

[illegible]

## Appendix 2 - Symbols

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$\Psi$	<b>Phylogeny</b> The (possibly unknown) relationship between entities resulting from an evolutionary tree
$\tau$	<b>Tree topology</b> Information on the relationships of the languages
$\mu$	<b>Substitution rate</b> the rate at which the language changes
$N$	<b>Sampled languages</b> The number of languages in a sample
$\nu$	<b>Expected events</b> The expected number of evolutionary events that occurred between two languages
$t$	<b>Past times</b> Times of branch events
$B$	<b>Possible rooted trees</b>
$A$	<b>Segmental alignment</b> Constructed by combining the word segment information for the languages of interest with information on the homology of the segments
$S$	<b>Segmental information</b> Information on the homology of the segments
$s$	<b>Segment</b> Linguistic segment
$s_i$	<b>ith segment</b>
$H$	<b>Homology map</b> The map describing the alignment of the segments
$Q$	<b>Rate Matrix</b>
$\beta$	<b>Rate matrix scaling factor</b> Scales the rate matrix such that the average rate of segmental substitution is one
$P$	<b>Probability</b> The probability the process ends in certain state
$P$	<b>Marginal Likelihood</b>
$\pi$	<b>Equilibrium distribution</b>
$\lambda$	<b>Rate of segment insertion</b>

## Appendix 2 - Symbols

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$\mu$	<b>Rate of segment deletion</b>
$n$	<b>Word length</b> Number of segments in a word
$r$	<b>Rate parameter</b>
$\vartheta$	<b>Rate parameters</b> Parameters associated with the rate matrix
$\vartheta'$	<b>Proposal</b> New value proposal
$q$	<b>Proposal probability</b> Probability of new proposal
$u$	<b>Random number</b>
$R$	<b>Acceptance probability</b> Probability of accepting a proposed value
$M$	<b>Model</b> Mathematical model for linguistic parameters
$BF$	<b>Bayes Factor</b> A numerical factor related to the quality of the model fit
$X$	<b>Unknown</b>

## Appendix 3 - Tongue Twister Configuration

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```
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## Appendix 3 - Tongue Twister Configuration

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```

## Appendix 3 - Tongue Twister Configuration

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```
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    {"Taxon": "PortugueseBrazil", "Segments": [26, 15, 35, -1, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [26, 15, 35, -1, 0, 28, -1]},
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    {"Taxon": "Italian", "Segments": [26, 27, 33, 7, 20, 6, -1]},
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```

## Appendix 3 - Tongue Twister Configuration

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```
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  {"Taxon": "Walloon", "Segments": [-1, -1, 21, -1, -1, 40, -1, 62, -1, -1, -1, -1]}
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```

## Appendix 3 - Tongue Twister Configuration

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  {"Taxon": "Romanian", "Segments": [13, 27, 14, -1, -1]}
]},
{"Name": "Nose-Nares", "Data": [
  {"Taxon": "Spanish", "Segments": [13, 27, 28, 7, 58, -1]},
  {"Taxon": "Italian", "Segments": [13, 27, 33, 7, 46, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [13, 27, 28, 7, 14, -1]},
  {"Taxon": "Portuguese", "Segments": [13, 29, 28, 7, 16, -1]},
  {"Taxon": "Catalan", "Segments": [13, 54, 33, 11, 14, -1]}
]},
{"Name": "Sun", "Data": [
  {"Taxon": "Latin", "Segments": [14, 2, 32, 0, 26]},
  {"Taxon": "Spanish", "Segments": [14, 6, 32, -1, -1]},
  {"Taxon": "Italian", "Segments": [14, 6, 32, 0, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [14, 9, 8, -1, -1]},
```



## Appendix 3 - Tongue Twister Configuration

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```
{
  "Taxon": "Portuguese", "Segments": [14, 9, 65, -1, -1]},
  "Taxon": "Catalan", "Segments": [14, 9, 32, -1, -1]},
  "Taxon": "Walloon", "Segments": [14, 9, 32, 9, -1]},
  "Taxon": "Romanian", "Segments": [14, 39, 28, 0, -1]}
}],
{
  "Name": "Sun-Soliculus", "Data": [
    {
      "Taxon": "Latin", "Segments": [14, 6, 32, 7, 66, 15, 32, 15, 14]},
      "Taxon": "French", "Segments": [14, 9, 32, 67, -1, -1, -1, -1, -1]},
      "Taxon": "Friulian", "Segments": [14, 6, 33, 0, -1, -1, 32, 7, -1]}
    ]},
{
  "Name": "Moon", "Data": [
    {
      "Taxon": "Latin", "Segments": [32, 21, 13, 27]},
      "Taxon": "French", "Segments": [32, 22, 13, -1]},
      "Taxon": "Spanish", "Segments": [32, 15, 13, 27]},
      "Taxon": "Italian", "Segments": [32, 15, 13, 27]},
      "Taxon": "PortugueseBrazil", "Segments": [32, 15, -1, 29]},
      "Taxon": "Portuguese", "Segments": [32, 15, -1, 29]},
      "Taxon": "Catalan", "Segments": [35, 15, 13, 4]},
      "Taxon": "Walloon", "Segments": [32, 68, 13, -1]},
      "Taxon": "Friulian", "Segments": [32, 15, 13, 0]},
      "Taxon": "Romanian", "Segments": [32, 15, 13, 4]}
    ]},
{
  "Name": "Star", "Data": [
    {
      "Taxon": "Latin", "Segments": [-1, 14, 20, -1, 25, 32, 32, 27]},
      "Taxon": "French", "Segments": [0, -1, 20, 8, 27, -1, 32, -1]},
      "Taxon": "Spanish", "Segments": [0, 14, 20, 28, 0, -1, 5, 27]},
      "Taxon": "Italian", "Segments": [-1, 14, 20, -1, 0, 32, 32, 27]},
      "Taxon": "PortugueseBrazil", "Segments": [7, 14, 20, 28, 0, -1, 32, 29]},
      "Taxon": "Portuguese", "Segments": [47, 16, 20, 28, 0, -1, 32, 29]},
      "Taxon": "Catalan", "Segments": [4, 14, 20, -1, 31, -1, 32, -1]},
      "Taxon": "Walloon", "Segments": [-1, 14, 20, -1, 64, -1, 32, -1]},
      "Taxon": "Friulian", "Segments": [-1, 14, 20, -1, 31, -1, 32, 0]},
      "Taxon": "Romanian", "Segments": [-1, 14, 20, -1, 69, -1, -1, -1]}
    ]},
{
  "Name": "Water", "Data": [
    {
      "Taxon": "Latin", "Segments": [27, -1, 70, -1, 27]},
      "Taxon": "French", "Segments": [6, -1, -1, -1, -1]},
      "Taxon": "Spanish", "Segments": [27, -1, 71, 8, 27]},
      "Taxon": "Italian", "Segments": [27, 52, 52, 8, 27]},
      "Taxon": "PortugueseBrazil", "Segments": [27, -1, 1, 8, 29]},
      "Taxon": "Portuguese", "Segments": [27, -1, 1, 8, 29]},
      "Taxon": "Catalan", "Segments": [72, -1, 71, 8, 4]},
      "Taxon": "Walloon", "Segments": [62, -1, -1, 8, -1]},
      "Taxon": "Friulian", "Segments": [27, -1, 73, -1, 0]},
      "Taxon": "Romanian", "Segments": [27, -1, 49, -1, 4]}
    ]},
{
  "Name": "Rain", "Data": [
    {
      "Taxon": "Latin", "Segments": [49, 32, 15, -1, 8, 7, 27]},
      "Taxon": "French", "Segments": [49, 32, 63, -1, -1, 7, -1]},
      "Taxon": "Spanish", "Segments": [5, -1, 15, -1, 19, 12, 27]},
      "Taxon": "Italian", "Segments": [49, 12, 6, 23, 10, -1, 27]},
      "Taxon": "PortugueseBrazil", "Segments": [16, -1, 15, -1, 18, -1, 29]},
      "Taxon": "Portuguese", "Segments": [16, -1, 15, -1, 18, -1, 29]},
      "Taxon": "Catalan", "Segments": [49, 32, 15, -1, 3, -1, 4]},
      "Taxon": "Walloon", "Segments": [49, 32, 21, -1, 36, -1, -1]},
      "Taxon": "Friulian", "Segments": [49, 32, 6, -1, -1, 12, 0]}
    ]}
}
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Romanian", "Segments": [49, 32, 39, -1, -1, 12, 0]}
}},
{"Name": "Lake", "Data": [
  {"Taxon": "Latin", "Segments": [32, 27, 52, 15, 26]},
  {"Taxon": "French", "Segments": [32, 27, 52, -1, -1]},
  {"Taxon": "Spanish", "Segments": [32, 27, 73, 6, -1]},
  {"Taxon": "Italian", "Segments": [32, 27, 1, 6, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [32, 27, 1, 15, -1]},
  {"Taxon": "Portuguese", "Segments": [32, 27, 71, 15, -1]},
  {"Taxon": "Catalan", "Segments": [35, 27, 52, -1, -1]},
  {"Taxon": "Walloon", "Segments": [32, 27, 52, -1, -1]},
  {"Taxon": "Friulian", "Segments": [32, 54, 20, -1, -1]},
  {"Taxon": "Romanian", "Segments": [32, 27, 52, -1, -1]}
]},
{"Name": "Sea", "Data": [
  {"Taxon": "Latin", "Segments": [26, 27, 33, 0]},
  {"Taxon": "French", "Segments": [26, 31, 36, -1]},
  {"Taxon": "Spanish", "Segments": [26, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [26, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [26, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [26, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [26, 27, 33, -1]},
  {"Taxon": "Walloon", "Segments": [26, 0, 36, -1]},
  {"Taxon": "Friulian", "Segments": [26, 54, 33, -1]},
  {"Taxon": "Romanian", "Segments": [26, 27, 33, 0]}
]},
{"Name": "Salt", "Data": [
  {"Taxon": "Latin", "Segments": [14, 54, 32, 0, 26]},
  {"Taxon": "French", "Segments": [14, 31, 32, -1, -1]},
  {"Taxon": "Spanish", "Segments": [14, 27, 32, -1, -1]},
  {"Taxon": "Italian", "Segments": [14, 27, 32, 0, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [14, 27, 8, -1, -1]},
  {"Taxon": "Portuguese", "Segments": [14, 27, 32, -1, -1]},
  {"Taxon": "Catalan", "Segments": [14, 27, 32, -1, -1]},
  {"Taxon": "Walloon", "Segments": [14, 0, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [14, 54, 32, -1, -1]},
  {"Taxon": "Romanian", "Segments": [14, 27, 33, 0, -1]}
]},
{"Name": "Earth", "Data": [
  {"Taxon": "Latin", "Segments": [20, -1, 0, 33, 33, 27]},
  {"Taxon": "French", "Segments": [20, -1, 0, -1, 36, -1]},
  {"Taxon": "Spanish", "Segments": [20, 12, 0, -1, 33, 27]},
  {"Taxon": "Italian", "Segments": [20, -1, 31, 33, 33, 27]},
  {"Taxon": "PortugueseBrazil", "Segments": [20, -1, 0, -1, 36, 29]},
  {"Taxon": "Portuguese", "Segments": [20, -1, 31, -1, 36, 29]},
  {"Taxon": "Catalan", "Segments": [20, -1, 31, -1, 33, 4]},
  {"Taxon": "Walloon", "Segments": [20, -1, 62, -1, 36, -1]},
  {"Taxon": "Friulian", "Segments": [20, 12, 31, -1, 33, 0]},
  {"Taxon": "Romanian", "Segments": [53, -1, 27, -1, 33, 4]}
]},
{"Name": "Fog", "Data": [
  {"Taxon": "Latin", "Segments": [52, 54, 32, 37, 1, 7, 13, 0, 26]},
  {"Taxon": "Spanish", "Segments": [52, 27, 32, 7, -1, -1, 13, 27, -1]},
  {"Taxon": "Italian", "Segments": [52, 27, 32, 7, 10, 7, 13, 0, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [52, 27, 32, 7, 3, 41, -1, -1, -1]},
  {"Taxon": "Portuguese", "Segments": [52, 29, 32, 7, 3, 55, -1, -1, -1]}
```

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```
}},
{"Name": "Fog-Nebula", "Data": [
  {"Taxon": "Latin", "Segments": [13, -1, 0, -1, 19, 15, 32, 27]},
  {"Taxon": "French", "Segments": [13, 12, 9, -1, -1, -1, 32, 22]},
  {"Taxon": "Spanish", "Segments": [13, 12, 0, -1, 19, -1, 32, 27]},
  {"Taxon": "Italian", "Segments": [13, -1, 0, 19, 19, -1, 12, 27]},
  {"Taxon": "PortugueseBrazil", "Segments": [13, -1, 31, -1, 18, 8, -1, 29]},
  {"Taxon": "Portuguese", "Segments": [13, -1, 31, -1, 18, 8, -1, 29]},
  {"Taxon": "Catalan", "Segments": [13, -1, 0, -1, -1, 8, 32, 4]},
  {"Taxon": "Romanian", "Segments": [13, 0, 1, 15, 33, 4, -1, -1]}
]},
{"Name": "Fog-Tenebrae", "Data": [
  {"Taxon": "Latin", "Segments": [20, 0, 13, 25, 19, 33, 72]},
  {"Taxon": "Italian", "Segments": [20, 62, 13, 0, 19, 33, 0]}
]},
{"Name": "Fog-Tenebras", "Data": [
  {"Taxon": "Latin", "Segments": [20, -1, 0, 13, -1, 25, 19, 33, 54, 14]},
  {"Taxon": "French", "Segments": [20, -1, 0, 13, -1, 31, 19, 36, -1, -1]},
  {"Taxon": "Spanish", "Segments": [20, -1, 7, 13, 12, 0, 19, 32, 27, 14]},
  {"Taxon": "Italian", "Segments": [20, -1, 62, 13, -1, 0, 19, 33, 0, -1]},
  {"Taxon": "Portuguese", "Segments": [20, 28, -1, -1, -1, 31, 18, -1, 29, 16]},
  {"Taxon": "Catalan", "Segments": [20, -1, 4, 13, -1, 0, 19, 28, 4, 14]}
]},
{"Name": "Fog-Fumata", "Data": [
  {"Taxon": "Latin", "Segments": [24, 21, 26, 54, 20, 27]},
  {"Taxon": "French", "Segments": [24, 22, 26, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [24, 15, 26, 27, 20, 27]},
  {"Taxon": "Italian", "Segments": [24, 15, 26, 54, 20, 27]},
  {"Taxon": "PortugueseBrazil", "Segments": [24, 15, 26, 27, 14, 29]},
  {"Taxon": "Portuguese", "Segments": [24, 15, 26, 27, 14, 29]},
  {"Taxon": "Friulian", "Segments": [24, 15, 26, 27, 20, 0]}
]},
{"Name": "Fog-Caecia", "Data": [
  {"Taxon": "Latin", "Segments": [52, 72, 52, 7, 27]},
  {"Taxon": "Romanian", "Segments": [46, 69, 46, -1, 4]}
]},
{"Name": "Sky", "Data": [
  {"Taxon": "Latin", "Segments": [52, -1, 72, 32, 15, 26]},
  {"Taxon": "French", "Segments": [14, 12, 31, 32, -1, -1]},
  {"Taxon": "Spanish", "Segments": [58, 12, 0, 32, 6, -1]},
  {"Taxon": "Italian", "Segments": [46, -1, 31, 32, 6, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [14, -1, 31, 8, -1, -1]},
  {"Taxon": "Portuguese", "Segments": [14, -1, 31, 8, -1, -1]},
  {"Taxon": "Catalan", "Segments": [14, -1, 31, 32, -1, -1]},
  {"Taxon": "Walloon", "Segments": [14, -1, 37, 36, -1, -1]},
  {"Taxon": "Friulian", "Segments": [46, -1, 37, 32, -1, -1]},
  {"Taxon": "Romanian", "Segments": [46, -1, 0, 28, -1, -1]}
]},
{"Name": "Wind", "Data": [
  {"Taxon": "Latin", "Segments": [8, -1, 0, 13, 20, 15, 26]},
  {"Taxon": "French", "Segments": [18, -1, 43, -1, -1, -1, -1]},
  {"Taxon": "Spanish", "Segments": [19, 12, 0, 13, 20, 6, -1]},
  {"Taxon": "Italian", "Segments": [18, -1, 31, 13, 20, 6, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [18, -1, 74, -1, 20, 15, -1]},
  {"Taxon": "Portuguese", "Segments": [18, -1, 74, -1, 20, 15, -1]},
  {"Taxon": "Catalan", "Segments": [19, -1, 0, 13, -1, -1, -1]},
```

## Appendix 3 - Tongue Twister Configuration

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```
{
  "Taxon": "Walloon", "Segments": [18, -1, 74, -1, -1, -1, -1]},
  "Taxon": "Friulian", "Segments": [18, -1, 7, 13, 20, -1, -1]},
  "Taxon": "Romanian", "Segments": [18, -1, 47, 13, 20, -1, -1]}
}],
{
  "Name": "Fire-Focus", "Data": [
    {"Taxon": "Latin", "Segments": [24, -1, 6, 52, 15, 26]},
    {"Taxon": "French", "Segments": [24, -1, 68, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [24, 8, 0, 1, 6, -1]},
    {"Taxon": "Italian", "Segments": [24, 8, 9, 52, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [24, -1, 6, 1, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [24, -1, 6, 71, 15, -1]},
    {"Taxon": "Catalan", "Segments": [24, -1, 9, 52, -1, -1]},
    {"Taxon": "Walloon", "Segments": [24, -1, 64, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [24, -1, 21, 52, -1, -1]},
    {"Taxon": "Romanian", "Segments": [24, -1, 6, 52, -1, -1]}
  ]
},
{
  "Name": "Year", "Data": [
    {"Taxon": "Latin", "Segments": [27, 13, 13, 15, 26]},
    {"Taxon": "French", "Segments": [43, -1, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [27, -1, 38, 6, -1]},
    {"Taxon": "Italian", "Segments": [27, 13, 13, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [29, -1, 13, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [29, -1, 13, 15, -1]},
    {"Taxon": "Catalan", "Segments": [27, -1, 38, -1, -1]},
    {"Taxon": "Walloon", "Segments": [48, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [27, -1, 75, -1, -1]},
    {"Taxon": "Romanian", "Segments": [27, 13, -1, -1, -1]}
  ]
},
{
  "Name": "Name-Nomen", "Data": [
    {"Taxon": "Latin", "Segments": [13, 2, 26, 0, 13]},
    {"Taxon": "French", "Segments": [13, 42, -1, -1, -1]},
    {"Taxon": "Italian", "Segments": [13, 2, 26, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [13, 6, 26, 7, -1]},
    {"Taxon": "Portuguese", "Segments": [13, 6, 26, 47, -1]},
    {"Taxon": "Catalan", "Segments": [13, 9, 26, -1, -1]},
    {"Taxon": "Walloon", "Segments": [13, 61, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [13, 9, 75, -1, -1]},
    {"Taxon": "Romanian", "Segments": [13, 15, 26, 0, -1]}
  ]
},
{
  "Name": "Name-Nominem", "Data": [
    {"Taxon": "Latin", "Segments": [13, 2, 26, 7, 13, -1, 0, 26]},
    {"Taxon": "Spanish", "Segments": [13, 6, 26, -1, 19, 28, 0, -1]}
  ]
},
{
  "Name": "Tongue", "Data": [
    {"Taxon": "Latin", "Segments": [32, 7, 13, 76, -1, 27]},
    {"Taxon": "French", "Segments": [32, 43, -1, 1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [32, 0, 75, 1, 8, 27]},
    {"Taxon": "Italian", "Segments": [32, 7, 13, 1, 8, 27]},
    {"Taxon": "PortugueseBrazil", "Segments": [32, 44, -1, 1, 8, 29]},
    {"Taxon": "Portuguese", "Segments": [32, 44, -1, 1, 8, 29]},
    {"Taxon": "Walloon", "Segments": [32, 77, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [32, 31, 13, 73, -1, 31]},
    {"Taxon": "Romanian", "Segments": [32, 7, 26, 19, -1, 4]}
  ]
},
{
  "Name": "ToDrink", "Data": [
    {"Taxon": "Latin", "Segments": [19, 7, 19, -1, 0, 33, 0]}
  ]
}
```

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---

```
{
  "Taxon": "French", "Segments": [19, -1, -1, 8, 78, 36, -1]},
  "Taxon": "Spanish", "Segments": [19, 0, 19, -1, 0, 28, -1]},
  "Taxon": "Italian", "Segments": [19, 0, -1, -1, -1, 28, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [19, 0, 19, -1, 0, 36, -1]},
  "Taxon": "Portuguese", "Segments": [19, 47, 79, -1, 0, 28, -1]},
  "Taxon": "Catalan", "Segments": [19, 31, 8, -1, -1, 28, 4]},
  "Taxon": "Walloon", "Segments": [19, -1, -1, -1, 64, 36, -1]},
  "Taxon": "Friulian", "Segments": [19, 0, 18, 7, -1, -1, -1]},
  "Taxon": "Romanian", "Segments": [19, -1, -1, -1, 69, -1, -1]}
}],
{
  "Name": "ToEat", "Data": [
    {
      "Taxon": "Latin", "Segments": [52, 6, 26, 0, 23, 0, 33, 0]},
      "Taxon": "Spanish", "Segments": [52, 6, 26, 0, -1, -1, 28, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 6, 26, 0, -1, -1, -1, -1]},
      "Taxon": "Portuguese", "Segments": [52, 15, 26, -1, -1, 0, 28, -1]}
    ]
  },
{
  "Name": "ToEat-Manducare", "Data": [
    {
      "Taxon": "Latin", "Segments": [26, 27, 13, 23, 15, 52, 54, 33, 0]},
      "Taxon": "French", "Segments": [26, 43, -1, 3, -1, -1, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [26, 27, 13, 23, 15, 52, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [26, 27, 13, 10, -1, -1, 27, 28, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [26, 45, -1, 3, -1, -1, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [26, 45, -1, 3, -1, -1, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [26, 4, 38, 3, -1, -1, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [26, 27, 38, -1, -1, -1, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [26, 27, 75, 80, -1, -1, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [26, 47, 13, -1, -1, 52, 27, -1, -1]}
    ]
  },
{
  "Name": "ToBite", "Data": [
    {
      "Taxon": "Latin", "Segments": [26, -1, 6, 33, 23, 25, 33, 0]},
      "Taxon": "French", "Segments": [26, -1, 6, 36, 23, -1, 36, -1]},
      "Taxon": "Spanish", "Segments": [26, -1, 6, 28, 51, 0, 28, -1]},
      "Taxon": "Italian", "Segments": [26, -1, 9, 33, 23, 0, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [26, -1, 6, 36, 23, 0, 36, -1]},
      "Taxon": "Portuguese", "Segments": [26, -1, 15, 28, 51, 0, 28, -1]},
      "Taxon": "Friulian", "Segments": [26, 8, 27, 33, 23, 7, -1, -1]}
    ]
  },
{
  "Name": "ToBite-Morsicare", "Data": [
    {
      "Taxon": "Latin", "Segments": [26, 6, 33, 14, 7, 52, 54, 33, 0]},
      "Taxon": "Spanish", "Segments": [26, 6, -1, 14, -1, 52, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [26, 6, 33, 14, 7, 52, 27, 28, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [26, 15, -1, 14, 4, 1, 27, -1, -1]},
      "Taxon": "Portuguese", "Segments": [26, 15, -1, 14, 4, 1, 27, 33, -1]},
      "Taxon": "Catalan", "Segments": [26, 15, -1, 14, 4, 71, 27, -1, -1]},
      "Taxon": "Romanian", "Segments": [26, 15, 33, 14, 0, 52, 27, -1, -1]}
    ]
  },
{
  "Name": "ToSuck", "Data": [
    {
      "Taxon": "Latin", "Segments": [14, 21, 1, 0, 33, 0]},
      "Taxon": "French", "Segments": [14, 22, 14, 0, -1, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [14, 15, 1, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [14, 15, 1, 27, 28, -1]},
      "Taxon": "Walloon", "Segments": [14, 22, 14, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [66, 15, 66, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [14, 15, 10, 0, -1, -1]}
    ]
  },
{
  "Name": "ToSpit", "Data": [
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Latin", "Segments": [52, 6, 13, 14, 49, 15, 0, 33, 0]},
  "Taxon": "French", "Segments": [52, 42, -1, 14, 49, 22, 0, -1, -1]},
  "Taxon": "PortugueseBrazil", "Segments": [52, 15, -1, 14, 49, 7, 36, -1, -1]},
  "Taxon": "Portuguese", "Segments": [52, 15, -1, 16, 49, 7, 28, -1, -1]}
}],
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      "Taxon": "Catalan", "Segments": [4, 14, 52, 15, -1, 49, 7, -1]},
      "Taxon": "Romanian", "Segments": [-1, 14, 52, 15, 12, 49, 27, -1]}
    ]},
{
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      "Taxon": "Spanish", "Segments": [0, 14, 49, 15, 20, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [-1, 14, 49, 15, 20, 27, 28, 0]},
      "Taxon": "Friulian", "Segments": [14, 49, 15, 23, 54, -1, -1, -1]}
    ]},
{
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      "Taxon": "Romanian", "Segments": [16, 20, 7, -1, -1]}
    ]},
{
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      "Taxon": "French", "Segments": [14, 27, 18, 8, 27, 36, -1]},
      "Taxon": "Spanish", "Segments": [14, 27, 19, -1, 0, 28, -1]},
      "Taxon": "Italian", "Segments": [14, 27, 49, -1, 0, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [14, 27, 19, -1, 0, 36, -1]},
      "Taxon": "Portuguese", "Segments": [14, 29, 19, -1, 0, 28, -1]},
      "Taxon": "Catalan", "Segments": [14, 4, 79, -1, 31, -1, -1]},
      "Taxon": "Walloon", "Segments": [14, 27, 18, -1, 64, 56, -1]},
      "Taxon": "Friulian", "Segments": [14, 27, 18, -1, 25, -1, -1]}
    ]},
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    {
      "Taxon": "Latin", "Segments": [52, 6, 1, 13, 2, 14, 52, 0, 33, 0]},
      "Taxon": "French", "Segments": [52, 9, -1, 13, 31, -1, 20, 36, -1, -1]},
      "Taxon": "Spanish", "Segments": [52, 6, -1, 13, 6, 58, 0, 28, -1, -1]},
      "Taxon": "Italian", "Segments": [52, 6, -1, 13, 6, 16, 16, 0, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 6, -1, 38, 0, 14, -1, 0, 36, -1]},
      "Taxon": "Portuguese", "Segments": [52, 15, -1, 38, 47, 14, -1, 0, 28, -1]},
      "Taxon": "Catalan", "Segments": [52, 15, -1, 13, 31, 16, -1, 4, -1, -1]},
      "Taxon": "Walloon", "Segments": [52, 7, -1, 13, 9, 40, -1, -1, -1, -1]},
      "Taxon": "Friulian", "Segments": [52, 6, -1, 38, 6, 14, -1, 7, -1, -1]},
      "Taxon": "Romanian", "Segments": [52, 15, -1, 13, 39, 16, 20, 0, -1, -1]}
    ]},
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      "Taxon": "French", "Segments": [52, 63, -1, -1, 7, 23, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [52, 8, -1, -1, 7, 23, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [52, -1, 6, 10, 7, 20, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [52, -1, 15, 3, 7, 20, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [52, -1, 15, 3, 7, 20, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [52, -1, 15, -1, 12, 23, 27, -1, -1]},
      "Taxon": "Romanian", "Segments": [52, -1, 15, 10, 0, 20, 27, -1, -1]}
    ]},
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      "Taxon": "French", "Segments": [49, 43, -1, 14, 0, -1, -1]},
    ]}
}
```



## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Spanish", "Segments": [49, 0, 13, 14, 27, 28, -1]},
  "Taxon": "Italian", "Segments": [49, 0, 13, 14, 27, 28, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [49, 74, -1, 14, 27, 36, -1]},
  "Taxon": "Portuguese", "Segments": [49, 74, -1, 14, 27, 28, -1]},
  "Taxon": "Catalan", "Segments": [49, 4, 13, 14, 27, -1, -1]},
  "Taxon": "Walloon", "Segments": [49, 81, -1, 14, 0, -1, -1]},
  "Taxon": "Friulian", "Segments": [49, 0, 75, 14, 54, -1, -1]},
  "Taxon": "Romanian", "Segments": [49, 4, -1, 14, 27, -1, -1]}
}],
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    {"Taxon": "Italian", "Segments": [20, 0, 26, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [20, 0, 26, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [20, 47, 26, 0, 28, -1]},
    {"Taxon": "Catalan", "Segments": [20, 0, 26, 4, -1, -1]},
    {"Taxon": "Friulian", "Segments": [20, 0, 26, 7, -1, -1]},
    {"Taxon": "Romanian", "Segments": [20, 0, 26, 0, -1, -1]}
  ]
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    {"Taxon": "French", "Segments": [52, 36, 74, -1, 23, -1, 36, -1]},
    {"Taxon": "Spanish", "Segments": [20, 28, 0, 26, -1, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [20, 33, 0, 26, -1, 27, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [20, 28, 0, 26, -1, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [20, 28, 47, 26, -1, 0, 28, -1]},
    {"Taxon": "Friulian", "Segments": [20, 33, 7, 26, -1, 54, -1, -1]}
  ]
},
{
  "Name": "ToSleep", "Data": [
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    {"Taxon": "Spanish", "Segments": [23, -1, 6, 28, 26, 7, 28, -1]},
    {"Taxon": "Italian", "Segments": [23, -1, 6, 33, 26, 7, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [23, -1, 6, 36, 26, 7, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [23, -1, 15, 28, 26, 7, 28, -1]},
    {"Taxon": "Catalan", "Segments": [23, -1, 15, 33, 26, 7, -1, -1]},
    {"Taxon": "Walloon", "Segments": [23, 8, 27, 36, 26, 7, -1, -1]},
    {"Taxon": "Friulian", "Segments": [23, -1, 15, 33, 26, 37, -1, -1]},
    {"Taxon": "Romanian", "Segments": [23, -1, 6, 33, 26, 7, -1, -1]}
  ]
},
{
  "Name": "ToLive", "Data": [
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    {"Taxon": "Italian", "Segments": [18, 7, 18, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [18, 7, 18, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [18, 7, 18, 0, 28, -1]},
    {"Taxon": "Catalan", "Segments": [19, 7, 8, -1, 28, 4]},
    {"Taxon": "Friulian", "Segments": [18, 7, 18, 7, -1, -1]},
    {"Taxon": "Romanian", "Segments": [18, 7, -1, 27, -1, -1]}
  ]
},
{
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    {"Taxon": "Spanish", "Segments": [26, 6, 28, 7, 28, -1]},
    {"Taxon": "Italian", "Segments": [26, 6, 33, 7, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [26, 6, 36, 0, 36, -1]},
  ]
}
```

## Appendix 3 - Tongue Twister Configuration

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```
{
  "Taxon": "Portuguese", "Segments": [26, 15, 36, 0, 28, -1]},
  "Taxon": "Catalan", "Segments": [26, 15, 28, 7, -1, -1]},
  "Taxon": "Walloon", "Segments": [26, 9, 56, 7, -1, -1]},
  "Taxon": "Friulian", "Segments": [26, 15, 33, 37, -1, -1]},
  "Taxon": "Romanian", "Segments": [26, 15, 33, 7, -1, -1]}
}],
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  {"Taxon": "French", "Segments": [13, 8, 72, 0, -1, -1, -1]},
  {"Taxon": "Catalan", "Segments": [13, -1, 4, 1, 27, -1, -1]},
  {"Taxon": "Romanian", "Segments": [13, -1, 0, 52, 27, -1, -1]}
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  {"Taxon": "Italian", "Segments": [27, 13, 13, 0, 1, 27, 33, 0]}
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  {"Taxon": "French", "Segments": [20, -1, 63, -1, 0, -1, -1]},
  {"Taxon": "Walloon", "Segments": [20, 15, 8, -1, 0, -1, -1]}
]},
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  {"Taxon": "French", "Segments": [26, 27, -1, 20, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [26, 27, -1, 20, 27, 28, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [26, 27, -1, 20, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [26, 29, -1, 20, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [26, 4, -1, 20, 27, -1, -1]},
  {"Taxon": "Friulian", "Segments": [26, 27, 82, -1, 54, -1, -1]}
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  {"Taxon": "French", "Segments": [9, 52, 14, 7, -1, -1, 36, -1]},
  {"Taxon": "Italian", "Segments": [15, 20, 46, 7, 23, 0, 28, 0]},
  {"Taxon": "Catalan", "Segments": [15, 52, 14, 7, -1, -1, -1, -1]},
  {"Taxon": "Romanian", "Segments": [15, -1, 46, 7, 23, 0, -1, -1]}
]},
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  {"Taxon": "Spanish", "Segments": [49, 15, -1, 38, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [49, 15, 38, 38, 27, 33, 0]},
  {"Taxon": "Catalan", "Segments": [49, 15, -1, 38, 27, -1, -1]}
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  {"Taxon": "French", "Segments": [19, 27, 20, -1, -1, 36, -1, -1]},
  {"Taxon": "Spanish", "Segments": [19, 27, -1, 20, -1, 7, 28, -1]},
  {"Taxon": "Italian", "Segments": [19, 27, 20, 20, -1, 0, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [19, 27, -1, 20, -1, 0, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [19, 29, -1, 20, -1, 0, 28, -1]},
  {"Taxon": "Catalan", "Segments": [19, 27, -1, 20, -1, -1, 28, 4]},
  {"Taxon": "Walloon", "Segments": [19, 27, 20, -1, 0, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [19, 27, 20, -1, 7, -1, -1, -1]},
  {"Taxon": "Romanian", "Segments": [19, 27, 20, -1, 0, -1, -1, -1]}
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## Appendix 3 - Tongue Twister Configuration

---

```
{
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  "Taxon": "French", "Segments": [16, 27, -1, 14, -1, 0, -1, -1]},
  "Taxon": "Spanish", "Segments": [52, 27, -1, 58, -1, 27, 28, -1]},
  "Taxon": "Italian", "Segments": [52, 27, 20, 46, -1, 27, 33, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [52, 27, -1, 14, -1, 27, 36, -1]},
  "Taxon": "Portuguese", "Segments": [52, 29, -1, 14, -1, 27, 28, -1]},
  "Taxon": "Catalan", "Segments": [52, 4, -1, 14, -1, 27, -1, -1]},
  "Taxon": "Walloon", "Segments": [46, 31, -1, 14, -1, 37, -1, -1]},
  "Taxon": "Friulian", "Segments": [66, 27, -1, 46, -1, 54, -1, -1]}
}],
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      "Taxon": "French", "Segments": [49, 15, -1, 14, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [49, 15, -1, 34, 27, 28, -1]},
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      "Taxon": "PortugueseBrazil", "Segments": [49, 15, -1, 16, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [49, 15, -1, 16, 27, 28, -1]},
      "Taxon": "Friulian", "Segments": [49, 15, 32, 14, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [49, 15, 32, 14, 27, -1, -1]}
    ]
  },
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      "Taxon": "Italian", "Segments": [14, -1, 0, 73, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [14, -1, 0, 1, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [14, -1, 47, 71, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [14, -1, 4, 71, 27, -1, -1]},
      "Taxon": "Friulian", "Segments": [14, -1, 0, -1, 54, -1, -1]}
    ]
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      "Taxon": "Spanish", "Segments": [52, 6, 28, 20, 27, 28, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 6, 36, 20, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [52, 15, 28, 20, 27, 28, -1]}
    ]
  },
{
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      "Taxon": "French", "Segments": [0, -1, -1, 52, 15, 36, 20, 0, -1, -1]},
      "Taxon": "Italian", "Segments": [-1, -1, 14, 66, 6, 33, 20, 27, 33, 0]},
      "Taxon": "Friulian", "Segments": [-1, -1, 14, 66, 15, 33, 20, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [-1, -1, 14, 52, 15, 33, 20, 27, -1, -1]}
    ]
  },
{
  "Name": "ToCut-Taliare", "Data": [
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      "Taxon": "French", "Segments": [20, 78, 12, -1, -1, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [20, 27, -1, 34, -1, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [20, 27, -1, 35, 35, 54, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [20, 27, -1, 35, -1, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [20, 29, -1, 35, -1, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [20, 4, -1, 35, -1, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [20, 31, -1, -1, 12, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [20, 27, -1, -1, 12, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [20, 4, -1, -1, 12, 27, -1, -1]}
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{
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## Appendix 3 - Tongue Twister Configuration

---

```
{
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  "Taxon": "Spanish", "Segments": [23, 7, 19, 7, 23, 7, 28, -1]},
  "Taxon": "Italian", "Segments": [23, 7, 18, 7, 23, 0, 33, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [10, 7, 18, 7, 10, 7, 36, -1]},
  "Taxon": "Portuguese", "Segments": [23, 7, 18, 7, 51, 7, 28, -1]},
  "Taxon": "Catalan", "Segments": [23, 7, 19, 7, 23, 7, -1, -1]},
  "Taxon": "Friulian", "Segments": [23, 7, 18, 7, 23, 7, -1, -1]},
  "Taxon": "Romanian", "Segments": [23, 7, 18, 7, 23, 0, -1, -1]}
}],
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    {"Taxon": "Italian", "Segments": [16, -1, 7, 13, 23, 0, 33, 0]}
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    {"Taxon": "French", "Segments": [24, 43, -1, 23, -1, 36, -1]},
    {"Taxon": "Spanish", "Segments": [-1, 0, 13, 23, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [24, 31, 13, 23, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [24, 74, -1, 23, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [24, 74, -1, 23, 0, 28, -1]},
    {"Taxon": "Catalan", "Segments": [24, 31, 13, 23, -1, 28, 4]},
    {"Taxon": "Walloon", "Segments": [24, 81, -1, 20, -1, -1, -1]}
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    {"Taxon": "Italian", "Segments": [49, 27, 33, 20, 7, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [49, 27, 36, 46, 7, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [49, 29, 28, 20, 7, 28, -1]},
    {"Taxon": "Catalan", "Segments": [49, 4, 33, 20, 7, -1, -1]},
    {"Taxon": "Walloon", "Segments": [49, 83, 56, 20, 7, -1, -1]},
    {"Taxon": "Friulian", "Segments": [49, 27, 33, 20, 37, -1, -1]}
  ]
},
{
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    {"Taxon": "Spanish", "Segments": [14, 0, 49, 27, 28, 27, 28, -1, -1]},
    {"Taxon": "Italian", "Segments": [14, 0, 49, 27, 33, 27, 33, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [14, 0, 49, 27, 28, 27, 36, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [14, 47, 49, 29, 28, 27, 28, -1, -1]},
    {"Taxon": "Catalan", "Segments": [14, 4, 49, 4, 28, 27, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [14, 0, 49, 27, 33, 54, -1, -1, -1]},
    {"Taxon": "Romanian", "Segments": [14, 0, 49, 27, 33, 27, -1, -1, -1]}
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},
{
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    {"Taxon": "French", "Segments": [49, 8, 81, -1, 23, -1, 36, -1]},
    {"Taxon": "Italian", "Segments": [49, -1, 15, 13, 10, 0, 33, 0]},
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    {"Taxon": "Portuguese", "Segments": [49, -1, 84, -1, 3, 7, 28, -1]},
    {"Taxon": "Catalan", "Segments": [49, -1, 15, 38, -1, 7, -1, -1]},
    {"Taxon": "Romanian", "Segments": [49, 15, 13, 10, 0, -1, -1, -1]}
  ]
},
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## Appendix 3 - Tongue Twister Configuration

---

