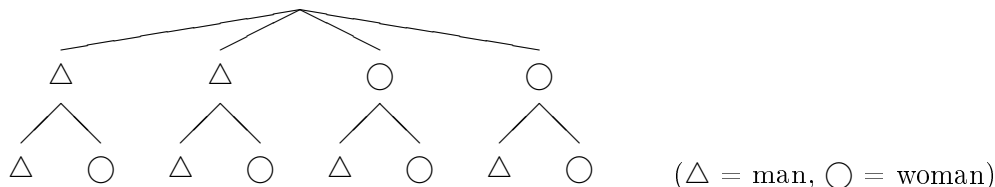


Problem #3 (20 points). Once upon a time in the Tangut Empire (“the Great State of the White and the Lofty”) there lived two brothers and two sisters. They each had a son and a daughter.



Below you see statements in the Tangut language concerning the relations between these people. The name **Lhie²nyn²** belongs to a man.

- | | |
|---|--|
| 1. Ldiu ² še ¹ Nie ² tse ¹ 'yn ¹ kâj ¹ ngu ² . | 19. Lhie ² nyn ² Wa ² nie ¹ 'yn ¹ wia ¹ ngu ² . |
| 2. Lhie ² nyn ² Ngwi ¹ mbyn ² 'yn ¹ lio ² ngu ² . | 20. Ldiu ² še ¹ Sei ¹ na ¹ 'yn ¹ zwej ¹ ngu ² . |
| 3. Sei ¹ na ¹ Wa ² nie ¹ 'yn ¹ ndon ¹ ngu ² . | 21. Wa ² nie ¹ Sei ¹ na ¹ 'yn ¹ mu ¹ ngu ² . |
| 4. Ldiu ² še ¹ Śan ¹ nia ¹ 'yn ¹ ndon ¹ ngu ² . | 22. Śan ¹ nia ¹ Wa ² nie ¹ 'yn ¹ zwej ¹ ngu ² . |
| 5. Śan ¹ nia ¹ Syn ¹ mei ¹ 'yn ¹ zwej ¹ ngu ² . | 23. Ngon ² ngwe ¹ Ldiu ² še ¹ 'yn ¹ la ² ngu ² . |
| 6. Ldiu ² še ¹ Syn ¹ mei ¹ 'yn ¹ zwej ¹ ngu ² . | 24. Lhie ² nyn ² Mbe ² phon ¹ 'yn ¹ mu ¹ ngu ² . |
| 7. Ldiu ² še ¹ Wa ² nie ¹ 'yn ¹ zwej ¹ ngu ² . | 25. Mbe ² phon ¹ Ldiu ² še ¹ 'yn ¹ ma ¹ ngu ² . |
| 8. Kei ¹ zey ² Ldiu ² še ¹ 'yn ¹ zwej ¹ ngu ² . | 26. Lhie ² nyn ² Nie ² tse ¹ 'yn ¹ 'iə ¹ ngu ² . |
| 9. Ldiu ² še ¹ Kei ¹ zey ² 'yn ¹ zwej ¹ ngu ² . | 27. Lhie ² nyn ² Ngon ² ngwe ¹ 'yn ¹ mu ¹ ngu ² . |
| 10. Lhie ² nyn ² Syn ¹ mei ¹ 'yn ¹ wia ¹ ngu ² . | 28. Śan ¹ nia ¹ Sie ¹ tsie ¹ 'yn ¹ lio ² ngu ² . |
| 11. Lhie ² nyn ² Sie ¹ tsie ¹ 'yn ¹ 'iə ¹ ngu ² . | 29. Lhie ² nyn ² Ldiu ² še ¹ 'yn ¹ 'iə ¹ ngu ² . |
| 12. Kei ¹ zey ² Wa ² nie ¹ 'yn ¹ lio ² ngu ² . | 30. Lhie ² nyn ² Sei ¹ na ¹ 'yn ¹ wiej ² ngu ² . |
| 13. Kei ¹ zey ² Sie ¹ tsie ¹ 'yn ¹ zwej ¹ ngu ² . | 31. Śan ¹ nia ¹ Nie ² tse ¹ 'yn ¹ mu ¹ ngu ² . |
| 14. Lhie ² nyn ² Kei ¹ zey ² 'yn ¹ wiej ² ngu ² . | 32. Lhie ² nyn ² Śan ¹ nia ¹ 'yn ¹ 'iə ¹ ngu ² . |
| 15. Syn ¹ mei ¹ Nie ² tse ¹ 'yn ¹ zwej ¹ ngu ² . | 33. Ngon ² ngwe ¹ Kei ¹ zey ² 'yn ¹ ny ¹ ngu ² . |
| 16. Ngon ² ngwe ¹ Mbe ² phon ¹ 'yn ¹ kâj ¹ ngu ² . | 34. Syn ¹ mei ¹ Śan ¹ nia ¹ 'yn ¹ zwej ¹ ngu ² . |
| 17. Syn ¹ mei ¹ Sei ¹ na ¹ 'yn ¹ kâj ¹ ngu ² . | 35. Mbe ² phon ¹ Sie ¹ tsie ¹ 'yn ¹ ma ¹ ngu ² . |
| 18. Ldiu ² še ¹ Sie ¹ tsie ¹ 'yn ¹ ndon ¹ ngu ² . | 36. Nie ² tse ¹ Sie ¹ tsie ¹ 'yn ¹ ____ ngu ² . |

(a) Reconstruct the family tree.

(b) Fill in the blank in the last sentence (there is only one way to do this).

⚠ Tangut is an extinct language of the Tibeto-Burman family that was spoken in the Tangut Empire (1038–1227, present-day central China). There is no agreement among scholars on what it sounded like, therefore the transcription is based on one of the reconstructions. The superscript numbers indicate its two tones (¹ = flat, ² = rising); in particular, the words for ‘father’ and ‘mother’ are in the first tone. â, ê, ɛ, ɔ, y, ə are vowels; ś, ź, ' are consonants.

—Ivan Derzhanski