

CLAIMS

1. A computer-implemented method for forming a relational multi-level tree system to overcome obstacles of broadening base logic inherent in multi-level trees for effecting fair
5 distributions to the entities positioned in the relational multi-level tree system, comprising:

providing member information of contributing members in a database, wherein the member information includes age information of the contributing members;

defining, by a processor based at least in part on the age information in the database, an optimal number of age range intervals corresponding to levels of an age range tabulation
10 data structure of the relational multi-level tree system, wherein the relational multi-level tree system comprises multi-level trees in the age range tabulation data structure;

pre-sorting, by the processor, the contributing members based on the age information in the database to form an ordered age priority sequence of contributing members' positions in the relational multi-level tree system;

15 assigning, by the processor using the ordered age priority sequence, the pre-sorted contributing members in their respective age range intervals which correspond to the levels in the age range tabulation data structure by the assignment of positions of contributing members into the multi-level trees in accordance with a level strength analysis chart, wherein the level strength analysis chart includes level strength and level accumulative strength
20 parameters, and assigning the contributing members in a respective age range interval comprises

determining an optimal size and number of multi-level trees required to be constructed within the respective age range interval based on a total number of contributing members to be positioned in the age range interval and optimal size
25 considerations made in accordance with the level strength analysis chart,

constructing a single multi-level tree or multiple adjacent multi-level trees based on the determination of the optimal size of the single multi-level tree or the optimal size of multiple adjacent multi-level trees required for positioning the total number of contributing members within the age range interval, wherein the single multi-level tree or the multiple adjacent multi-level trees would be constructed based on the optimal size considerations made in accordance with the level strength accumulative parameter of the level strength analysis chart, and

assigning the contributing members into their respective positions in the age range interval's single multi-level tree or multiple adjacent multi-level trees by applying top/down or adjacent-top/down assignment of positions of contributing members respectively;

periodically releasing and reassigning, by the processor, contributing members' position into a next higher age range interval in the age range tabulation data structure of the relational multi-level tree system based on the contributing members' age advancement, wherein one or more contributing members' are graduated out of the relational multi-level tree system in the event the one or more contributing members' age exceeds the defined age range intervals; and

according, by the processor, fair distributions to the contributing members based on their age-ordered assigned positions in the relational multi-level tree system.

2. The computer-implemented method of claim 1 wherein applying the top/down or adjacent top/down assignment of positions of contributing members based on the optimal size considerations made in accordance with the level strength analysis chart comprises determining an optimal level with corresponding level strength and level accumulative

strength parameters in the level strength analysis chart and assigning contributing members into a multi-level tree starting from a top level of the multi-level tree.

3. The computer-implemented method of claim 1 wherein the value of level strength incremental parameter of a level i in the level strength analysis chart is a desire variable applied for constructing a level strength analysis chart if it is not equal to $5i$.

4. The computer-implemented method of claim 1 wherein the age range intervals are defined above a threshold age.

5. The computer-implemented method of claim 4 wherein the threshold age is 17 years old.

6. The computer-implemented method of claim 1 wherein pre-sorting the contributing members' position in the relational multi-level tree system into an ordered age priority sequence is based in accordance with birth-date and birth-time.

7. The computer-implemented method of claim 1 wherein a unique assignment serial number is assigned to each contributing members' position during the pre-sorting for verification.

8. A computer-implemented method for forming a relational multi-level tree system and positioning entities in the relational multi-level tree system for effecting fair distributions to the entities positioned in the relational multi-level tree system, comprising:

providing member information of contributing members in a database, wherein the member information includes age information of the contributing members;

defining, by a processor based at least in part on the age information in the database, an optimal number of age range intervals corresponding to levels of an age range tabulation data structure of the relational multi-level tree system, wherein the relational multi-level tree system comprises multi-level trees in the age range tabulation data structure;

pre-sorting, by the processor, the contributing members based on the age information in the database to form an ordered age priority sequence of contributing members' positions in the relational multi-level tree system;