```
{
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  "Taxon": "French", "Segments": [3, 22, 1, 22, 32, 0, -1, -1]},
  "Taxon": "Italian", "Segments": [12, 15, 73, 15, 32, 54, 33, 0]}
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  {"Taxon": "Catalan", "Segments": [33, 27, 8, -1, 28, 4]},
  {"Taxon": "Friulian", "Segments": [33, 27, 23, 54, -1, -1]},
  {"Taxon": "Romanian", "Segments": [33, 27, 23, 0, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [33, 27, 14, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [33, 27, 14, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [36, 27, 50, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [36, 29, 50, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [33, 4, 50, 27, -1, -1]},
  {"Taxon": "Friulian", "Segments": [33, 27, 14, 54, -1, -1]}
]},
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  {"Taxon": "PortugueseBrazil", "Segments": [36, 27, 16, 52, 27, 36]},
  {"Taxon": "Portuguese", "Segments": [36, 29, 16, 52, 27, 28]},
  {"Taxon": "Catalan", "Segments": [33, 4, 14, 52, 27, -1]}
]},
{"Name": "ToScratch-Coctiare", "Data": [
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  {"Taxon": "Portuguese", "Segments": [52, 15, 14, 27, 28]}
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{"Name": "ToDig", "Data": [
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  {"Taxon": "French", "Segments": [24, 8, 7, 36, -1, -1]}
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{"Name": "ToDig-Cavare", "Data": [
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  {"Taxon": "Spanish", "Segments": [52, 27, 19, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [52, 27, 18, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [52, 29, 18, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [52, 29, 18, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [52, 4, 19, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [86, 87, 18, -1, 32, 0]},
  {"Taxon": "Friulian", "Segments": [80, 27, 18, 54, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [0, 14, 52, 27, 19, 27, 28, -1, -1]},
  {"Taxon": "Italian", "Segments": [-1, -1, 14, 52, 27, 18, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [7, -1, 16, 52, 29, 18, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [7, -1, 16, 52, 29, 18, 27, 28, -1]},
  {"Taxon": "Friulian", "Segments": [-1, -1, 50, 80, 27, 18, 54, -1, -1]}
]},
{"Name": "ToSwim", "Data": [
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## Appendix 3 - Tongue Twister Configuration

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```
{
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  "Taxon": "Spanish", "Segments": [13, -1, 27, 23, 27, 28, -1]},
  "Taxon": "Italian", "Segments": [13, 8, 6, 20, 27, 28, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [13, -1, 27, 23, 27, 36, -1]},
  "Taxon": "Portuguese", "Segments": [13, -1, 29, 51, 27, 28, -1]},
  "Taxon": "Catalan", "Segments": [13, -1, 4, 23, 27, -1, -1]},
  "Taxon": "Friulian", "Segments": [13, -1, 27, 23, 54, -1, -1]}
}],
{
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      "Taxon": "French", "Segments": [13, 27, -1, -1, 3, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [13, 27, 19, 0, 1, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [13, 27, 18, 7, 1, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [13, 27, 18, 47, 71, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [13, 29, 18, 47, 71, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [13, 4, 19, 4, 1, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [13, 31, -1, -1, 10, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [13, 27, 18, 7, 73, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [13, 27, 18, 7, 1, 27, -1, -1]}
    ]
  },
{
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      "Taxon": "French", "Segments": [18, 6, 32, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [19, 6, 32, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [18, 6, 32, 27, 28, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [18, 6, -1, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [18, 8, -1, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [19, 15, 32, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [18, 9, 32, 0, -1, -1]}
    ]
  },
{
  "Name": "ToFly-Exvolare", "Data": [
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      "Taxon": "Friulian", "Segments": [50, 18, 6, 32, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [50, 19, 15, 28, 27, -1, -1]}
    ]
  },
{
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      "Taxon": "Spanish", "Segments": [52, 27, 26, 7, 13, 27, 28, -1, -1]},
      "Taxon": "Italian", "Segments": [52, 27, 26, 26, 7, 13, 27, 28, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 29, 26, 7, 38, 27, 36, -1, -1]},
      "Taxon": "Portuguese", "Segments": [52, 29, 26, 7, 38, 27, 28, -1, -1]},
      "Taxon": "Catalan", "Segments": [52, 4, 26, 7, 13, 27, -1, -1, -1]},
      "Taxon": "Walloon", "Segments": [46, 7, 26, 7, 13, 0, -1, -1, -1]},
      "Taxon": "Friulian", "Segments": [46, 12, 27, 26, 7, 13, 27, -1, -1]}
    ]
  },
{
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      "Taxon": "Walloon", "Segments": [26, 54, 56, 46, 37]}
    ]
  },
{
  "Name": "ToWalk-Mergere", "Data": [
    {
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      "Taxon": "Italian", "Segments": [26, 31, 33, 10, 0, 33, 0]},
      "Taxon": "Romanian", "Segments": [26, 0, 33, 10, 0, -1, -1]}
    ]
  },
{
  "Name": "ToWalk-Ambitare", "Data": [
    {
      "Taxon": "Latin", "Segments": [27, 26, 19, 7, 20, 54, 33, 0]},

```

## Appendix 3 - Tongue Twister Configuration

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```
{
  "Taxon": "Spanish", "Segments": [27, 13, 23, -1, -1, 27, 28, -1]},
  "Taxon": "Italian", "Segments": [27, 13, 23, -1, -1, 27, 33, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [45, -1, 23, -1, -1, 27, 36, -1]},
  "Taxon": "Portuguese", "Segments": [45, -1, 23, -1, -1, 27, 28, -1]}
}],
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    {"Taxon": "French", "Segments": [18, 4, 13, 7, 36, -1]},
    {"Taxon": "Spanish", "Segments": [19, 0, 13, 7, 28, -1]},
    {"Taxon": "Italian", "Segments": [18, 0, 13, 7, 28, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [18, -1, -1, 7, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [18, -1, -1, 7, 28, -1]},
    {"Taxon": "Catalan", "Segments": [19, 4, 13, 7, -1, -1]},
    {"Taxon": "Walloon", "Segments": [18, 7, 13, 7, -1, -1]},
    {"Taxon": "Friulian", "Segments": [18, 7, 38, 37, -1, -1]},
    {"Taxon": "Romanian", "Segments": [18, 0, 13, 7, -1, -1]}
  ],
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    {"Taxon": "French", "Segments": [0, -1, 20, 43, -1, 23, -1, 36, -1, -1]},
    {"Taxon": "Spanish", "Segments": [0, 52, 14, 20, 0, 13, 23, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [0, -1, 14, 20, 31, 13, 23, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [7, 14, 20, 74, -1, 23, 0, 36, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [7, 16, 20, 74, -1, 23, 0, 28, -1, -1]},
    {"Taxon": "Catalan", "Segments": [4, -1, 14, 20, 0, 13, 23, -1, 28, 4]},
    {"Taxon": "Romanian", "Segments": [0, 52, 14, 20, 7, 13, 23, 0, -1, -1]}
  ],
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    {"Taxon": "Latin", "Segments": [12, 27, -1, 52, 25, 33, 0]},
    {"Taxon": "French", "Segments": [3, 0, -1, 50, 7, 36, -1]},
    {"Taxon": "Spanish", "Segments": [5, 27, -1, 58, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [10, 27, -1, 46, 25, 28, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [3, 29, -1, 50, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [3, 29, -1, 50, 0, 28, -1]},
    {"Taxon": "Catalan", "Segments": [3, 27, 8, -1, -1, 28, 4]},
    {"Taxon": "Walloon", "Segments": [10, 0, -1, -1, 33, 0, -1]},
    {"Taxon": "Friulian", "Segments": [12, 0, -1, 14, 7, -1, -1]},
    {"Taxon": "Romanian", "Segments": [50, 4, -1, 46, 69, -1, -1]}
  ],
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    {"Taxon": "French", "Segments": [14, 8, 27, -1, -1, 36, -1]},
    {"Taxon": "Spanish", "Segments": [14, -1, 0, -1, -1, 28, -1]},
    {"Taxon": "Italian", "Segments": [14, -1, 0, 23, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [14, -1, 0, -1, -1, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [14, -1, 0, -1, -1, 28, -1]},
    {"Taxon": "Romanian", "Segments": [16, -1, 0, 23, 69, -1, -1]}
  ],
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    {"Taxon": "Spanish", "Segments": [14, 0, -1, -1, 13, 20, 27, 28, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [14, 74, -1, -1, -1, 20, 27, 28, -1]},
    {"Taxon": "Portuguese", "Segments": [14, 74, -1, -1, -1, 20, 27, 28, -1]},
    {"Taxon": "Friulian", "Segments": [14, 0, -1, -1, 13, 20, 54, -1, -1]}
  ],
  "Name": "ToStand", "Data": [
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Latin", "Segments": [-1, 14, 20, 54, 33, 0]},
  "Taxon": "French", "Segments": [31, -1, 20, -1, 36, -1]},
  "Taxon": "Spanish", "Segments": [0, 14, 20, 27, 28, -1]},
  "Taxon": "Italian", "Segments": [-1, 14, 20, 27, 33, 0]},
  "Taxon": "PortugueseBrazil", "Segments": [47, 16, 20, 27, 28, -1]},
  "Taxon": "Portuguese", "Segments": [47, 16, 20, 27, 28, -1]},
  "Taxon": "Catalan", "Segments": [4, 14, 20, 27, -1, -1]},
  "Taxon": "Walloon", "Segments": [31, 14, -1, -1, -1, -1]},
  "Taxon": "Friulian", "Segments": [-1, 14, 20, 54, -1, -1]},
  "Taxon": "Romanian", "Segments": [-1, 14, 20, 27, -1, -1]}
}],
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      "Taxon": "Spanish", "Segments": [5, 0, 19, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [32, 0, 18, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [32, 0, 18, 27, 36, -1]},
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      "Taxon": "Catalan", "Segments": [35, 4, 19, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [32, 4, 18, 0, -1, -1]},
      "Taxon": "Friulian", "Segments": [32, 0, 18, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [32, -1, 15, 27, -1, -1]}
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      "Taxon": "French", "Segments": [-1, 6, -1, 14, -1, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [-1, 27, 32, 58, -1, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [-1, 27, 32, 53, 27, 33, 0, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [-1, 27, 65, 14, -1, 27, -1, -1]},
      "Taxon": "Portuguese", "Segments": [-1, 27, 65, 14, -1, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [-1, 4, 32, 14, -1, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [40, 83, -1, 14, -1, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [-1, 27, 32, 20, 16, -1, 54, -1]}
    ],
  "Name": "ToTurnIntransitive", "Data": [
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      "Taxon": "French", "Segments": [20, 15, 36, 13, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [20, 6, 28, 13, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [20, 6, 33, 13, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [20, 6, 36, 13, 27, 36, -1]},
      "Taxon": "Portuguese", "Segments": [20, 15, 28, 13, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [20, 15, 33, 13, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [20, 21, 33, 13, 0, -1, -1]},
      "Taxon": "Friulian", "Segments": [20, 6, 33, 13, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [20, 15, 33, 13, 27, -1, -1]}
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      "Taxon": "French", "Segments": [3, 7, 36, 0, -1, -1]},
      "Taxon": "Spanish", "Segments": [34, 7, 28, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [10, 7, 33, 27, 28, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [3, 7, 28, 27, 28, -1]},
      "Taxon": "Portuguese", "Segments": [3, 7, 28, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [3, 7, 28, 27, -1, -1]},
      "Taxon": "Friulian", "Segments": [10, 7, 33, 54, -1, -1]}
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  ],
}
```



## Appendix 3 - Tongue Twister Configuration

---

```
{
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    { "Taxon": "Spanish", "Segments": [19, 7, 28, 27, 28, -1] },
    { "Taxon": "Italian", "Segments": [18, 7, 33, 27, 28, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [18, 7, 28, 27, 28, -1] },
    { "Taxon": "Portuguese", "Segments": [3, 7, 28, 27, 28, -1] },
    { "Taxon": "Catalan", "Segments": [19, 7, 28, 27, -1, -1] },
    { "Taxon": "Walloon", "Segments": [18, 7, 36, 0, -1, -1] },
    { "Taxon": "Friulian", "Segments": [10, 7, 33, 54, -1, -1] }
  ],
  "Name": "ToTurnIntransitive-Torquere", "Data": [
    { "Taxon": "Latin", "Segments": [20, 6, 33, 70, 25, 33, 0] },
    { "Taxon": "French", "Segments": [20, 9, 36, 23, -1, 36, -1] },
    { "Taxon": "Spanish", "Segments": [20, 6, 28, 58, 0, 28, -1] },
    { "Taxon": "Italian", "Segments": [20, 9, 33, 46, 0, 33, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [20, 15, 33, 14, 0, 33, -1] },
    { "Taxon": "Portuguese", "Segments": [20, 15, 33, 14, 0, 33, -1] },
    { "Taxon": "Catalan", "Segments": [20, 9, 33, 14, 4, -1, -1] },
    { "Taxon": "Romanian", "Segments": [20, 39, 33, 46, 0, -1, -1] }
  ],
  "Name": "ToFall", "Data": [
    { "Taxon": "Latin", "Segments": [52, -1, 27, 23, 0, 33, 0] },
    { "Taxon": "French", "Segments": [16, 8, 27, -1, -1, 36, -1] },
    { "Taxon": "Spanish", "Segments": [52, -1, 27, -1, 0, 28, -1] },
    { "Taxon": "Italian", "Segments": [52, -1, 27, 23, 0, 28, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [52, -1, 29, -1, 7, 28, -1] },
    { "Taxon": "Portuguese", "Segments": [52, -1, 29, -1, 7, 28, -1] },
    { "Taxon": "Catalan", "Segments": [52, -1, 27, 8, -1, 33, 4] },
    { "Taxon": "Walloon", "Segments": [46, -1, 62, -1, -1, 56, -1] },
    { "Taxon": "Friulian", "Segments": [46, 12, 27, 23, 0, -1, -1] },
    { "Taxon": "Romanian", "Segments": [52, 4, 23, 69, -1, -1, -1] }
  ],
  "Name": "ToFall-Tumbare", "Data": [
    { "Taxon": "French", "Segments": [20, 61, -1, 19, 0, -1] },
    { "Taxon": "Spanish", "Segments": [20, 15, 26, 19, 27, 28] },
    { "Taxon": "PortugueseBrazil", "Segments": [20, 61, -1, 19, 27, 36] },
    { "Taxon": "Portuguese", "Segments": [20, 61, -1, 19, 27, 28] },
    { "Taxon": "Catalan", "Segments": [20, 15, 26, 19, 27, -1] },
    { "Taxon": "Walloon", "Segments": [20, 15, 26, -1, 0, -1] },
    { "Taxon": "Romanian", "Segments": [20, 15, 26, 19, 27, -1] }
  ],
  "Name": "ToHold", "Data": [
    { "Taxon": "Latin", "Segments": [20, 0, 13, -1, 25, 33, 0] },
    { "Taxon": "French", "Segments": [20, 4, 13, -1, 7, 36, -1] },
    { "Taxon": "Spanish", "Segments": [20, 0, 13, -1, 0, 28, -1] },
    { "Taxon": "Italian", "Segments": [20, 0, 13, -1, 0, 28, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [20, 0, -1, -1, -1, 36, -1] },
    { "Taxon": "Portuguese", "Segments": [20, 0, -1, -1, -1, 28, -1] },
    { "Taxon": "Catalan", "Segments": [20, 4, 13, -1, 7, -1, -1] },
    { "Taxon": "Walloon", "Segments": [20, 7, 13, -1, 7, -1, -1] },
    { "Taxon": "Friulian", "Segments": [20, 7, 13, 12, 7, -1, -1] },
    { "Taxon": "Romanian", "Segments": [53, 7, 13, -1, 0, -1, -1] }
  ],
  "Name": "ToHold-Segurar", "Data": [
    { "Taxon": "Spanish", "Segments": [14, 0, 1, 15, 28, 27, 28] },
    { "Taxon": "PortugueseBrazil", "Segments": [14, 47, 1, 15, 28, 27, 36] },
  ]
}
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Portuguese", "Segments": [14, 47, 71, 15, 28, 27, 28]}
}},
{"Name": "ToSqueeze", "Data": [
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  {"Taxon": "French", "Segments": [0, -1, -1, 49, 36, 81, -1, 23, -1, 36, -1]},
  {"Taxon": "Spanish", "Segments": [0, 52, 14, 49, 28, 0, 26, -1, 7, 28, -1]},
  {"Taxon": "Italian", "Segments": [-1, -1, 14, 49, 33, 31, 26, -1, 0, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [7, -1, 16, 49, 33, 4, 26, -1, 0, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [7, -1, 16, 49, 33, 4, 26, -1, 0, 33, -1]},
  {"Taxon": "Catalan", "Segments": [4, -1, 14, 49, 28, 0, 26, -1, 4, -1, -1]},
  {"Taxon": "Friulian", "Segments": [0, -1, 14, 49, 33, 7, 26, -1, 7, -1, -1]},
  {"Taxon": "Romanian", "Segments": [-1, 14, 52, -1, 33, 0, 26, 0, -1, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [14, 0, -1, 33, 27, 28, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [14, 0, -1, 36, 27, -1, -1]},
  {"Taxon": "Portuguese", "Segments": [14, 4, -1, 56, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [14, 4, -1, 33, 27, -1, -1]}
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  {"Taxon": "Italian", "Segments": [14, 0, 33, 33, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [14, 47, -1, 36, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [14, 47, -1, 36, 27, 28, -1]},
  {"Taxon": "Walloon", "Segments": [14, 31, -1, 56, 0, -1, -1]}
}},
{"Name": "ToSqueeze-Appetorare", "Data": [
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  {"Taxon": "PortugueseBrazil", "Segments": [29, -1, 49, 47, -1, 28, -1, 20, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [29, -1, 49, 47, -1, 28, -1, 20, 27, 28, -1]}
}},
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  {"Taxon": "Spanish", "Segments": [0, 14, 20, 28, 0, 38, -1, 7, 28, -1]},
  {"Taxon": "Italian", "Segments": [-1, 14, 20, 33, 7, 13, 10, 0, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [4, 16, 20, 33, 44, -1, 3, 7, 33, -1]},
  {"Taxon": "Portuguese", "Segments": [4, 16, 20, 33, 44, 3, 7, 33, -1, -1]},
  {"Taxon": "Catalan", "Segments": [4, 14, 20, 28, 31, 38, 4, -1, -1, -1]},
  {"Taxon": "Walloon", "Segments": [14, 20, 33, 7, 13, 73, 0, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [14, 20, 33, 31, 13, 73, 37, -1, -1, -1]},
  {"Taxon": "Romanian", "Segments": [14, 20, 33, 47, 13, 10, 0, -1, -1, -1]}
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  {"Taxon": "French", "Segments": [24, 36, 67, 0, -1, -1, -1]},
  {"Taxon": "Spanish", "Segments": [24, 28, 0, 1, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [24, 33, 0, 73, 27, 33, 0]},
  {"Taxon": "Catalan", "Segments": [24, 28, 4, 1, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [24, 33, 17, -1, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [24, 33, 0, -1, 27, -1, -1]},
  {"Taxon": "Romanian", "Segments": [24, 33, 0, 52, 27, -1, -1]}
```



## Appendix 3 - Tongue Twister Configuration

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```
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  {"Taxon": "Portuguese", "Segments": [47, 16, 24, 28, 47, 71, 27, 28]}
]},
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  {"Taxon": "French", "Segments": [24, 36, 6, 20, 0, -1, -1, -1]},
  {"Taxon": "Spanish", "Segments": [24, 28, 6, 20, 27, 28, -1, -1]},
  {"Taxon": "Italian", "Segments": [24, 33, 0, 20, 20, 27, 33, 0]},
  {"Taxon": "Walloon", "Segments": [24, 36, 6, 20, 0, -1, -1, -1]}
]},
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  {"Taxon": "Catalan", "Segments": [24, 28, 4, 14, 27, -1]}
]},
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  {"Taxon": "Italian", "Segments": [32, 27, 18, 27, 33, 0]},
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  {"Taxon": "Portuguese", "Segments": [32, 29, 18, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [35, 4, 19, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [32, 27, 18, 0, -1, -1]},
  {"Taxon": "Friulian", "Segments": [32, 27, 18, 54, -1, -1]},
  {"Taxon": "Romanian", "Segments": [32, 27, -1, -1, -1, -1]}
]},
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  {"Taxon": "Latin", "Segments": [20, 0, 33, 1, 0, 33, 0]},
  {"Taxon": "Italian", "Segments": [20, 31, 33, 10, 0, 33, 0]}
]},
{"Name": "ToWipe-Extergere", "Data": [
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  {"Taxon": "Spanish", "Segments": [0, -1, 14, 20, 27, 28, 14, 7, 28, -1]},
  {"Taxon": "Catalan", "Segments": [4, -1, 14, 20, 4, 33, 3, 7, -1, -1]},
  {"Taxon": "Romanian", "Segments": [-1, -1, 16, 20, 0, 33, 10, 0, -1, -1]}
]},
{"Name": "ToWipe-Exsucare", "Data": [
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  {"Taxon": "French", "Segments": [0, -1, 14, 63, 7, -1, 12, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [0, 13, 34, -1, 15, 1, -1, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [27, 16, 16, -1, 15, 1, -1, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [74, -1, 16, -1, 15, 1, -1, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [74, -1, 16, -1, 15, 71, -1, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [4, -1, 16, -1, 15, 1, 27, -1, -1, -1]},
  {"Taxon": "Walloon", "Segments": [-1, -1, 14, -1, 15, -1, 8, 0, -1, -1]},
  {"Taxon": "Friulian", "Segments": [-1, -1, 14, -1, 15, -1, 12, 54, -1, -1]},
  {"Taxon": "Romanian", "Segments": [15, -1, 14, -1, -1, 52, -1, 27, -1, -1]}
]},
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  {"Taxon": "Spanish", "Segments": [32, 7, 26, 49, 12, -1, 27, 28, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [32, 44, -1, 49, -1, -1, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [32, 44, -1, 49, -1, -1, 27, 28, -1]}
]},
}},
```

## Appendix 3 - Tongue Twister Configuration

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```
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    { "Taxon": "Spanish", "Segments": [20, 7, 28, 27, 28, -1] },
    { "Taxon": "Italian", "Segments": [20, 7, 33, 27, 33, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [46, 7, 28, 27, -1, -1] },
    { "Taxon": "Portuguese", "Segments": [20, 7, 28, 27, 28, -1] },
    { "Taxon": "Catalan", "Segments": [20, 7, 28, 27, -1, -1] },
    { "Taxon": "Walloon", "Segments": [20, 7, 33, 0, -1, -1] },
    { "Taxon": "Friulian", "Segments": [20, 7, 33, 54, -1, -1] }
  ],
  "Name": "ToPull-Pulsare", "Data": [
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    { "Taxon": "Spanish", "Segments": [49, 15, -1, 34, 27, 28, -1] },
    { "Taxon": "Italian", "Segments": [49, 15, 32, 14, 27, 33, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [49, 15, -1, 16, 27, 28, -1] },
    { "Taxon": "Portuguese", "Segments": [49, 15, -1, 16, 27, 28, -1] },
    { "Taxon": "Walloon", "Segments": [49, 21, 14, 37, -1, -1, -1] },
    { "Taxon": "Friulian", "Segments": [49, 15, 32, 14, 54, -1, -1] },
    { "Taxon": "Romanian", "Segments": [49, 15, 32, 14, 27, -1, -1] }
  ],
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    { "Taxon": "Italian", "Segments": [20, 33, 27, 33, -1, 33, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [20, 28, 27, 50, 0, -1, -1] },
    { "Taxon": "Portuguese", "Segments": [20, 28, 29, 50, 0, 28, -1] },
    { "Taxon": "Catalan", "Segments": [20, 28, 31, 8, -1, 28, 4] },
    { "Taxon": "Friulian", "Segments": [20, 33, 72, -1, -1, -1, -1] },
    { "Taxon": "Romanian", "Segments": [20, 33, 27, 10, 0, -1, -1] }
  ],
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    { "Taxon": "Italian", "Segments": [7, 26, 49, 7, 13, 10, 0, 33, 0] },
    { "Taxon": "Catalan", "Segments": [4, 26, 49, 31, 38, -1, 4, -1, -1] },
    { "Taxon": "Romanian", "Segments": [47, 26, 49, 7, 13, 10, 0, -1, -1] }
  ],
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    { "Taxon": "French", "Segments": [3, 4, -1, 20, 0, -1, -1] },
    { "Taxon": "Spanish", "Segments": [-1, 0, -1, 46, 27, 28, -1] },
    { "Taxon": "Italian", "Segments": [10, 0, 20, 20, 27, 33, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [3, 59, 20, 27, 28, -1, -1] },
    { "Taxon": "Portuguese", "Segments": [3, 59, 20, 27, 28, -1, -1] },
    { "Taxon": "Catalan", "Segments": [34, 7, 20, 27, -1, -1, -1] },
    { "Taxon": "Walloon", "Segments": [10, 31, 20, 0, -1, -1, -1] }
  ],
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    { "Taxon": "French", "Segments": [32, 43, -1, 14, -1, 0, -1, -1] },
    { "Taxon": "Spanish", "Segments": [32, 27, 13, 58, -1, 27, 28, -1] },
    { "Taxon": "Italian", "Segments": [32, 27, 13, 46, 27, 33, 0, -1] },
    { "Taxon": "PortugueseBrazil", "Segments": [32, 45, -1, 14, -1, 27, -1, -1] },
    { "Taxon": "Portuguese", "Segments": [32, 45, -1, 14, -1, 27, 28, -1] },
    { "Taxon": "Catalan", "Segments": [35, 4, 13, 14, -1, 27, -1, -1] },
  ]
}
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Walloon", "Segments": [32, 27, 13, 66, -1, 37, -1, -1]},
  "Taxon": "Friulian", "Segments": [32, 27, 13, 46, 54, -1, -1, -1]}
}],
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      "Taxon": "Spanish", "Segments": [27, -1, 33, 27, 13, 52, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [27, 33, 33, 6, 13, 46, 27, 33, 0]},
      "Taxon": "Romanian", "Segments": [27, -1, 28, 15, 75, 52, 27, -1, -1]}
    ]},
{
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      "Taxon": "Spanish", "Segments": [32, 0, 1, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [32, 0, 1, 27, 33, 0]},
      "Taxon": "Catalan", "Segments": [35, 7, 71, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [32, 9, 12, 37, -1, -1]},
      "Taxon": "Friulian", "Segments": [32, 0, -1, 54, -1, -1]},
      "Taxon": "Romanian", "Segments": [32, 0, 73, 27, -1, -1]}
    ]},
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      "Taxon": "PortugueseBrazil", "Segments": [29, -1, 20, 27, 28, -1]},
      "Taxon": "Portuguese", "Segments": [29, -1, 20, 27, 28, -1]}
    ]},
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      "Taxon": "Spanish", "Segments": [52, 6, -1, -1, 14, -1, 0, 28, -1]},
      "Taxon": "Italian", "Segments": [52, 15, -1, -1, 46, -1, 7, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 15, -1, -1, 50, -1, 0, 28, -1]},
      "Taxon": "Portuguese", "Segments": [52, 15, -1, -1, 50, -1, 0, 28, -1]},
      "Taxon": "Catalan", "Segments": [52, 15, -1, -1, 50, -1, 7, -1, -1]},
      "Taxon": "Walloon", "Segments": [52, 64, -1, -1, 50, -1, -1, -1, -1]},
      "Taxon": "Friulian", "Segments": [52, 15, -1, -1, 50, 7, -1, -1, -1]},
      "Taxon": "Romanian", "Segments": [66, 39, -1, -1, 14, -1, 0, -1, -1]}
    ]},
{
  "Name": "ToCount", "Data": [
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      "Taxon": "Spanish", "Segments": [52, 6, 13, -1, -1, 20, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [52, 6, 13, -1, -1, 20, 27, 33, 0]},
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      "Taxon": "Portuguese", "Segments": [52, 61, -1, -1, -1, 20, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [52, 15, 26, -1, -1, 20, 27, -1, -1]},
      "Taxon": "Walloon", "Segments": [52, 61, -1, -1, -1, 20, 0, -1, -1]},
      "Taxon": "Friulian", "Segments": [52, 6, 13, -1, -1, 20, 54, -1, -1]}
    ]},
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      "Taxon": "Spanish", "Segments": [0, 13, 15, 26, 0, 28, 27, 28, -1]},
      "Taxon": "Italian", "Segments": [0, 13, 15, 26, 0, 33, 27, 33, 0]},
      "Taxon": "PortugueseBrazil", "Segments": [0, 13, 15, 26, 0, 28, 27, 28, -1]},
      "Taxon": "Portuguese", "Segments": [0, 13, 15, 26, 0, 28, 27, 28, -1]},
      "Taxon": "Catalan", "Segments": [0, 13, 15, 26, 0, 28, 27, -1, -1]}
    ]}
}
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
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  {"Taxon": "Italian", "Segments": [23, 7, -1, -1, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [23, 7, 50, -1, 0, 28]},
  {"Taxon": "Portuguese", "Segments": [23, 7, 50, -1, 0, 28]},
  {"Taxon": "Catalan", "Segments": [23, 7, -1, -1, -1, -1]},
  {"Taxon": "Walloon", "Segments": [23, 37, -1, -1, 36, -1]},
  {"Taxon": "Friulian", "Segments": [23, 37, -1, -1, -1, -1]},
  {"Taxon": "Romanian", "Segments": [50, 7, 46, 0, -1, -1]}
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  {"Taxon": "Italian", "Segments": [-1, -1, 14, 49, 6, 33, -1, 33, 0]},
  {"Taxon": "Romanian", "Segments": [-1, -1, 14, 49, 15, 13, 0, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [52, 27, 13, 20, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [52, 27, 13, 20, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [52, 45, -1, 20, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [52, 45, -1, 20, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [52, 4, 13, 20, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [46, 48, -1, 20, 0, -1, -1]},
  {"Taxon": "Friulian", "Segments": [66, 27, 13, 20, 54, -1, -1]},
  {"Taxon": "Romanian", "Segments": [52, 47, 13, 20, 27, -1, -1]}
]},
{"Name": "ToPlay-Ludere", "Data": [
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  {"Taxon": "Spanish", "Segments": [32, 15, 23, 7, 28, -1]}
]},
{"Name": "ToPlay-Jiocare", "Data": [
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  {"Taxon": "French", "Segments": [3, -1, 8, -1, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [34, 15, -1, 73, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [10, 6, -1, 52, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [3, 6, -1, 1, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [3, 15, -1, 71, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [3, 15, -1, 1, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [10, 15, 8, -1, 0, -1, -1]},
  {"Taxon": "Friulian", "Segments": [10, 15, 12, -1, 54, -1, -1]},
  {"Taxon": "Romanian", "Segments": [3, 15, -1, 52, 27, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [24, 32, 15, 1, 20, 8, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [24, 32, 15, 20, 20, 15, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [24, 32, 15, -1, 20, 15, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [24, 32, 15, -1, 20, 15, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [24, 32, 15, 52, 20, 15, 27, -1, -1]},
  {"Taxon": "Romanian", "Segments": [24, 32, 15, 66, 20, 15, 27, -1, -1]}
]}
```

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---

```
}},
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  {"Taxon": "Italian", "Segments": [24, 32, 15, 7, 20, 27, 33, 0]}
]},
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  {"Taxon": "Spanish", "Segments": [24, 32, 15, 7, 28, -1]},
  {"Taxon": "Italian", "Segments": [24, 32, 15, 7, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [24, 32, 8, 7, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [24, 32, 8, 7, 28, -1]},
  {"Taxon": "Catalan", "Segments": [24, 32, 15, 7, -1, -1]}
]},
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  {"Taxon": "French", "Segments": [52, 15, 32, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [52, 6, 32, 27, 28, -1]},
  {"Taxon": "Italian", "Segments": [52, 6, 32, 27, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [52, 6, -1, 27, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [52, 15, -1, 27, 28, -1]},
  {"Taxon": "Catalan", "Segments": [52, 15, 65, 27, -1, -1]},
  {"Taxon": "Walloon", "Segments": [52, 9, 32, 0, -1, -1]}
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  {"Taxon": "PortugueseBrazil", "Segments": [7, -1, 16, 52, 6, -1, 36, 0, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [7, -1, 16, 52, 15, -1, 56, 0, 28, -1]},
  {"Taxon": "Catalan", "Segments": [4, -1, 14, 52, 6, -1, 33, 4, -1, -1]},
  {"Taxon": "Friulian", "Segments": [-1, -1, 14, 52, 6, -1, 33, 37, -1, -1]},
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  {"Taxon": "French", "Segments": [52, 15, -1, 36, 7, 36, -1]},
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  {"Taxon": "Italian", "Segments": [52, 6, 33, 33, 0, 33, 0]},
  {"Taxon": "PortugueseBrazil", "Segments": [52, 6, -1, 36, 0, 36, -1]},
  {"Taxon": "Portuguese", "Segments": [52, 15, -1, 36, 0, 28, -1]},
  {"Taxon": "Catalan", "Segments": [52, 6, -1, 33, 4, -1, -1]},
  {"Taxon": "Friulian", "Segments": [52, 6, -1, 33, 7, -1, -1]},
  {"Taxon": "Romanian", "Segments": [52, 15, 28, 10, 0, -1, -1]}
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  {"Taxon": "French", "Segments": [3, 4, 32, 0, -1, -1]},
  {"Taxon": "Spanish", "Segments": [-1, 0, 32, 27, 28, -1]},
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  {"Taxon": "PortugueseBrazil", "Segments": [3, 47, 32, 27, 28, -1]},
  {"Taxon": "Portuguese", "Segments": [3, 47, 32, 27, 28, -1]},
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  {"Taxon": "Walloon", "Segments": [10, 27, 32, 0, -1, -1]}
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## Appendix 3 - Tongue Twister Configuration

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```
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  "Taxon": "Italian", "Segments": [1, 12, 27, 20, 46, 12, 27, 33, 0]},
  "Taxon": "Catalan", "Segments": [1, 32, 4, -1, 14, -1, 27, -1, -1]},
  "Taxon": "Friulian", "Segments": [73, 32, 27, -1, 46, -1, 54, -1, -1]}
}],
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    {"Taxon": "Romanian", "Segments": [47, 13, 73, -1, 0, 53, -1, 27, -1, -1]}
  ]
},
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    {"Taxon": "Italian", "Segments": [19, 33, 15, 46, 27, 33, 0]},
    {"Taxon": "Walloon", "Segments": [19, 36, 21, 32, 0, -1, -1]},
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  ]
},
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    {"Taxon": "French", "Segments": [52, 36, 27, 26, 0, -1, -1]},
    {"Taxon": "Spanish", "Segments": [52, -1, 0, 26, 27, 28, -1]},
    {"Taxon": "Italian", "Segments": [52, 33, 0, 26, 27, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [52, -1, 60, 26, 27, 28, 0]},
    {"Taxon": "Portuguese", "Segments": [52, -1, 59, 26, 27, 36, 0]},
    {"Taxon": "Catalan", "Segments": [52, 33, 4, 26, 27, -1, -1]}
  ]
},
{
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    {"Taxon": "French", "Segments": [24, 32, 43, -1, 19, 0, -1, -1]},
    {"Taxon": "Spanish", "Segments": [24, 32, 27, -1, 26, 0, 27, 28]},
    {"Taxon": "Italian", "Segments": [24, 12, 27, 26, 26, 27, 33, 0]},
    {"Taxon": "Catalan", "Segments": [24, 65, 27, 26, 27, -1, -1, -1]}
  ]
},
{
  "Name": "ToBurn-Ardere", "Data": [
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    {"Taxon": "Spanish", "Segments": [27, 28, 23, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [27, 33, 23, 0, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [27, 36, 23, 0, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [29, 28, 23, 0, 28, -1]},
    {"Taxon": "Romanian", "Segments": [27, 28, 23, 0, -1, -1]}
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},
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    {"Taxon": "French", "Segments": [24, 32, 27, 1, 36, 0, -1, -1]},
    {"Taxon": "Spanish", "Segments": [24, 32, 27, 1, 28, 27, 28, -1]},
    {"Taxon": "Italian", "Segments": [24, 32, 27, 1, 33, 27, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [24, 32, 27, 73, 36, 27, 36, -1]},
    {"Taxon": "Portuguese", "Segments": [24, 32, 27, 1, 28, 27, 28, -1]}
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    {"Taxon": "French", "Segments": [81, -1, 14, 43, -1, 23, 12, 0, -1, -1]},
    {"Taxon": "Spanish", "Segments": [0, 13, 58, 0, 13, 23, -1, 0, 28, -1]},
    {"Taxon": "Italian", "Segments": [7, 13, 46, 31, 13, 23, 12, 27, 33, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [44, -1, 14, 0, 13, 10, 11, 27, 28, -1]},
    {"Taxon": "Portuguese", "Segments": [44, -1, 14, 74, -1, 23, 12, 27, 28, -1]},
  ]
}
```



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```
{
  "Taxon": "Catalan", "Segments": [4, 13, 14, 0, 13, 23, -1, -1, 28, 4]},
  "Taxon": "Romanian", "Segments": [47, 13, 46, 7, 13, 23, 3, 0, -1, -1]}
}],
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  {"Taxon": "Italian", "Segments": [15, 14, 20, 6, 32, 27, 33, 0]},
  {"Taxon": "Romanian", "Segments": [15, 14, 20, 15, 33, 27, -1, -1]}
]},
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  {"Taxon": "Italian", "Segments": [6, 38, 38, 7, -1]}
]},
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  {"Taxon": "French", "Segments": [20, 15, -1, -1, -1, -1]},
  {"Taxon": "Spanish", "Segments": [20, 6, -1, 23, 6, -1]},
  {"Taxon": "Italian", "Segments": [20, 15, 20, 20, 6, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [20, 6, -1, 23, 15, -1]},
  {"Taxon": "Portuguese", "Segments": [20, 6, -1, 51, 15, -1]},
  {"Taxon": "Catalan", "Segments": [20, 6, -1, 20, -1, -1]},
  {"Taxon": "Walloon", "Segments": [20, 9, -1, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [23, 15, -1, 20, -1, -1]},
  {"Taxon": "Romanian", "Segments": [20, 6, -1, 20, -1, -1]}
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  {"Taxon": "French", "Segments": [26, 15, -1, -1, -1, -1]},
  {"Taxon": "Spanish", "Segments": [26, 15, -1, 46, 6, -1]},
  {"Taxon": "Italian", "Segments": [26, 6, 32, 20, 6, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [26, 84, 88, -1, 20, 15]},
  {"Taxon": "Portuguese", "Segments": [26, 84, 88, -1, 20, 15]},
  {"Taxon": "Catalan", "Segments": [26, 6, 32, -1, -1, -1]},
  {"Taxon": "Friulian", "Segments": [26, 6, 32, 66, -1, -1]},
  {"Taxon": "Romanian", "Segments": [26, 15, 32, 20, -1, -1]}
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  {"Taxon": "Portuguese", "Segments": [20, 45, -1, 20, 15, -1]},
  {"Taxon": "Catalan", "Segments": [20, 27, 13, 20, -1, -1]},
  {"Taxon": "Friulian", "Segments": [20, 27, 13, 66, -1, -1]}
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  {"Taxon": "Italian", "Segments": [27, 32, 52, 15, 13, 6]},
  {"Taxon": "PortugueseBrazil", "Segments": [27, 8, 1, 84, -1, -1]},
  {"Taxon": "Portuguese", "Segments": [27, 65, 1, 84, -1, -1]},
  {"Taxon": "Catalan", "Segments": [4, 32, 1, 15, -1, -1]}
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---

```
{
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  "Taxon": "PortugueseBrazil", "Segments": [49, 6, 8, 52, 15]},
  "Taxon": "Portuguese", "Segments": [49, 6, 8, 52, 15]},
  "Taxon": "Catalan", "Segments": [49, 9, 52, -1, -1]},
  "Taxon": "Walloon", "Segments": [49, 61, -1, -1, -1]},
  "Taxon": "Friulian", "Segments": [49, 2, 52, -1, -1]}
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    {"Taxon": "Spanish", "Segments": [6, -1, 20, -1, 28, 6]},
    {"Taxon": "Italian", "Segments": [27, 32, 20, -1, 33, 6]},
    {"Taxon": "PortugueseBrazil", "Segments": [6, 8, 20, -1, 28, 15]},
    {"Taxon": "Portuguese", "Segments": [6, 8, 20, -1, 28, 15]},
    {"Taxon": "Catalan", "Segments": [27, 32, 20, -1, 28, 4]},
    {"Taxon": "Walloon", "Segments": [61, -1, 20, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [27, 32, 20, -1, 33, 7]},
    {"Taxon": "Romanian", "Segments": [27, 32, 20, -1, -1, -1]}
  ]
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{
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    {"Taxon": "PortugueseBrazil", "Segments": [27, 8, -1, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [27, 65, -1, -1, -1]}
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    {"Taxon": "Italian", "Segments": [26, 27, 38, 38, 6, -1]}
  ]
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{
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    {"Taxon": "Spanish", "Segments": [1, 28, 27, 13, 23, 0, -1]},
    {"Taxon": "Italian", "Segments": [1, 33, 27, 13, 23, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [1, 28, 45, -1, 10, 7, -1]},
    {"Taxon": "Portuguese", "Segments": [1, 28, 45, -1, 23, 47, -1]},
    {"Taxon": "Catalan", "Segments": [73, 33, 27, 13, -1, -1, -1]},
    {"Taxon": "Walloon", "Segments": [73, 36, 48, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [73, 33, 27, 13, 20, -1, -1]}
  ]
},
{
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    {"Taxon": "Romanian", "Segments": [26, 27, -1, -1, -1, 28, 0]}
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{
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    {"Taxon": "Spanish", "Segments": [32, 6, -1, 13, 73, 6, -1]},
    {"Taxon": "Italian", "Segments": [32, 15, -1, 13, 1, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [32, 61, -1, 1, 15, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [32, 61, -1, 1, 15, -1, -1]},
    {"Taxon": "Catalan", "Segments": [35, 6, -1, 75, -1, -1, -1]},
    {"Taxon": "Walloon", "Segments": [32, 61, -1, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [32, 15, 13, 52, -1, -1, -1]},
    {"Taxon": "Romanian", "Segments": [32, 15, 13, 73, -1, -1, -1]}
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]
```



