the SampleGroupDescription box having a particular value, the container box being a sample table box or a track fragment box, wherein the file belongs to a particular file format in which there shall only be one SampleGroupDescription box in the container box with the particular value of the grouping type syntax element; and means for generating, in the same container box of the file, a plurality of SampleToGroup boxes, each respective SampleToGroup box of the plurality of SampleToGroup boxes including a respective grouping type syntax element having the particular value, each respective SampleToGroup box including one or more sample group entries, each respective sample group entry of the one or more sample group entries comprising a respective sample count syntax element indicating a number of samples in a respective sample group, and each respective sample group entry of the one or more sample group entries comprising a respective group description index syntax element indicating an index of a group description entry in the SampleGroupDescription box that provides a description of the respective sample group, each sample of the respective sample group comprising one or more pictures of the video contents;

and means for outputting the file.

16. The device of claim 15, wherein the means for generating the plurality of SampleToGroup boxes comprises means for generating the plurality of SampleToGroup boxes such that, for each respective SampleToGroup box of the plurality of SampleToGroup boxes, the respective SampleToGroup box includes a respective grouping type parameter syntax element indicating a sub-type of the type of sample grouping.

17. The device of claim 15, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, each of the multiple SampleToGroup boxes must have a respective version identifier equal to 1.

18. The device of claim 15, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, no two of the multiple SampleToGroup boxes shall have group description index syntax elements having the same value greater than 0.

19. The device of claim 15, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single track or track fragment, no two of the multiple SampleToGroup boxes have the same value of a grouping type parameter syntax element.

20. A device for reading a file for storage of video contents, the device comprising: a memory configured to store the file; and one or more processors configured to obtain, from the file, a container box of the file, wherein the container box comprises: a SampleGroupDescription box that includes one or more group description entries, wherein each respective group description entry provides descriptions for a respective sample group, the SampleGroupDescription box further including a grouping type syntax element that identifies a type of sample grouping, the grouping type syntax element in the SampleGroupDescription box having a particular value, the container box being a sample table box or a track fragment box, wherein a requirement of the

particular file format is that there shall only be one SampleGroupDescription box in the container box with the particular value of the grouping type syntax element; and a plurality of SampleToGroup boxes, each respective SampleToGroup box of the plurality of SampleToGroup boxes including a respective grouping type syntax element having the particular value, each respective SampleToGroup box including one or more sample group entries, each respective sample group entry of the one or more sample group entries comprising a respective sample count syntax element indicating a number of samples in a respective sample group, and each respective sample group entry of the one or more sample group entries comprising a respective group description index syntax element indicating an index of a group description entry in the SampleGroupDescription box that provides a description of the respective sample group, each sample of the respective sample group comprising one or more pictures of the video contents.

21. The device of claim 20, wherein each respective SampleToGroup box of the plurality of SampleToGroup boxes includes a respective grouping type parameter syntax element indicating a sub-type of the type of sample grouping.

22. The device of claim 20, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, each of the multiple SampleToGroup boxes must have a respective version identifier equal to 1.

23. The device of claim 20, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single container box, no two of the multiple SampleToGroup boxes shall have group description index syntax elements having the same value greater than 0.

24. The device of claim 20, wherein a requirement of the particular file format is that when there are multiple SampleToGroup boxes with the same value of the grouping type syntax element in a single track or track fragment, no two of the multiple SampleToGroup boxes have the same value of a grouping type parameter syntax element.

25. The device of claim 20, wherein the SampleGroupDescription box is a first SampleGroupDescription box and the container box comprises a second SampleGroupDescription box, the second SampleGroupDescription box having a grouping type syntax element different from the particular value.