assigning, by the processor using the ordered age priority sequence, the pre-sorted contributing members in their respective age range intervals which correspond to the levels in the age range tabulation data structure by the assignment of positions of contributing members into the multi-level trees based on optimal size considerations made in accordance with a level strength analysis chart, wherein the level strength analysis chart includes level strength and level accumulative strength parameters, and the value of level strength incremental parameter of a level i in the level strength analysis chart is a desire variable applied for constructing a level strength analysis chart if it is not equal to 5^i where i is from 0 to 12, and wherein:

for level 0, strength = 1 and accumulative strength = 1;

for level 1, strength = 5 and accumulative strength = 6;

for level 2, strength = 25 and accumulative strength = 31;

for level 3, strength = 125 and accumulative strength = 156;

for level 4, strength = 625 and accumulative strength = 781;

for level 5, strength = 3,125 and accumulative strength = 3,906;

for level 6, strength = 15,625 and accumulative strength = 19,531;

for level 7, strength = 78,125 and accumulative strength = 97,656;

for level 8, strength = 390,625 and accumulative strength = 4,88,281;

for level 9, strength = 1,953,125 and accumulative strength = 2,441,406;

for level 10, strength = 9,765,625 and accumulative strength = 12,207,031;

5 for level 11, strength = 48,828,125 and accumulative strength = 61,035,156; and

for level 12, strength = 244,140,625 and accumulative strength = 305,175,781,

wherein assigning the contributing members in a respective age range interval comprises

10 determining an optimal size and number of multi-level trees to be constructed within the respective age range interval based on a total number of contributing members to be positioned in the age range interval and optimal size considerations made in accordance with the level strength analysis chart,

15 constructing a single multi-level tree or multiple adjacent multi-level trees based on the determination of the optimal size of the single multi-level tree or the optimal size of multiple adjacent multi-level trees required for positioning the total number of contributing members within the age range interval, wherein the single multi-level tree or the multiple adjacent multi-level trees would be constructed based on the optimal size considerations made in accordance with the level strength accumulative parameter of the level strength analysis chart, and

20 assigning the contributing members into their respective positions in the age range interval's single multi-level tree or multiple adjacent multi-level trees by applying top/down or adjacent-top/down assignment of positions of contributing members respectively;

periodically releasing and reassigning, by the processor, contributing members' position into
25 a next higher age range interval in the age range tabulation data structure of the relational

multi-level tree system based on the contributing members' age advancement, wherein one or more contributing members' are graduated out of the relational multi-level tree system in the event the one or more contributing members' age exceeds the defined age range intervals; and

according, by the processor, fair distributions to the contributing members based on their age-ordered assigned positions in the relational multi-level tree system.

9. The computer-implemented method of claim 8 comprising:

determining a strength of a contributing member; and

determining a weight of a contributing member.

10. The computer-implemented method of claim 9 wherein:

the strength of a contributing member is the number of collective child contributing members assigned to each contributing member per child level;

the weight of a contributing member is the number of levels of child contributing members assigned to each contributing member; and

the number of child contributing members assigned to each contributing member is $X^y + X^{y-1} + X^{y-2} + \dots X^1$, wherein X is the strength of a contributing member and y is the weight.

11. The computer-implemented method of claim 10 wherein the strength = 5 and weight =

2 and the number of child contributing members assigned to each contributing member is $5^2 + 5^1 = 30$.

12. The computer-implemented method of claim 10 wherein an optimal number of desire age range intervals which corresponds to 8 levels in the age range tabulation data structure of the relational multi-level tree system.

13. The computer-implemented method of claim 12 wherein:

the first level corresponds to age range of 18-26;

5 the second level corresponds to age range of 27-35;

the third level corresponds to age range of 36-44;

10 the fourth level corresponds to age range of 45-53;

the fifth level corresponds to age range of 54-62;

the sixth level corresponds to age range of 63-71;

15 the seventh level corresponds to age range of 72-80; and

the eighth level corresponds to age range of 81-90.