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---

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    {"Taxon": "Italian", "Segments": [32, 27, 33, 1, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [32, 27, 36, 1, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [32, 27, 28, 1, 15, -1]},
    {"Taxon": "Catalan", "Segments": [35, 27, 28, 52, -1, -1]},
    {"Taxon": "Friulian", "Segments": [32, 27, 33, 52, -1, -1]},
    {"Taxon": "Romanian", "Segments": [32, 27, 33, 73, -1, -1]}
  ],
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    {"Taxon": "Portuguese", "Segments": [32, 27, 20, 15, -1]},
    {"Taxon": "Romanian", "Segments": [32, 27, 20, -1, -1]}
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    {"Taxon": "Spanish", "Segments": [27, 13, 46, -1, 6, -1]},
    {"Taxon": "Italian", "Segments": [27, 26, 49, 12, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [45, -1, 16, -1, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [45, -1, 16, -1, 15, -1]},
    {"Taxon": "Catalan", "Segments": [27, 26, 49, 32, 4, -1]}
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    {"Taxon": "Spanish", "Segments": [1, 28, 27, 19, 0, -1]},
    {"Taxon": "Italian", "Segments": [1, 33, 31, 18, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [1, 28, 27, 18, 7, -1]},
    {"Taxon": "Portuguese", "Segments": [1, 28, 27, 18, 47, -1]},
    {"Taxon": "Catalan", "Segments": [1, 28, 0, 8, -1, -1]},
    {"Taxon": "Walloon", "Segments": [73, 33, 27, 18, -1, -1]},
    {"Taxon": "Friulian", "Segments": [73, 33, 31, 18, 7, -1]},
    {"Taxon": "Romanian", "Segments": [73, 28, 0, 8, -1, -1]}
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    {"Taxon": "French", "Segments": [32, 15, 36, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [32, 0, 28, 23, 6, -1]},
    {"Taxon": "Italian", "Segments": [32, 6, 33, 23, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [32, 0, 28, 23, 6, -1]},
    {"Taxon": "Portuguese", "Segments": [32, 0, 28, 23, 6, -1]}
  ],
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    {"Taxon": "French", "Segments": [49, 4, 50, 43, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [49, 0, 14, 27, -1, 51, 6]},
    {"Taxon": "Italian", "Segments": [49, 0, 14, 27, 13, 20, 0]},
    {"Taxon": "PortugueseBrazil", "Segments": [49, 0, 50, 27, -1, 23, 15]},
    {"Taxon": "Portuguese", "Segments": [49, 47, 50, 27, -1, 51, 15]}
  ]
}
```

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---

```
{
  "Taxon": "Catalan", "Segments": [49, 4, 50, 27, -1, 20, -1]},
  "Taxon": "Friulian", "Segments": [49, 0, 50, 27, 13, 20, -1]}
}],
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      "Taxon": "French", "Segments": [49, 4, -1, 20, 7, -1, -1, -1]},
      "Taxon": "Catalan", "Segments": [49, 4, 20, 7, 20, -1, -1, -1]},
      "Taxon": "Walloon", "Segments": [49, 7, -1, 20, 7, -1, -1, -1]}
    ]
  },
{
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    {
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      "Taxon": "Spanish", "Segments": [49, 0, -1, 52, 0, 38, 6, -1]},
      "Taxon": "Italian", "Segments": [49, 7, 20, 46, 7, 13, 6, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [49, 0, -1, 52, 0, 13, 15, -1]},
      "Taxon": "Portuguese", "Segments": [49, 47, -1, 52, 0, 13, 15, -1]},
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  },
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      "Taxon": "Friulian", "Segments": [49, 7, -1, 46, 15, 32, -1, -1]}
    ]
  },
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      "Taxon": "Latin", "Segments": [52, 15, 33, 20, 15, 14]},
      "Taxon": "French", "Segments": [52, 15, 36, -1, -1, -1]},
      "Taxon": "Spanish", "Segments": [52, 6, 28, 20, 6, -1]},
      "Taxon": "Italian", "Segments": [52, 6, 33, 20, 6, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [52, 15, 36, 20, 15, -1]},
      "Taxon": "Portuguese", "Segments": [52, 15, 28, 20, 15, -1]},
      "Taxon": "Catalan", "Segments": [52, 15, 28, 20, -1, -1]},
      "Taxon": "Walloon", "Segments": [52, 21, 36, -1, -1, -1]},
      "Taxon": "Friulian", "Segments": [52, 15, 33, 20, -1, -1]}
    ]
  },
{
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      "Taxon": "French", "Segments": [19, 36, 31, 24, -1, -1]},
      "Taxon": "Spanish", "Segments": [19, 28, 0, 19, 0, -1]},
      "Taxon": "Italian", "Segments": [19, 33, 31, 18, 0, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [19, 28, 31, 18, 7, -1]},
      "Taxon": "Portuguese", "Segments": [19, 28, 31, 18, 47, -1]},
      "Taxon": "Catalan", "Segments": [19, 28, 0, 8, -1, -1]},
      "Taxon": "Walloon", "Segments": [19, 36, 0, 24, -1, -1]}
    ]
  },
{
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      "Taxon": "Latin", "Segments": [27, 13, 1, 15, 14, 20, 15, 14]},
      "Taxon": "Spanish", "Segments": [27, 13, 1, 6, 14, 20, 6, -1]},
      "Taxon": "Italian", "Segments": [27, 13, 1, 15, 14, 20, 6, -1]},
      "Taxon": "Romanian", "Segments": [47, 75, 73, 15, 14, 20, -1, -1]}
    ]
  },
{
  "Name": "Narrow-Strictus", "Data": [
    {
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      "Taxon": "French", "Segments": [0, -1, 20, 36, 8, 27, -1, -1, -1, -1, -1]},
      "Taxon": "Spanish", "Segments": [0, 14, 20, 28, -1, 0, -1, -1, 46, 6, -1]},
      "Taxon": "Italian", "Segments": [-1, 14, 20, 33, -1, 0, -1, 20, 20, 6, -1]},
      "Taxon": "PortugueseBrazil", "Segments": [7, 14, 20, 28, -1, 59, -1, -1, 20, 15, -1]},
      "Taxon": "Portuguese", "Segments": [47, 16, 20, 28, -1, 60, -1, -1, 20, 15, -1]},
    ]
  }
}
```

## Appendix 3 - Tongue Twister Configuration

---

```
{
  "Taxon": "Catalan", "Segments": [4, 14, 20, 28, -1, 31, -1, -1, 20, -1, -1]},
  "Taxon": "Walloon", "Segments": [-1, 14, 20, 36, -1, 64, -1, -1, -1, -1, -1]},
  "Taxon": "Friulian", "Segments": [-1, 14, 20, 33, -1, 31, -1, -1, 20, -1, -1]},
  "Taxon": "Romanian", "Segments": [-1, 14, 20, 33, -1, 47, 26, -1, 20, -1, -1]}
}],
{
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    {"Taxon": "Latin", "Segments": [26, 7, 13, 21, -1, 20, 15, 14]},
    {"Taxon": "French", "Segments": [26, 4, 13, 22, -1, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [26, 0, 13, 15, -1, 23, 6, -1]},
    {"Taxon": "Italian", "Segments": [26, 7, 13, 15, -1, 20, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [26, 7, -1, 15, -1, 23, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [26, 7, -1, 15, -1, 51, 15, -1]},
    {"Taxon": "Catalan", "Segments": [26, 4, 13, 15, -1, 20, -1, -1]},
    {"Taxon": "Walloon", "Segments": [26, 7, 13, 15, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [26, 7, 13, 21, -1, 20, -1, -1]},
    {"Taxon": "Romanian", "Segments": [26, 4, 33, 15, 13, 20, -1, -1]}
  ],
  "Name": "Thin-Delicatus", "Data": [
    {"Taxon": "Latin", "Segments": [23, 25, 32, 7, 52, 54, 20, 15, 14]},
    {"Taxon": "French", "Segments": [23, 21, -1, -1, 3, 25, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [23, 0, 32, -1, 71, 27, 51, 6, -1]},
    {"Taxon": "Italian", "Segments": [23, 0, 32, 7, 52, 27, 20, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [23, 0, 8, -1, 1, 27, 23, 15, -1]},
    {"Taxon": "Portuguese", "Segments": [23, 31, 65, -1, 71, 27, 51, 15, -1]},
    {"Taxon": "Catalan", "Segments": [23, 4, 32, 7, 52, 27, 20, -1, -1]}
  ],
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    {"Taxon": "Latin", "Segments": [14, 15, 19, 20, 37, 32, 0, 26]},
    {"Taxon": "Spanish", "Segments": [14, 15, -1, 20, 7, 32, -1, -1]},
    {"Taxon": "Italian", "Segments": [14, 6, 20, 20, 7, 32, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [14, 15, -1, 46, 7, 8, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [14, 15, -1, 46, 7, 8, -1, -1]},
    {"Taxon": "Catalan", "Segments": [14, 15, 49, 20, 7, 32, -1, -1]},
    {"Taxon": "Walloon", "Segments": [14, 21, -1, 20, 7, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [14, 15, -1, 20, 37, 32, -1, -1]},
    {"Taxon": "Romanian", "Segments": [14, 15, 19, 53, 7, 33, 0, -1]}
  ],
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    {"Taxon": "Italian", "Segments": [33, 15, 19, -1, 33, 6]}
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    {"Taxon": "French", "Segments": [36, 15, -1, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [33, 6, -1, 34, 6, -1]},
    {"Taxon": "Italian", "Segments": [33, 6, 14, 14, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [36, 6, -1, 16, 91, -1]},
    {"Taxon": "Portuguese", "Segments": [36, 6, -1, 16, 15, -1]},
    {"Taxon": "Catalan", "Segments": [33, 6, -1, 14, -1, -1]},
    {"Taxon": "Friulian", "Segments": [33, 9, -1, 14, -1, -1]},
    {"Taxon": "Romanian", "Segments": [28, 6, -1, 16, 15, -1]}
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    {"Taxon": "French", "Segments": [18, 31, 36, 26, 67, -1, -1, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [19, 0, 28, 26, 0, 34, 6, -1, -1, -1]}
  ]
}
```

## Appendix 3 - Tongue Twister Configuration

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```
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  "Taxon": "Italian", "Segments": [18, 0, 33, 26, 7, 35, -1, 35, 6, -1]},
  "Taxon": "PortugueseBrazil", "Segments": [18, 0, 36, 26, 0, -1, -1, 35, 15, -1]},
  "Taxon": "Portuguese", "Segments": [18, 47, 28, 26, 60, -1, -1, 35, 15, -1]},
  "Taxon": "Catalan", "Segments": [19, 4, 33, 26, 31, -1, -1, 35, -1, -1]}
}],
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    {"Taxon": "French", "Segments": [36, 15, -1, 3, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [33, 15, -1, 19, 12, 6, -1]},
    {"Taxon": "Italian", "Segments": [33, 9, 19, 19, 12, 6, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [33, 15, -1, 19, 0, 6, -1]},
    {"Taxon": "Portuguese", "Segments": [33, 15, -1, 19, 0, 6, -1]},
    {"Taxon": "Catalan", "Segments": [33, 15, -1, 10, 0, -1, -1]},
    {"Taxon": "Walloon", "Segments": [33, 9, -1, 46, -1, -1, -1]},
    {"Taxon": "Romanian", "Segments": [33, 17, -1, 19, -1, -1, -1]}
  ]
},
{
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    {"Taxon": "French", "Segments": [18, 0, 36, -1, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [19, 0, 28, -1, 23, 0, -1]},
    {"Taxon": "Italian", "Segments": [18, 0, 33, -1, 23, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [18, 0, 28, -1, 23, 47, -1]},
    {"Taxon": "Portuguese", "Segments": [18, 0, 28, -1, 23, 47, -1]},
    {"Taxon": "Catalan", "Segments": [18, 31, 28, -1, 20, -1, -1]},
    {"Taxon": "Walloon", "Segments": [18, 31, 36, -1, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [18, 31, 33, -1, 20, -1, -1]},
    {"Taxon": "Romanian", "Segments": [18, 0, 28, -1, 23, 0, -1]}
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},
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    {"Taxon": "French", "Segments": [89, -1, -1, -1]},
    {"Taxon": "Spanish", "Segments": [15, 13, 6, -1]},
    {"Taxon": "Italian", "Segments": [15, 13, 6, -1]},
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    {"Taxon": "Portuguese", "Segments": [84, -1, -1, -1]},
    {"Taxon": "Catalan", "Segments": [15, 13, -1, -1]},
    {"Taxon": "Walloon", "Segments": [61, -1, -1, -1]},
    {"Taxon": "Friulian", "Segments": [15, 75, -1, -1]},
    {"Taxon": "Romanian", "Segments": [15, 13, 15, -1]}
  ]
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    {"Taxon": "French", "Segments": [23, -1, 68, -1]},
    {"Taxon": "Spanish", "Segments": [23, -1, 6, 14]},
    {"Taxon": "PortugueseBrazil", "Segments": [23, -1, 17, 14]},
    {"Taxon": "Portuguese", "Segments": [23, -1, 17, 16]},
    {"Taxon": "Catalan", "Segments": [23, -1, 6, 14]},
    {"Taxon": "Walloon", "Segments": [23, -1, 64, -1]},
    {"Taxon": "Friulian", "Segments": [23, -1, 17, -1]},
    {"Taxon": "Romanian", "Segments": [23, -1, 17, -1]}
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{
  "Name": "Two-Duae", "Data": [
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    {"Taxon": "Italian", "Segments": [23, 15, -1, 0]},
    {"Taxon": "Romanian", "Segments": [23, 6, 8, 4]}
  ]
},
]
```

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---

```
{
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    { "Taxon": "Latin", "Segments": [23, 15, 27, 14] },
    { "Taxon": "PortugueseBrazil", "Segments": [23, 15, 29, 14] },
    { "Taxon": "Portuguese", "Segments": [23, 15, 29, 16] }
  ]
},
{
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    { "Taxon": "French", "Segments": [20, 36, 8, 78, -1] },
    { "Taxon": "Spanish", "Segments": [20, 28, -1, 0, 14] },
    { "Taxon": "Italian", "Segments": [20, 33, -1, 0, -1] },
    { "Taxon": "PortugueseBrazil", "Segments": [20, 28, -1, 0, 14] },
    { "Taxon": "Portuguese", "Segments": [20, 28, -1, 0, 16] },
    { "Taxon": "Catalan", "Segments": [20, 33, -1, 31, 14] },
    { "Taxon": "Walloon", "Segments": [20, 33, -1, 64, -1] },
    { "Taxon": "Friulian", "Segments": [20, 33, -1, 25, -1] },
    { "Taxon": "Romanian", "Segments": [20, 33, -1, 59, -1] }
  ]
},
{
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    { "Taxon": "Latin", "Segments": [70, -1, 27, 20, 20, 8, 6, 33, -1] },
    { "Taxon": "French", "Segments": [52, -1, 27, -1, 20, -1, -1, 36, -1] },
    { "Taxon": "Spanish", "Segments": [52, 8, 27, -1, 20, -1, -1, 28, 6] },
    { "Taxon": "Italian", "Segments": [52, 8, 27, 20, 20, -1, -1, 33, 6] },
    { "Taxon": "PortugueseBrazil", "Segments": [52, 8, 27, -1, 20, -1, -1, 28, 15] },
    { "Taxon": "Portuguese", "Segments": [52, 8, 27, -1, 20, -1, -1, 28, 15] },
    { "Taxon": "Catalan", "Segments": [52, 8, 27, -1, 20, -1, -1, 28, 4] },
    { "Taxon": "Walloon", "Segments": [52, 8, 27, -1, 20, -1, -1, -1, -1] },
    { "Taxon": "Friulian", "Segments": [52, 8, 27, -1, 20, -1, -1, 33, 7] },
    { "Taxon": "Romanian", "Segments": [49, -1, 27, -1, 20, -1, -1, 33, 15] }
  ]
},
{
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    { "Taxon": "French", "Segments": [14, 74, -1, 52, -1, -1] },
    { "Taxon": "Spanish", "Segments": [58, 7, 13, 52, -1, 6] },
    { "Taxon": "Italian", "Segments": [46, 7, 75, 52, 8, 0] },
    { "Taxon": "PortugueseBrazil", "Segments": [14, 44, -1, 52, -1, 15] },
    { "Taxon": "Portuguese", "Segments": [14, 44, -1, 52, -1, 15] },
    { "Taxon": "Catalan", "Segments": [14, 7, 75, 52, -1, -1] },
    { "Taxon": "Walloon", "Segments": [14, 74, -1, 52, -1, -1] },
    { "Taxon": "Friulian", "Segments": [46, 7, 75, 52, -1, -1] },
    { "Taxon": "Romanian", "Segments": [46, 7, 13, 46, -1, -1] }
  ]
},
{
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    { "Taxon": "Spanish", "Segments": [-1, 27, -1, 52, -1, -1, -1, 7, -1] },
    { "Taxon": "Italian", "Segments": [-1, -1, -1, 52, 8, -1, -1, 7, -1] },
    { "Taxon": "PortugueseBrazil", "Segments": [-1, 27, -1, 52, -1, -1, -1, 7, -1] },
    { "Taxon": "Portuguese", "Segments": [-1, 29, -1, 52, -1, -1, -1, 7, -1] },
    { "Taxon": "Catalan", "Segments": [-1, 27, -1, 52, -1, -1, -1, 7, -1] },
    { "Taxon": "Friulian", "Segments": [-1, 27, -1, 52, -1, -1, -1, 7, -1] }
  ]
},
{
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    { "Taxon": "French", "Segments": [-1, -1, 32, 27, -1] },
    { "Taxon": "Spanish", "Segments": [27, -1, 5, 27, -1] },
    { "Taxon": "Italian", "Segments": [-1, -1, 32, 27, -1] },
  ]
}
```

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---

```
{
  "Taxon": "PortugueseBrazil", "Segments": [-1, -1, 32, 27, -1]},
  "Taxon": "Portuguese", "Segments": [-1, -1, 32, 27, -1]},
  "Taxon": "Catalan", "Segments": [4, -1, 35, 27, -1]},
  "Taxon": "Walloon", "Segments": [-1, -1, 32, 27, -1]},
  "Taxon": "Romanian", "Segments": [-1, -1, 32, 27, -1]}
}],
{
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    {"Taxon": "Italian", "Segments": [-1, 18, 7]}
  ]
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{
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    {"Taxon": "Spanish", "Segments": [27, 7]},
    {"Taxon": "PortugueseBrazil", "Segments": [27, 7]},
    {"Taxon": "Portuguese", "Segments": [29, 7]}
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},
{
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    {"Taxon": "French", "Segments": [52, -1, 7, -1]},
    {"Taxon": "Italian", "Segments": [52, -1, 7, -1]},
    {"Taxon": "Catalan", "Segments": [52, -1, 7, -1]},
    {"Taxon": "Walloon", "Segments": [52, -1, 37, -1]},
    {"Taxon": "Friulian", "Segments": [52, 8, 7, -1]}
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},
{
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    {"Taxon": "Spanish", "Segments": [52, 12, 0, 13, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [52, -1, 41, -1, -1]},
    {"Taxon": "Portuguese", "Segments": [52, -1, 55, -1, -1]},
    {"Taxon": "Romanian", "Segments": [46, -1, 7, 13, 0]}
  ]
},
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    {"Taxon": "Spanish", "Segments": [52, -1, 0, -1]},
    {"Taxon": "Italian", "Segments": [52, -1, 0, -1]},
    {"Taxon": "PortugueseBrazil", "Segments": [52, -1, 7, -1]},
    {"Taxon": "Portuguese", "Segments": [52, -1, 47, -1]},
    {"Taxon": "Catalan", "Segments": [52, -1, 31, -1]},
    {"Taxon": "Walloon", "Segments": [52, 8, 62, -1]},
    {"Taxon": "Friulian", "Segments": [46, -1, 0, -1]},
    {"Taxon": "Romanian", "Segments": [46, -1, 0, -1]}
  ]
},
{
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    {"Taxon": "Spanish", "Segments": [52, 8, 27, 13, 23, 6]},
    {"Taxon": "Italian", "Segments": [52, 8, 27, 13, 23, 6]},
    {"Taxon": "PortugueseBrazil", "Segments": [52, 8, 45, -1, 23, 15]},
    {"Taxon": "Portuguese", "Segments": [52, 8, 45, -1, 23, 15]},
    {"Taxon": "Catalan", "Segments": [52, 8, 27, 13, -1, -1]},
    {"Taxon": "Walloon", "Segments": [52, 8, 27, 13, 23, -1]},
    {"Taxon": "Friulian", "Segments": [52, 8, 27, 13, 20, -1]},
    {"Taxon": "Romanian", "Segments": [52, -1, 47, 13, 23, -1]}
  ]
},
{
  "Name": "How-Quomodo", "Data": [
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  ]
}
```

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```
{
  "Taxon": "French", "Segments": [52, 9, 26, -1, -1, -1]},
  "Taxon": "Spanish", "Segments": [52, 6, 26, 6, -1, -1]},
  "Taxon": "Italian", "Segments": [52, 6, 26, 0, -1, -1]},
  "Taxon": "PortugueseBrazil", "Segments": [52, 6, 26, 15, -1, -1]},
  "Taxon": "Portuguese", "Segments": [52, 6, 26, 15, -1, -1]},
  "Taxon": "Catalan", "Segments": [52, 9, 26, -1, -1, -1]},
  "Taxon": "Walloon", "Segments": [52, 9, 26, 81, -1, -1]},
  "Taxon": "Friulian", "Segments": [46, 0, 26, 21, 20, -1]},
  "Taxon": "Romanian", "Segments": [52, 15, 26, -1, -1, -1]}
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  {"Taxon": "Spanish", "Segments": [13, 6, -1]},
  {"Taxon": "Italian", "Segments": [13, 6, 13]},
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  {"Taxon": "Catalan", "Segments": [13, 7, -1]},
  {"Taxon": "Walloon", "Segments": [13, 74, -1]}
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  {"Taxon": "Italian", "Segments": [0, -1]},
  {"Taxon": "PortugueseBrazil", "Segments": [7, -1]},
  {"Taxon": "Portuguese", "Segments": [7, -1]},
  {"Taxon": "Catalan", "Segments": [7, -1]},
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  {"Taxon": "Friulian", "Segments": [0, -1]},
  {"Taxon": "Romanian", "Segments": [0, -1]}
]},
{"Name": "And-Si", "Data": [
  {"Taxon": "Latin", "Segments": [14, 37, 52]},
  {"Taxon": "Romanian", "Segments": [16, 7, -1]}
]}
]
```



## Appendix 4 - RevBayes Source File

---

```
#####  
# RevBayes Source File for Linguistomics Project #  
#####  
clear()  
path = "C:/Users/shawn/Documents/Code/Linguistomics/Run/Run1/"  
gammapath = path+"Gamma.trees"  
  
# Read in discrete character data  
data = readDiscreteCharacterData(path+"Characters.nex")  
  
# Get some useful variables from the data. We need these later on  
num_taxa <- data.ntaxa()  
  
# Number of branches in an rooted tree  
num_branches <- 2 * num_taxa - 2  
taxa <- data.taxa()  
  
# Create helper variables  
moves = VectorMoves()  
monitors = VectorMonitors()  
  
#####  
# Tree Model #  
#####  
  
# Outgroup is a clade consisting of one language  
out_group = clade("Latin")  
  
# Prior distribution on the tree topology  
topology ~ dnUniformTopology(taxa, outgroup=out_group, rooted=TRUE)  
  
# These are moves that change the tree topology  
moves.append(mvNNI(topology, weight=num_taxa/2.0))  
moves.append(mvSPR(topology, weight=num_taxa/10.0))  
  
# Branch length prior  
for (i in 1:num_branches) {  
  bl[i] ~ dnExponential(10.0)  
  moves.append(mvScale(bl[i]))  
}  
  
TL := sum(bl)  
  
psi := treeAssembly(topology, bl)  
  
#####  
# Substitution Model #  
#####
```



## Appendix 4 - RevBayes Source File

---

```
# This is the number of unique characters from the segment filters
unique_chars = 93

# Jukes-Cantor model
Q <- fnJC(unique_chars)

#####
# Gamma model for among-site variation #
#####
alpha ~ dnUniform(0, 10.0)
moves.append(mvScale(alpha, weight=1))
site_rates := fnDiscretizeGamma(alpha, alpha, 4)

#####
# PhyloCTMC Model #
#####
seq ~ dnPhyloCTMC(tree=psi, Q=Q, type="Standard", siteRates=site_rates)
seq.clamp(data)

#####
# Analysis #
#####

# You can use any node as the argument of model()
mymodel = model(psi)
n_gen = 10

# This prints monitors to the screen
monitors.append(mnScreen(TL, printgen=n_gen))

# This monitors the trees and puts them in a file
monitors.append(mnFile(psi, filename=gammapath, printgen=n_gen))

# Model monitor
monitors.append(mnModel(filename=path+"Gamma.log", printgen=n_gen))
mymcmc = mcmc(mymodel, moves, monitors, nruns=1, combine="mixed")
mymcmc.run(generations=1000)

# Summarizes the MCMC runs
mymcmc.operatorSummary()

#####
# Post processing #
#####
treetrace = readTreeTrace(gammapath, outgroup=out_group)
map_tree = mapTree(treetrace, path+"Gamma_MAP.tree")
mcc_tree = mccTree(treetrace, path+"Gamma_MCC.tree")
consensus_tree = consensusTree(treetrace, path+"Gamma_Consensus.tree")

# Exit the program
q()
```

## Appendix 5 - Segments used in the word list

---

Char.	Segment	Words containing this segment
-------	---------	-------------------------------

## Appendix 5 - Segments used in the word list

0	e	<p>ego:, ew, jew, usted, vose, vōse, voste, embrā, femmina, femēv, femjv, fembra, feme je, mulierem, muxer, μολλη, μυλεκ, μυλετ, μυλε, mujere, dōne, hominem, ombre, infantem, infante, fante, nenēj, nen, epuz, esposa, mulier, muxer, μολλη, μυλεκ, μυλετ, μυλε, mujere, epu, esposo, mātrem, meκ, maðre, ma:dre, mer, piskem, peθ, peſſe, peſ, peſte, awem, abe, awikellum, useλ, passerem, passero, pasəre, flo:rem, fjo:re, floare, ne, nariſe, so:lem, sole, soare, soreli, lune, etwal, estreja, stella, istrelv, iſtrelv, stele, age, ploje, ploaje, mare, meκ, sa:lem, sale, se, sare, terra, teκ, tjera, teκv, tjere, ka:li:ginem, kaliðgine, nebula, njebla, nebbja, newlā, negurā, tene:braj, te:nebre, tene:bra:s, tenēbκ, tinjeblas, te:nebre, tōnebrās, fyme, fumate, θjelo, tjer, wentum, bjento, ben, fwego, nō:men, nō:me, nume, nō:minem, nombre, lengwa, bibere, beber, bere, bebeκ, biβer, bevi, komedere, komer, kome, kumer, manduka:re, māze, mandǵare, morde:re, morðer, mōrdere, mōrdeκ, murðer, morsika:re, morsikare, murseka, su:gere, syse, suðe, konspuere, kōspyē, eskupir, sputere, esputar, sputare, ski:re, sa pere, saber, sabēv, sēber, kogno:skere, konothē, konoffere, kopeseκ, kupiser, kunqā ſte, ko:gita:re, kŭide, koðgita:re, kuðgeta, pe:nsa:re, pāse, pensar, pensare, pēse, peſsa:re, time:re, temer, temere, temēv, timer, temā, temi, teme, tremere, tremet, tremare, tremeκ, trimer, dormi:re, dormire, wi:were, vivere, viveκ, viver, morire, moxēv, muker, neka:re, nwaje, neka, anegar, annegare, tje, tuwe, macta:re, mate, okki:dere, utſidere, utſide, pugna:re, puſpare, battuere, battere, bateκ, bēter, bate, kaptia:re, fase, kattfare, pulsa:re, puse, pulsare, seka:re, sje, segar, segare, segav, sea:, kurtare, ekskurta:re, ekukte, scortare, ta:lia:re, taje, taλλa:re, di:widere, dividere, divide, skindere, sēde, findere, findere, ender, fēndere, fēdeκ, fēder, parti:re, partire, se:para:re, sāvke, separar, separare, separav, separa:, separa, pungere, punðere, punðe, jugulare, zygye, jugula:re, radere, raer, radere, vaeκ, v̄er, rade, vaze, rasare, fodere, kaware, kavare, çavle, ekskaware, eskabar, skavare, nata:re, nwotare, navigare, naze, nabegar, navigare, wola:re, vole, volare, v̄ole, zvolare, ſəmine, kamminare, t̄imine, maſse, mergere, merðgere, merðe, ambita:re, andare, wenire, benir, venire, veni, ekstendere, etāðv, ekstender, estendere, istēdeκ, iſtēder, æstendrā, ekstinde, jakere, zeziv, jaθer, ðatſe:re, zezēv, zezet, ðgere, jesi, sede:re, ser, sedere, seκ, ſed̄a, sedenta:re, sentar, senta:, stare, estar, stare, leva:re, l̄ve, jebar, levare, levav, leva:, altia:re, ose, altsare, torna:re, tuκne, tornare, turne, gyra:re, ziβe, ðirare, viβe, virare, tork<sup>w</sup>:re, torθer, t̄orſere, turser, t̄orſe, kadere, kaer, kadere, t̄jade, t̄obe, tume, tene:re, tener, tenere, teκ, ter, tsine, segurar, esprimere, epv̄ēdκ, ekspremir, spremere, iſprēmēv, iſprēmer, æspremā, esprimi, skreme, serrere, serar, seva, serare, seve, θerar, serrare, sere, appektora:re, apretar, stringere, etv̄ēdκ, estrepir, strindgere, stringe, strindge, frika:re, f̄veje, fregar, fregare, frea, freka, frikta:re, f̄rote, frettare, laware, lave, lavare, tergere, terðgere, ekstergere, estarsir, ſterðe, eksu:ka:re, esqije, enxugar, affugare, suwe, limpidare, tira:re, tiβe, tirare, tire, puse, trahere, trarre, traze, trezer, traðe, impingere, impindgere, impindge, jakta:re, z̄ote, eſar, ðettare, ðete, lankeare, l̄se, lanſare, e:runka:re, arronſare, liga:re, lie, legar, legare, lea:, lega, apta:re, ko:nsuere, koser, kuſfire, kuzer, çase, komputa:re, k̄ote, kontare, e:numera:re, enumeve, enumerar, enumerare, enumera, di:kere, deθir, dire, dizer, ziſe, ekspone re, sporre, spune, kanta:re, ſāte, kantare, t̄āte, lu:dere, joka:re, zve, ðokare, ðuwe, flu:ktua:re, flyktje, fluttuare, fluitare, fluitare, fluere, flye, fluire, ko:lare, kule, kolare, k̄ole, eskurrere, eskurir, skorrere, iſkoxēv, iſkurer, skurðe, kurrere, korer, korrere, koxēv, kuβer, kurðe, gela:re, z̄ole, elar, ðelare, ðale, glakia:re, glase, gjatſjare, inglakia:re, ingetsa, b̄yle, bruſfare, b̄u:le, kremare, k̄ame, kemar, kremare, k̄ejmare, k</p> <p>ejmake, flamma:re, flābe, flamear, fjammare, arde:re, arder, ardere, avdeκ, v̄rder, arde, flagra:re, flagve, flagrare, inkendere, ēsādje, enθender, inſendjare, iſendj̄ar, ænsendrā, inſindze, ustula:re, ustolare, alter, grandem, grande, grande, majjorem, mare, le, grabe, greve, grew, grew, lerdo, pesaðo, pesante, pezadu, pezant, pekeno, pekenu, pikenu, brewis, brebe, breve, brew, b̄ref, etv̄wa, estreſjo, stretto, menudo, del yaðo, delikato, dewgadu, subtil:le, sottilē, sottile, subtsire, ruber, vermikulus, bermexo, vermiλλo, vekmeλu, rubeus, rubeo, ruðe, wiridem, v̄eκ, berde, verde, verdi, verde, due, tres, tre, tref, k<sup>w</sup>:ink<sup>w</sup>e, t̄inkwe, ekkumhi:k, k<sup>w</sup>em, kjen, t̄ine, ke, t̄e, kome, t̄e</p>
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## Appendix 5 - Segments used in the word list

1	g	ego:, agwə, lago, lagu, ka:li:ginem, negurə, fwego, fogu, lāg, leŋgwa, lingwa, līgwe, musəga, musəgar, su:gere, sugaɁ, sugar, kogno:skere, ko:gita:re, nəga, anegar, anne gare, segaɁ, pungere, jugula:re, zygye, nabegar, navigare, nəbəga, naviga, segurar, siguraɁ, fregar, frəga, iʃfrigar, tergere, ekstergere, enxugar, aʃʃugare, ɛʃugar, ɛʃuga, liga:re, legar, legare, zogaa, zuga, flugtwar, gela:re, glakia:re, glase, gjatʃfare, gləsa, inglakia:re, flagra:re, flagɁe, flagrar, flagrare, flagrar, awgū, atgū, əlgu, gɁā, grand e, grande, grēdʒi, grēdi, longum, lungu, lögu, largo, laɁgu, largu, grawis, gɁav, grabe, greve, gravi, gravi, grew, angustus, angosto, angusto, dewgadu
2	o:	ego:, no:s, no:i, no:, wo:s, vo:i, vo:, homo:, spo:s, flo:rem, fjo:re, flo:r, so:lem, no:men, no:me, no:minem, kogno:skere, ko:gita:re, ko:nsuere, ekspo:nere, ko:la:re, to:tus, po: k, duo:s, k <sup>w</sup> ando:, k <sup>w</sup> o:modo, no:n
3	z	zə, zə, pluza, kalizē, kelizē, mǎze, mēzaɁ, mēzar, mənza, kuzitaɁ, kuzitar, pūziɁ, p ūzir, zygye, naze, zeziz, zezex, zezex, zawra, zixə, zizar, zira, ɛʃtrizir, ɛʃtrizir, ɛstər zi, zəte, zejtar, zwe, zogaa, zuɁar, zuga, zuka, zəle, zilar, zəla, iɳʃindze, laɁz, du:ze:, Ɂuz
4	ə	zə, dənə, dɁamənə, Ɂmə, ɛspəzə, mərit, ɛspəs, marə, pasəre, ʌnə, lunə, ɛstəl, ajɁwə, apə, pluza, tərə, tsarə, newlə, negurə, tənəbrəs, ʃɛaʃə, limbə, bəwra, mənza, musəga, musəgar, musəɁa, ɛskupi, səβe, kunɛʃə, pənsa, pəsa, temə, biwra, nəga, mətə, batrə, kəsa, səɁa, təʌa, təja, fəndrə, pərti, səvɁe, səpəra, rawra, rəza, rəska, kəba, nəda, nə bəga, fəmine, kəmina, vəniz, bəni, ɛstəndrə, zawra, zəʃɛa, ɛsta, ləve, ʌbə, əlsa, tər sə, kawra, kədə, təniz, təni, iʃprəmek, iʃprəmer, ɛspremə, sərar, səra, ɛʃtrizir, ɛʃtr izir, ɛstɛpə, frəga, frəsa, ɛstərzi, ɛʃuga, trəwra, ɛmpɛrə, zəte, ʌnsa, kəntə, ɛskorə, korə, zəle, zəla, gləsa, krəma, ɛnsəndrə, əlgu, altrə, amplə, pəzā, pəzat, pəti, pətit, ɛ strət, məny, mənut, mərunt, dəlikat, bərmɛʌ, dowə, kwatrə, əʌa
5	j	jə, estreja, jubja, jaθer, jəbar, aja
6	o	jə, io, jo, nos, no, bos, vof, vos, vose, voste, moʌʌe, domina, doɳa, donə, hominem, ombre, omē, om, homo:, wəmo, nipo, nino, sponsa, esposa, ispoza, iʃpozə, moʌʌe, mariðo, marito, sponsus, esposo, spəzo, ispozu, iʃpozu, sokius, səʃo, sots, wazo, utʃ ello, paxaro, passero, fruto, frutto, flor, floɁ, naso, na:so, sol, sole, soliculus, soreli, o, pjodɁa, ploje, lago, lago, θjelo, ʃɛlo, bjento, vento, fokum, fwego, fwəko, fogu, f oɁu, fok, apə, anno, nomi, nomi, nombre, komedere, komer, kome, morde:re, moɁd Ɂ, moɁðer, moɁðer, morsika:re, moskar, morsikare, konspuere, kogno:skere, konoθe r, konofɛre, kəpəsək, kəɳosi, koɁitare, dormi:re, dormir, dormire, doɁmiɁ, dormi, morir, morire, moɁek, okki:dere, kortar, koɁtaɁ, scortare, kosaɁ, fodere, nwotare, wolare, vole, bolar, volare, voaɁ, zvolare, zvola:, ose, tornare, tornar, tornare, toɁ naɁ, tornar, toɁk <sup>w</sup> ere, toɁθer, appektore, fəte, frotaɁ, arronɛare, koser, komput are, kontar, kontare, kontar, sporre, jəka:re, Ɂjəka:re, zogaa, kolar, kolare, koaɁ, sko rrere, iʃkoɁek, ɛskorə, skori:, korer, korrere, koɁek, korə, kori, ustolare, omne:s, op ni, todo, tutto, todə, toðu, tot, muʃo, molto, mol, molc, tanto, okœ, alguno, alkuno, poko, pəko, powku, otɁ, otro, altro, owtru, maɳo, maɳno, majjorem, longum, longo, lungu, ʌoŋ, larɁo, largo, lato, anɛʃo, ampjo, lerdo, lordo, pesaðo, pekeɳo, pitɛino, pi kkolo, korto, korto, angosto, angusto, estɛʃo, stretto, menudo, minuto, dəɁaðo, de likato, sottile, rubro, roxo, rosso, ɁofɁ, Ɂofu, ros, Ɂofu, bermexo, vermiʌʌo, rubjo, r əbbjo, rubeo, uno, dos, dowə, k <sup>w</sup> attwor, kwatro, kwattro, θinko, kwando, k <sup>w</sup> o:modo, komo, kome, komu, no, non

## Appendix 5 - Segments used in the word list

7	i	io, no:i, vo:i, fe:mina, femmina, fəmine, mulierem, domina, hominem, infantem, in fante, ifēfi, nijo, nino, ispoza, mulier, mari, mariðo, marito, maridu, mēriðu, mari t, mērit, ispozu, sokius, mōri, piskem, pejsi, avi, awikellum, fəqi, nariθ, nariθe, nar is, nērif, soliculus, soreli, istrelə, pluwia, plqi, ka:li:ginem, kalina, kalidžine, kalizēj, kēlizēj, tinjeblas, kajkia, vint, nomi, no:minem, ling <sup>w</sup> a, lingwa, limbə, bibere, bevi, mwardi, morsika:re, morsikare, kuspix, kufpir, eskupir, əskupi, fti, kinəh, kōnosi, ko:gita:re, kqide, kwidar, kodžitare, kuzitaʁ, kuzitar, time:re, temi, trima: dəʁmiʁ, dormir, dormire, dəʁmiʁ, durmir, durmi, dwaʁmi, dormi, vivə, bibir, vivere, viveʁ, viver, biwra, vivi, via, muʁix, morir, morire, muri, mōri, muri, tu:tari, əksix, utʃid ere, uksi, utʃide, batir, bati, kaptia:re, ta:lia:re, di:widere, dibidir, dividere, džividžix, dividiʁ, dibidi, dividi, divide, skindere, findere, findere, pəʁtiʁ, partir, partire, pəʁ ʃix, pəʁtir, pəʁti, pə:rti, pūžix, pūžir, puni, fwix, ifkəvaʁ, ifkəvaʁ, naviga:re, naviga re, naviga: naviga, fəmine, kaminar, kamminare, kəminəʁ, kəminar, kəmina, ʃim ine, ʃjamina, ambita:re, vənix, benir, venire, vix, vir, bəni, vini, vixi, veni, istēder, iftēder, ekstinde, zezix, jesi, altia:re, zixə, xirar, džirare, zirar, zira, džira: vixə, birar, virare, virar, bira, kəir, tənix, təni, tini, tinji, tsine, eksprimere, ekspremir, isprəməʁ, isprəmer, esprimi, stringere, estrepiʁ, strindžere, əʃtrizir, əʃtrizir, stringe, frika:re, frikta:re, frisar, estarsir, əstərzi, esqije, limpida:re, limpjar, tira:re, tixə, tirar, tirare, ʃira, tira, tire, tira: impingere, impindžere, impindže, xita, liga:re, lie, ʁiya, kuʃire, kuzi, kuzi, diʁ, deθir, dire, dizer, di, ziʃe, ludir, fluita:re, fluitare, fluir, fluire, flw ix, flwir, flui, eskurir, ifkoʁəʁ, ifkureʁ, kuʁix, kori, glakia:re, inglakia:re, inkender e, inʃendjare, inʃindze, oʁpi, altri, alius, grēdži, grawis, gravi, grəvi, pittitus, pəti, pətit, piti, pittinus, pitʃino, putsin, pitulus, pikkolo, pitʃul, brewis, brəvi, striktus, i strejtu, minu:tus, minuto, miudu, miuðu, minu, minu:t, de:lika:tus, delikato, dəlikat, sutil, sottile, suʃiw, suptil, su:ti, subtsire, vermikulus, vermiʁʁo, wiridem, kwatri, θinko, ʃinʁkwe, siŋk, ʃinʁk, ʃinʃ, isi, aki, kwi, eki, illa:k, ibi, vi, ai, ei, k <sup>w</sup> is, ki, kwi, ʃ ine, k <sup>w</sup> id, ni, i, fi
8	w	ew, jew, wo:s, wəmo, pwasō, awem, aw, awikellum, wazo, səw, etwal, aywa, akkwa, agwə, ajwə, e:w, pluwia, saw, nəwə, newlə, səw, wentum, fwego, fwəko, lengwa, lingwa, ligwə, bwaʁ, bəwra, mwardi, sawwaʁ, kwidar, dwaʁmi, wi:were, biwra, n waje, tuwe, di:widere, pwēdʁ, rawra, fwix, kawa:re, ekskawa:re, nwotare, wolare, vwar, weni:re, zawra, swaʁ, ʃwaʁ, kawra, lawa:re, suwe, tɛwra, zwe, dzuwe, flugt war, flwix, flwir, awgū, powku, owtru, aw, grawis, grew, grew, brewis, brew, etəw a, dewgadu, suʃiw, wiridem, dowə, təwa, k <sup>w</sup> attwor, kwatro, kwattro, kwatru, kwa trə, kwat, kwatri, ʃinʁkwe, kwi, kwi, kwa, kwe: kwando, kwēdu, kwan, kwand, kw ant
9	ɔ	zə, nojs, nɔʃ, vojs, vɔse, dənna, dənə, dəne, əm, əmēj, əmə, əm, wəmo, spəza, əspəzə, spəzo, əspəs, sɔʃo, flə, səw, sɔʃ, sɔl, sɔlə, sɔlej, njɔly, fwəko, fəʁk, nəm, nəŋ, mɔrdere, kənɛtə, kinəh, dəʁmiʁ, mōri, əksix, vɔle, təʁdʁ, tɔʁʃere, tɔrsə, lɔji, kɔle, tɔ, pəko, pə k, rəs, rəbbjo, rɔʃ, kəm, kəmə
10	ɖ	ɖɪ, pjodɖa, kalidžine, mandžare, sudže, kodžitare, kudžeta, džividžix, pundžere, pundže, nɛdži, mɛrdžere, mɛrdže, dʒaʃe:re, džere, džirare, džira:, strindžere, strindže, tɛrdžere, ʃ tɛrdže, traɖe, impindžere, impindže, dʒettare, dʒete, dʒokare, dʒuwe, dʒuja:, skurdže, k urdže, dʒelare, dʒale, ʃsendžiar, grēdži, rudže
11	ɪ	ɖɪ, na:ris, ʃsendžiar

## Appendix 5 - Segments used in the word list

12	j	jo, jew, nɔjs, vɔjs, femjə, femeje, mujere, mujere, uʃjel, fruʃt, fjo:re, jubja, pjodɔʒa, p loje, plɔaje, tjera, tjere, njɔly, njebla, nebbja, tinjeblas, sjel, ʈjelo, bjento, skuʒpa, kuj da, sje, taje, teji:, taja:, təja, jugula:re, jugula:re, ʃjamina, jake:re, jesi, ʃjade, tinji, es ɥije, suʒa:, limpja:, jakta:re, lɔji:, joka:re, ɖuʒa:, gʒatʃjare, fʒammare, ɛsɔdʒe, inʃendʒ are, ʃsɛdʒa:, majjorem, ampjo, rubjo, rɔbbjo, kjen
13	n	no:s, nu, nos, no:i, nɔjs, nɔʃ, no, no:, noj, fe:mina, femmina, fəmine, domina, dɔnna, done, dɔnə, dɔne, dɔamnə, hominem, infantem, infante, fante, nijo, nino, nenɛj, n en, sponsa, sponsus, na:sus, ne, naso, na:so, nas, na:s, nas, nariθ, nariʃe, naris, neriʃ, na:ris, lu:na, lyn, luna, ʌunə, lɔn, lune, lunə, ka:li:ginem, kalina, kalidʒine, nebula, njɔly, njebla, nebbja, nɛvwə, newlə, negurə, tene:braj, tɛ:nebre, tene:bra:s, tenɛbɤ, ti njeblas, tɛ:nebre, tənebrəs, wentum, bjento, vento, ben, vint, vint, annum, anno, ɛn u, an, no:men, nɔ, no:me, nomi, nomi, nɔm, nɔ, nɔɣ, nume, no:minem, nombre, lin g <sup>w</sup> a, lingwa, lɛnge, manduka:re, manduka:, mandʒare, minka, konspuere, kogno:sk ere, kɔnɛtɤ, konoθer, konoffere, kunɛʃə, kinɔh, kunɔafte, pe:nsare, pensar, pensare, pənsa, neka:re, nwaje, nəga, neka, anegar, annegare, pugna:re, skindere, ʃindere, ʃi ndere, ender, fɛndere, fɛndrə, pungere, punɖere, punɖe, nata:re, nadar, nwotare, nadaɤ, nəðar, nəda, nada:, naviga:re, nəze, nabegar, navigare, naviʒaɤ, nəviʒar, nə bəga, nəɖji:, naviga:, naviga, ʃəmine, kaminar, kamminare, kəmina, ʃimine, ʃjami na, andar, andare, wen:re, vəniɤ, benir, venire, bəni, vini, veni, ekstendere, eksten der, estendere, əstendrə, ekstinde, sedenta:re, sentar, senta:, torna:re, tuɤne, tornar, tornare, toɤnaɤ, turnar, turna, tu:rne, torna:, turna, tenere, təniɤ, tener, tenere, tən i, tini, tinji, tsine, stringere, strindʒere, stringe, strɛngi:, strindʒe, enxugar, impinger e, impindʒere, impindʒe, lankea:re, lanθar, lanʃare, ʌənsa, lanci:, lanʃa:, ɛ:runka:re, arankar, arronʃare, ko:nsuere, kontar, kontare, konta:, ɛ:numera:re, enumere, en umerar, enumerare, enumera, numara, ekspo:nere, spune, kanta:re, kantar, kantare, kənta, cantar, kinta, inglakia:re, ingetsa, inkendere, enθender, inʃendjare, ʃsɛndʒar, ənsendrə, inʃindʒe, omne:s, tantus, tanto, tant, tanc, alguno, alkuno, magnum, gr andem, grande, grande, gran, grant, longum, longo, lungo, lunk, lung, anʃo, pe:san t, pesante, pezant, pittinus, pittino, pekenu, pikenu, putsin, angustus, angosto, ang usto, minu:tus, mənɥ, menudo, minuto, mənut, minu, minu:t, mərunt, u:num, uno, un, unu, k <sup>w</sup> i:nk <sup>w</sup> e, ʈinko, ʃintʃ, kjen, ʃine, k <sup>w</sup> ando:, kwando, kwan, kwand, kwant, kind, no:n, nɔ, no, non, nəw, nu, nek, ni, ne, nəj, nəj, nə

## Appendix 5 - Segments used in the word list

14	s	<p>no:s, nos, nɔjs, wo:s, bos, vɔjs, bus, vos, usted, vose, vɔse, veste, sponsa, esposa, spɔz a, ispoza, əspɔzə, mari:tus, sponsus, esposo, spɔzo, ispozu, əspɔs, spo:s, sokius, sɔfɔ, sots, piskem, pɛs, pwasɔ̃, useɹ, passerem, passero, pasɛru, pasəre, fru:ktus, na:sus, n aso, na:so, nas, na:s, nas, naris, na:rɪs, so:lem, sol, sole, sɔw, sɔɫ, sɔl, sɔɫɔ, sqare, solíc ulus, sɔlej, soreli, ste:lla, estreja, stella, istrelɐ, əstɛl, stɔ:l, stɛle, stɛa, sa:lem, sɛl, sal, sale, saw, se, sa:l, sare, tene:bra:s, tinjeblas, tənɛbrəs, fumasɐ, sjɛl, sɛw, sɛl, si:ɤ, mor sika:re, moskar, morsikare, musəga, musəgar, musəya, murseka, su:gere, syse, suga ɤ, sugar, sysi, suɟe, konspuere, kɔ̃spye, kuspiɤ, eskupiɾ, əskupi, skujpa, sputere, es putar, sputare, spuda:, ski:re, sapere, savwaɤ, saber, sabɛɤ, səber, səβɛ, savɔ:r, save:, kogno:skere, kopeseɤ, kupiser, kɔ̃nosi, pe:nsa:re, pāse, pensar, pensare, pɛsaɤ, pɛsar, pənsa, pɛse, peɟsa:, pəsa, ɔksɪɤ, uksi, fase, kasaa, kɛsar, kəsa, ʃɛsi:, pulsa:re, puse, p ulsare, pulsa:, pulsa, seka:re, sje, segar, segare, segaa, siyar, səya, sea:, ekskurta:re, s cortare, scurta:, skurta, skindere, sɛde, se:para:re, səvɛ, separar, separare, separaa, sipɛrar, səpəra, separa:, separa, rasar, rasare, rasa:, raskar, rəska, kosaɹ, kusar, eks kaware, eskabar, skavare, ekstendere, ekstender, estəndere, istɛdeɤ, əstendɛrə, ekst inde, jesi, sede:re, swaa, ser, sedere, seɤ, sedenta:re, sentar, sɛtar, senta:, sta:re, estar, stare, əsta, ɛs, sta:, sta, ose, aɫsa, aɫsar, əlsa, hɔ:si:, turser, tɔrsə, segurar, siguraɤ, si yurar, eksprimere, ekspremiɾ, spremerɛ, əspremə, esprimi, skreme, serrere, serar, s eɤa, sərar, səra, serare, seɤe, serrare, siɤar, səre, stringere, estrepɪɾ, strindɟere, əstr ɛɾə, stringe, strengi:, strindɟe, frisar, frəsa, ekstergere, estarsir, əstərzi, eksu:kare, esɟije, suwe, suja:, uska, puse, pu:si:, pulsa:, lāse, lɛsa, lɛsar, lənsa, ko:nsuere, koser, cɔase, ekspone:re, sporre, spune, ekskurrere, eskurɪɾ, skorrere, əskorə, skori:, skur ɟe, glase, gləsa, ɛsɔ̃dɟe, ɪsendɟiar, ɪsɛdjar, ənsendɛrə, ustula:re, ustolare, ustura, om ne:s, to:tus, multus, tantus, paɯkus, alius, grawis, lurdus, pe:sant, pesaɔ̃, pesante, pittitus, pittinus, pitulus, kurtus, brewis, angustus, angosto, angusto, ɪngust, strikt us, estreɟɔ, stretto, istrejtɔ, əstret, stɔɔ:, stɛt, strimt, minu:tus, de:lika:tus, subti:le m, sutil, sottile, suɟiɯ, suptil, su:ti, suti:l, subtsire, russus, rosso, ros, rɔs, vermikul us, rubeus, duo:s, dos, dojs, duas, duəs, tre:s, tres, trɛs, sɛk, siku, siɟk, isi, kʷis, si:k</p>
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## Appendix 5 - Segments used in the word list

15	u	<p>nu, vu, bus, tu, usted, mulierem, muxer, мулех, мулер, муле, muir, mujere, epuz, mulier, muxer, мулех, мулер, муле, muir, mujere, maritus, maridu, mēriðu, sponsus, epu, ispozu, ifpozu, sokius, awikellum, utffello, useλ, utffjel, paseru, fruktus, fruto, frutto, frute, frujt, frut, frukt, nāsus, soliculus, luna, luē, λunə, lune, lunə, pluwia, jubja, juvə, plužə, lakum, lagu, layu, nebula, negurə, fumata, fuma:ta, fuma sē, fumate, kajlum, wentum, vētu, fokum, fogu, foγu, annum, enu, nume, kumer, manduka:re, mandukar, murðer, musəga, musəgar, musəγa, murseka, sugaḅ, sugar, cuca: suḏe, konspuere, kuspiḅ, kuspir, eskupir, əskupi, skujpa, sputere, esputar, sputare, spuda: kupiser, kunəfə, kunəqaste, kuzitaḅ, kuzitar, kujda, kuḏgeta, durmir, durmi, durmi: muḅiḅ, muḅer, muri, muri: muri, tuwe, utffidere, uksi, utffide, pugnare, pupar, puppare, pupa, battuere, pulsa:re, puse, puxar, pulsare, puḃaḅ, puḃar, pulsa: pulsa, kurta:re, kurtar, ekskurta:re, ekurte, scurta: skurta, pungere, pundgere, pupi, pundge, jugula:re, jugula:re, kusar, bula, zbura, lua, tuxne, turnar, turna, turna, turser, tumbat, tumba, tume, segurar, sigurəḅ, siγurar, enxugar, affugare, əfugar, əfuyar, əfuga, suwe, suja: uska, puse, pulsa: e:runka:re, aruḅka, ko:nsuere, kudḅ, kufire, kuzer, kuzi, kuzi, komputa:re, kumta, e:numera:re, enumeḅe, enumerar, enumerare, enumera, numara, spune, ludir, xugar, zuγar, zuga, ḏuwe, ḏuja: zuka, fluktua:re, flugtwar, fluttuare, flutuəḅ, flutuər, fluktua, fluctua, fluita:re, fluitare, fluere, fluir, fluire, flui, kule, kuər, kuḷa, ekskurrere, eskurir, ifkurer, skurḏe, kurere, kuḅiḅ, kuḅer, kurḏe, brutfare, bruza: ustula:re, ustolare, ustura, to:tus, tu, tutto, todū, todū, dut, multus, mu, mutfo, mūjtu, mult, tantus, tētū, tētū, alguno, alku no, əlgu, paḅkus, powku, owtru, alius, magnum, longum, lungu, lōgu, lunk, lung, largum, laḅgu, largu, la:tum, latu, amplum, ēfu, lurdus, luḅ, pezadu, pizaḏū, pittitus, pittinus, pekenu, pikenu, putsin, pitulus, pitful, kurtus, kuḅ, kuḅtu, kurtu, kurt, kurt, angustus, angusto, ingust, striktus, istrejtu, iftrejtu, minutus, menudo, minuto, miudu, miuḏū, mənūt, minu, mərunt, de:lika:tus, dewgadu, deḷγaḏū, subtilem, sutil, sufḷiw, subtil, suti:l, subtsire, ruber, rubro, russus, ru, rofu, rofu, vermikululus, vərme λu, virmejλu, rubeus, ruž, rubjo, rubeo, ruḏe, u:num, uno, un, uḅ, unu, duo:s, duaj, due, duas, duēs, duēf, kwatru, patru, siku, ekkumhi:k, kwēdu, komu, kum, nu</p>
16	f	<p>nəf, vof, ifpozə, ifpozu, peḃfe, peḃfi, peḃfi, peḃ, peḃte, nərif, iftrele, juvə, trevəf, kufpir, fti, konoffere, kunəfə, kunəqaste, fase, puḃaḅ, puḃar, findere, ɤafkaḅ, ɤəfkar, ifkəvaḅ, ifkəvar, fəmine, maḃse, iftēder, sedəa, iftar, altfa: fwaḅ, ifprəmeḅ, ifprəmer, əftrižir, əftrižir, iffrigar, iffriγar, fterḏe, affugare, əfugar, əfuyar, əfuga, fāte, ifkoḅeḅ, ifkurer, ēfu, iftrejtu, rofə, rofu, rofu, doḃf, duēf, tref, fi</p>
17	oj	<p>noj, voj, froj, rojb, dojs, doḃf, doj</p>
18	v	<p>vu, vo:i, vōjs, vof, vos, vo:, voj, vose, vōse, veste, avi, avi, juvə, nəvwə, trevəf, vā, vento, vētu, vē, vint, vint, bevi, savwaḅ, savø:ḅ, save: vivḅ, vivere, viveḅ, viver, vivi, via, dividere, ḏividiḏiḅ, dividiḅ, dividi, divide, səvke, kavare, kəvaḅ, kəvar, ɤəvle, ɤava: skavare, ifkəvaḅ, ifkəvar, zjava: navigare, navigare, naviγaḅ, nəviγar, naviga: naviga, vole, volare, voaḅ, vwar, vole, zvolare, zvola: vənḅiḅ, venire, viḅ, vir, vini, vini: veni, leva:re, ləve, levare, levaḅ, livar, leva: viḅe, virare, virar, lave, lavare, levar, lava: gvaḅ, greve, gravi, gravi, grav, grevi, breve, brevi, brevi, vermikululus, vərmej, vermiλlo, vərme λu, virmejλu, vək, verde, verdi, vət, vək, vət, verde, vi</p>

## Appendix 5 - Segments used in the word list

19	b	bos, bus, embra, fembra, ombre, abe, jubja, nebula, njebla, nebbja, tene:braj, tē:nebre, tene:bra:s, tenɛbɤ, tinjeblas, tē:nebre, tēnebrəs, bjento, ben, nombre, limbə, bibere, bwɔɤ, beber, bere, bebeɤ, biʃer, bɛwɾə, bɔ:ɤ, bevi, bɛa, saber, sabɛɤ, sɛber, bibir, biw rə, battuere, batɤ, batir, battere, bateɤ, bɛter, batrə, bate, bati, dibidir, dibidi, kabar, kəba, eskabar, nabegar, nəbəga, bolar, bula, zbura, ambita:re, benir, bəni, jebat, ʌəb a, birar, bira, tōbe, tumbat, tōbɔɤ, tōbat, tumba, bɤyle, brufjare, bɤu:le, bruza:, flābe, grabe, brewis, bɛf, brebe, brève, brɛvi, brɛvi, brew, bɛf, subti:lem, subtsire, ruber, rubro, bermexo, bərmɛɤ, rubeus, rubjo, rəbbjo, rubeo, rojb, berde, ibi:
20	t	tu:, ty, tu, usted, voste, infantem, infante, fante, ifēti, maritus, marito, marit, mar i:t, mərit, mɑ:trem, pɛfte, utʃello, fruktus, fruto, frutto, frute, frujt, frut, frukt, st ella, etwal, estreja, stella, istrelə, iftrelə, əstɛl, stə:l, stele, stɛa, la:t, terra, tɛɤ, tjera, tɛrra, tɛɤ, tɛɤ, tɛrə, tɛ:ɤ, tjere, tene:braj, tē:nebre, tene:bra:s, tenɛbɤ, tinjeblas, tē:nebre, trɛvɛf, tēnebrəs, fu:ma:ta, fumata, fuma:ta, fumate, wentum, bjento, vɛnto, v ētu, vint, vint, sputere, esputar, sputare, fti, kɔnɛtɤ, kungafte, ko:gita:re, kodgitare, kuzitatɤ, kuzitar, kudgeta, timere:re, temer, temere, temɛɤ, timer, temə, temi, teme, tr emere, tremere, tremare, tremɛɤ, trimer, trima:, tu:tari, tɥe, tuwe, mactare, mate, m atar, mataɤ, mɛtar, mɛta, utʃidere, battuere, batɤ, batir, battere, bateɤ, bɛter, batrə, bate, bati, kaptia:re, katʃare, kurtare, kortar, kɔtɔɤ, kurtar, ekskurta:re, ekusɛte, s cortare, scurta:, skurta, ta:lia:re, taje, taxar, taɤɤa:re, taɤaɤ, tɛɤar, tɛɤa, tɛji:, taja:, t əja, fēt, partire, paktiɤ, partir, partire, pɛrtir, pɛrti, pɔ:rti, parti:, nata:re, nwotare, ambita:re, ekstendere, etāɤɤ, ekstender, estendere, istēɤɤ, iftēɤɤ, əstendrə, eksti nde, sedenta:re, sentar, sɛtar, senta:, stare, etɤ, estar, stare, iftar, əsta, sta:, sta, alti are, altʃa:, torna:re, tɤɤne, tornar, tornare, tɔɤnaɤ, turnar, turna, turne, torna:, tur na, tork <sup>w</sup> ere, tɔɤɤɤ, tɔɤθer, tɔɤʃere, turser, tɔɤsə, tɔɤarʃe, tōbe, tumbat, tōbɔɤ, tōbat, tumba, tume, tene:re, tənɤɤ, tener, tenere, tɛɤ, ter, təni, tini, tinji, appektorare, apre tar, ɛpirtar, stringere, etɤɤɤɤ, estrepir, strindɤere, əʃtrizir, əʃtrizir, əstɛɤə, stringe, strɛngi:, strindɤe, friktare, fɤote, frotar, frettare, tergere, tɛɤɤere, ekstergere, estar sir, əstərzi, ʃterɤe, tira:re, tiɤe, tirar, tirare, tira, tire, tira:, trahere, tɤɤɤ, trarre, tra ze, trɛzer, trɛwɾə, traj, tradɤe, jaktare, zɔte, ɤɛttare, zejtat, xita, ɤɛte, apta:re, atar, ɛtar, komputa:re, kōte, kontar, kontare, kōtar, kumta, konta:, kantare, ʃāte, kantar, kantare, kɛtar, kənta, ʃāte, canta:, kinta, flu:ktua:re, flyktɥe, flugtwar, fluttuare, f lutuɔɤ, flutuar, fluktua, fluctua, fluita:re, fluitare, gjatʃjare, ustula:re, ustolare, u stura, to:tus, tu, todo, tutto, todɤ, toɤu, tot, tɔ, dut, multus, molto, mūʃtu, mult, tan tus, tanto, tētu, tētɤ, tant, tanc, alter, otɤ, otro, altro, owtru, altrə, ɔt, altri, alt, gra nt, la:tum, lato, latu, lat, pɛ:sant, pesante, pəzat, pezant, pittitus, pəti, pətit, piti, pit tinus, pitʃino, pitulus, kurtus, korto, korto, kuɤtu, kurtu, kurt, kurt, angustus, ang osto, angusto, ingust, striktus, etɤwa, estɛʃo, stretto, istrejtɤ, iftrejtɤ, əstɛt, stɔ:ɤ, strɛt, strimt, minu:tus, minuto, mənut, minu:t, mərunt, de:lika:tus, delikato, dəlikat, subti:lem, sutil, sottile, suptil, su:ti, suti:l, vɛrt, vɛrt, tre:s, tɔwɔ, tres, tre, tɛf, tɛs, t rɔ:, tre:, trej, k <sup>w</sup> attwor, katɤ, kwatro, kwattro, kwatru, kwatrə, kwat, kwatri, patru, kwant, ʃɛmu:t, et