14. A relational multi-level tree system for effecting fair distributions to entities

20 positioned in the relational multi-level tree system, comprising:

a database for retrieving member information of contributing members, wherein the member information includes age information of the contributing members; and

a processor configured to

25 define, based at least in part on the age information in the database, an optimal number of age range intervals corresponding to levels of an age range tabulation data structure of the relational multi-level tree system, wherein the relational multi-level tree system comprises multi-level trees in the age range tabulation data structure,

pre-sort the contributing members based on the age information in the database to form an ordered age priority sequence of contributing members' positions in the relational multi-level tree system,

30 assign, using the ordered age priority sequence, the pre-sorted contributing members in their respective age range intervals which correspond to the levels in the age range tabulation data structure by applying top/down or adjacent top/down

assignment of positions of contributing members into the multi-level trees based on optimal size considerations made in accordance with a level strength analysis chart, wherein the level strength analysis chart includes level strength and level accumulative strength parameters, wherein assignment of positions of contributing members into the multi-level trees-comprises constructing structured optimal multi-level trees in a respective age range interval which includes

determining an optimal size and number of adjacent multi-level trees to be constructed within the respective age range interval based on a total number of contributing members to be positioned in the age range interval and optimal size considerations made in accordance with the level strength analysis chart,

constructing the determined number of adjacent multi-level trees for positioning the contributing members within the age range interval based on the determined optimal size of multi-level trees, wherein each of the adjacent multi-level trees is constructed in accordance with an optimal level strength accumulative parameter selected from the level strength analysis chart, and

assigning the contributing members into their respective positions in the multi-level trees by applying the top/down or adjacent-top/down assignment of positions of contributing members into the multi-level trees constructed within the age range interval, and

periodically release and reassign contributing members' position into a next higher age range interval in the age range tabulation data structure of the relational multi-level tree system based on the contributing members' age advancement, wherein one or more contributing members' are graduated out of the relational multi-level tree system in the event the one or more contributing members' age exceeds the defined age range intervals; and

performing fair distributions to the contributing members based on their age-ordered assigned positions in the relational multi-level tree system.

15. The system of claim 14 wherein the value of level strength incremental parameter of a level i in the level strength analysis chart is a desire variable applied for constructing a level strength analysis chart if it is not equal to $5i$.

16. The system of claim 15 wherein i is from 0 to 12, and wherein:

for level 0, strength = 1 and accumulative strength = 1;

for level 1, strength = 5 and accumulative strength = 6;

for level 2, strength = 25 and accumulative strength = 31;

for level 3, strength = 125 and accumulative strength = 156;

for level 4, strength = 625 and accumulative strength = 781;

for level 5, strength = 3,125 and accumulative strength = 3,906;

for level 6, strength = 15,625 and accumulative strength = 19,531;

for level 7, strength = 78,125 and accumulative strength = 97,656;

for level 8, strength = 390,625 and accumulative strength = 4,88,281;

for level 9, strength = 1,953,125 and accumulative strength = 2,441,406;

for level 10, strength = 9,765,625 and accumulative strength = 12,207,031;

for level 11, strength = 48,828,125 and accumulative strength = 61,035,156; and

for level 12, strength = 244,140,625 and accumulative strength = 305,175,781.

17. The system of claim 14 wherein an optimal number of desire age range intervals which corresponds to 8 levels in the age range tabulation data structure of the relational multi-level tree system.

5 **18.** The system of claim 17 wherein:

the first level corresponds to age range of 18-26;

the second level corresponds to age range of 27-35;

the third level corresponds to age range of 36-44;

the fourth level corresponds to age range of 45-53;

10 the fifth level corresponds to age range of 54-62;

the sixth level corresponds to age range of 63-71;

the seventh level corresponds to age range of 72-80; and

the eighth level corresponds to age range of 81-90.

15 **19.** The system of claim 14 wherein the age range intervals are defined above 17 years old.

20. The system of claim 14 wherein pre-sorting the contributing members' position in the relational multi-level tree system into an ordered age priority sequence is based on priority to
20 oldest age in accordance with birth-date and birth-time.

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