21	u:	tu:, u:hɛr, fruktus, lu:na, plu:ɤ, fu:ma:ta, fu:k, su:gere, tu:tari, turne, eksu:kare, pu: si:, lu:dere, flu:ktua:re, bɤu:le, ku:ɤ, minu:tus, minu:t, du:ze:, su:ti, u:num, ʃɛmu:t
22	y	ty, fry, lyn, njoly, fyme, syse, sysi:, kɔspye, zygye, gyra:re, flyktɥe, flye, bɤyle, m əny

## Appendix 5 - Segments used in the word list

23	d	usted, domina, dam, doŋa, dōnna, done, dōnə, dœm, dōne, dɔamɲə, maridu, ma:dre, pjodɕa, komedere, manduka:re, mandukar, morde:re, moɽdɤ, mɔrdere, moɽdeɤ, mwardi, spuda:, kɥide, kwidar, kujda, kɤēdɤ, dormi:re, dɔɤmiɤ, dormir, dormire, doɤmiɤ, durmir, durmi, dwaɤmi, durmi:, dormi, okki:dere, utɕidere, uɕide, di:widere, dibidir, dividere, dividiɽ, dibidi, dividi, divide, skindere, sēde, findere, findere, fãdɤ, ender, fēdere, fēdeɤ, fēder, fēndrə, pɤēdɤ, ra:dere, radere, rada:, rade, fodere, nadar, nadaɤ, nəda, nada:, andar, andare, ēdaɤ, ēdar, ekstendere, etãdɤ, ekstender, estendere, istēdeɤ, iɕtēder, əstendrə, ekstinde, sede:re, sedere, fedea, sedenta:re, tɔɤdɤ, kadere, kadere, ɕjade, kədə, epɤēdɤ, etɤēdɤ, limpida:re, kudɤ, di:kere, diɤ, deθiɽ, dire, dizer, di, di:ɤ, di:, lu:dere, ludir, arde:re, aɽdɤ, arder, ardere, aɽdeɤ, ɤrder, arde, inkendere, ēsãdje, enθender, inɕendjare, iɕēdjər, ənsendrə, inɕindze, todo, todut, grandem, grande, grande, grēdi, lurdus, lerdo, lordo, pezadu, menudo, miudu, delika:tus, du:ze:, deɣaðo, delikato, dewgadu, deɣaðu, dəlikat, wiridem, berde, verde, verdi, verde, duo:s, dø, dos, dojs, doɕf, dø:, doj, duaj, due, dowə, duas, duɤs, duɤf, kʷid, kʷando:, kwando, kwēdu, kwand, kind, kʷo:modo
24	f	fe:mina, fam, femmina, femeɤ, femjɤ, fembra, fœm, fəmine, femeje, infantem, ãfã, infante, fante, iɕēɕi, iɕēti, efã, fru:ktus, fɤqi, fruto, frutto, frutɤ, fruɕt, fɤɣ, frut, frukt, flo:rem, flœɤ, flor, fjo:re, floɤ, flɔ, flø:ɤ, flo:r, flɔare, fu:ma:ta, fyme, fumata, fuma:ta, fumasɤ, fumate, fokum, fø, fwego, fwɔko, fogu, foyu, fɔk, fø:, fu:k, fok, findere, fãdɤ, fēdere, fēdeɤ, fēder, fēndrə, fēt, fodere, fwɤɤ, frika:re, fɤeje, fregar, fregare, frəga, froj, frea, freka, iɕfriɣar, iɕfriɣar, frikta:re, fɤote, frotar, frettare, frisar, frəsa, flu:ktua:re, flyktɥe, flugtɤar, fluttuare, flutuəɤ, flutuər, fluktua, fluctua, fluita:re, fluitare, fluere, flye, fluir, fluire, flwɤɤ, flwir, flui, flamma:re, flãbe, flamear, fjammar, flama, flagra:re, flagɤe, flagrar, flagrare, flagɤəɤ, flagrar, bɤef, bɤef
25	e:	fe:mina, ste:lla, tene:braj, tene:bra:s, morde:re, save:, pe:nsa:re, time:re, se:para:re, ja:kere, ɕaɕfe:re, sede:re, torkʷere, tene:re, e:runka:re, e:numerare, arde:re, omne:s, pesant, de:lika:tus, du:ze:, tre:s, tre:

## Appendix 5 - Segments used in the word list

26	m	<p> fe:mina, fam, embra, femmina, femeə, femjə, fembra, fœm, fəmine, femeje, mulier  em, muxer, μολλε, мулеѣ, мулер, муле, mui:r, mujere, domina, dam, dœm, dɔam  nə, hominem, ɔm, ombre, omēj, ɔmēj, ɔmə, ɔm, om, homo:, wəmo, infantem, mulier,  muxer, μολλε, мулеѣ, мулер, муле, mui:r, mujere, mari:tus, maki, mariðo, marito,  maridu, məriðu, marit, mari:t, mərit, ma:trem, meѣ, maðre, ma:dre, mēj, marə, meѣ,  mɔri, piskem, awem, awikellum, passerem, flo:rem, so:lem, lakum, mare, meѣ, mar,  maѣ, mar, meѣ, ma:r, sa:lem, ka:li:ginem, fu:ma:ta, fyme, fumata, fuma:ta, fumasə,  fumate, kajlum, wentum, fokum, annum, no:men, no:me, nomi, nomi, nɔm, nume,  no:minem, nombre, limbə, komedere, komer, kome, kumer, manduka:re, mǎze, ma  ndukas, mandzare, mēzəѣ, mēzəѣ, mǎza, mapi:, maŋja:, minka, morde:re, mɔdѣ,  mɔdѣ, mɔrdere, mɔdѣ, mɔdѣ, mwardi, morsika:re, moskar, morsikare, musəga,  musəgar, musəya, murseka, time:re, temer, temere, temek, timer, temə, temi, teme,  tremere, tremer, tremare, tremek, trimer, trima:, dormi:re, dɔvmiѣ, dormir, dormire,  dɔvmiѣ, durmir, durmi, dwaѣmi, durmi:, dormi, mukiѣ, morir, morire, mɔkѣ, muk  er, muri, mɔri, muri:, muri, macta:re, mate, matar, mataѣ, mɔtar, mɔta, maŋja:, fə  mine, kaminar, kamminare, kəmi:naѣ, kəmi:naѣ, kəmina, ʃimine, ʃjamina, maʃje, m  a:ʃi:, mergere, mɔdѣ, merdže, ambita:re, tumbar, tumba, tume, eksprimere, eks  premir, spremer, iʃprəmeѣ, iʃprəmer, əspremə, esprimi, skreme, limpida:re, limpjar,  impingere, impinđere, əmpɔrə, impinđe, komputa:re, kumta, e:numera:re, enume  je, enumerar, enumerare, enumera, numara, krema:re, kəame, kemar, kremare, k  ejmare, kejməje, krəma, flamma:re, flamear, fjammare, flama, omne:s, multus, mu  muʃo, molto, mǎjtu, mol, molc, mult, magnum, maɔo, maɔo, grandem, majjorem,  mare, longum, largum, la:tum, amplum, ampjo, amplə, strimt, minu:tus, mɔny, me  nudo, minuto, miudu, miuðu, mənut, minu, minu:t, mərunt, subti:lem, vermikulus,  vəmej, bermexo, vermiλλo, vɔmeλu, vɔrməjλu, bərməλ, wiridem, u:num, ekkumh  i:k, k<sup>w</sup>em, k<sup>w</sup>o:modo, kɔm, komo, kome, komu, kɔmē, ʃemu:t, kum </p>
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## Appendix 5 - Segments used in the word list

27	a	<p>fe:mina, fam, embra, femmina, fembra, domina, dam, doṇa, dōnna, infantem, inf ante, fante, sponsa, esposa, spōza, ispoza, mari:tus, maṛi, mariḏo, marito, maridu, marit, marit, maḏre, marə, pwasō, awem, abe, avi, avi, aw, awikellum, wazo, passe rem, paxaro, passero, paseru, pasere, naso, nas, nas, nariḡ, nariḡe, naris, lu:na, luna, ste:lla, etwal, estreja, stella, ak<sup>w</sup>a, aywa, akkwa, agwə, age, apə, pluwia, jubja, pjo dḡa, lakum, lak, lago, lago, lagu, layu, ʎak, mare, mar, maṛ, mar, sal, sale, saw, sar e, terra, tjera, terra, tsarə, kalina, kalidḡine, kalizēḡ, nebula, njebła, nebbja, tinjeblas, fu:ma:ta, fumata, fuma:ta, fumasə, fumate, kajkia, annum, apo, anno, ap, aṇ, an, li ng<sup>w</sup>a, lengwa, lingwa, manduka:re, mandukaṛ, mandḡare, mēḡzaṛ, mēḡzaṛ, mənza, m aṇi: maṇja: minka, mwardi, moskaṛ, morsikare, musəga, musəgar, musəḡa, murse ka, sugaṛ, sugar, skuḡpa, esputar, sputare, sapere, savwaṛ, saber, sabəṛ, savə:ṛ, save:, kwidar, koḡitare, kuzitaṛ, kuzitaṛ, kujda, kuḡeta, pensar, pensare, pēsəṛ, pēsəṛ, p ənsa, pəsa, tremare, dwaṛmi, via, nəga, neka, anegar, annegare, macta:re, mate, ma tar, mataṛ, mətəṛ, mətə, maḡḡa: puṇar, puṇṇare, puṇa, battuere, batṛ, batir, battere, bateṛ, batrə, bate, bati, kaptia:re, ʃase, kaḡar, katḡare, kasəṛ, kəsəṛ, kəsa, caḡa: pu xar, pulsare, puḡaṛ, puḡar, pulsa, segar, segare, segəṛ, siḡar, səḡa, kortar, koṛtaṛ, k urtar, scortare, skurta, taxar, taʎʎa:re, taʎaṛ, təʎar, təʎa, taja: təja, parti:re, paṛtiṛ, partiṛ, partire, paṛḡiṛ, parti: se:para:re, separar, separare, separəṛ, sipəṛar, səpəṛa, separa: separa, raer, radere, ʋaer, rawrə, rada: rade, rasar, rasare, ʋazaṛ, ʋəzar, rə za, rasa: raskaṛ, ʋaḡkaṛ, ʋəḡkaṛ, rəska, kosaḡ, kusar, kawa:re, kabar, kavare, kəvaṛ, kəvaṛ, kəba, ʃava: ekskawa:re, eskabar, skavare, iḡkəvaṛ, iḡkəvaṛ, zḡava: nata:re, n adar, nwotare, nadaṛ, nəḡar, nəda, nada: naviga:re, naḡe, nabegar, navigare, naviḡ aṛ, nəviḡar, nəbəga, naviga: naviga, bolar, volare, voaṛ, vwar, bula, zvolare, zbura, kaminar, kamminare, kəmiṇaṛ, kəmiṇar, kəmina, ḡḡamina, maḡḡe, ambita:re, anda r, andare, ēdaṛ, ēdar, jake:re, jaḡer, ḡḡaḡe:re, zaṛrə, swaṛ, sentar, sētar, estar, stare, iḡtar, əsta, sta, jebar, levare, levaṛ, livar, ʎəba, lua, altia:re, alḡar, alsare, aḡsa, aḡsar, əlsa, altḡa: tornar, tornare, toṛnaṛ, turnar, turna, turna, xirar, ḡirare, ziraṛ, zira, bi rar, virare, virar, bira, kadere, ʃwaṛ, kaer, kadere, kawrə, ḡjade, tumbaṛ, tōbaṛ, tōb ar, tumba, segurar, siguraṛ, siḡuraṛ, serar, seṛa, sərar, səra, serare, ḡerar, serrare, s iṛar, appektorare, apretar, epirtar, fregar, fregar, frəga, frea, freka, iḡfrigar, iḡfr iḡar, frotar, frettare, frisar, frəsa, lawa:re, lave, laḡar, lavare, ləvaṛ, lava: la, estars ir, enxugar, aḡḡugare, ēḡugar, ēḡuḡar, əḡuga, uska, limpjar, liṇar, tirar, tirare, ḡira, t ira, trahere, trarre, traze, traḡe, jakta:re, eḡar, ḡettare, zejtar, xita, lankea:re, lanḡ ar, lanḡare, lēsa, lēsar, ʎənsa, lanci: lanḡa: arankar, arronḡare, aruṇka, legar, lega re, ʎiya, lega, apta:re, atar, ətəṛ, kontar, kontare, kōtar, kumta, enumerar, enumera re, enumera, numara, kanta:re, kantar, kantare, kētar, kənta, canta: kinta, xugar, ḡokare, zogəṛ, zuḡar, zuga, zuka, flugtwar, fluttuare, flutuəṛ, flutuar, fluktua, fl uctua, fluitare, kolar, kolare, koəṛ, kuar, kuʎa, elar, ḡelare, zilar, zəla, ḡale, glaki a:re, glase, ḡatḡḡare, gləsa, glaḡa: inglakia:re, ingetsa, bruḡare, kṛame, kemaṛ, kre mare, kəjmare, kejməṛ, krəma, flamma:re, flamear, ḡjammare, ḡlama, arde:re, aṛd ʋ, arder, ardere, aṛdeṛ, arde, flagra:re, flagṛe, flagrar, flagrare, flagṛəṛ, flagrar, in ḡendḡare, iḡendḡar, iḡēḡar, ustolare, ustura, tantus, tanto, tant, tanc, alguno, alku no, awḡū, aḡḡū, alter, altro, altrə, altri, alt, alius, aw, aḡ, magnum, maṇo, maṇṇo, g randem, grande, grande, gran, grant, mare, largum, laḡz, larḡo, largo, laḡgu, largu, ʎark, lark, larg, lato, latu, lat, amplum, anḡo, ampjo, amplə, grawis, ḡrav, grabe, ḡr avi, gravi, grav, pe:sant, pesaḏo, pesante, pezadu, piḡaḏu, pazat, pezant, angustus, angosto, angusto, etṛwa, deḡaḏo, delikato, dewḡadu, deḡaḏu, dəlikat, duas, k<sup>w</sup>att wor, katṛ, kwatro, kwattro, kwatru, kwat rə, kwat, kwatri, patru, aki, la, aja, əʎa, ai, kwa, k<sup>w</sup>ando: kwando, kwan, kwand, kwant</p>
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## Appendix 5 - Segments used in the word list

28	r	embra, fembra, muxer, mu <sub>l</sub> er, ombre, muxer, mu <sub>l</sub> er, mariðo, maridu, mæriðu, mari t, maðre, marə, paxaro, pasəru, pasəre, fruto, frutə, frujt, flor, fjo:re, floare, nariθ, naris, nəriʃ, sɔare, estreja, istrele, iʃtrele, mar, trɛvɛʃ, tənɛbrəs, ʃer, nombre, beber, bere, biβer, bɛwɾə, komer, kumer, mandukar, mandɟare, mēzar, morðer, murðer, mo skar, morsikare, sugar, kuspir, eskupir, esputar, sputare, saber, səber, konothər, kup iser, kwidar, kuzitar, pensar, pensare, pēsar, temer, timer, tremər, tremɛ, trimer, d ormir, durmir, bibir, viver, biwɾə, morir, muker, muri, anegar, matar, mɛtar, utʃide re, pupar, batir, bɛter, batrə, kaθar, kəsar, puxar, puʃar, segar, siyar, kortar, kurtar, taxar, tɛlar, dibidir, dividiɾ, ender, fēder, fɛndrə, partir, pɛrtir, separar, separaɤ, si pɛrar, səpəra, pūzir, raer, ʋer, rawɾə, rasar, ʋəzar, raskar, ʋɛʃkar, kusar, kabar, kə var, eskabar, iʃkəvar, nadar, nɔotare, nɛðar, nabegar, nəviyar, bolas, volare, vwar, zvolare, zbura, kaminar, kamminare, kəminar, andar, ẽdar, benir, venire, vir, ekst ender, iʃtēder, əstendrə, jaθer, ɟaʃɛ:re, zəzer, zawɾə, ser, sentar, sɛtar, estar, iʃtar, j ebar, livar, alθar, aʃsar, tornar, turnar, xirar, ɟirare, zirar, zira, birar, virare, virar, bira, torθer, kaer, kadere, kɛir, tumber, tɔbar, tener, tenere, ter, segurar, siguraɤ, si yurar, ekspremir, əspremə, serar, sərar, θerar, siɤar, apretar, ɛpirtar, estrepir, əstre nə, fregar, frəga, iʃfrigar, iʃfriyar, frotar, frisar, frəsa, laβar, lɛvar, estarsir, enxug ar, ɛʃugar, ɛʃuyar, limpjar, lipar, tɪrar, ʃira, tira, traze, trɛzer, trɛwɾə, ɛʃar, zejtar, l anθar, lēsar, arankar, aruŋka, legar, atar, ɛtar, koser, kuzer, kontar, kōtar, enumera r, enumera, deθir, dizer, kantar, kētar, ludir, xugar, zuyar, flugtwar, flutuar, fluir, flwir, kolar, kuar, eskurir, iʃkurer, skurdɟe, korer, kuɤer, kurdɟe, elar, zilar, kemas, kəjmare, flamear, arder, ɛrder, arde, flagrar, flagrar, enθender, iʃendɟiar, iʃɛɟjar, ə nsendrə, otro, owtru, altrə, grande, grɛɟzi, grɛɟdi, mare, larɣo, largu, ʎark, grabe, gr avi, gravi, grew, grew, lerdo, korto, kurtu, kurt, brebe, brɛvi, brɛvi, brew, estreʃo, is trejtu, iʃtrejtu, əstrɛt, roʃu, bermexo, virmɛjɫu, berde, verdi, vert, verde, tres, tref, kwatro, kwatru, kwatrə
29	ɐ	femeɐ, femjɐ, done, iʃpozɐ, mæriðu, pasəru, frutə, nɛriʃ, luɐ, istrele, iʃtrele, agwɐ, ʃ uvɐ, tɛɐ, tɛɐ, kɛlizɛj, nənwɐ, trɛvɛʃ, fumasɐ, ɛnu, liɣwɐ, səber, mɛtar, bɛter, kəsar, tɛlar, pɛrtir, sipɛrar, ʋer, ʋəzar, ʋɛʃkar, kəvaɤ, kəvar, iʃkəvaɤ, iʃkəvar, nɛðar, nəv iyar, kəminar, kəminar, zɛzɛɤ, zɛzer, kɛir, ɛpirtar, lɛvar, trɛzer, ɛtar, ɛrder, duɐs, d uɛʃ, ɛki, ɛi
30	œ	fœm, dœm, flœɤ
31	ɛ	fəmine, ɛfã, pɛs, pɛhõ, utʃello, utʃjel, əstɛl, stɛle, mɛɤ, sɛl, terra, tɛɐ, tɛrə, tjere, nəw ɐ, tɛnɛbɤ, trɛvɛʃ, sjɛl, ʃɛlo, sɛw, sɛl, vɛnto, lɛnɟɛ, bɛwɾə, səβɛ, kɔnɛtɤ, kunɛʃə, ʃɛsi:, tɛji:, fɛndere, fɛndrə, nɛɟi:, mɛrɟere, estendere, ɛtɤ, ɛs, sprɛmere, sɛre, əstreɲə, strɛ ngi:, tɛrɟere, tɛɤ, trɛwɾə, əmpɛɲə, ɟɛte, inʃɛndjare, grɛve, grɛvi, bɛɛf, brɛve, brɛvi, brɛvi, əstrɛt, strɛt, dɛɫɣaðu, vɛɤmɛj, bɛrmɛɫ, vɛrt, vɛɤ, vɛrt, trɛs, kɛ, ɛ

## Appendix 5 - Segments used in the word list

32	1	<p>mulierem, mulier, awikellum, uttfello, utfjēl, flo:rem, flœx, flor, flox, flō, flø:x, flo:r, flqare, so:lem, sol, sole, sōl, sōlō, soliculus, sōlej, soreli, lu:na, lyn, luna, luē, lōn, lune, lunə, stella, etwal, stella, istrelē, iftrelē, əstēl, stō:l, stēle, pluwia, plūi, plužə, pl u:x, ploje, plqaje, lakum, lak, lago, lago, lagu, layu, la:t, sa:lem, sēl, sal, sale, sa:l, ka: li:ginem, kalina, kalidžine, kalizēj, kēlizēj, nebula, njōly, njebla, newlə, tinjebłas, k ajlum, sjēl, θjelo, fēlo, sēl, fī:l, ling<sup>w</sup>a, lāg, lēngwa, lingwa, ligwē, lēū, lēngē, limbə, pulsa:re, pulsare, pulsa:, pulsa, ta:lia:re, jugula:re, zygyle, jugula:re, çə:vle, wola:re, vole, bolar, volare, bula, vōle, zvolare, zvola:, leva:re, ləve, levare, levax, livar, leva:, lua, altia:re, alθar, altsare, əlsa, altfar, lawa:re, lave, laβar, lavare, ləvar, lava:, la, li mpida:re, limpjar, līpar, pulsa:, lankea:re, lāse, lanθar, lanfjare, lēsa, lēsar, lanci:, la ntfa:, liga:re, lie, legar, legare, lōji:, lea:, lega, lu:dere, ludir, flu:ktua:re, flyktqē, flug twar, fluttuare, flutuax, flutuar, fluktua, fluctua, fluita:re, fluitare, fluere, flye, f lui, fluire, flwix, flwir, flui, ko:la:re, kule, kolar, kolare, kōle, gela:re, zəle, elar, dže lare, žilar, žəla, džale, glakia:re, glase, gləsa, glatfa:, inglakia:re, bēyle, bēu:le, flam mare, flābe, flamear, flagra:re, flagvē, flagrar, flagrare, flagvax, flagrar, ustula:re, ustolare, multus, molto, mol, molc, mult, alguno, alkuno, əlgu, alter, altro, altrə, al tri, alt, alius, longum, lō, longo, lungo, lōgu, lō, lunk, lung, largum, laxž, larçō, larg o, laxgu, largu, lark, larg, la:tum, le, lato, latu, lat, amplum, āpl, amplə, lurdus, lūx, lerdo, lordo, pitulus, pikkolo, piťful, de:lika:tus, delyađo, delikato, dēlikat, subti:lem, sutil, sottile, suptil, suti:l, vermikulus, illa:k, la</p>
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## Appendix 5 - Segments used in the word list

33	r	mulierem, mui:r, mujere, mulier, mui:r, mujere, mari:tus, marito, mari:t, mærit, ma:trem, ma:dre, mōri, passerem, passero, fru:ktus, frutto, frut, frukt, flo:rem, flo:r, nari:fe, na:rīs, soreli, mare, mar, mar, sare, terra, tjera, tērra, tērā, tjere, tsarə, negurə, tene:braj, tē:nebre, tene:bra:s, tē:nebre, bibere, komedere, manduka:re, morde:re, mōrdere, mwardi, morsika:re, morsikare, musəgar, murseka, su:gere, konspuere, spute re, ski:re, sapere, kogno:skere, konoffere, ko:gita:re, koḡitare, pe:nsa:re, time:re, te mere, tremere, tremare, trima:, dormi:re, dormire, durmi, durmi:, dormi, wi:were, v ivere, morire, muri:, muri, neka:re, annegare, tu:ta:ri, macta:re, okki:dere, pugna:re, punnare, battuere, battere, kaptia:re, katfjare, pulsa:re, pulsare, seka:re, segare, kur ta:re, ekskurta:re, scortare, scurta:, skurta, ta:lia:re, ta:lla:re, di:widere, dividere, sk indere, f indere, findere, fēndere, parti:re, partire, pər̥ti, parti:, se:para:re, separare, separa:, separa, pungere, punḡere, jugula:re, jugula:re, ra:dere, raer, radere, rawrə, rada:, rade, rasar, rasare, rəza, rasa:, raskar, rəska, fodere, kawa:re, kavare, ekska ware, skavare, nata:re, naviga:re, navigare, wola:re, mergere, mēḡgere, merḡe, am bita:re, andare, weni:re, ekstendere, estendere, jake:re, ḡgere, sedere, sedere, seden ta:re, stare, stare, leva:re, levare, altia:re, altsare, torna:re, tornare, turna, tu:rne, to rna:, turna, gyra:re, ḡjirare, ḡjira:, virare, tork <sup>w</sup> e:re, tər̥fjere, turser, tōrsə, tōartfe, ka dere, kawrə, tene:re, eksprimere, spremere, iḡprəmeḡ, iḡprəmer, esprimi, skreme, se rrere, serar, səra, serare, ḡerar, serrare, appekto:re, stringere, strindḡere, əḡtr̥z̥ir, əḡtr̥z̥ir, stringe, strēngi:, strindḡe, frika:re, fregare, froj, frea, freka, frikta:re, frett are, frisar, lawa:re, lavare, tergere, tēḡgere, ekstergere, əstərzi, fterḡe, eksu:ka:re, affugare, limpida:re, tira:re, tirare, tire, tira:, trahere, trarre, traj, traḡe, impingere, impinḡere, jakta:re, ḡgettare, lankea:re, lanfjare, e:runka:re, arankar, arronfjare, li gare, legare, apta:re, ko:nsuere, kuḡfire, komputa:re, kontare, e:numera:re, enumera re, numara, di:kere, dire, ekspō:nerē, sporre, kantare, kantare, lu:dere, joka:re, ḡgo kare, flu:ktua:re, fluttuare, fluita:re, fluitare, fluere, fluire, ko:la:re, kolare, eksku rrere, eskuri:, skorrere, əskorə, skori:, kurrere, koreḡ, korrere, korə, kori, gela:re, ḡelare, glakia:re, ḡjattfjare, inglakia:re, bruḡfare, bruza:, krema:re, kremare, krəma, f lamma:re, fjammare, arde:re, ardere, flagra:re, flagrare, inkendere, inḡēndjare, ust ula:re, ustolare, ustura, alter, altro, altri, grandem, grande, gran, grant, majjorem, largum, largo, lark, larg, grawis, grēve, grav, grēvi, lurdus, lordo, kurtus, korto, ku rt, brewis, brēve, striktus, stretto, stret, strimt, mərunt, subtsire, ruber, rubro, russ us, roxo, rosso, ros, rōs, vermikulus, vermi:λλo, bərme:λ, rubeus, rubjo, rōbbjo, rubeo, ruḡe, rōḡf, rojb, wiridem, verde, vēr̥t, tre:s, tre, trēs, trō:, tre:, trej, k <sup>w</sup> attwor, kwattro, kwatri, patru
34	x	muxer, muxer, paxaro, puxar, taxar, xīrar, enxugar, xita, xugar, roxo, bermexo
35	λ	moλλe, muλeḡ, muλer, muλe, moλλe, muλeḡ, muλer, muλe, useλ, λunə, λak, taλλa: re, taλaḡ, tēλar, tēλa, λəba, λənsa, λiḡa, λoḡ, λark, vermi:λλo, vərme:λu, vīrmējλu, bərme:λ, əλa

## Appendix 5 - Segments used in the word list

36	ɤ	muɭɤ, muɭɤ, maɪ, meɤ, fɤɟi, flɔɤ, floɤ, flɔ:ɤ, plu:ɤ, meɤ, maɤ, meɤ, teɤ, teɤ, te ɤ, te:ɤ, tenɛɤ, si:ɤ, bwɤ, bebeɤ, bɔ:ɤ, mɛzɤ, moɤ, moɤ, sugɤ, kuspiɤ, savɤ ɤ, sabɤ, kɔnɛɤ, kɔnesɤ, kuzitaɤ, pɛsɤ, temɤ, kɛdɤ, tremɤ, dɔkmɤ, dokmɤ, dwaɤmi, vivɤ, viveɤ, muɪɤ, moɤ, muɪɤ, mataɤ, ɔksiɤ, batɤ, bateɤ, kasɤ, puɤaɤ, segɤ, koɤtaɤ, ekuɤte, taɤaɤ, ɟivɪɟiɤ, fɔdɤ, fɛdɤ, paɤtiɤ, paɤɟiɤ, sɔnɤ, sepaɤaɤ, pwɛdɤ, pɪziɤ, ɤaɤ, ɤɛɤ, ɤaze, ɤazaɤ, ɤɛzaɤ, ɤafkaɤ, ɤɛfkaɤ, fwɪɤ, kɛnaɤ, ifkɛnaɤ, naɤaɤ, naɪɪaɤ, voaɤ, kɛmɪnaɤ, maɤɤe, ɛdaɤ, vɔniɤ, viɤ, etɔdɤ, istɛdɤ, zezɪɤ, zɛzɛɤ, swaɤ, seɤ, etɤ, leɤaɤ, tuɤne, toɤnaɤ, ziɤ, viɤ, tɔɤdɤ, ɟwaɤ, tɔbaɤ, tɔniɤ, teɤ, sigura ɤ, epɛdɤ, ifprɔmɤ, seɤa, seɤe, siɤaɤ, etɛdɤ, fɤɛɤe, fɤɔte, tiɤ, tɤɤ, kudɤ, enumeɤe, diɤ, di:ɤ, zoɤaɤ, flutuɤaɤ, flwɪɤ, koaɤ, ifkoɤeɤ, kuɪɤ, koɤeɤ, kuɪɤ, bɤyle, bɤu:le, kɤ ame, keɤmaɤe, aɤdɤ, aɤdɤ, flagɤe, flagɤaɤ, otɤ, gɤã, gɤã, laɤz, laɤgu, gɤaɤ, luɤ, kuɤ, kuɤtu, ku:ɤ, bɤɛf, bɤɛf, etɤwa, stɤɔ:, ɤu, ɤofɔ, ɤofɔ, vɛɤmeɤɤ, vɛɤmeɤu, ɤuz, vɤɤ, vɤɤ, tɤwa, katɤ
37	i:	mui:r, mui:r, mari:tus, mari:t, kaɪi:ginem, si:ɤ, ɟi:l, maɪi:, sysi:, ski:re, dormi:re, du rmi:, wi:were, muri:, okki:dere, ɟɛsi:, teɟi:, di:widere, parti:re, parti:, nɛɟi:, ma:ɤɟi:, weni:re, viɪi:, hɔ:si:, strengi:, pu:si:, lanci:, lɔɟi:, di:kere, di:ɤ, di:, skori:, subti:lem, sut i:l, k <sup>w</sup> i:ɤk <sup>w</sup> e, ekkumhi:k, ibi:, ki:, si:k
38	ɲ	doɲa, niɲo, aɲo, aɲ, mɔɲza, maɪi:, kɔnesɤ, kuɲiser, kɔɲosi, puɲaɤ, puɲɲare, puɲa, puɲi, kɛmɪnaɤ, kɛmɪnaɤ, viɪi:, estɛɲiɤ, ɔstɛɲɔ, ɔmpɛɲɔ, oɲɲi, maɲo, maɲɲo, pekeɲo
39	ɔa	dɔamɲɔ, flɔare, sɔare, plɔaje, kuɲɔaste, tɔartɟe, ɔɔase
40	h	hominem, homo:, pɛhɔ, u:hɛ:, kinɔh, hɔ:si:, trahere, ekkumhi:k
41	ẽɟ	omẽɟ, ɔmẽɟ, nenẽɟ, kalizẽɟ, kẽɟ, nẽɟ
42	õ	õ, nõ, kõspye, lõ, nõ
43	ã	ãfã, vã, ã, lãg, mãze, pãse, fãdɤ, etãdɤ, lãse, ɟãte, flãbe, ẽsãɟe, ãpl, pɔzã
44	ĩ	ifẽɟi, ifẽti, liɟwɛ, ɔftri:zir, ɔftri:zir, liɲaɤ, isenɟɪaɤ, isɛɟaɤ, siɤu
45	ẽ	ifẽɟi, ifẽti, mɛzɤ, mɛzaɤ, ɛdaɤ, ɛdaɤ, lɛsa, lɛsaɤ, kɛtaɤ, tɛtu, tɛtu, grɛɟi, grɛdi, ɛɟu, kwɛdu
46	ɟ	ifẽɟi, sɔɟo, utɟello, utɟel, nariɟe, ɟɛaɟɔ, ɟɛlo, ɟi:l, ɟɛɤ, utɟidere, utɟide, katɟare, ɟɛ si:, caɟa:, paɤɟiɤ, ɟimine, ɟɟamina, ma:ɤɟi:, ɟaɟɛ:re, zɔɟɛa, tɔɟɛɛ, tɔɟɛɛ, tɔartɟe, ɟɛ:ɤ, ɟɟ ade, ɟira, etɟaɤ, lanɟare, lanɟaɤ, arronɟare, kuɟire, ziɟe, ɟãte, gɟatɟɟare, glatɟaɤ, bru ɟare, inɟɛndɟare, inɟindze, muɟo, anɟo, pitɟino, piɟul, estɟɟo, suɟiw, rɔɟ, ɟiɲkwe, ɟiɲk, ɟinɟ, ɟine, ɟe, ɟemu:t
47	i	ifẽti, ifpoze, ifpozu, peɟɟi, avi, iftreɤ, vint, nomi, biɟɛɤ, minka, kuɲiser, timer, tri mer, siɪaɤ, siɲɛaɤ, naɪɪaɤ, nɛviɪaɤ, iftaɤ, liɪaɤ, siguraɤ, siɪuraɤ, siɪaɤ, ɛpiɪtaɤ, str indze, iffriɪaɤ, iffriɪaɤ, impindze, kinta, zilar, ingɛsa, inɟindze, grɛdi, gravi, pizaɟu, piɤenu, breɪi, ingust, iftreɟtu, strimt, viɪmeɤu, verdi, ki, kind
48	ã	ɛfã, ã, ɟãte, gɤã, gɤã, kã

## Appendix 5 - Segments used in the word list

49	p	sponsa, epuz, esposa, spɔza, ispoza, iʃpozə, əspɔzə, sponsus, epu, esposo, spɔzo, ispozu, iʃpozu, əspɔs, spo:s, piskem, peθ, peʃfe, pejfi, pejfi, pef, pes, peʃte, pwasɔ, pɛhɔ, passerem, paɣaro, passero, paseru, pasəre, apə, pluwia, plɔi, pjodɕa, pluʒə, plu:ɤ, ploje, plɔaje, konspuere, kɔspye, kuspiɤ, kuspiɾ, eskupiɾ, əskupi, skujpa, sputere, esputar, sputare, spudaɪ, sapere, pe:nsa:re, pāse, pensar, pensare, pēsəɤ, pēsar, pənsa, pēse, pe:nsa:, pəsa, pugna:re, puɲar, puɲnare, puɲa, kaptia:re, pulsa:re, puse, puxar, pulsare, puʃəɤ, puʃar, pulsaɪ, pulsa, parti:re, paktiɤ, partir, partire, pəʃfiɤ, pɛrtir, pərti, pɔ:rti, parti, se:para:re, separar, separare, separəɤ, sipərar, səpəra, separaɪ, separa, pungere, pwe:ɤ, punɕere, pūziɤ, pūzir, puni, punɕe, eksprimere, epwe:ɤ, eksprimir, spre:me:re, iʃpre:me:re, iʃpremer, əspremə, esprimi, appektora:re, apretar, epirtar, limpida:re, limpjar, lipar, puse, pu:si:, pulsaɪ, impingere, impinɕere, əmpɛɲə, impiɲɕe, apta:re, komputa:re, ekspone:re, sporre, spune, paɯkus, pø, poko, pɔko, powku, pɔk, pɔ, pɔ:k, amplum, āpl, ampjo, amplə, pe:sant, pəzā, pesaɔo, pesante, pezadu, piɹaɔu, pəzat, pezant, pittitus, pəti, pətit, piti, pittinus, pekeɲo, pitfi:ɲo, pekenu, pikenu, putsin, pitulus, pikkolo, piʃul, suptil, patru
50	z	epuz, spɔza, ispoza, iʃpozə, əspɔzə, spɔzo, ispozu, iʃpozu, wazo, ɤaze, ɤazəɤ, ɤazar, rəza, zɤava:, zvolare, zvolaɪ, zburə, zeziɤ, zezeɤ, zezer, zəʃɕə, traze, trezer, kuzer, kuɹi, kɔ:z, kuzi, dizer, ziʃe, bruzaɪ, pəzā, pezadu, pizaɔu, pəzat, pezant
51	ð	mariðo, me:riðu, maðre, mo:ðer, mu:ðer, diviðiɾ, neðar, toðu, pesaɔo, pizaɔu, miuðu, deʎaɔo, deʎaɔu
52	k	sokius, piskem, awikellum, fru:ktus, frukt, akkwa, lakum, lak, ʌak, ka:li:ginem, ka:lina, kalidɕine, kalizēj, keʎizēj, kajkia, kajlum, fokum, fwɔko, fɔk, fu:k, fok, komedere, komer, kome, kumer, manduka:re, mandukar, minka, morsika:re, moskar, morsikare, murseka, konspuere, kɔspye, kuspiɤ, kuspiɾ, eskupiɾ, əskupi, skujpa, ski:re, kogno:skere, kɔnetɤ, konoθer, konoffere, kɔnesəɤ, kupiser, kunɕə, kinɔh, koposi, kunɔafte, ko:gitare, kɔide, kwidar, koɕitare, kuzitaɤ, kuzitar, kujda, kuɕeta, kwe:ɤ, neka:re, neka, okki:dere, ɔksiɤ, uksi, kaptiare, kaθar, katfiare, kasəɤ, kəsar, kəsə, seka:re, kurta:re, kortar, ko:taɤ, kurtar, ekskurta:re, eku:te, skurta, skindere, raskar, ɤəʃkaɤ, ɤəʃkar, rəska, kosaɹ, kusar, kaware, kabar, kavare, keɤəɤ, keɤar, kəba, ekskaware, eskabar, skavare, iʃkeɤəɤ, iʃkeɤar, kaminar, kamminare, ke:miɲəɤ, ke:miɲar, kəmina, ekstendere, ekstender, ekstinde, jake:re, kadere, kaer, kadere, keir, kawrə, kəɕə, eksprimere, ekspremir, skreme, appektora:re, frika:re, freka, frikta:re, ekstergere, eksu:ka:re, uska, jakta:re, lankea:re, erunka:re, arankar, aruɲka, ko:nsuere, kudɤ, koser, kuʃire, kuzer, kuzi, kɔ:z, kuzi, komputa:re, kɔte, kontar, kontare, kɔtar, kumta, kontaɪ, di:kere, ekspone:re, kanta:re, kantar, kantare, ke:tar, kənta, kinta, joka:re, ɕokare, zuka, flu:ktua:re, flyktɕe, fluktua, ko:la:re, kule, kolar, kolare, koəɤ, kuar, kuʌa, kɔle, ekscurrere, eskurir, skorrere, iʃkoɤəɤ, iʃkurer, əskoɹə, skori:, skurɕe, kurrere, kuɹiɤ, korer, korre:re, koɤəɤ, kuɤer, korə, kori, kurɕe, glakia:re, inglakia:re, kremare, kɤame, kemar, kremare, ke:jma:re, ke:jma:re, krəma, inkendere, okɔē, alkuno, paɯkus, poko, pɔko, powku, pɔk, pɔ:k, lunk, ʌark, lark, pekɛɲo, pekenu, pikenu, pikkolo, kurtus, kuɤ, korto, korto, kuɹtu, kurtu, kurt, ku:ɤ, kurt, striktus, de:lika:tus, delikato, dəlikat, vermikulus, katɤ, kwatro, kwattro, kwatru, kwatrə, kwat, kwatri, sēk, θinko, ʃiɲkwe, si:ku, siɲk, ʃiɲk, ekkumhi:k, aki, kwi, eki, illa:k, ki, ki:, kwi, kjen, kēj, ke:ʃ, kwa, ke, ki, ke, kwɛ:, kā, kwando, kwēdu, kwan, kwand, kwant, kind, kɔm, komo, kome, komu, kɔmē, kum, nek, si:k
53	ts	sots, tsarə, altsare, tsine, ingetsa, putsin, subtsire

## Appendix 5 - Segments used in the word list

54	a:	ma:trem, ma:dre, na:sus, na:so, na:s, na:ris, la:t, ma:r, sa:lem, sa:l, ka:li:ginem, tene:b ra:s, fu:ma:ta, fumata, manduka:re, maɲja:, morsika:re, cuca:, spuda:, ko:gitare, pe: nsare, peɲsa:, trima:, neka:re, tuta:ri, macta:re, maʦja:, pugna:re, kaptia:re, caʦa:, pu lsa:re, pulsa:, seka:re, sea:, kurtare, ekskurtare, scurta:, ta:lia:re, taʎʎa:re, taja:, se:p ara:re, separa:, jugula:re, jugula:re, ra:dere, rada:, rasa:, kawa:re, ʃava:, ekskawa:re, z ʃava:, nata:re, nada:, naviga:re, naviga:, wola:re, zvola:, ma:rʦi:, ambita:re, sedenta:r e, senta:, sta:re, sta:, leva:re, leva:, altia:re, altja:, torna:re, torna:, gyra:re, ɖira:, app ektora:re, frika:re, frikta:re, lawa:re, lava:, eksuka:re, suja:, limpida:re, tira:re, tira:, pulsa:, jaktare, lankea:re, lanʦja:, erunka:re, liga:re, lea:, apta:re, komputa:re, konta:, e:numera:re, kanta:re, canta:, joka:re, ɖuja:, flu:ktua:re, fluita:re, ko:la:re, gela:re, gl akia:re, glaʦja:, inglakia:re, bruza:, krema:re, flamma:re, flagra:re, ustula:re, la:tum, de:lika:tus, illa:k
55	ẽj	mẽj, kelizẽj, kẽj, nẽj
56	r	meR, fRy, savøR, mɔRi, pɔ:Rti, ma:rʦi:, ʦʃɛR, sɔRas, sɛRe, iʦkureR
57	ɒ	mɒri
58	θ	peθ, nariθ, θjelo, konoθer, kaθar, jaθer, alθar, torθer, θerar, lanθar, deθir, enθender, θinko
59	ej	pejʃi, zejtar, kejmæke, istrejtu, trej
60	ej	pejʃi, kejmære, iʃtrejtu, virmejʎu
61	õ	pwasõ, pehõ, nõ, tõbe, tõbaɤ, tõbar, kõte, kõtar, põ, õt, lõgu, lõ, õ
62	ɛ:	u:hɛ:, ɛ:w, tɛ:ɤ, tɛ:nebre, tɛ:nebre, ʦʃɛ:R, kwɛ:
63	ɥ	fɤqi, plɥi, kɥide, tɥe, esɥije, flyktɥe
64	ø:	flø:ɤ, stø:l, fø:, bø:ɤ, savøR, kø:z, stxø:, dø:, trø:
65	ɭ	sɔɭ, aɭsa, aɭsar, kuɭa, ʎama, aɭgũ, aɭ, deɭyaðu
66	c	soliculus, cuca:, macta:re, caʦa:, scortare, scurta:, lanci:, çqase, canta:, fluctua, molc, tanc
67	ɛj	sɔɛj, fɤɛje, vɛɤmej
68	ø	løn, fø, pø, dø
69	ɛa	stɛa, ʦʃɛaʦʃə, bɛa, zəʦʃɛa, ʃedɛa, kəɖɛa
70	k <sup>w</sup>	ak <sup>w</sup> a, tork <sup>w</sup> ere, k <sup>w</sup> attwor, k <sup>w</sup> i:nk <sup>w</sup> e, k <sup>w</sup> is, k <sup>w</sup> em, k <sup>w</sup> id, k <sup>w</sup> ando:, k <sup>w</sup> o:modo
71	ɣ	aɣwa, ajɣwə, laɣu, foɣu, musəɣa, siɣar, səɣa, naviɣaɤ, nəviɣar, siɣurar, iʃfriɣar, ɛ ʃuɣar, ɭiɣa, zuɣar, larɣo, deɣaɖo, deɣaðu
72	aj	ajɣwə, tene:braj, kajkia, kajlum, nwaje, traj, majjorem, duaj
73	g	age, lago, lenge, pugna:re, segar, segare, jugula:re, naviga:re, naviga:, mergere, gyr are, stringere, stringe, strēngi:, fregare, impingere, lega, xugar, glaʦja:, ingetsa, fla gɤaɤ, alguno, magnum, grandem, gran, gɤā, grant, longo, lung, largum, larg, grav, grevi, grew, ingust
74	ẽ	vẽtu, vẽ, pēsaa, pēsar, kɤēdɤ, fēdɤɤ, fēder, istēdɤɤ, iʃtēder, sētar, ɛʃugar, ɛʃuɣar, ɭs ɛɖjar, sēk, nẽ
75	ŋ	aŋ, nɔŋ, leŋgwa, maɲja:, peɲsa:, aɣuŋka, ɭoŋ, iŋgust, uŋ, ʦiŋkwe, siŋk, ʦiŋk
76	g <sup>w</sup>	ling <sup>w</sup> a
77	ẽu	lẽu
78	ɑ	bwaɤ, taje, ɤaze, tɤwa
79	β	biβer, səβɛ, laβar
80	ʃ	maɲja:, ʃava:, zʃava:
81	ẽ	pēsɛ, sēde, fēt, pwēdɤ, epɤēdɤ, etɤēdɤ, ɛsādje, kɔmɛ
82	ʦʃ	maʦja:
83	ɔ:	pɔ:Rti, hɔ:si:

## Appendix 5 - Segments used in the word list

84	ũ	pũzĩɾ, pũzĩɾ, mũjtu, awgũ, ałgũ, ũ
85	ɫ	kosaɫ
86	ç	çɑ:vle
87	ɑ:	çɑ:vle
88	ĩ	mũjtu
89	œ̃	okœ̃, œ̃
90	aɯ	paɯkus
91	ʊ	koʃʊ
92	ẽw̃	nẽw̃

## Appendix 6 - Word Lists by Language

### Latin

Cognate	IPA	Sounds
I	-ego:	ay-g-O
We	no:-s	n-O-s
YouPlural	wo:-s	w-O-s
YouSingular	tu:	t-U
Woman	fe:-mi-n-a	f-ai-m-e-n-ah
Woman-Mulier	mulierem	m-u-l-e-ay-r-ay-m
Woman-Domina	domina	d-oh-m-e-n-ah
ManHumanBeing	homi-nem	h-oh-m-e-n-ay-m
ManHumanBeing-Homo	-homo:	h-oh-m-O
Child	infantem	e-n-f-ah-n-t-ay-m
Wife	-sponsa	s-p-oh-n-s-ah
Wife-Mulier	mulier-	m-u-l-e-ay-r
Husband	mari:tus	m-ah-r-E-t-u-s
Husband-Sponsus	-sponsus	s-p-oh-n-s-u-s
Husband-Socius	sokius	s-oh-k-e-u-s
Mother	ma:trem	m-A-t-r-ay-m
Fish-Piskem	piskem	p-e-s-k-ay-m
Bird-Avem	awem	ah-w-ay-m
Bird-Avicellum	-awi-k-ellum	ah-w-e-k-ay-l-l-u-m
Bird-Passerem	passerem	p-ah-s-s-ay-r-ay-m
Fruit	fru:-ktus	f-r-U-k-t-u-s
Flower	flo:rem	f-l-O-r-ay-m
Nose	na:sus	n-A-s-u-s
Sun	so:lem	s-O-l-ay-m
Sun-Soliculus	soliculus	s-oh-l-e-tya-u-l-u-s
Moon	lu:na	l-U-n-ah
Star	-st-e:lla	s-t-ai-l-l-ah
Water	a-k <sup>w</sup> -a	ah-kw-ah
Rain	plu-wia	p-l-u-w-e-ah
Lake	lakum	l-ah-k-u-m
Sea	mare	m-ah-r-ay
Salt	'sa:lem	s-A-l-ay-m
Earth	t-erra	t-ay-r-r-ah
Fog	ka:li:ginem	k-A-l-E-g-e-n-ay-m
Fog-Nebula	n-e-bula	n-ay-b-u-l-ah
Fog-Tenebrae	tene:braj	t-ay-n-ai-b-r-aj_diphthong
Fog-Tenebras	t-en-e:bra:s	t-ay-n-ai-b-r-A-s
Fog-Fumata	fu:ma:ta	f-U-m-A-t-ah
Fog-Caecia	kajkia	k-aj_diphthong-k-e-ah
Sky	'k-ajlum	k-aj_diphthong-l-u-m
Wind	w-entum	w-ay-n-t-u-m
Fire-Focus	f-okum	f-oh-k-u-m
Year	annum	ah-n-n-u-m
Name-Nomen	no:men	n-O-m-ay-n
Name-Nominem	no:min-em	n-O-m-e-n-ay-m

## Appendix 6 - Word Lists by Language

Tongue	ling <sup>w</sup> -a	l-e-n-gw-ah
ToDrink	'bib-ere	b-e-b-ay-r-ay
ToEat	komedere	k-oh-m-ay-d-ay-r-ay
ToEat-Manducare	manduka:re	m-ah-n-d-u-k-A-r-ay
ToBite	m-orde:re	m-oh-r-d-ai-r-ay
ToBite-Morsicare	morsika:re	m-oh-r-s-e-k-A-r-ay
ToSuck	su:gere	s-U-g-ay-r-ay
ToSpit	konspuere	k-oh-n-s-p-u-ay-r-ay
ToSpit-Sputare	-sputere	s-p-u-t-ay-r-ay
ToKnow	ski:re	s-k-E-r-ay
ToKnow-Sapere	sap-ere	s-ah-p-ay-r-ay
ToKnow-Cognoscere	kogno:skere	k-oh-g-n-O-s-k-ay-r-ay
ToThink	k-o:gita:re	k-O-g-e-t-A-r-ay
ToThink-Pensare	pe:nsa:re	p-ai-n-s-A-r-ay
ToFear	time:re	t-e-m-ai-r-ay
ToFear-Tremere	trem-ere	t-r-ay-m-ay-r-ay
ToSleep	d-ormi:re	d-oh-r-m-E-r-ay
ToLive	wi:were	w-E-w-ay-r-ay
ToKill	n-eka:re	n-ay-k-A-r-ay
ToKill-Tutari	tu:-ta:ri	t-U-t-A-r-e
ToKill-Mactare	macta:re	m-ah-tya-t-A-r-ay
ToKill-Occidere	okki:dere	oh-k-k-E-d-ay-r-ay
ToFight	pugna:re	p-u-j-n-A-r-ay
ToFight-Battuere	battuere	b-ah-t-t-u-ay-r-ay
ToHunt-Captiare	kaptia:re	k-ah-p-t-e-A-r-ay
ToHit	pulsa:re	p-u-l-s-A-r-ay
ToCut	s-eka:re	s-ay-k-A-r-ay
ToCut-Curtare	kurta:re	k-u-r-t-A-r-ay
ToCut-Excurtare	ekskurta:re	ay-k-s-k-u-r-t-A-r-ay
ToCut-Taliare	ta:-lia:re	t-A-l-e-A-r-ay
ToSplit	di:widere	d-E-w-e-d-ay-r-ay
ToSplit-Scindere	skindere	s-k-e-n-d-ay-r-ay
ToSplit-Findere	findere	f-e-n-d-ay-r-ay
ToSplit-Partire	parti:re	p-ah-r-t-E-r-ay
ToSplit-Separare	se:para:re	s-ai-p-ah-r-A-r-ay
ToStab	p-ungere	p-u-n-g-ay-r-ay
ToStab-Iugulare	jugula:re	jg-u-g-u-l-A-r-ay
ToScratch	ra:dere	r-A-d-ay-r-ay
ToDig	fodere	f-oh-d-ay-r-ay
ToDig-Cavare	kawa:re	k-ah-w-A-r-ay
ToDig-Excavare	ekskawa:re	ay-k-s-k-ah-w-A-r-ay
ToSwim	n-ata:re	n-ah-t-A-r-ay
ToSwim-Navigare	naviga:re	n-ah-v-e-j-A-r-ay
ToFly	wola:re	w-oh-l-A-r-ay
ToWalk-Mergere	mergere	m-ay-r-j-ay-r-ay
ToWalk-Ambitare	ambita:re	ah-m-b-e-t-A-r-ay
ToCome	weni:re	w-ay-n-E-r-ay



## Appendix 6 - Word Lists by Language

ToLieAsInABed	ekstendere	ay-k-s-t-ay-n-d-ay-r-ay
ToLieAsInABed-lacere	ja-ke:re	jg-ah-k-ai-r-ay
ToSit	s-e-de:re	s-ay-d-ai-r-ay
ToSit-Sedentare	sedenta:re	s-ay-d-ay-n-t-A-r-ay
ToStand	-sta:re	s-t-A-r-ay
ToStand-Levare	leva:re	l-ay-v-A-r-ay
ToStand-Altiare	-altia:re	ah-l-t-e-A-r-ay
ToTurnIntransitive	torna:re	t-oh-r-n-A-r-ay
ToTurnIntransitive-Gyrare	gyra:re	j-eeh-r-A-r-ay
ToTurnIntransitive-Torquere	tork <sup>w</sup> e:re	t-oh-r-kw-ai-r-ay
ToFall	k-adere	k-ah-d-ay-r-ay
ToHold	ten-e:re	t-ay-n-ai-r-ay
ToSqueeze	eksprim-ere	ay-k-s-p-r-e-m-ay-r-ay
ToSqueeze-Serrere	serrere	s-ay-r-r-ay-r-ay
ToSqueeze-Serare	se-rare	s-ay-r-ah-r-ay
ToSqueeze-Appetorare	appetora:re	ah-p-p-ay-k-t-oh-r-A-r-ay
ToSqueeze-Stringere	-stringere	s-t-r-e-n-j-ay-r-ay
ToRub	frika:re	f-r-e-k-A-r-ay
ToRub-Frictare	frikta:re	f-r-e-k-t-A-r-ay
ToWash	lawa:re	l-ah-w-A-r-ay
ToWipe	tergere	t-ay-r-g-ay-r-ay
ToWipe-Extergere	ekstergere	ay-k-s-t-ay-r-g-ay-r-ay
ToWipe-Exsucare	eks-u:k-a:re	ay-k-s-U-k-A-r-ay
ToWipe-Limpidare	limpida:re	l-e-m-p-e-d-A-r-ay
ToPull	tira:re	t-e-r-A-r-ay
ToPull-Pulsare	pulsa:re	p-u-l-s-A-r-ay
ToPull-Trahere	trahere	t-r-ah-h-ay-r-ay
ToPush	impingere	e-m-p-e-n-j-ay-r-ay
ToThrow	jakta:re	jg-ah-k-t-A-r-ay
ToThrow-Lanceare	lankea:re	l-ah-n-k-ay-A-r-ay
ToThrow-Eruncare	e:-runka:re	ai-r-u-n-k-A-r-ay
ToTie	liga:re	l-e-g-A-r-ay
ToTie-Aptare	apta:re	ah-p-t-A-r-ay
ToSew	ko:n-suere	k-O-n-s-u-ay-r-ay
ToCount	komputa:re	k-oh-m-p-u-t-A-r-ay
ToCount-Enumerare	e:numera:re	ai-n-u-m-ay-r-A-r-ay
ToSay	di:kere	d-E-k-ay-r-ay
ToSay-Exponere	eksponere	ay-k-s-p-O-n-ay-r-ay
ToSing-AncestralClass	kanta:re	k-ah-n-t-A-r-ay
ToPlay-Ludere	lu:dere	l-U-d-ay-r-ay
ToPlay-Jiocare	jo-ka:re	jg-oh-k-A-r-ay
ToFloat	flu:ktua:re	f-l-U-k-t-u-A-r-ay
ToFloat-Fluitare	fluita:re	f-l-u-e-t-A-r-ay
ToFlow	fluere	f-l-u-ay-r-ay
ToFlow-Colare	ko:la:re	k-O-l-A-r-ay
ToFlow-Excurrere	ekskurrere	ay-k-s-k-u-r-r-ay-r-ay
ToFlow-Currere	kurrere	k-u-r-r-ay-r-ay

## Appendix 6 - Word Lists by Language

ToFreeze	gela:re	g-ay-l-A-r-ay
ToFreeze-Glaciare	gla-kia:re	g-l-ah-k-e-A-r-ay
ToFreeze-Inglaciare	inglakia:re	e-n-g-l-ah-k-e-A-r-ay
ToBurn-Cremare	krema:re	k-r-ay-m-A-r-ay
ToBurn-Flammare	flamma:re	f-l-ah-m-m-A-r-ay
ToBurn-Ardere	arde:re	ah-r-d-ai-r-ay
ToBurn-Flagrare	flagra:re	f-l-ah-g-r-A-r-ay
ToBurn-Incendere	inkend-ere	e-n-k-ay-n-d-ay-r-ay
ToBurn-AncestralClass8	ustula:re	u-s-t-u-l-A-r-ay
All	omne:s	oh-m-n-ai-s
All-Totus	to:-tus	t-O-t-u-s
Many	multus	m-u-l-t-u-s
Many-Tantus	tantus	t-ah-n-t-u-s
Few	paukus	p-au_diphthong-k-u-s
Other	alter-	ah-l-t-ay-r
Other-Alius	alius	ah-l-e-u-s
Big	magnum	m-ah-j-n-u-m
Big-Grandem	grandem	j-r-ah-n-d-ay-m
Big-Majjorem	majjorem	m-aj_diphthong-jg-oh-r-ay-m
Long-Longum	'lo-ngum	l-oh-n-g-u-m
Long-Largum	largum	l-ah-r-j-u-m
Wide	'la:tum	l-A-t-u-m
Wide-Amplum	amplum	ah-m-p-l-u-m
Heavy	grawis	g-r-ah-w-e-s
Heavy-Lurdus	lurdus	l-u-r-d-u-s
Heavy-Pesant	pe:sant-	p-ai-s-ah-n-t
Small	pittitus	p-e-t-t-e-t-u-s
Small-Pittinus	'pittinus	p-e-t-t-e-n-u-s
Small-Pitulus	pi-tulus	p-e-t-u-l-u-s
Short	kurtus	k-u-r-t-u-s
Short-Brevis	brewis	b-r-ay-w-e-s
Narrow	angustus	ah-n-g-u-s-t-u-s
Narrow-Strictus	-str-i-ktus	s-t-r-e-k-t-u-s
Thin	minu:-tus	m-e-n-U-t-u-s
Thin-Delicatus	de:lika:tus	d-ai-l-e-k-A-t-u-s
Thin-Subtilis	subti:lem	s-u-b-t-E-l-ay-m
Red	ruber-	r-u-b-ay-r
Red-Russus	russus	r-u-s-s-u-s
Red-Vermiculus	vermikulus	v-ay-r-m-e-k-u-l-u-s
Red-Rubeus	ru-beus	r-u-b-ay-u-s
Green	'wiridem	w-e-r-e-d-ay-m
One	'u:num	U-n-u-m
Two-Duos	duo:s	d-u-O-s
Two-Duae	du-aj	d-u-aj_diphthong
Two-Duas	duas	d-u-ah-s
Three	tr-e:s	t-r-ai-s
Four	k <sup>w</sup> -attwor-	kw-ah-t-t-w-oh-r

## Appendix 6 - Word Lists by Language

Five	'k <sup>w</sup> i:nk <sup>w</sup> -e	kw-E-n-kw-ay
Here	-ekkumhi:k	ay-k-k-u-m-h-E-k
There	illa:k	e-l-l-A-k
There-Ibi	ibi:	e-b-E
Who-Qui	k <sup>w</sup> -is	kw-e-s
Who-Quem	k <sup>w</sup> -em-	kw-ay-m
What	'k <sup>w</sup> -id	kw-e-d
When-Quando	k <sup>w</sup> -ando:	kw-ah-n-d-O
How-Quomodo	'k <sup>w</sup> o:modo	kw-O-m-oh-d-oh
Not	no:n	n-O-n
Not-Nec	nek	n-ay-k
And-Et	et	ay-t
And-Si	si:k	s-E-k

## French

Cognate	IPA	Sounds
I	ʒə--	gzah-aah
We	nu--	n-u
YouPlural	vu--	v-u
YouSingular	ty	t-eeh
Woman	fa-m-----	f-ah-m
Woman-Domina	dam---	d-ah-m
ManHumanBeing	-ɔ̃m-----	eu-h-m
ManHumanBeing-Homo	-ɔ̃--	oon
Child	ã-fã----	NasalA-f-NasalA
Wife	e-pu-z-	ay-p-u-zz
Husband	maʁi---	m-ah-rr-e
Husband-Sponsus	e-pu----	ay-p-u
Mother	me-ʁ--	m-ay-rr
Fish-Pescion	pwasõ	p-w-ah-s-on
Bird-Avicellum	wa---z-o----	w-ah-zz-oh
Fruit	fʁɥi----	f-rr-eu-e
Flower	flœʁ--	f-l-OpenMidNearFrontRounded-rr
Nose	ne---	n-ay
Sun-Solliculus	sɔ̃leʝ----	s-euh-l-eh_diphthong
Moon	lyn-	l-eeh-n
Star	e-twa-l-	ay-t-w-ah-l
Water	o----	oh
Rain	plɥ-i-	p-l-eu-e
Lake	lak--	l-ah-k
Sea	mɛʁ-	m-eh-rr
Salt	sɛl--	s-eh-l
Earth	t-e-ʁ-	t-ay-rr
Fog-Nebula	nʝo---ly	n-jg-euh-l-eeh
Fog-Tenebras	t-en-ɛbʁ-	t-ay-n-eh-b-rr
Fog-Fumata	fyme--	f-eeh-m-ay
Sky	sjɛl--	s-jg-eh-l

## Appendix 6 - Word Lists by Language

Wind	v-ã----	v-NasalA
Fire-Focus	f-ø---	f-uu
Year	ã----	NasalA
Name-Nomen	nõ---	n-oon
Tongue	lã-g--	l-NasalA-g
ToDrink	b--waʁ-	b-w-a-rr
ToEat-Manducare	mã-ʒ--e--	m-NasalA-gzah-ay
ToBite	m-oʁd-ʁ-	m-oh-rr-d-rr
ToSuck	syse--	s-eeh-s-ay
ToSpit	kõ-spye-	k-oon-s-p-eeh-ay
ToKnow-Sapere	savwaʁ-	s-ah-v-w-ah-rr
ToKnow-Cognoscere	kõ-nɛ-tʁ-	k-euh-n-eh-t-rr
ToThink	kʏ--ide--	k-eu-e-d-ay
ToThink-Pensare	pã-se--	p-NasalA-s-ay
ToFear-Tremere	kʁẽ-d-ʁ-	k-rr-ehn-d-rr
ToSleep	d-ɔʁmiʁ-	d-euh-rr-m-e-rr
ToLive	viv-ʁ-	v-e-v-rr
ToDie	muriʁ-	m-u-rr-e-rr
ToKill	nwaje--	n-w-aj_diphthong-ay
ToKill-Tutari	t-ʏ-e--	t-eu-ay
ToKill-Mactare	ma-te--	m-ah-t-ay
ToKill-Occidere	ɔksi--ʁ-	euh-k-s-e-rr
ToFight-Battuere	bat--ʁ-	b-ah-t-rr
ToHunt-Captiare	ʃa-s-e--	shh-ah-s-ay
ToHit	pu-se	p-u-s-ay
ToCut	sje----	s-jg-ay
ToCut-Excurtare	e--kuste--	ay-k-u-rr-t-ay
ToCut-Taliare	taj--e--	t-a-jg-ay
ToSplit-Scindere	s-ɛ-de--	s-ehnn-d-ay
ToSplit-Findere	fã-d-ʁ-	f-NasalA-d-rr
ToSplit-Partire	paktiʁ-	p-ah-rr-t-e-rr
ToSplit-Separare	sə-v---ʁe	s-aah-v-rr-ay
ToStab	pwẽ-d-ʁ-	p-w-ehnn-d-rr
ToStab-Iugulare	ʒygyle--	gzah-eeh-g-eeh-l-ay
ToScratch-Rasare	ʁaze--	rr-a-zz-ay
ToDig	fwɪʁ	f-w-e-rr
ToSwim-Navigare	na--ʒe--	n-ah-gzah-ay
ToFly	vole--	v-oh-l-ay
ToWalk	ʃəmine--	shh-aah-m-e-n-ay
ToWalk-Marcher	maʁʃe	m-ah-rr-shh-ay
ToCome	vəniʁ-	v-aah-n-e-rr
ToLieAsInABed	e-tã-d-ʁ-	ay-t-NasalA-d-rr
ToLieAsInABed-lacere	ʒe-zɪʁ-	gzah-ay-zz-e-rr
ToSit	swa--ʁ-	s-w-ah-rr
ToStand	ɛ-t-ʁ-	eh-t-rr
ToStand-Levare	ləve--	l-aah-v-ay
ToStand-Altiare	-o-s-e--	oh-s-ay

## Appendix 6 - Word Lists by Language

ToTurnIntransitive	tukne--	t-u-rr-n-ay
ToTurnIntransitive-Gyrare	zike--	gzah-e-rr-ay
ToTurnIntransitive	vike--	v-e-rr-ay
-AncestralClass3		
ToTurnIntransitive-Torquere	tɔkd-ɣ-	t-euh-rr-d-rr
ToFall	ʃwa--ɣ-	shh-w-ah-rr
ToFall-Tumbare	tō-be-	t-on-b-ay
ToHold	tən-ik-	t-aah-n-e-rr
ToSqueeze	e--pɣɛ-d-ɣ-	ay-p-rr-ehnn-d-rr
ToSqueeze-Serare	se-ɣe--	s-ay-rr-ay
ToSqueeze-Stringere	e-tɣɛ-d-ɣ-	ay-t-rr-ehnn-d-rr
ToRub	fɣɛje--	f-rr-eh_diphthong-ay
ToRub-Frictare	fɣote--	f-rr-oh-t-ay
ToWash	lave--	l-ah-v-ay
ToWipe-Exsucare	e-sɣi-je--	ay-s-eu-e-jg-ay
ToPull	tike--	t-e-rr-ay
ToPull-Pulsare	pu-se--	p-u-s-ay
ToPull-Trahere	tɣ--ɛɣ-	t-rr-eh-rr
ToThrow	zə-te	gzah-aah-t-ay
ToThrow-Lanceare	lā-s-e-	l-NasalA-s-ay
ToTie	li-e--	l-e-ay
ToSew	ku-d---ɣ-	k-u-d-rr
ToCount	kō---te--	k-on-t-ay
ToCount-Enumerare	enumere--	ay-n-u-m-ay-rr-ay
ToSay	di--ɣ	d-e-rr
ToSing-AncestralClass	ʃā-te--	shh-NasalA-t-ay
ToPlay-Jiocare	ʒ-w-e--	gzah-w-ay
ToFloat	flyktɣe--	f-l-eeh-k-t-eu-ay
ToFlow	flye--	f-l-eeh-ay
ToFlow-Colare	kule--	k-u-l-ay
ToFlow-Currere	ku-ɣiɣ-	k-u-rr-e-rr
ToFreeze	zəle--	gzah-aah-l-ay
ToFreeze-Glaciare	gla-s-e--	g-l-ah-s-ay
ToBurn-Brojan	bɣyle--	b-rr-eeh-l-ay
ToBurn-Cremare	kɣame--	k-rr-ah-m-ay
ToBurn-Flammare	flā-be--	f-l-NasalA-b-ay
ToBurn-Ardere	aɣd-ɣ-	ah-rr-d-rr
ToBurn-Flagrare	flagɣe--	f-l-ah-g-rr-ay
ToBurn-Incendere	ɛ-sā-dje--	ehnn-s-NasalA-d-jg-ay
All-Totus	tu----	t-u
Many	mu---	m-u
Some	o-kœ-	oh-k-uuh
Few	pø---	p-uu
Other	o-t-ɣ-	oh-t-rr
Big-Grandem	gɣā---	g-rr-an
Long-Longum	lō-----	l-oon
Long-Largum	laɣʒ--	l-ah-rr-gzah

## Appendix 6 - Word Lists by Language

Wide	le---	l-ay
Wide-Amplum	ã-pl--	NasalA-p-l
Heavy	gɣav--	g-rr-ah-v
Heavy-Lurdus	luɣ---	l-u-rr
Heavy-Pesant	pəzã---	p-aah-zz-NasalA
Small	pə-ti---	p-aah-t-e
Short	kuɣ---	k-u-rr
Short-Brevis	bɣef--	b-rr-eh-f
Narrow-Strictus	e-tɣwa-----	ay-t-rr-w-ah
Thin	məny----	m-aah-n-eeh
Thin-Delicatus	du:--ʒe:---	d-U-gzah-ai
Red-Russus	ɣu----	rr-u
Red-Vermiculus	vɣmɛj----	v-eh-rr-m-eh_diphthong
Red-Rubeus	ɣu-ʒ---	rr-u-gzah
Green	vɣɣ----	v-ay-rr
One	œ---	uuh
Two-Duos	d-ø-	d-uu
Three	tɣwɑ-	t-rr-w-a
Four	k-a-t--ɣ-	k-ah-t-rr
Five	sɛ-k--	s-ehn-k
Here	i--s---i-	e-s-e
There	--la-	l-ah
Who-Qui	k-i-	k-e
What	kwa-	k-w-ah
When-Quando	k-ã---	k-an
How-Quomodo	kɔm---	k-euh-m
Not	nɔ̃-	n-oon
Not-Nec	ni-	n-e
And-Et	e-	ay

## Spanish

Cognate	IPA	Sounds
I	j--o	VdPalatalFricative-oh
We	no-s	n-oh-s
YouPlural	bo-s	b-oh-s
YouSingular	tu	t-u
YouSingular	-usted	u-s-t-ay-d
-VostramMercedem		
Woman	-e-m-br-a	ay-m-b-er-ah
Woman-Mulier	mux-er--	m-u-xha-ay-er
Woman-Domina	do--ɲa	d-oh-VdPalatalNasal-ah
ManHumanBeing	om-bre-	oh-m-b-er-ay
Child	infante-	e-n-f-ah-n-t-ay
Child-Ninnus	nijo	n-e-VdPalatalNasal-oh
Wife	espo-sa	ay-s-p-oh-s-ah
Wife-Mulier	mux-er-	m-u-xha-ay-er
Husband	mariðo-	m-ah-er-e-dd-oh

## Appendix 6 - Word Lists by Language

Husband-Sponsus	espo-so-	ay-s-p-oh-s-oh
Mother	maðre-	m-ah-dd-er-ay
Fish-Piskem	peθ---	p-ay-th
Bird-Avem	abe-	ah-b-ay
Bird-Passerem	pa-xaro-	p-ah-xha-ah-er-oh
Fruit	fru--to-	f-er-u-t-oh
Flower	flor--	f-l-oh-er
Nose	nas-	n-ah-s-oh
Nose-Nares	nariθ-	n-ah-er-e-th
Sun	sol--	s-oh-l
Moon	luna	l-u-n-ah
Star	estre-ja	ay-s-t-er-ay-VdPalatalFricative-ah
Water	'a-ywa	ah-juh-w-ah
Rain	j-u-bja	VdPalatalFricative-u-b-jg-ah
Lake	lago-	l-ah-j-oh
Sea	mar-	m-ah-er
Salt	sal--	s-ah-l
Earth	'tje-ra	t-jg-ay-r-ah
Fog	kali--na-	k-ah-l-e-n-ah
Fog-Nebula	nje-b-la	n-jg-ay-b-l-ah
Fog-Tenebras	t-injeblas	t-e-n-jg-ay-b-l-ah-s
Fog-Fumata	fumata	f-u-m-ah-t-ah
Sky	'θjelo	th-jg-ay-l-oh
Wind	'bjento-	b-jg-ay-n-t-oh
Fire-Focus	fwego-	f-w-ay-g-oh
Year	a-ɲo-	ah-VdPalatalNasal-oh
Name-Nominem	nom-bre-	n-oh-m-b-er-ay
Tongue	'lengwa	l-ay-nya-g-w-ah
ToDrink	beb-er-	b-ay-b-ay-er
ToEat	kome--r-	k-oh-m-ay-er
ToEat-Manducare	mandukar-	m-ah-n-d-u-k-ah-er
ToBite	m-orðer-	m-oh-er-dd-ay-er
ToBite-Morsicare	mo-s-kar-	m-oh-s-k-ah-er
ToSpit-Exconspuere	esku-pir	ay-s-k-u-p-e-er
ToSpit-Sputare	esputar	ay-s-p-u-t-ah-er
ToKnow-Sapere	sab-er-	s-ah-b-ay-er
ToKnow-Cognoscere	ko-noθer-	k-oh-n-oh-th-ay-er
ToThink	kw--idar-	k-w-e-d-ah-er
ToThink-Pensare	pensar-	p-ay-n-s-ah-er
ToFear	temer-	t-ay-m-ay-er
ToFear-Tremere	trem-er-	t-er-ay-m-ay-er
ToSleep	d-ormir-	d-oh-er-m-e-er
ToLive	bibir-	b-e-b-e-er
ToDie	morir-	m-oh-er-e-er
ToKill-Adnecare	a-negar-	ah-n-ay-g-ah-er
ToKill-Mactare	ma-tar-	m-ah-t-ah-er
ToFight	pu-ɲar-	p-u-VdPalatalNasal-ah-er



## Appendix 6 - Word Lists by Language

ToFight-Battuere	ba-t-ir-	b-ah-t-e-er
ToHunt-Captiare	ka-θ-ar-	k-ah-th-ah-er
ToHit	pu-xar-	p-u-xha-ah-er
ToCut	s-egar-	s-ay-j-ah-er
ToCut-Curtare	kortar-	k-oh-er-t-ah-er
ToCut-Taliare	ta-x-ar-	t-ah-xha-ah-er
ToSplit	dibidir-	d-e-b-e-d-e-er
ToSplit-Findere	-ender-	ay-n-d-ay-er
ToSplit-Partire	partir-	p-ah-er-t-e-er
ToSplit-Separare	separar-	s-ay-p-ah-er-ah-er
ToScratch	ra-er-	r-ah-ay-er
ToScratch-Rasare	rasar-	r-ah-s-ah-er
ToScratch-Rasicare	raskar	r-ah-s-k-ah-er
ToDig-Cavare	kabar	k-ah-b-ah-er
ToDig-Excavare	eskabar-	ay-s-k-ah-b-ah-er
ToSwim	n-adar-	n-ah-d-ah-er
ToSwim-Navigare	nabegar-	n-ah-b-ay-g-ah-er
ToFly	bolar-	b-oh-l-ah-er
ToWalk	kaminar-	k-ah-m-e-n-ah-er
ToWalk-Ambitare	and--ar-	ah-n-d-ah-er
ToCome	benir-	b-ay-n-e-er
ToLieAsInABed	ekstender-	ay-k-s-t-ay-n-d-ay-er
ToLieAsInABed-lacere	ja-θer-	VdPalatalFricative-ah-th-ay-er
ToSit	s-e--r-	s-ay-er
ToSit-Sedentare	se--ntar-	s-ay-n-t-ah-er
ToStand	estar-	ay-s-t-ah-er
ToStand-Levare	jebat-	VdPalatalFricative-ay-b-ah-er
ToStand-Altiare	-alθ-ar-	ah-l-th-ah-er
ToTurnIntransitive	tornar-	t-oh-er-n-ah-er
ToTurnIntransitive-Gyrare	xirar-	xha-e-er-ah-er
ToTurnIntransitive	birar-	b-e-er-ah-er
-AncestralClass3		
ToTurnIntransitive-Torquere	torθer-	t-oh-er-th-ay-er
ToFall	k-a-er-	k-ah-ay-er
ToFall-Tumbare	tumbar	t-u-m-b-ah-er
ToHold	ten-er-	t-ay-n-ay-er
ToHold-Segurar	segurar	s-ay-g-u-er-ah-er
ToSqueeze	eksprem-ir-	ay-k-s-p-er-ay-m-e-er
ToSqueeze-Serrere	se-rar	s-ay-r-ah-er
ToSqueeze-Serare	θe-rar-	th-ay-r-ah-er
ToSqueeze-Appetorare	a-p--retar-	ah-p-er-ay-t-ah-er
ToSqueeze-Stringere	estrep-ir-	ay-s-t-er-ay-VdPalatalNasal-e-er
ToRub	fregar-	f-er-ay-g-ah-er
ToRub-Frictare	frotar-	f-er-oh-t-ah-er
ToRub-Frictiare	frisar	f-r-e-s-ah-er
ToWash	laβar-	l-ah-bb-ah-er
ToWipe-Extergere	e-starsir-	ay-s-t-ah-er-s-e-er

## Appendix 6 - Word Lists by Language

ToWipe-Exsucare	enx-ug-ar-	ay-n-xha-u-g-ah-er
ToWipe-Limpidare	limpj-ar-	l-e-m-p-jg-ah-er
ToPull	tirar-	t-e-er-ah-er
ToPull-Pulsare	pu-xar-	p-u-xha-ah-er
ToThrow	-e-ſſar	ay-ts-ah-er
ToThrow-Lanceare	lanθ-ar-	l-ah-n-th-ah-er
ToThrow-Eruncare	a-rankar	ah-r-ah-n-k-ah-er
ToTie	legar-	l-ay-g-ah-er
ToTie-Aptare	a-tar-	ah-t-ah-er
ToSew	ko--s-er-	k-oh-s-ay-er
ToCount	kon--tar-	k-oh-n-t-ah-er
ToCount-Enumerare	enumerar-	ay-n-u-m-ay-er-ah-er
ToSay	deθir	d-ay-th-e-er
ToSing-AncestralClass	kantar-	k-ah-n-t-ah-er
ToPlay-Ludere	ludir-	l-u-d-e-er
ToPlay-Jiocare	xu-gar-	xha-u-j-ah-er
ToFloat	flugtwar-	f-l-u-g-t-w-ah-er
ToFlow	fluir-	f-l-u-e-er
ToFlow-Colare	kolar-	k-oh-l-ah-er
ToFlow-Excurrere	e-skurir-	ay-s-k-u-r-e-er
ToFlow-Currere	ko-rer-	k-oh-r-ay-er
ToFreeze	-elar-	ay-l-ah-er
ToBurn-Cremare	k-emar-	k-ay-m-ah-er
ToBurn-Flammare	fla-mear	f-l-ah-m-ay-ah-er
ToBurn-Ardere	arder-	ah-er-d-ay-er
ToBurn-Flagrare	flagrar	f-l-ah-g-er-ah-er
ToBurn-Incendere	enθend-er-	ay-n-th-ay-n-d-ay-er
All-Totus	to-do-	t-oh-d-oh
Many	mu-ſſo-	m-u-ts-oh
Many-Tantus	tanto-	t-ah-n-t-oh
Some	alguno	ah-l-j-u-n-oh
Few	poko-	p-oh-k-oh
Other	o-t-ro	oh-t-er-oh
Big	ma-po-	m-ah-VdPalatalNasal-oh
Big-Grandem	grande-	g-er-ah-n-d-ay
Long-Longum	lo-ngo-	l-oh-n-j-oh
Long-Largum	laryo-	l-ah-er-juh-oh
Wide	lato-	l-ah-t-oh
Wide-Amplum	anſſ-o-	ah-n-ts-oh
Heavy	grabe-	g-er-ah-b-ay
Heavy-Lurdus	lerdo-	l-ay-er-d-oh
Heavy-Pesant	pesa-ðo	p-ay-s-ah-dd-oh
Small-Pittinus	pe-kepo-	p-ay-k-ay-VdPalatalNasal-oh
Short	korto-	k-oh-er-t-oh
Short-Brevis	brebe-	b-er-ay-b-ay
Narrow	angosto-	ah-n-g-oh-s-t-oh
Narrow-Strictus	estr-e--ſſo-	ay-s-t-er-ay-ts-oh

## Appendix 6 - Word Lists by Language

Thin	menu-do-	m-ay-n-u-d-oh
Thin-Delicatus	del-yaðo-	d-ay-l-juh-ah-dd-oh
Thin-Subtilis	su-til--	s-u-t-e-l
Red-Russus	ro-xo-	r-oh-xha-oh
Red-Vermiculus	bermexo---	b-ay-er-m-ay-xha-oh
Red-Rubeus	ru-bjo-	r-u-b-jg-oh
Green	ber-de-	b-ay-er-d-ay
One	'uno-	u-n-oh
Two-Duos	d-os	d-oh-s
Three	tr-es	t-er-ay-s
Four	kwa-t--ro	k-w-ah-t-er-oh
Five	'θink-o	th-e-n-k-oh
Here	-a-k---i-	ah-k-e
There	a-ja-	ah-VdPalatalFricative-ah
There-Adlbi	ai	ah-e
Who-Quem	kjen-	k-jg-ay-n
What	k-e-	k-ay
When-Quando	kwando	k-w-ah-n-d-oh
How-Quomodo	komo--	k-oh-m-oh
Not	no-	n-oh
Not-Nec	ni-	n-e
And-Et	i-	e

## Italian

Cognate	IPA	Sounds
I	i--o	e-oh
We	no:i-	n-O-e
YouPlural	'vo:i-	v-O-e
YouSingular	tu	t-u
Woman	femmi-n-a	f-ay-m-m-e-n-ah
Woman-Mulier	moʎʎe---	m-oh-yuh-yuh-ay
Woman-Domina	dɔn-na	d-euh-n-n-ah
ManHumanBeing-Homo	wɔmo	w-euh-m-oh
Child	--fante-	f-ah-n-t-ay
Child-Ninnus	nino	n-e-n-oh
Wife	-spɔ-za	s-p-euh-zz-ah
Wife-Mulier	moʎʎe--	m-oh-yuh-yuh-ay
Husband	marito-	m-ah-r-e-t-oh
Husband-Sponsus	-spɔ-zo-	s-p-euh-zz-oh
Husband-Socius	sɔʎf-o-	s-euh-ts-oh
Mother	ma:dre-	m-A-d-r-ay
Fish-Piskem	peʎʎe-	p-ay-shh-shh-ay
Bird-Avicellum	--u-tʎf-ello-	u-t-ts-eh-l-l-oh
Bird-Passerem	passero-	p-ah-s-s-ay-r-oh
Fruit	fru-tto-	f-r-u-t-t-oh
Flower	'fjo:re-	f-jg-O-er-ay
Nose	na:so-	n-A-s-oh

## Appendix 6 - Word Lists by Language

Nose-Nares	nariŋe	n-ah-r-e-ts-ay
Sun	sole-	s-oh-l-ay
Moon	luna	l-u-n-ah
Star	-st-ella	s-t-ay-l-l-ah
Water	akkwa	ah-k-k-w-ah
Rain	pjoddʒ-a	p-jg-oh-d-VdPalatoAlveolarSibilant-ah
Lake	lago-	l-ah-g-oh
Sea	mare	m-ah-r-ay
Salt	sale-	s-ah-l-ay
Earth	't-erra	t-eh-r-r-ah
Fog	kalidʒine-	k-ah-l-e-VdPalatoAlveolarSibilant-e-n-ay
Fog-Nebula	n-ebb-ja	n-ay-b-b-jg-ah
Fog-Tenebrae	tɛːnebre	t-Eh-n-ay-b-r-ay
Fog-Tenebras	t-ɛːn-ebre-	t-Eh-n-ay-b-r-ay
Fog-Fumata	fumaːta	f-u-m-A-t-ah
Sky	'ʃ-elo-	ts-eh-l-oh
Wind	'v-ento-	v-eh-n-t-oh
Fire-Focus	fwoko-	f-w-euh-k-oh
Year	anno-	ah-n-n-oh
Name-Nomen	noːme-	n-O-m-ay
Tongue	'lingwa	l-e-n-g-w-ah
ToDrink	be---re	b-ay-er-ay
ToEat-Manducare	mandʒ--are	m-ah-n-VdPalatoAlveolarSibilant-ah-er-ay
ToBite	m-ordere	m-euh-r-d-ay-r-ay
ToBite-Morsicare	morsikare	m-oh-r-s-e-k-ah-er-ay
ToSpit-Sputare	-sputare	s-p-u-t-ah-er-ay
ToKnow-Sapere	sap-ere	s-ah-p-ay-r-ay
ToKnow-Cognoscere	ko-noʃfere	k-oh-n-oh-shh-shh-ay-r-ay
ToThink	k-odʒitare	k-oh-VdPalatoAlveolarSibilant-e-t-ah-r-ay
ToThink-Pensare	pensare	p-ay-n-s-ah-er-ay
ToFear	temere	t-ay-m-ay-r-ay
ToFear-Tremere	trem-are	t-r-ay-m-ah-r-ay
ToSleep	d-ormire	d-oh-r-m-e-r-ay
ToLive	vivere	v-e-v-ay-r-ay
ToDie	morire	m-oh-r-e-r-ay
ToKill-Adnecare	annegare	ah-n-n-ay-g-ah-r-ay
ToKill-Occidere	utʃfidere	u-t-ts-e-d-ay-er-ay
ToFight	pupɲare	p-u-VdPalatalNasal-VdPalatalNasal-ah-r-ay
ToFight-Battuere	batt-ere	b-ah-t-t-ay-r-ay
ToHunt-Captiare	kattʃ-are	k-ah-t-ts-ah-r-ay
ToHit	pulsare	p-u-l-s-ah-r-ay
ToCut	s-egare	s-ay-j-ah-r-ay
ToCut-Excurtare	--scortare	s-tya-oh-r-t-ah-r-ay
ToCut-Taliare	ta-ʌʌaːre	t-ah-yuh-yuh-A-r-ay
ToSplit	dividere	d-e-v-e-d-ay-r-ay
ToSplit-Scindere	ʃ-indere	shh-e-n-d-ay-r-ay
ToSplit-Findere	fendere	f-eh-n-d-ay-r-ay

## Appendix 6 - Word Lists by Language

ToSplit-Partire	partire	p-ah-r-t-e-r-ay
ToSplit-Separare	separare	s-ay-p-ah-r-ah-r-ay
ToStab	p-undzere	p-u-n-VdPalatoAlveolarSibilant-ay-r-ay
ToStab-Iugulare	jugula:re	jg-u-j-u-l-A-r-ay
ToScratch	radere	r-ah-d-ay-r-ay
ToScratch-Rasare	rasare	r-ah-s-ah-r-ay
ToDig-Cavare	kavare	k-ah-v-ah-r-ay
ToDig-Excavare	--skavare	s-k-ah-v-ah-r-ay
ToSwim	nwotare	n-w-oh-t-ah-er-ay
ToSwim-Navigare	navigare	n-ah-v-e-g-ah-r-ay
ToFly	volare	v-oh-l-ah-er-ay
ToFly-Exvolare	zvolare	zz-v-oh-l-ah-er-ay
ToWalk	kamminare	k-ah-m-m-e-n-ah-er-ay
ToWalk-Mergere	mærdzere	m-eh-r-VdPalatoAlveolarSibilant-ay-r-ay
ToWalk-Ambitare	and--are	ah-n-d-ah-r-ay
ToCome	venire	v-ay-n-e-er-ay
ToLieAsInABed	e-stendere	ay-s-t-eh-n-d-ay-r-ay
ToLieAsInABed-lacere	dʒa-ŋe:re	VdPalatoAlveolarSibilant-ah-ts-ai-er-ay
ToSit	s-edere	s-ay-d-ay-r-ay
ToStand	-stare	s-t-ah-r-ay
ToStand-Levare	levare	l-ay-v-ah-r-ay
ToStand-Altiare	-altsare	ah-l-VlAlveolarSibilantAffricate-ah-r-ay
ToTurnIntransitive	tornare	t-oh-r-n-ah-r-ay
ToTurnIntransitive-Gyrare	dʒirare	VdPalatoAlveolarSibilant-e-r-ah-er-ay
ToTurnIntransitive	virare	v-e-r-ah-er-ay
-AncestralClass3		
ToTurnIntransitive-Torquere	tørŋere	t-euh-r-ts-ay-r-ay
ToFall	k-adere	k-ah-d-ay-er-ay
ToHold	ten-ere	t-ay-n-ay-er-ay
ToSqueeze	--sprēm-ere	s-p-r-eh-m-ay-r-ay
ToSqueeze-Serare	serrare	s-ay-r-r-ah-r-ay
ToSqueeze-Stringere	-strindzere	s-t-r-e-n-VdPalatoAlveolarSibilant-ay-r-ay
ToRub	fregare	f-r-ay-j-ah-r-ay
ToRub-Frictare	frettare	f-r-ay-t-t-ah-r-ay
ToWash	lavare	l-ah-v-ah-r-ay
ToWipe	tærdzere	t-eh-r-VdPalatoAlveolarSibilant-ay-r-ay
ToWipe-Exsucare	aŋŋ-ug-are	ah-shh-shh-u-g-ah-r-ay
ToPull	tirare	t-e-r-ah-r-ay
ToPull-Pulsare	pulsare	p-u-l-s-ah-r-ay
ToPull-Trahere	trar-re	t-r-ah-r-r-ay
ToPush	impindzere	e-m-p-e-n-VdPalatoAlveolarSibilant-ay-r-ay
ToThrow	dʒettare	VdPalatoAlveolarSibilant-ay-t-t-ah-r-ay
ToThrow-Lanceare	lanŋfare	l-ah-n-ts-ah-r-ay
ToThrow-Eruncare	arronfare	ah-r-r-oh-n-ts-ah-r-ay
ToTie	legare	l-ay-g-ah-r-ay
ToSew	ku--ŋ-ire	k-u-ts-e-r-ay
ToCount	kon--tare	k-oh-n-t-ah-r-ay

## Appendix 6 - Word Lists by Language

ToCount-Enumerare	enumerare	ay-n-u-m-ay-r-ah-r-ay
ToSay	di--re	d-e-r-ay
ToSay-Exponere	--spor-re	s-p-oh-r-r-ay
ToSing-AncestralClass	kantare	k-ah-n-t-ah-r-ay
ToPlay-Jiocare	dʒo-kare	VdPalatoAlveolarSibilant-oh-k-ah-r-ay
ToFloat	fluttuare	f-l-u-t-t-u-ah-r-ay
ToFloat-Flutare	flutare	f-l-u-e-t-ah-r-ay
ToFlow	fluire	f-l-u-e-r-ay
ToFlow-Colare	kolare	k-oh-l-ah-r-ay
ToFlow-Excurrere	--skorrere	s-k-oh-r-r-ay-r-ay
ToFlow-Currere	korrere	k-oh-r-r-ay-r-ay
ToFreeze	dʒelare	VdPalatoAlveolarSibilant-ay-l-ah-r-ay
ToFreeze-Glaciare	gʒatʃjare	g-jg-ah-t-ts-jg-ah-r-ay
ToBurn-Brojan	brutʃare	b-r-u-ts-ah-r-ay
ToBurn-Cremare	kremare	k-r-ay-m-ah-r-ay
ToBurn-Flammare	fjammare	f-jg-ah-m-m-ah-r-ay
ToBurn-Ardere	ardere	ah-r-d-ay-r-ay
ToBurn-Flagrare	flagrare	f-l-ah-g-r-ah-r-ay
ToBurn-Incendere	inʃendjare	e-n-ts-eh-n-d-jg-ah-r-ay
ToBurn-AncestralClass8	ustolare	u-s-t-oh-l-ah-r-ay
All	onpi-	oh-VdPalatalNasal-VdPalatalNasal-e
All-Totus	tutto-	t-u-t-t-oh
Many	molto-	m-oh-l-t-oh
Many-Tantus	tanto-	t-ah-n-t-oh
Some	alkuno	ah-l-k-u-n-oh
Few	poko-	p-euh-k-oh
Other	alt-ro	ah-l-t-r-oh
Big	mapno-	m-ah-VdPalatalNasal-VdPalatalNasal-oh
Big-Grandem	grande-	g-r-ah-n-d-ay
Long-Longum	lu-ngo-	l-u-n-g-oh
Long-Largum	largo-	l-ah-r-g-oh
Wide	lato-	l-ah-t-oh
Wide-Amplum	ampjo-	ah-m-p-jg-oh
Heavy	grève-	g-r-eh-v-ay
Heavy-Lurdus	lordo-	l-oh-r-d-oh
Heavy-Pesant	pesante	p-ay-s-ah-n-t-ay
Small-Pittinus	pittjino-	p-e-t-ts-e-n-oh
Small-Pitulus	pikkolo-	p-e-k-k-oh-l-oh
Short	korto-	k-oh-r-t-oh
Short-Brevis	breve-	b-r-eh-v-ay
Narrow	angusto-	ah-n-g-u-s-t-oh
Narrow-Strictus	-str-e-tto-	s-t-r-ay-t-t-oh
Thin	minu-to-	m-e-n-u-t-oh
Thin-Delicatus	delikato-	d-ay-l-e-k-ah-t-oh
Thin-Subtilis	sottile-	s-oh-t-t-e-l-ay
Red	rub-ro	r-u-b-r-oh
Red-Russus	rosso-	r-oh-s-s-oh

## Appendix 6 - Word Lists by Language

Red-Vermiculus	vermiʎ-ʎo-	v-ay-r-m-e-yuh-yuh-oh
Red-Rubeus	rɔbbjo-	r-euh-b-b-jg-oh
Green	ver-de-	v-ay-r-d-ay
One	'uno-	u-n-oh
Two-Duae	du-e	d-u-ay
Three	'tr-e-	t-r-ay
Four	kwatt--ro	k-w-ah-t-t-r-oh
Five	'ʃɪŋkwe	ts-e-nya-k-w-ay
Here	---kw--i-	k-w-e
There	--la-	l-ah
There-Ibi	-vi	v-e
Who-Qui	k-i-	k-e
What	k-e-	k-ay
When-Quando	kwando	k-w-ah-n-d-oh
How-Quomodo	kome--	k-oh-m-ay
Not	non	n-oh-n
Not-Nec	ne-	n-ay
And-Et	e-	ay

## Brazilian Portuguese

Cognate	IPA	Sounds
I	-e-w	ay-w
We	nɔj-s	n-euh-jg-s
YouPlural	vɔjs	v-euh-jg-s
YouSingular	tu	t-u
YouSingular	vos-e-	v-oh-s-ay
-VostramMercedem		
Woman	fe-me---ɐ	f-ay-m-ay-ahh
Woman-Mulier	muʎ-ek--	m-u-yuh-ay-rr
Woman-Domina	do--nɐ	d-oh-n-ahh
ManHumanBeing	omɛj---	oh-m-nasal_diphthong_portuguese1
Child	ĩ-fɛ-ʃi-	een-f-ahn-ts-e
Child-Ninnus	nenɛj	n-ay-n-nasal_diphthong_portuguese1
Wife	ispo-za	e-s-p-oh-zz-ah
Wife-Mulier	muʎ-ek-	m-u-yuh-ay-rr
Husband	maridu-	m-ah-er-e-d-u
Husband-Sponsus	ispo-zu-	e-s-p-oh-zz-u
Mother	mɛj----	m-nasal_diphthong_portuguese2
Fish-Piskem	pejʃ-i-	p-ej_diphthong-shh-e
Bird-Avem	avi-	ah-v-e
Bird-Passerem	pa-sɐru-	p-ah-s-ahh-er-u
Fruit	fru--tɐ-	f-er-u-t-ahh
Flower	flok--	f-l-oh-rr
Nose-Nares	naris-	n-ah-er-e-s
Sun	sɔw--	s-euh-w
Moon	lu-ɐ	l-u-ahh
Star	istre-lɐ	e-s-t-er-ay-l-ahh

## Appendix 6 - Word Lists by Language

Water	'a-gwə	ah-g-w-ahh
Rain	ʃ-u-v-ə	shh-u-v-ahh
Lake	lagu-	l-ah-g-u
Sea	maʁ-	m-ah-rr
Salt	saw--	s-ah-w
Earth	't-e-ʁə	t-ay-rr-ahh
Fog	kalizẽj̃---	k-ah-l-e-gzah-nasal_diphthong_portuguese1
Fog-Nebula	n-ɛ-vw-ə	n-eh-v-w-ahh
Fog-Fumata	fumasə	f-u-m-ah-s-ahh
Sky	s-ɛw--	s-eh-w
Wind	'v-ẽ-tu-	v-ehn-t-u
Fire-Focus	f-ogu-	f-oh-g-u
Year	ɐ-nu-	ahh-n-u
Name-Nomen	nomi-	n-oh-m-e
Tongue	'lĩ-gwə	l-een-g-w-ahh
ToDrink	beb-ek-	b-ay-b-ay-rr
ToEat	kome---	k-oh-m-ay
ToEat-Manducare	mẽ-ʒ--ak-	m-ahn-gzah-ah-rr
ToBite	m-okdek-	m-oh-rr-d-ay-rr
ToBite-Morsicare	mu-səga--	m-u-s-aah-g-ah
ToSuck	sugaʁ-	s-u-g-ah-rr
ToSpit	ku-spiʁ	k-u-s-p-e-rr
ToKnow-Sapere	sab-ek-	s-ah-b-ay-rr
ToKnow-Cognoscere	ko-ɲes-ek-	k-oh-VdPalatalNasal-ay-s-ay-rr
ToThink	k-uʒitaʁ-	k-u-gzah-e-t-ah-rr
ToThink-Pensare	pẽ-saʁ-	p-ehn-s-ah-rr
ToFear	temek-	t-ay-m-ay-rr
ToFear-Tremere	trem-ek-	t-er-ay-m-ay-rr
ToSleep	d-okmiʁ-	d-oh-rr-m-e-rr
ToLive	viveʁ-	v-e-v-ay-rr
ToDie	mokeʁ-	m-oh-rr-ay-rr
ToKill-Mactare	ma-taʁ-	m-ah-t-ah-rr
ToFight-Battuere	ba-t-ek-	b-ah-t-ay-rr
ToHunt-Captiare	ka-s-aʁ-	k-ah-s-ah-rr
ToHit	pu-ʃaʁ-	p-u-shh-ah-rr
ToCut	s-egaʁ-	s-ay-g-ah-rr
ToCut-Curtare	koʁtaʁ-	k-oh-rr-t-ah-rr
ToCut-Taliare	ta-ʎ-aʁ-	t-ah-yuh-ah-rr
ToSplit	dʒividʒiʁ-	VdPalatoAlveolarSibilant-e-v-e -VdPalatoAlveolarSibilant-e-rr
ToSplit-Findere	fẽ-dek-	f-ehn-d-ay-rr
ToSplit-Partire	paʁʃiʁ-	p-ah-rr-ts-e-rr
ToSplit-Separare	separaʁ-	s-ay-p-ah-er-ah-rr
ToStab	p-ũ-ʒiʁ-	p-ooo-gzah-e-rr
ToScratch	ʁa-ek-	rr-ah-ay-rr
ToScratch-Rasare	ʁazaʁ-	rr-ah-zz-ah-rr
ToScratch-Rasicare	ʁaʃkaʁ	rr-ah-shh-k-ah-rr



## Appendix 6 - Word Lists by Language

ToScratch-Coctiare	kosaɫ	k-oh-s-ah-VdRetroflexApproximant
ToDig-Cavare	kəvaɤ	k-ahh-v-ah-rr
ToDig-Excavare	i-ʃkəvaɤ-	e-shh-k-ahh-v-ah-rr
ToSwim	n-adaɤ-	n-ah-d-ah-rr
ToSwim-Navigare	naviyaɤ-	n-ah-v-eee-juh-ah-rr
ToFly	vo-aɤ-	v-oh-ah-rr
ToWalk	kəmiɲaɤ-	k-ahh-m-e-VdPalatalNasal-ah-rr
ToWalk-Ambitare	ẽ-d--aɤ-	ahn-d-ah-rr
ToCome	v--iɤ-	v-e-rr
ToLieAsInABed	istẽ-deɤ-	e-s-t-ehn-d-ay-rr
ToLieAsInABed-lacere	ʒɐ-zɐɤ-	gzah-ahh-zz-ay-rr
ToSit	s-e--ɤ-	s-ay-rr
ToSit-Sedentare	sẽ---tar-	s-ehn-t-ah-er
ToStand	ɪʃtar-	eee-shh-t-ah-er
ToStand-Levare	levaɤ-	l-ay-v-ah-rr
ToStand-Altiare	-aɫs-a--	ah-ssha-s-ah
ToTurnIntransitive	toɤnaɤ-	t-oh-rr-n-ah-rr
ToTurnIntransitive-Gyrare	ʒɪrar-	gzah-e-er-ah-er
ToTurnIntransitive	virar-	v-e-er-ah-er
-AncestralClass3		
ToTurnIntransitive-Torquere	turser-	t-u-r-s-ay-r
ToFall	k-ɐ-ir-	k-ahh-e-er
ToFall-Tumbare	tõ-baɤ	t-on-b-ah-rr
ToHold	te---ɤ-	t-ay-rr
ToHold-Segurar	siguraɤ	s-eee-g-u-er-ah-rr
ToSqueeze	i-ʃprəm-ɐɤ-	e-shh-p-r-aah-m-ay-rr
ToSqueeze-Serrere	se-ka--	s-ay-rr-ah
ToSqueeze-Serare	si-kaɤ-	s-eee-rr-ah-er
ToSqueeze-Appetorare	ɐ-pi-r-tar-	ahh-p-eee-er-t-ah-er
ToSqueeze-Stringere	əʃtri-ʒir-	aah-shh-t-r-een-gzah-e-r
ToRub-Exfricare	ɪʃfrigaɤ	eee-shh-f-er-eee-g-ah-er
ToWash	lɐvaɤ-	l-ahh-v-ah-er
ToWipe-Exsucare	ẽ-ʃ-ug-ar-	ehn-shh-u-g-ah-er
ToWipe-Limpidare	li-p--ar-	l-een-p-ah-er
ToPull	ʃɪra--	ts-e-er-ah
ToPull-Pulsare	pu-ʃar-	p-u-shh-ah-er
ToPull-Trahere	traze--	t-er-ah-zz-ay
ToThrow	ʒɛjtar	gzah-ej_diphthong-t-ah-er
ToThrow-Lanceare	lɐ-s-a--	l-ahn-s-ah
ToTie-Aptare	ɐ-tar-	ahh-t-ah-er
ToSew	ku--z-er-	k-u-zz-ay-er
ToCount	kõ---tar-	k-on-t-ah-er
ToCount-Enumerare	enumerar-	ay-n-u-m-ay-er-ah-er
ToSay	diz-er	d-e-zz-ay-er
ToSing-AncestralClass	kẽ-tar-	k-ahn-t-ah-er
ToPlay-Jiocare	ʒo-gaɤ-	gzah-oh-g-ah-rr
ToFloat	flu-tuaɤ-	f-l-u-t-u-ah-rr

## Appendix 6 - Word Lists by Language

ToFlow	flwɪk-	f-l-w-e-rr
ToFlow-Colare	ko-aɤ-	k-oh-ah-rr
ToFlow-Excurrere	i-ʃko-ɤɤk-	e-shh-k-oh-rr-ay-rr
ToFlow-Currere	ko-ɤɤk-	k-oh-rr-ay-rr
ToFreeze	ʒɪlar-	gzah-eee-l-ah-er
ToBurn-Cremare	k-ɛjmare	k-diphthong_portuguese-m-ah-er-ay
ToBurn-Ardere	aɤɤɤk-	ah-rr-d-ay-rr
ToBurn-Flagrare	flagɤaɤk-	f-l-ah-j-rr-ah-rr
ToBurn-Incendere	ĩ-sendʒɪar-	een-s-ay-n-VdPalatoAlveolarSibilant -NearCloseFrontUnrounded-ah-er
All-Totus	to-du-	t-oh-d-u
Many	mũj-tu	m-ooo-jn-t-u
Many-Tantus	tẽ-tu	t-ahn-t-u
Some	awgũ--	ah-w-g-ooo
Few	powku	p-oh-w-k-u
Other	owt-ru	oh-w-t-er-u
Other-Alius	aw---	ah-w
Big-Grandem	grẽ-dʒi-	g-er-ahn-VdPalatoAlveolarSibilant-e
Long-Longum	lõ-gu-	l-on-g-u
Long-Largum	laɤgu-	l-ah-rr-g-u
Wide	latu-	l-ah-t-u
Wide-Amplum	ẽ-ʃ-u-	ahn-shh-u
Heavy	gravi-	g-er-ah-v-e
Heavy-Lurdus	lerdo-	l-ay-er-d-oh
Heavy-Pesant	peza-du	p-ay-zz-ah-d-u
Small-Pittinus	pe-kenu-	p-ay-k-ay-n-u
Short	kugtu-	k-u-rr-t-u
Short-Brevis	'brɛvi-	b-er-eh-v-e
Narrow-Strictus	istr-ej--tu-	e-s-t-er-ej_diphthong-t-u
Thin	mi-u-du-	m-e-u-d-u
Thin-Delicatus	dew-gadu-	d-ay-w-g-ah-d-u
Thin-Subtilis	su-ʃiɥw--	s-u-ts-e-w
Red-Russus	ɤo-ʃo-	rr-oh-shh-NearCloseBackRounded
Red-Vermiculus	veɤme--ʌu-	v-ay-rr-m-ay-yuh-u
Red-Rubeus	ru-beo-	r-u-b-ay-oh
Green	ver-di-	v-ay-er-d-eee
One	ũ---	ooo
Two-Duos	d-ojs	d-oj_diphthong-s
Two-Duas	duɤs	d-u-ahh-s
Three	tr-es	t-er-ay-s
Four	kwa-t--ru	k-w-ah-t-er-u
Five	'sĩ-k-u	s-een-k-u
Here	-a-k---i-	ah-k-e
There	--la-	l-ah
There-Adlbi	ai	ah-e
Who-Quem	k-ẽj--	k-nasal_diphthong_portuguese l
What	k-i-	k-e

## Appendix 6 - Word Lists by Language

When-Quando	kwẽ-du	k-w-ahn-d-u
How-Quomodo	komu--	k-oh-m-u
Not	nẽw	n-au_diphthong_nasal
Not-Nec	nẽj	n-nasal_diphthong_portuguese1
And-Et	i-	e

### Portuguese

Cognate	IPA	Sounds
I	-e-w	ay-w
We	nɔ-ʃ	n-euh-shh
YouPlural	vo-ʃ	v-oh-shh
YouSingular	tu	t-u
YouSingular	vɔs-e-	v-euh-s-ay
-VostramMercedem		
Woman	'fe-mj---e	f-ay-m-jg-ahh
Woman-Mulier	muɔ-er--	m-u-yuh-ay-er
Woman-Domina	do--ne	d-oh-n-ahh
ManHumanBeing	ɔmẽj---	euh-m-nasal_diphthong_portuguese1
Child	ĩ-fẽ-ti-	een-f-ahn-t-eee
Child-Ninnus	nenẽj	n-ay-n-nasal_diphthong_portuguese1
Wife	ĩʃpo-zẽ	eee-shh-p-oh-zz-ahh
Wife-Mulier	muɔ-er-	m-u-yuh-ay-er
Husband	mɛriðu-	m-ahh-er-e-dd-u
Husband-Sponsus	ĩʃpo-zu-	eee-shh-p-oh-zz-u
Mother	mẽj----	m-nasal_diphthong_portuguese2
Fish-Piskem	pɛijf-i-	p-diphthong_portuguese-shh-eee
Bird-Avem	avi-	ah-v-eee
Bird-Passerem	pa-sɛru-	p-ah-s-ahh-er-u
Fruit	fɾu--tẽ-	f-er-u-t-ahh
Flower	flor--	f-l-oh-er
Nose-Nares	nɛrijf-	n-ahh-er-e-shh
Sun	sɔɫ--	s-euh-ssha
Moon	lu-e	l-u-ahh
Star	ĩʃtre-lẽ	eee-shh-t-er-ay-l-ahh
Water	'a-gwẽ	ah-g-w-ahh
Rain	ʃ-u-v-e	shh-u-v-ahh
Lake	layu-	l-ah-juh-u
Sea	mar-	m-ah-er
Salt	sal--	s-ah-l
Earth	't-ɛ-kẽ	t-eh-rr-ahh
Fog	kɛlizẽj---	k-ahh-l-e-gzah-nasal_diphthong_portuguese2
Fog-Nebula	n-ɛ-vw-e	n-eh-v-w-ahh
Fog-Tenebras	tr---ɛv-ɛʃ	t-er-eh-v-ahh-shh
Fog-Fumata	fumasẽ	f-u-m-ah-s-ahh
Sky	s-ɛw--	s-eh-w
Wind	'v-ẽ-tu-	v-ehn-t-u
Fire-Focus	f-oyu-	f-oh-juh-u

## Appendix 6 - Word Lists by Language

Year	ɐ-nu-	ahh-n-u
Name-Nomen	nomi-	n-oh-m-eee
Tongue	'lĩ-gwɐ	l-een-g-w-ahh
ToDrink	biβ-er-	b-eee-bb-ay-er
ToEat	kum--er-	k-u-m-ay-er
ToEat-Manducare	mẽ-ʒ--ar-	m-ahn-gzah-ah-er
ToBite	m-urðer-	m-u-er-dd-ay-er
ToBite-Morsicare	mu-səgar-	m-u-s-aah-g-ah-r
ToSuck	sugar-	s-u-g-ah-er
ToSpit	ku-ʃpir	k-u-shh-p-e-er
ToKnow-Sapere	sɐb-er-	s-ahh-b-ay-er
ToKnow-Cognoscere	ku-ɲis-er-	k-u-VdPalatalNasal-eee-s-ay-er
ToThink	k-uʒitar-	k-u-gzah-e-t-ah-er
ToThink-Pensare	pẽ-sar-	p-ehn-s-ah-er
ToFear	timer-	t-eee-m-ay-er
ToFear-Tremere	trim-er-	t-er-eee-m-ay-er
ToSleep	d-urmir-	d-u-er-m-e-er
ToLive	viver-	v-e-v-ay-er
ToDie	muker-	m-u-rr-ay-er
ToKill-Mactare	mɐ-tar-	m-ahh-t-ah-er
ToFight-Battuere	bɐ-t-er-	b-ahh-t-ay-er
ToHunt-Captiare	kɐ-s-ar-	k-ahh-s-ah-er
ToHit	pu-ʃar-	p-u-shh-ah-er
ToCut	s-iɣar-	s-eee-juh-ah-er
ToCut-Curtare	kurtar-	k-u-er-t-ah-er
ToCut-Taliare	tɐ-ʎ-ar-	t-ahh-yuh-ah-er
ToSplit	diviðir-	d-e-v-e-dd-e-er
ToSplit-Findere	fẽ-der-	f-ehn-d-ay-er
ToSplit-Partire	pɛrtir-	p-ahh-er-t-e-er
ToSplit-Separare	sipɛrar-	s-eee-p-ahh-er-ah-er
ToStab	p-ũ-ʒir-	p-ooo-gzah-e-er
ToScratch	kɐ-er-	rr-ahh-ay-er
ToScratch-Rasare	kɛzar-	rr-ahh-zz-ah-er
ToScratch-Rasicare	kɛʃkar	rr-ahh-shh-k-ah-er
ToScratch-Coctiare	kusar	k-u-s-ah-er
ToDig-Cavare	kɛvar	k-ahh-v-ah-er
ToDig-Excavare	i-ʃkɛvar-	e-shh-k-ahh-v-ah-er
ToSwim	n-ɐðar-	n-ahh-dd-ah-er
ToSwim-Navigare	nɛviɣar-	n-ahh-v-eee-juh-ah-er
ToFly	vw-ar-	v-w-ah-er
ToWalk	kɛmɲar-	k-ahh-m-e-VdPalatalNasal-ah-er
ToWalk-Ambitare	ẽ-d--ar-	ahn-d-ah-er
ToCome	v--ir-	v-e-er
ToLieAsInABed	iftẽ-der-	e-shh-t-ehn-d-ay-er
ToLieAsInABed-lacere	ʒɐ-zer-	gzah-ahh-zz-ay-er
ToSit	s-e--r-	s-ay-er
ToSit-Sedentare	sẽ---tar-	s-ehn-t-ah-er

## Appendix 6 - Word Lists by Language

ToStand	iftar-	eee-shh-t-ah-er
ToStand-Levare	livar-	l-eee-v-ah-er
ToStand-Altiare	-aʎs-ar-	ah-ssha-s-ah-er
ToTurnIntransitive	turnar-	t-u-er-n-ah-er
ToTurnIntransitive-Gyrare	zirar-	gzah-e-er-ah-er
ToTurnIntransitive	zirar-	gzah-e-er-ah-er
-AncestralClass3		
ToTurnIntransitive-Torque	turser-	t-u-r-s-ay-r
ToFall	k-ɐ-ir-	k-ahh-e-er
ToFall-Tumbare	tõ-bar	t-on-b-ah-er
ToHold	te---r-	t-ay-er
ToHold-Segurar	siɣurar	s-eee-juh-u-er-ah-er
ToSqueeze	i-ʃprəm-er-	e-shh-p-r-aah-m-ay-r
ToSqueeze-Serrere	sə-rar-	s-aah-VIUvularTrill-ah-er
ToSqueeze-Serare	si-ɐ-ar-	s-eee-rr-ah-er
ToSqueeze-Appetorare	ɐ-pi-r-tar-	ahh-p-eee-er-t-ah-er
ToSqueeze-Stringere	əʃtrĩzĩr-	aah-shh-t-r-eeen-gzah-e-r
ToRub-Exfricare	iffrĩɣar	eee-shh-f-er-eee-juh-ah-er
ToWash	lɐvar-	l-ahh-v-ah-er
ToWipe-Exsucare	ẽ-ʃ-uy-ar-	ehn-shh-u-juh-ah-er
ToWipe-Limpidare	lĩ-p--ar-	l-eeen-p-ah-er
ToPull	tirar-	t-e-er-ah-er
ToPull-Pulsare	pu-ʃar-	p-u-shh-ah-er
ToPull-Trahere	trɛzer-	t-er-ahh-zz-ay-er
ToThrow	zejt̃ar	gzah-ej_diphthong-t-ah-er
ToThrow-Lanceare	lẽ-s-ar-	l-ahn-s-ah-er
ToTie-Aptare	ɐ-tar-	ahh-t-ah-er
ToSew	ku--z-er-	k-u-zz-ay-er
ToCount	kõ---tar-	k-on-t-ah-er
ToCount-Enumerare	enumerar-	ay-n-u-m-ay-er-ah-er
ToSay	diz-er	d-e-zz-ay-er
ToSing-AncestralClass	kẽ-tar-	k-ahn-t-ah-er
ToPlay-Jiocare	zu-ɣar-	gzah-u-juh-ah-er
ToFloat	flu-tuar-	f-l-u-t-u-ah-er
ToFlow	flwir-	f-l-w-e-er
ToFlow-Colare	ku-ar-	k-u-ah-er
ToFlow-Excurrere	i-ʃku-ɾɛɾ-	e-shh-k-u-VIUvularTrill-ay-er
ToFlow-Currere	ku-ɾɛr-	k-u-rr-ay-er
ToFreeze	zilar-	gzah-eee-l-ah-er
ToBurn-Cremare	k-ejmake	k-ej_diphthong-m-ah-rr-ay
ToBurn-Ardere	ɐrder-	ahh-er-d-ay-er
ToBurn-Flagrare	flagrar-	f-l-ah-g-er-ah-er
ToBurn-Incendere	ĩ-sẽ-djar-	een-s-ehn-d-jg-ah-er
All-Totus	to-ðu-	t-oh-dd-u
Many	mũj̃-tu	m-ooo-jn-t-u
Many-Tantus	tẽ-tu-	t-ahn-t-u
Some	aɣũ--	ah-ssha-g-ooo

## Appendix 6 - Word Lists by Language

Few	powku	p-oh-w-k-u
Other	owt-ru	oh-w-t-er-u
Other-Alius	at---	ah-ssha
Big-Grandem	grẽ-di-	g-er-ahn-d-eee
Long-Longum	lõ-gu-	l-on-g-u
Long-Largum	langu-	l-ah-er-g-u
Wide	latu-	l-ah-t-u
Wide-Amplum	ẽ-f-u-	ahn-shh-u
Heavy	gravi-	g-er-ah-v-eee
Heavy-Lurdus	lerdo-	l-ay-er-d-oh
Heavy-Pesant	piza-đu	p-eee-zz-ah-dd-u
Small-Pittinus	pi-kenu-	p-eee-k-ay-n-u
Short	kurtu-	k-u-er-t-u
Short-Brevis	'brevi-	b-er-eh-v-eee
Narrow-Strictus	iftr-ẽj--tu-	eee-shh-t-er-diphthong_portuguese-t-u
Thin	mi-u-đu-	m-e-u-dd-u
Thin-Delicatus	deł-yađu-	d-eh-ssha-juh-ah-dd-u
Thin-Subtilis	su-ťiw--	s-u-ts-e-w
Red-Russus	ko-đu-	rr-oh-shh-u
Red-Vermiculus	virmej--lu-	v-eee-er-m-diphthong_portuguese-yuh-u
Red-Rubeus	ru-beo-	r-u-b-ay-oh
Green	ver-di-	v-ay-er-d-eee
One	ũ---	ooo
Two-Duos	d-ojɸ	d-oj_diphthong-shh
Two-Duas	dueɸ	d-u-ahh-shh
Three	tr-ef	t-er-ay-shh
Four	kwa-t--ru	k-w-ah-t-er-u
Five	'sĩ-k-u	s-eeen-k-u
Here	-ẽ-k---i-	ahh-k-e
There	--la-	l-ah
There-Adlbi	ei	ahh-e
Who-Quem	k-ẽj--	k-nasal_diphthong_portuguese2
What	k-i-	k-eee
When-Quando	kwẽ-du	k-w-ahn-d-u
How-Quomodo	komu--	k-oh-m-u
Not	nẽw	n-au_diphthong_nasal
Not-Nec	nẽj	n-nasal_diphthong_portuguese2
And-Et	i-	e

## Catalan

Cognate	IPA	Sounds
I	ʒ--ɔ	gzah-euh
YouPlural	bu-s	b-u-s
YouSingular	tu	t-u
YouSingular	voste-	v-oh-s-t-ay
-VostramMercedem		
Woman	fe-m-br-a	f-ay-m-b-er-ah

## Appendix 6 - Word Lists by Language

Woman-Mulier	muɬ-e---	m-u-yuh-ay
Woman-Domina	dɔ--nə	d-euh-n-aah
ManHumanBeing	-ɔmə---	euh-m-aah
Child-Ninnus	nen-	n-ay-n
Wife	əspɔ-zə	aah-s-p-euh-zz-aah
Wife-Mulier	muɬ-e-	m-u-yuh-ay
Husband	marit--	m-ah-er-e-t
Husband-Sponsus	əspɔ-s--	aah-s-p-euh-s
Mother	ma-rə-	m-ah-er-aah
Fish-Piskem	peɬ---	p-ay-shh
Bird-Avem	aw--	ah-w
Bird-Avicellum	--u--s-e-ɬ--	u-s-ay-yuh
Fruit	fruj-t--	f-er-u-jg-t
Flower	flɔ---	f-l-euh
Nose	nas	n-ah-s
Nose-Nares	na:ris-	n-A-r-NearCloseFrontUnrounded-s
Sun	sɔl--	s-euh-l
Moon	ɬunə	yuh-u-n-aah
Star	əst-ɛ-l-	aah-s-t-eh-l
Water	'aj-ɣwə	aj_diphthong-juh-w-aah
Rain	plu-ɜ-ə	p-l-u-gzah-aah
Lake	ɬak--	yuh-ah-k
Sea	mar-	m-ah-r
Salt	sal--	s-ah-l
Earth	't-ɛ-rə	t-eh-r-aah
Fog-Nebula	n-e--wɬə	n-ay-w-l-aah
Fog-Tenebras	t-ən-ebɾəs	t-aah-n-ay-b-er-aah-s
Sky	s-ɛl--	s-eh-l
Wind	b-en---	b-ay-n
Fire-Focus	f-ɔk--	f-euh-k
Year	a-ɲ--	ah-VdPalatalNasal
Name-Nomen	nɔm--	n-euh-m
ToDrink	bɛw--rə	b-eh-w-er-aah
ToEat-Manducare	məɲɜ--a--	m-aah-VdPalatalNasal-gzah-ah
ToBite-Morsicare	mu-səɣa--	m-u-s-aah-juh-ah
ToSpit-Exconspuere	əsku-pi	aah-s-k-u-p-e
ToKnow-Sapere	səβ-ɛ--	s-aah-bb-eh
ToKnow-Cognoscere	ku-nɛɟ-ə--	k-u-n-eh-shh-aah
ToThink	k-u-jda--	k-u-jg-d-ah
ToThink-Pensare	pənsa--	p-aah-n-s-ah
ToFear	temə--	t-ay-m-aah
ToSleep	d-urmi--	d-u-r-m-e
ToLive	biw-rə	b-e-w-er-aah
ToDie	muri--	m-u-er-e
ToKill	n-əga--	n-aah-g-ah
ToKill-Mactare	mə-ta--	m-aah-t-ah
ToKill-Occidere	uksi----	u-k-s-e

## Appendix 6 - Word Lists by Language

ToFight	pu-ɲa--	p-u-VdPalatalNasal-ah
ToFight-Battuere	ba-t--rə	b-ah-t-er-aah
ToHunt-Captiare	kə-s-a--	k-aah-s-ah
ToCut	s-əɣa--	s-aah-juh-ah
ToCut-Taliare	tə-ʎ-a--	t-aah-yuh-ah
ToSplit	dibidi--	d-e-b-e-d-e
ToSplit-Findere	fənd-rə	f-eh-n-d-er-aah
ToSplit-Partire	pərti--	p-aah-r-t-e
ToSplit-Separare	səpəra--	s-aah-p-aah-er-ah
ToStab	p-up-i--	p-u-VdPalatalNasal-e
ToScratch	raw-rə	r-ah-w-er-aah
ToScratch-Rasare	rəza--	r-aah-zz-ah
ToScratch-Rasicare	rəska-	r-aah-s-k-ah
ToDig-Cavare	kəba	k-aah-b-ah
ToSwim	n-əda--	n-aah-d-ah
ToSwim-Navigare	nəbəga--	n-aah-b-aah-g-ah
ToFly	bula--	b-u-l-ah
ToWalk	kəmina--	k-aah-m-e-n-ah
ToCome	bəni--	b-aah-n-e
ToLieAsInABed	ə-stend-rə	aah-s-t-ay-n-d-er-aah
ToLieAsInABed-lacere	ɰaw--rə	gzah-ah-w-er-aah
ToStand	əsta--	aah-s-t-ah
ToStand-Levare	ʎəba--	yuh-aah-b-ah
ToStand-Altiare	-əls-a--	aah-l-s-ah
ToTurnIntransitive	turna-	t-u-r-n-ah
ToTurnIntransitive-Gyrare	ɰira--	gzah-e-er-ah
ToTurnIntransitive	bira--	b-e-er-ah
-AncestralClass3		
ToTurnIntransitive-Torquere	tərsə--	t-euh-r-s-aah
ToFall	k-aw-rə	k-ah-w-r-aah
ToFall-Tumbare	tumba-	t-u-m-b-ah
ToHold	tən-i--	t-aah-n-e
ToSqueeze	ə-sprem-ə--	aah-s-p-er-ay-m-aah
ToSqueeze-Serrere	sə-ra--	s-aah-r-ah
ToSqueeze-Stringere	əstrəpə	aah-s-t-er-eh-VdPalatalNasal-aah
ToRub	fɣəga--	f-er-aah-g-ah
ToRub-Frictiare	fɣəsa-	f-er-aah-s-ah
ToWash	ʎəba--	yuh-aah-b-ah
ToWipe-Extergere	ə-stərɰi--	aah-s-t-aah-r-gzah-e
ToWipe-Exsucare	ə-ʃ-uɡa--	aah-shh-u-g-ah
ToPull	tira--	t-e-er-ah
ToPull-Trahere	tɣəw-rə	t-er-eh-w-er-aah
ToPush	əmpɣɛn-ə--	aah-m-p-eh-VdPalatalNasal-aah
ToThrow	xita	xha-e-t-ah
ToThrow-Lanceare	ʎəns-a--	yuh-aah-n-s-ah
ToTie	ʎiya--	yuh-e-juh-ah
ToSew	ku--z-i--	k-u-zz-e



## Appendix 6 - Word Lists by Language

ToCount	kum--ta--	k-u-m-t-ah
ToCount-Enumerare	enumera--	ay-n-u-m-ay-er-ah
ToSay	di	d-e
ToSing-AncestralClass	kənta--	k-aah-n-t-ah
ToPlay-Jiocare	ʒu-ga--	gzah-u-g-ah
ToFloat	fluktua--	f-l-u-k-t-u-ah
ToFlow	flui--	f-l-u-e
ToFlow-Colare	kuʎa--	k-u-ssha-ah
ToFlow-Excurrere	ə-sko-rə--	aah-s-k-oh-r-aah
ToFlow-Currere	ko-rə--	k-oh-r-aah
ToFreeze	ʒəla--	gzah-aah-l-ah
ToFreeze-Glaciare	glə-s-a--	g-l-aah-s-ah
ToBurn-Cremare	krəma--	k-r-aah-m-ah
ToBurn-Flammare	flama--	f-ssha-ah-m-ah
ToBurn-Incendere	ənsend--rə	aah-n-s-ay-n-d-er-aah
All-Totus	to-t--	t-oh-t
Many	mol---	m-oh-l
Many-Tantus	tant--	t-ah-n-t
Some	əʎu--	aah-l-g-u
Few	pək--	p-euh-k
Other	alt-rə	ah-l-t-er-aah
Big-Grandem	gran---	j-r-ah-n
Long-Longum	ʎo-ŋ---	yuh-oh-nya
Long-Largum	ʎark--	yuh-ah-er-k
Wide-Amplum	amplə-	ah-m-p-l-aah
Heavy	grew--	g-er-ay-w
Heavy-Pesant	pəza-t-	p-aah-zz-ah-t
Small	pətit--	p-aah-t-e-t
Short	kurt--	k-u-er-t
Short-Brevis	brew--	b-er-ay-w
Narrow-Strictus	əstr-ε--t--	aah-s-t-er-eh-t
Thin	mənu-t--	m-aah-n-u-t
Thin-Delicatus	dəlikat--	d-aah-l-e-k-ah-t
Thin-Subtilis	suptil--	s-u-p-t-e-l
Red-Russus	ro-s--	r-oh-s
Red-Vermiculus	bərmε--ʎ--	b-aah-r-m-eh-yuh
Red-Rubeus	ru-dʒe--	r-u-VdPalatoAlveolarSibilant-ay
Green	vεr-t--	v-eh-er-t
One	'un--	u-n
Two-Duos	d-os	d-oh-s
Three	'tr-εs	t-r-eh-s
Four	kwa-t--rə	k-w-ah-t-er-aah
Five	'siŋk--	s-e-nya-k
Here	-a-k---i-	ah-k-e
There	ə-ʎa-	aah-yuh-ah
Who-Qui	k-i-	k-e
What	k-ε-	k-eh

## Appendix 6 - Word Lists by Language

When-Quando	kwan	k-w-ah-n
How-Quomodo	kəm---	k-euh-m
Not	no-	n-oh
Not-Nec	ni-	n-e
And-Et	i-	e

## Walloon

Cognate	IPA	Sounds
I	dʒɪ--	VdPalatoAlveolarSibilant -NearCloseFrontUnrounded
We	no--	n-oh
YouPlural	vo-s	v-oh-s
YouSingular	ty	t-eeh
Woman	fœ-m-----	f-OpenMidNearFrontRounded-m
Woman-Domina	dœm---	d-OpenMidNearFrontRounded-m
ManHumanBeing	-ɔm----	euh-m
Child	ɛ-fǎ----	eh-f-an
Mother	me-r--	m-ay-VIUvularTrill
Fish-Pescion	p-ɛhõ	p-eh-h-on
Bird-Avicellum	--u:-h-ɛ:----	U-h-Eh
Fruit	fry-----	f-VIUvularTrill-eeh
Flower	flø:ʁ--	f-l-o-rr
Nose	ne---	n-ay
Sun	sɔlɔ-	s-euh-l-euh
Moon	løn-	l-uu-n
Star	-st-ø:-l-	s-t-o-l
Water	ɛ:-w-	Eh-w
Rain	plu:-ʁ--	p-l-U-rr
Lake	lak--	l-ah-k
Sea	meʁ-	m-ay-rr
Salt	se---	s-ay
Earth	t-ɛ:-ʁ-	t-Eh-rr
Sky	s-i:ʁ--	s-E-rr
Wind	v-ẽ----	v-ehn
Fire-Focus	f-ø:---	f-o
Year	ǎ----	an
Name-Nomen	nõ---	n-on
Tongue	lœu----	l-eu_nasalized_diphthong
ToDrink	b---ø:ʁ-	b-o-rr
ToEat-Manducare	map---i:--	m-ah-VdPalatalNasal-E
ToSuck	sysi:--	s-eeh-s-E
ToKnow-Sapere	sav-ø:R-	s-ah-v-o-VIUvularTrill
ToKnow-Cognoscere	ki-nõh----	k-e-n-euh-h
ToThink-Pensare	pẽ-se--	p-ehnn-s-ay
ToSleep	dwaʁmi--	d-w-ah-rr-m-e
ToDie	mɔri--	m-euh-VIUvularTrill-e
ToKill-Tutari	tuw-e--	t-u-w-ay

## Appendix 6 - Word Lists by Language

ToFight-Battuer	bat-e--	b-ah-t-ay
ToHunt-Captiare	ʃɛ-s-i:--	ts-eh-s-E
ToCut-Taliare	tɛ--ji:--	t-eh-jg-E
ToSplit-Findere	fɛ-t---	f-ehnn-t
ToSplit-Partire	pɔ:rti--	p-LongOpenMidBackRounded-VIUvularTrill-t-e
ToDig-Cavare	çɑ:v-le	sh-aay-v-l-ay
ToSwim-Navigare	nɛ--dʒi:--	n-eh-VdPalatoAlveolarSibilant-E
ToFly	vɔle--	v-euh-l-ay
ToWalk	ʃimine--	ts-e-m-e-n-ay
ToWalk-Marcher	ma:ʀʃi:	m-A-VIUvularTrill-ts-E
ToCome	vini--	v-e-n-e
ToLieAsInABed-lacere	dʒe--re	VdPalatoAlveolarSibilant-ay-r-ay
ToStand	ɛs----	eh-s
ToStand-Levare	lɔve--	l-aah-v-ay
ToStand-Altiare	hɔ:-s-i:	h-LongOpenMidBackRounded-s-E
ToTurnIntransitive	tu:rne-	t-U-r-n-ay
ToTurnIntransitive	viʁe--	v-e-rr-ay
-AncestralClass3		
ToFall	ʃ-ɛ:--R-	ts-Eh-VIUvularTrill
ToFall-Tumbare	tum-e-	t-u-m-ay
ToHold	tin-i--	t-e-n-e
ToSqueeze-Serare	sɛ-re--	s-eh-VIUvularTrill-ay
ToSqueeze-Stringere	stringe	s-t-r-e-n-j-ay
ToRub	froj----	f-r-oj_diphthong
ToRub-Frictare	fʁote--	f-rr-oh-t-ay
ToWash	lave--	l-ah-v-ay
ToWipe-Exsucare	--s-u-we--	s-u-w-ay
ToPull	tire--	t-e-r-ay
ToPull-Pulsare	pu:si:--	p-U-s-E
ToThrow	dʒete	VdPalatoAlveolarSibilant-eh-t-ay
ToThrow-Lanceare	lanc-i:-	l-ah-n-tya-E
ToTie	lɔji:--	l-euh-jg-E
ToSew	kø:--z----	k-o-zz
ToCount	kõ---te--	k-on-t-ay
ToSay	di:--ʁ	d-E-rr
ToSing-AncestralClass	ʃã-te--	ts-an-t-ay
ToPlay-Jiocare	dʒuw-e--	VdPalatoAlveolarSibilant-u-w-ay
ToFlow-Colare	kɔle--	k-euh-l-ay
ToFreeze	dʒale--	VdPalatoAlveolarSibilant-ah-l-ay
ToBurn-Brojan	bʁu:le--	b-rr-U-l-ay
All-Totus	tɔ----	t-euh
Few	põ---	p-on
Other	õ-t---	on-t
Big-Grandem	gʁã---	j-rr-an
Long-Longum	lõ-----	l-on
Heavy	grav--	j-r-ah-v
Small	pi-ti---	p-e-t-e

## Appendix 6 - Word Lists by Language

Short	ku:ɤ---	k-U-rr
Short-Brevis	bɤef--	b-rr-ay-f
Narrow-Strictus	-stɤ-ø:-----	s-t-rr-o
Thin	minu----	m-e-n-u
Thin-Subtilis	su:-ti---	s-U-t-e
Red-Rubeus	rɔ-ʃf---	r-euh-ts
Green	vɛɤ----	v-eh-rr
One	õ---	on
Two-Duos	d-ø:-	d-o
Three	tr-ø:-	t-r-o
Four	kwa-t----	k-w-ah-t
Five	sẽ-k--	s-ehn-k
There	--la-	l-ah
Who-Qui	k-i:-	k-E
What	kwɛ:-	k-w-Eh
When-Quando	kwand	k-w-ah-n-d
How-Quomodo	kɔmẽ--	k-euh-m-ehnn
Not-Nec	nẽ-	n-ehn
And-Et	ɛ-	eh

## Friulian

Cognate	IPA	Sounds
I	j--o	jg-oh
We	no:--	n-O
YouPlural	vo:--	v-O
YouSingular	tu	t-u
Woman	fɛ-mi-n-ɛ	f-eh-m-e-n-eh
Woman-Mulier	mu--i:r--	m-u-E-r
Woman-Domina	dɔ--ne	d-euh-n-ay
ManHumanBeing	-ɔm----	euh-m
Wife-Mulier	mu-i:r-	m-u-E-r
Husband	mari:t--	m-ah-r-E-t
Husband-Sponsus	-spo:-s--	s-p-O-s
Mother	mɔ-ri-	m-OpenBackRounded-r-e
Fish-Piskem	pɛs---	p-eh-s
Bird-Avicellum	--u--ʃʃɛ-l--	u-ts-jg-eh-l
Fruit	fru--t--	f-r-u-t
Flower	flo:r--	f-l-O-r
Nose	na:s--	n-A-s
Sun-Soliculus	sore--li-	s-oh-r-ay-l-e
Moon	lune	l-u-n-ay
Star	-st-ɛ-le	s-t-eh-l-ay
Water	a-g-e	ah-j-ay
Rain	plo--je	p-l-oh-jg-ay
Lake	la:t--	l-A-t
Sea	ma:r-	m-A-r
Salt	sa:l--	s-A-l

## Appendix 6 - Word Lists by Language

Earth	tje-re	t-jg-eh-r-ay
Fog-Fumata	fumate	f-u-m-ah-t-ay
Sky	ʃ-i:l--	ts-E-l
Wind	'v-int--	v-e-n-t
Fire-Focus	f-u:k--	f-U-k
Year	a-ŋ--	ah-nya
Name-Nomen	nŋ--	n-euh-nya
Tongue	'leng-ε	l-eh-n-j-eh
ToDrink	bevi--	b-ay-v-e
ToEat-Manducare	manʒ--a:--	m-ah-nya-VdPalatalStop-A
ToBite	mwardi--	m-w-ah-r-d-e
ToSuck	cuca:--	tya-u-tya-A
ToSpit-Sputare	spuda:--	s-p-u-d-A
ToKnow-Sapere	sav-e:--	s-ah-v-ai
ToKnow-Cognoscere	ko-ɲos-i--	k-oh-VdPalatalNasal-oh-s-e
ToThink-Pensare	peɲsa:--	p-ay-nya-s-A
ToFear	temi--	t-ay-m-e
ToFear-Tremere	trim-a:--	t-r-e-m-A
ToSleep	d-urmi:--	d-u-r-m-E
ToLive	vivi--	v-e-v-e
ToDie	muri:--	m-u-r-E
ToKill-Mactare	matʃ-a:--	m-ah-VlAlveoloPalatalSibilantAffricate-A
ToFight-Battuere	bat-i--	b-ah-t-e
ToHunt-Captiare	ca-ʃ-a:--	tya-ah-ts-A
ToHit	pulsa:-	p-u-l-s-A
ToCut	s-e-a:--	s-ay-A
ToCut-Excurtare	--scurta:--	s-tya-u-r-t-A
ToCut-Taliare	ta--ja:--	t-ah-jg-A
ToSplit	dividi--	d-e-v-e-d-e
ToSplit-Partire	parti:--	p-ah-r-t-E
ToSplit-Separare	separa:--	s-ay-p-ah-r-A
ToScratch	rada:--	r-ah-d-A
ToScratch-Rasare	rasa:--	r-ah-s-A
ToDig-Cavare	java:	VdPalatalStop-ah-v-A
ToDig-Excavare	--zjava:--	zz-VdPalatalStop-ah-v-A
ToSwim	n-ada:--	n-ah-d-A
ToSwim-Navigare	naviga:--	n-ah-v-e-j-A
ToFly-Exvolare	zvola:--	zz-v-oh-l-A
ToWalk	ʃʃamina--	ts-jg-ah-m-e-n-ah
ToCome	vipi:-	v-e-VdPalatalNasal-E
ToLieAsInABed-lacere	je-si--	jg-ay-s-e
ToSit-Sedentare	se--nta:--	s-ay-n-t-A
ToStand	-sta:--	s-t-A
ToStand-Levare	leva:--	l-ay-v-A
ToStand-Altiare	-altʃ-a:	ah-l-t-shh-A
ToTurnIntransitive	torna:--	t-oh-r-n-A
ToTurnIntransitive-Gyrare	dʒira:--	VdPalatoAlveolarSibilant-e-r-A

## Appendix 6 - Word Lists by Language

ToTurnIntransitive	dʒira:--	VdPalatoAlveolarSibilant-e-r-A
-AncestralClass3		
ToFall	fʃjade--	ts-jg-ah-d-ay
ToHold	tinji--	t-e-n-jg-e
ToSqueeze	e-sprim-i--	ay-s-p-r-e-m-e
ToSqueeze-Stringere	strengi:--	s-t-r-eh-n-j-E
ToRub	fre-a--	f-r-ay-ah
ToWash	lava:--	l-ah-v-A
ToWipe-Exsucare	--s-u-ja:--	s-u-jg-A
ToPull	tira:--	t-e-r-A
ToPull-Pulsare	pulsa:--	p-u-l-s-A
ToPull-Trahere	traj---	t-r-aj_diphthong
ToThrow-Lanceare	lanʃa:--	l-ah-n-ts-A
ToTie	le-a:--	l-ay-A
ToSew	ku--zi---	k-u-zz-e
ToCount	kon--ta:--	k-oh-n-t-A
ToSay	di:	d-E
ToSing-AncestralClass	canta:--	tya-ah-n-t-A
ToPlay-Jiocare	dʒuj-a:--	VdPalatoAlveolarSibilant-u-jg-A
ToFlow-Excurrere	--sko-ri:--	s-k-oh-r-E
ToFlow-Currere	ko-ri--	k-oh-r-e
ToFreeze-Glaciare	gla-ʃa:--	j-l-ah-ts-A
ToBurn-Brojan	bruza:--	b-r-u-zz-A
All-Totus	du-t--	d-u-t
Many	molc--	m-oh-l-tya
Many-Tantus	tanc--	t-ah-n-tya
Few	po:k-	p-O-k
Other	alt-ri	ah-l-t-r-e
Big-Grandem	grant--	j-r-ah-n-t
Long-Longum	lunk--	l-u-n-k
Long-Largum	lark--	l-ah-r-k
Heavy	grevi-	j-r-eh-v-e
Heavy-Pesant	pezant-	p-ay-zz-ah-n-t
Small-Pitulus	pi-ʃul--	p-e-ts-u-l
Short	kurt--	k-u-r-t
Narrow-Strictus	-str-ε--t--	s-t-r-eh-t
Thin	minu:-t--	m-e-n-U-t
Thin-Subtilis	su-ti:l--	s-u-t-E-l
Red-Russus	rɔ-s--	r-euh-s
Green	ver-t--	v-eh-r-t
One	uŋ--	u-nya
Two-Duos	d-oj-	d-oj_diphthong
Three	'tr-e:-	t-r-ai
Four	kwa-t--ri	k-w-ah-t-r-e
Five	'ʃiŋk--	ts-e-nya-k
Here	-a-k---i-	ah-k-e
Who-Qui	kwi-	k-w-e

## Appendix 6 - Word Lists by Language

What	tʃ-e-	ts-ay
When-Quando	kwan	k-w-ah-n-t
How-Quomodo	tʃemu:t-	ts-ay-m-U-t
Not	no-	n-oh
And-Et	e-	ay

### Romanian

Cognate	IPA	Sounds
I	je-w	jg-ay-w
We	noj-	n-oy_diphthong
YouPlural	voj-	v-oy_diphthong
YouSingular	tu	t-u
Woman	fe-me--je	f-ay-m-ay-jg-ay
Woman-Mulier	mu-jere-	m-u-jg-ay-r-ay
Woman-Domina	doam-nə	d-midback_diphthong_romanian-m-n-aah
ManHumanBeing	-om----	oh-m
Wife-Mulier	mu-jere	m-u-jg-ay-r-ay
Husband	mərīt--	m-aah-r-e-t
Husband-Socius	sots---	s-oh-VIAlveolarSibilantAffricate
Fish-Piskem	peʃte-	p-ay-shh-t-ay
Bird-Passerem	pa-səre-	p-ah-s-aah-er-ay
Fruit	fru-kt--	f-r-u-k-t
Flower	floare-	f-l-midback_diphthong_romanian-er-ay
Nose	nas--	n-ah-s
Sun	soare-	s-midback_diphthong_romanian-er-ay
Moon	lunə	l-u-n-aah
Star	-st-ea---	s-t-midfront_diphthong_romanian
Water	a-p-ə	ah-p-aah
Rain	ploa--je	p-l-midback_diphthong_romanian-jg-ay
Lake	lak--	l-ah-k
Sea	mare	m-ah-r-ay
Salt	sare-	s-ah-r-ay
Earth	ts-a-rə	VIAlveolarSibilantAffricate-ah-r-aah
Fog-Nebula	negurə	n-ay-g-u-r-aah
Fog-Caecia	tʃeʌtʃ-ə	ts-midfront_diphthong_romanian-ts-aah
Sky	tʃ-er--	ts-ay-er
Wind	v-int--	v-eee-n-t
Fire-Focus	f-ok--	f-oh-k
Year	an---	ah-n
Name-Nomen	nume-	n-u-m-ay
Tongue	'limb-ə	l-e-m-b-aah
ToDrink	b---eā--	b-midfront_diphthong_romanian
ToEat-Manducare	min--ka--	m-eee-n-k-ah
ToBite-Morsicare	murseka--	m-u-r-s-ay-k-ah
ToSuck	sudʒe--	s-u-VdPalatoAlveolarSibilant-ay
ToSpit-Exconspuere	-skujpa	s-k-u-jg-p-ah
ToKnow	ʃti--	shh-t-e

## Appendix 6 - Word Lists by Language

ToKnow-Cognoscere	ku-noaște--	k-u-n-midback_diphthong_romanian-shh-t-ay
ToThink	k-udžeta--	k-u-VdPalatoAlveolarSibilant-ay-t-ah
ToThink-Pensare	pə-sa--	p-aah-s-ah
ToFear	teme--	t-ay-m-ay
ToSleep	d-ormi--	d-oh-r-m-e
ToLive	vi-a--	v-e-ah
ToDie	muri--	m-u-r-e
ToKill	n-eka--	n-ay-k-ah
ToKill-Occidere	u-țfide--	u-ts-e-d-ay
ToFight-Battuire	bat-e--	b-ah-t-ay
ToHit	pulsa--	p-u-l-s-ah
ToCut-Excurtare	--skurta--	s-k-u-r-t-ah
ToCut-Taliare	tə--ja--	t-aah-jg-ah
ToSplit	divide--	d-e-v-e-d-ay
ToSplit-Separare	separa--	s-ay-p-ah-r-ah
ToStab	pundže--	p-u-n-VdPalatoAlveolarSibilant-ay
ToScratch	rade--	r-ah-d-ay
ToSwim-Navigare	naviga--	n-ah-v-e-g-ah
ToFly-Exvolare	zbura--	zz-b-u-er-ah
ToWalk-Mergere	merdže--	m-ay-r-VdPalatoAlveolarSibilant-ay
ToCome	veni--	v-ay-n-e
ToLieAsInABed	ekstinde--	ay-k-s-t-e-n-d-ay
ToLieAsInABed-lacere	zə-țfe--	zz-aah-ts-midfront_diphthong_romanian
ToSit	ș-eđe--	shh-ay-d-midfront_diphthong_romanian
ToStand	-sta--	s-t-ah
ToStand-Levare	l-ua--	l-u-ah
ToTurnIntransitive	turna--	t-u-r-n-ah
ToTurnIntransitive-Torquere	toarfe--	t-midback_diphthong_romanian-r-ts-ay
ToFall	kəđe--	k-aah-d-midfront_diphthong_romanian
ToFall-Tumbare	tumba-	t-u-m-b-ah
ToHold	tsin-e--	VAlveolarSibilantAffricate-e-n-ay
ToSqueeze	-sk-reme--	s-k-r-ay-m-ay
ToSqueeze-Stringere	strindže--	s-t-r-eee-n-VdPalatoAlveolarSibilant-ay
ToRub	freka--	f-r-ay-k-ah
ToWash	la---	l-ah
ToWipe-Extergere	--șterdže--	shh-t-ay-r-VdPalatoAlveolarSibilant-ay
ToWipe-Exsucare	u-s--k-a--	u-s-k-ah
ToPull-Pulsare	pulsa--	p-u-l-s-ah
ToPull-Trahere	tradže--	t-r-ah-VdPalatoAlveolarSibilant-ay
ToPush	impindže--	eee-m-p-e-n-VdPalatoAlveolarSibilant-ay
ToThrow-Eruncare	a-runjka	ah-er-u-nya-k-ah
ToTie	lega--	l-ay-j-ah
ToSew	co--s-e--	tya-midback_diphthong_romanian-s-ay
ToCount-Enumerare	-numara--	n-u-m-ah-r-ah
ToSay	zițfe	zz-e-ts-ay
ToSay-Exponere	--spune	s-p-u-n-ay
ToSing-AncestralClass	kinta--	k-eee-n-t-ah



## Appendix 6 - Word Lists by Language

ToPlay-Jiocare	ʒu-ka--	gzah-u-k-ah
ToFloat	fluctua--	f-l-u-tya-t-u-ah
ToFlow-Excurrere	--skurdʒe--	s-k-u-er-VdPalatoAlveolarSibilant-ay
ToFlow-Currere	kurdʒe--	k-u-er-VdPalatoAlveolarSibilant-ay
ToFreeze-Inglaciare	ing-ets-a--	eee-n-j-ay-VlAlveolarSibilantAffricate-ah
ToBurn-Ardere	arde--	ah-er-d-ay
ToBurn-Incendere	intʃindʒe--	eee-n-ts-e-n-d-gzah-ay
ToBurn-AncestralClass8	ustura--	u-s-t-u-r-ah
All-Totus	to-t--	t-oh-t
Many	mult--	m-u-l-t
Other	alt---	ah-l-t
Big-Majjorem	ma---re	m-ah-er-ay
Long-Longum	lung--	l-u-n-j
Long-Largum	larg--	l-ah-r-j
Wide	lat--	l-ah-t
Heavy	grew--	j-er-ay-w
Small-Pittinus	pu-tsɪn--	p-u-VlAlveolarSibilantAffricate-e-n
Narrow	ɪngust--	eee-nya-j-u-s-t
Narrow-Strictus	-str-ɪm-t--	s-t-r-eee-m-t
Thin	mərunt--	m-aah-r-u-n-t
Thin-Subtilis	subtsire-	s-u-b-VlAlveolarSibilantAffricate-e-r-ay
Red-Russus	ro-ʃu-	er-oh-shh-u
Red-Rubeus	roj-b---	r-øj_diphthong-b
Green	ver-de-	v-ay-er-d-ay
One	unu-	u-n-u
Two-Duos	d-øj-	d-øj_diphthong
Two-Duae	dowə	d-oh-w-aah
Three	tr-ej-	t-r-ej_diphthong
Four	p-a-t--ru	p-ah-t-r-u
Five	ʃɪntʃ--	ts-e-n-ts
There	--la-	l-ah
Who-Quem	ʃf-ine	ts-e-n-ay
What	ʃf-e-	ts-ay
When-Quando	k-ɪnd	k-eee-n-d
How-Quomodo	kum---	k-u-m
Not	nu-	n-u
And-Et	e-	ay
And-Si	ʃi-	shh-e

## Appendix 7 - Segment Groups

### Pulmonic Consonants

Manner	Bilabial	Labial-Velar	Labio-Dental	Linguo-Labia	Dental	Alveolar	Post-Alveola	Retroflex	Palatal	Velar	Uvular	Pharyngeal Epiglottal	Glottal
Nasal	m					n			ɲ	ŋ			
Stop	p b	k <sup>w</sup> g <sup>w</sup>				t d			c ɟ	k g			
Sibilant, Fricative						s z	ʃ ʒ						
Fricative	β		f v		θ ð				ç ʝ	x ɣ	ʁ		h
Approximant								ɻ	j				
Tap/Flap						ɾ							
Trill						r					R		
Lateral, Fricative													
Lateral, Approximant						l			ʎ				
Lateral, Tap/Flap													

Shaded areas denote articulations judged to be impossible. Where symbols appear in pairs, the one to the right represents a modally voiced consonant.

### Non-Pulmonic Consonants

Manner	Bilabial	Labio-Dental	Velar	Uvular	Pharyngeal Epiglottal
Ejective, Stop					
Ejective, Fricative					
Ejective, Lateral, Fricative					
Tenuis, Click					
Nasal, Click					
Tenuis, Lateral, Click					
Implosive					

Shaded areas denote articulations judged to be impossible. Where symbols appear in pairs, the one to the right represents a modally voiced consonant.

## Appendix 7 - Segment Groups

### Vowels

	Front	Near-Front	Central	Near-Back	Back
Close	i • y		ɨ		u
Near-close		ɪ		ʊ	
Close-mid	e • ø		ə		o
Mid					
Open-mid		œ • ɛ			ɔ
Near-open			ɐ		
Open		a			ɒ • ɑ

Where symbols appear in pairs, the one to the right represents a rounded vowel.

### Long Vowels

	Front	Near-Front	Central	Near-Back	Back
Close	iː				uː
Mid	eː				oː
Open-mid		ɛː			ɔː
Open	øː		aː		

### Pulmonic Affricates

Manner	Bilabial	Labio-Dental	Alveolar	Alveolo-Pala	Palato-Alveo	Velar	Uvular	Pharyngeal Epiglottal	Glottal
Sibilant			ts	tʃ	tʃ				
Non-Sibilant									
Lateral									

Shaded areas denote articulations judged to be impossible.

### Ejective Affricates

Manner	Bilabial	Labio-Dental	Pharyngeal Epiglottal	Glottal
Central				
Lateral				

Shaded areas denote articulations judged to be impossible.

## Appendix 7 - Segment Groups

### Other Segments

<b>e</b> Close-mid Front Vocoid Vowel Continuant	<b>g</b> Velar Voiced Pulmonic Stop Occlusive
<b>oː</b> Mid Back Rounded Vocoid Long Vowel Continuant	<b>ʒ</b> Post-Alveolar Voiced Pulmonic Sibilant Fricative Strident Obstruent Continuant
<b>ə</b> Close-mid Central Vowel	<b>j</b> Palatal Voiced Pulmonic Fricative Obstruent Continuant
<b>o</b> Close-mid Back Rounded Vocoid Vowel Continuant	<b>i</b> Close Front Vocoid Vowel Continuant
<b>w</b> Labial-Velar Vocoid Semivowel Voiced Approximant Continuant	<b>ɔ</b> Open-mid Back Rounded Vocoid Vowel Continuant
<b>dʒ</b> Palato-Alveolar Voiced Sibilant Affricate	<b>ɪ</b> Near-close Near-Front Vowel
<b>j</b> Palatal Vocoid Semivowel Voiced Pulmonic Approximant Continuant	<b>n</b> Alveolar Voiced Pulmonic Nasal Occlusive
<b>s</b> Alveolar Pulmonic Sibilant Fricative Strident Obstruent Continuant	<b>u</b> Close Back Rounded Vocoid Vowel Continuant
<b>ʃ</b> Post-Alveolar Pulmonic Sibilant Fricative Strident Obstruent Continuant	<b>oj</b> Mid Front Vowel Diphthong
<b>v</b> Labio-Dental Voiced Pulmonic Fricative Strident Obstruent Continuant	<b>b</b> Bilabial Voiced Pulmonic Stop Occlusive
<b>t</b> Alveolar Pulmonic Stop Occlusive	<b>uː</b> Close Back Rounded Long Vowel
<b>y</b> Close Front Rounded Vocoid Vowel Continuant	<b>d</b> Alveolar Voiced Pulmonic Stop Occlusive
<b>f</b> Labio-Dental Pulmonic Fricative Strident Obstruent Continuant	<b>eː</b> Mid Front Vocoid Long Vowel Continuant
<b>m</b> Bilabial Voiced Pulmonic Nasal Occlusive	<b>a</b> Open Near-Front Vocoid Vowel Continuant
<b>ɾ</b> Alveolar Voiced Pulmonic Tap/Flap Rhotic Vibrant Liquid	<b>ɐ</b> Near-open Central Rounded Vowel
<b>œ</b> Open-mid Near-Front Rounded Vocoid Vowel Continuant	<b>ɛ</b> Open-mid Near-Front Vocoid Vowel Continuant
<b>l</b> Alveolar Vocoid Voiced Pulmonic Lateral Approximant Rhotic Liquid	<b>r</b> Alveolar Voiced Pulmonic Trill Rhotic Vibrant Liquid
<b>x</b> Velar Pulmonic Fricative Obstruent Continuant	<b>ʎ</b> Palatal Vocoid Voiced Pulmonic Lateral Approximant Rhotic Liquid
<b>ʁ</b> Uvular Voiced Pulmonic Fricative Rhotic Strident Obstruent Continuant Liquid	<b>iː</b> Close Front Vocoid Long Vowel Continuant
<b>ɲ</b> Palatal Voiced Pulmonic Nasal Occlusive	<b>o</b> Mid Front Vowel Diphthong
<b>h</b> Glottal Pulmonic Fricative	<b>ẽj</b> Mid Front Nasal Vowel Diphthong
<b>õ</b> Open-mid Back Rounded Nasal Vowel	<b>ã</b> Near-close Back Nasal Vowel
<b>ĩ</b> Close Front Nasal Vowel	<b>ẽ</b> Near-open Central Rounded Nasal Vowel

## Appendix 7 - Segment Groups

<b>ʈʃ</b> Palato-Alveolar Pulmonic Sibilant Affricate	<b>ɪ</b> Close Central Vowel
<b>ã</b> Near-open Central Nasal Vowel	<b>p</b> Bilabial Pulmonic Stop Occlusive
<b>ʒ</b> Alveolar Voiced Pulmonic Sibilant Fricative Strident Obstruent Continuant	<b>ð</b> Dental Voiced Pulmonic Fricative Obstruent Continuant
<b>k</b> Velar Pulmonic Stop Occlusive	<b>ʈʃ</b> Alveolar Pulmonic Sibilant Affricate Occlusive Strident
<b>aː</b> Open Central Vocoid Long Vowel Continuant	<b>ẽĩ</b> Mid Front Nasal Vowel Diphthong
<b>ʀ</b> Uvular Pulmonic Trill Rhotic Vibrant Liquid	<b>ɒ</b> Open Back Rounded Vocoid Vowel Continuant
<b>θ</b> Dental Pulmonic Fricative Obstruent Continuant	<b>ej</b> Mid Front Vowel Diphthong
<b>ɛj</b> Mid Front Vowel Diphthong	<b>õ</b> Close-mid Back Rounded Nasal Vowel
<b>ɛː</b> Open-mid Near-Front Vocoid Long Vowel Continuant	<b>ɥ</b> Labial-Palatal Vocoid Semivowel Voiced Approximant Continuant
<b>øː</b> Open Front Rounded Vocoid Long Vowel	<b>ɭ</b> Alveolar Voiced Velarized Pulmonic Lateral Approximant
<b>c</b> Palatal Pulmonic Stop Occlusive	<b>ɛj</b> Mid Front Vowel Diphthong
<b>ø</b> Close-mid Front Rounded Vocoid Vowel Continuant	<b>ẽ</b> Mid Front Vowel Diphthong
<b>k</b> Labial-Velar Pulmonic Stop Occlusive	<b>ɣ</b> Velar Voiced Pulmonic Fricative Obstruent Continuant
<b>aj</b> Mid Front Vowel Diphthong	<b>g</b> Velar Voiced Pulmonic Stop Occlusive
<b>ẽ</b> Close Back Nasal Vowel	<b>ŋ</b> Velar Voiced Pulmonic Nasal Occlusive
<b>g</b> Labial-Velar Voiced Pulmonic Stop Occlusive	<b>ẽ</b> Mid Front Nasal Vowel Diphthong
<b>ɑ</b> Open Back Vocoid Vowel Continuant	<b>β</b> Bilabial Voiced Pulmonic Fricative Obstruent Continuant
<b>ʃ</b> Palatal Voiced Pulmonic Stop Occlusive	<b>ẽ</b> Open-mid Near-Front Nasal Vowel
<b>ʈʃ</b> Alveolo-Palatal Pulmonic Sibilant Affricate	<b>ɔː</b> Open-mid Back Rounded Vocoid Long Vowel Continuant
<b>ũ</b> Open Back Nasal Vowel	<b>ɭ</b> Retroflex Vocoid Voiced Pulmonic Approximant Rhotic Liquid
<b>ç</b> Palatal Pulmonic Fricative Obstruent Continuant	<b>ɑː</b> Near-close Back Long Nasal Vowel
<b>ĩ</b> Palatal Nasal Approximant	<b>œ</b> Open-mid Near-Front Rounded Nasal Vowel Diphthong

## Appendix 7 - Segment Groups

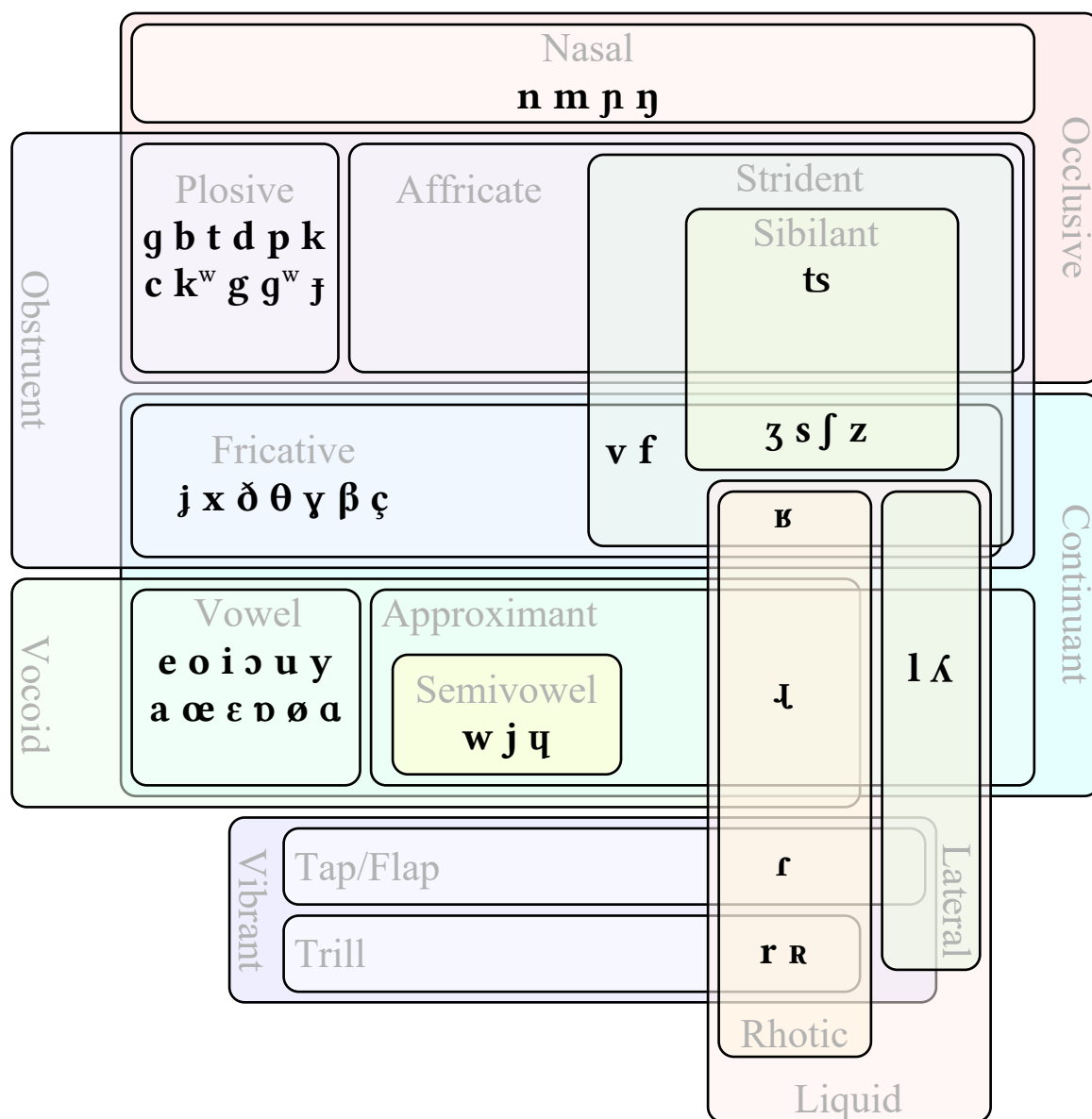
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**a** Mid Front Vowel Diphthong

**ʊ** Near-close Near-Back Rounded Vowel

**ẽ** Mid Front Nasal Vowel Diphthong

## Appendix 8 - Euler Feature Diagram



## Appendix 9 - International Phonetic Alphabet

### IPA Segments

ẽ	θ	β	ʈʂ
1EBD Close Back Nasal Vowel	03B8 Dental Pulmonic Fricative Obstruent Continuant	03B2 Bilabial Voiced Pulmonic Fricative Obstruent Continuant	02A7 Palato-Alveolar Pulmonic Sibilant Affricate
ts	ɖʒ	j	ʒ
02A6 Alveolar Pulmonic Sibilant Affricate Occlusive Strident	02A4 Palato-Alveolar Voiced Sibilant Affricate	029D Palatal Voiced Pulmonic Fricative Obstruent Continuant	0292 Post-Alveolar Voiced Pulmonic Sibilant Fricative Strident Obstruent Continuant
ʎ	ʊ	ʃ	ʁ
028E Palatal Vocoid Voiced Pulmonic Lateral Approximant Rhotic Liquid	028A Near-close Near-Back Rounded Vowel	0283 Post-Alveolar Pulmonic Sibilant Fricative Strident Obstruent Continuant	0281 Uvular Voiced Pulmonic Fricative Rhotic Strident Obstruent Continuant Liquid
ʀ	ɽ	ɻ	ɲ
0280 Uvular Pulmonic Trill Rhotic Vibrant Liquid	027E Alveolar Voiced Pulmonic Tap/Flap Rhotic Vibrant Liquid	027B Retroflex Vocoid Voiced Pulmonic Approximant Rhotic Liquid	0272 Palatal Voiced Pulmonic Nasal Occlusive
ɭ	ɪ	ɨ	ɥ
026B Alveolar Voiced Velarized Pulmonic Lateral Approximant	026A Near-close Near-Front Vowel	0268 Close Central Vowel	0265 Labial-Palatal Vocoid Semivowel Voiced Approximant Continuant



## Appendix 9 - International Phonetic Alphabet

<p style="text-align: center; font-size: 2em;">ɤ</p> <p style="text-align: center;">0263</p> <p style="text-align: center;">Velar Voiced Pulmonic Fricative Obstruent Continuant</p>	<p style="text-align: center; font-size: 2em;">g</p> <p style="text-align: center;">0261</p> <p style="text-align: center;">Velar Voiced Pulmonic Stop Occlusive</p>	<p style="text-align: center; font-size: 2em;">ʃ</p> <p style="text-align: center;">025F</p> <p style="text-align: center;">Palatal Voiced Pulmonic Stop Occlusive</p>	<p style="text-align: center; font-size: 2em;">ɛ</p> <p style="text-align: center;">025B</p> <p style="text-align: center;">Open-mid Near-Front Vocoid Vowel Continuant</p>
<p style="text-align: center; font-size: 2em;">ə</p> <p style="text-align: center;">0259</p> <p style="text-align: center;">Close-mid Central Vowel</p>	<p style="text-align: center; font-size: 2em;">ɔ</p> <p style="text-align: center;">0254</p> <p style="text-align: center;">Open-mid Back Rounded Vocoid Vowel Continuant</p>	<p style="text-align: center; font-size: 2em;">ɒ</p> <p style="text-align: center;">0252</p> <p style="text-align: center;">Open Back Rounded Vocoid Vowel Continuant</p>	<p style="text-align: center; font-size: 2em;">ɑ</p> <p style="text-align: center;">0251</p> <p style="text-align: center;">Open Back Vocoid Vowel Continuant</p>
<p style="text-align: center; font-size: 2em;">ɐ</p> <p style="text-align: center;">0250</p> <p style="text-align: center;">Near-open Central Rounded Vowel</p>	<p style="text-align: center; font-size: 2em;">ũ</p> <p style="text-align: center;">0169</p> <p style="text-align: center;">Open Back Nasal Vowel</p>	<p style="text-align: center; font-size: 2em;">œ</p> <p style="text-align: center;">0153</p> <p style="text-align: center;">Open-mid Near-Front Rounded Vocoid Vowel Continuant</p>	<p style="text-align: center; font-size: 2em;">ŋ</p> <p style="text-align: center;">014B</p> <p style="text-align: center;">Velar Voiced Pulmonic Nasal Occlusive</p>
<p style="text-align: center; font-size: 2em;">ĩ</p> <p style="text-align: center;">0129</p> <p style="text-align: center;">Close Front Nasal Vowel</p>	<p style="text-align: center; font-size: 2em;">ø</p> <p style="text-align: center;">00F8</p> <p style="text-align: center;">Close-mid Front Rounded Vocoid Vowel Continuant</p>	<p style="text-align: center; font-size: 2em;">õ</p> <p style="text-align: center;">00F5</p> <p style="text-align: center;">Close-mid Back Rounded Nasal Vowel</p>	<p style="text-align: center; font-size: 2em;">ð</p> <p style="text-align: center;">00F0</p> <p style="text-align: center;">Dental Voiced Pulmonic Fricative Obstruent Continuant</p>
<p style="text-align: center; font-size: 2em;">ç</p> <p style="text-align: center;">00E7</p> <p style="text-align: center;">Palatal Pulmonic Fricative Obstruent Continuant</p>	<p style="text-align: center; font-size: 2em;">ã</p> <p style="text-align: center;">00E3</p> <p style="text-align: center;">Near-open Central Nasal Vowel</p>	<p style="text-align: center; font-size: 2em;">z</p> <p style="text-align: center;">007A</p> <p style="text-align: center;">Alveolar Voiced Pulmonic Sibilant Fricative Strident Obstruent Continuant</p>	<p style="text-align: center; font-size: 2em;">y</p> <p style="text-align: center;">0079</p> <p style="text-align: center;">Close Front Rounded Vocoid Vowel Continuant</p>

## Appendix 9 - International Phonetic Alphabet

<b>x</b>	<b>w</b>	<b>v</b>	<b>u</b>
0078 Velar Pulmonic Fricative Obstruent Continuant	0077 Labial-Velar Vocoid Semivowel Voiced Approximant Continuant	0076 Labio-Dental Voiced Pulmonic Fricative Strident Obstruent Continuant	0075 Close Back Rounded Vocoid Vowel Continuant
<b>t</b>	<b>s</b>	<b>r</b>	<b>p</b>
0074 Alveolar Pulmonic Stop Occlusive	0073 Alveolar Pulmonic Sibilant Fricative Strident Obstruent Continuant	0072 Alveolar Voiced Pulmonic Trill Rhotic Vibrant Liquid	0070 Bilabial Pulmonic Stop Occlusive
<b>o</b>	<b>n</b>	<b>m</b>	<b>l</b>
006F Close-mid Back Rounded Vocoid Vowel Continuant	006E Alveolar Voiced Pulmonic Nasal Occlusive	006D Bilabial Voiced Pulmonic Nasal Occlusive	006C Alveolar Vocoid Voiced Pulmonic Lateral Approximant Rhotic Liquid
<b>k</b>	<b>j</b>	<b>i</b>	<b>h</b>
006B Velar Pulmonic Stop Occlusive	006A Palatal Vocoid Semivowel Voiced Pulmonic Approximant Continuant	0069 Close Front Vocoid Vowel Continuant	0068 Glottal Pulmonic Fricative
<b>g</b>	<b>f</b>	<b>e</b>	<b>d</b>
0067 Velar Voiced Pulmonic Stop Occlusive	0066 Labio-Dental Pulmonic Fricative Strident Obstruent Continuant	0065 Close-mid Front Vocoid Vowel Continuant	0064 Alveolar Voiced Pulmonic Stop Occlusive

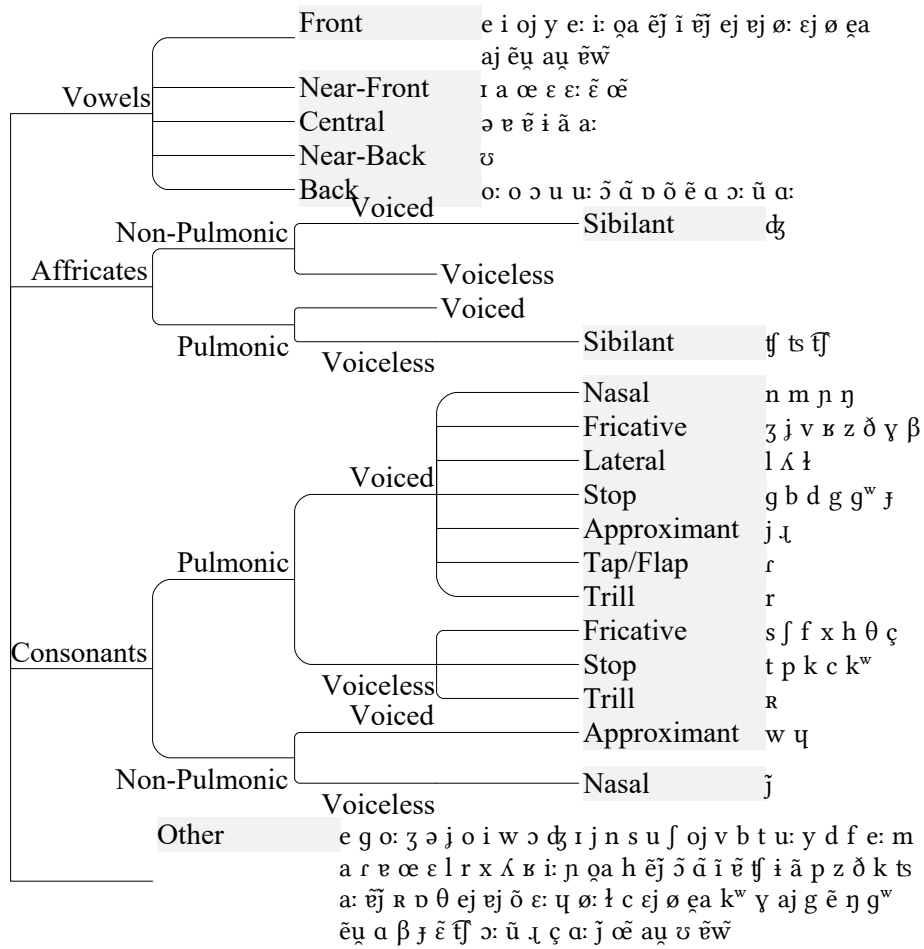
## Appendix 9 - International Phonetic Alphabet

c	b	a	g <sup>w</sup>
0063 Palatal Pulmonic Stop Occlusive	0062 Bilabial Voiced Pulmonic Stop Occlusive	0061 Open Near-Front Vocoid Vowel Continuant	0261, 02B7 Labial-Velar Voiced Pulmonic Stop Occlusive
ẽ	ɛː	ɛj	õ
025B, 0303 Open-mid Near-Front Nasal Vowel	025B, 02D0 Open-mid Near-Front Vocoid Long Vowel Continuant	025B, 006A Mid Front Vowel Diphthong	0254, 0303 Open-mid Back Rounded Nasal Vowel
ɔː	ã	ɑː	ẽ
0254, 02D0 Open-mid Back Rounded Vocoid Long Vowel Continuant	0251, 0303 Near-close Back Nasal Vowel	0251, 02D0 Near-close Back Long Nasal Vowel	0250, 0303 Near-open Central Rounded Nasal Vowel
ɶj	œ̃	øː	uː
0250, 006A Mid Front Vowel Diphthong	0153, 0303 Open-mid Near-Front Rounded Nasal Vowel Diphthong	00F8, 02D0 Open Front Rounded Vocoid Long Vowel	0075, 02D0 Close Back Rounded Long Vowel
oː	oj	k <sup>w</sup>	j̃
006F, 02D0 Mid Back Rounded Vocoid Long Vowel Continuant	006F, 006A Mid Front Vowel Diphthong	006B, 02B7 Labial-Velar Pulmonic Stop Occlusive	006A, 0303 Palatal Nasal Approximant

## Appendix 9 - International Phonetic Alphabet

<p>iː</p> <p>0069, 02D0</p> <p>Close Front Vowoid Long Vowel Continuant</p>	<p>eː</p> <p>0065, 02D0</p> <p>Mid Front Vowoid Long Vowel Continuant</p>	<p>ej</p> <p>0065, 006A</p> <p>Mid Front Vowel Diphthong</p>	<p>aː</p> <p>0061, 02D0</p> <p>Open Central Vowoid Long Vowel Continuant</p>
<p>aj</p> <p>0061, 006A</p> <p>Mid Front Vowel Diphthong</p>	<p>ẽu̯</p> <p>1EBD, 0075, 032F</p> <p>Mid Front Nasal Vowel Diphthong</p>	<p>ẽj̥</p> <p>1EBD, 006A, 0303</p> <p>Mid Front Nasal Vowel Diphthong</p>	<p>tʃ</p> <p>0074, 0361, 0283</p> <p>Alveolo-Palatal Pulmonic Sibilant Affricate</p>
<p>o̯a</p> <p>006F, 032F, 0061</p> <p>Mid Front Vowel Diphthong</p>	<p>e̯a</p> <p>0065, 032F, 0061</p> <p>Mid Front Vowel Diphthong</p>	<p>a̯u̯</p> <p>0061, 0075, 032F</p> <p>Mid Front Vowel Diphthong</p>	<p>ẽw̥</p> <p>0250, 0303, 0077, 0303</p> <p>Mid Front Nasal Vowel Diphthong</p>
<p>ẽj̥</p> <p>0250, 0303, 006A, 0303</p> <p>Mid Front Nasal Vowel Diphthong</p>			

## Appendix 10 - Feature Tree



## Appendix 11 - Diacritics

### Diacritics

	Undefined escape character	~	Nasalized	..	Centralized
+	Advanced	-	Retracted	˘	RisingTone
◌	Voiceless		Implosive	◌̩	Syllabic
◌̥	Ejective	◌̦	Pharyngealized	◌̤	Falling tone
◌̥	Non-syllabic	◌̧	No audible release	◌̨	Rhotic hook
◌̥	Advanced tongue root	◌̩	Apical	◌̪	Extra low tone
◌̥	Low rising tone	◌̫	Less rounded	◌̬	Dental
~	Velarized or Pharyngealized	↘	Global fall	◌̭	Velarized
◌̥	High tone	◌̮	High rising tone	◌̯	Aspirated
◌̥	Palatalized	~	Creaky voiced	◌̰	Low tone
◌̥	Lateral release	-	Mid tone	◌̱	Laminal
◌̥	Linguo-Labial	◌̲	Nasal release	◌̳	More rounded
◌̥	Lowered	◌̴	Retracted tongue root	↗	Global rise
◌̥	Rising falling tone	◌̵	Raised	◌̶	Extra high tone
◌̥	Breathy voiced	◌̷	Voiced	◌̸	Labialized
◌̥	Extra short	◌̸	Mid-centralized	◌̹	Down-step
↑	Up-step	◌̹	Long	◌̺	Half-long
	Indeterminacy in french vowels		Begin Non-segmental notation		End non-segmental notation
◌̥	Voiced epiglottal fricative	!	Post-alveolar click		Minor group
	Dental click		Major group		Alveolar lateral click
‡	Palatal click	◌̥	Voiceless descender	-	Combining macron
◌̥	Tie-bar below	◌̥	Tie-bar above	◌̥	Ready made combination
→	Becomes		Separator		

## Appendix 12 - Languages

### Latin

A classical language belonging to the Italic branch of the Indo-European languages. Latin was originally spoken in the area around Rome, known as Latium. Through the power of the Roman Republic, it became the dominant language in Italy, and subsequently throughout the western Roman Empire, before eventually becoming a dead language. Latin has contributed many words to the English language. In particular, Latin (and Ancient Greek) roots are used in English descriptions of theology, the sciences, medicine, and law.

By the late Roman Republic (75 BC), Old Latin had been standardised into Classical Latin. Vulgar Latin was the colloquial form spoken at that time and attested in inscriptions and the works of comic playwrights like Plautus and Terence[3] and author Petronius. Late Latin is the written language from the 3rd century; its colloquial form Vulgar Latin developed in the 6th to 9th centuries into the Romance languages, such as Italian, Sardinian, Venetian, Neapolitan, Sicilian, Piedmontese, Lombard, French, Franco-Provençal, Occitan, Corsican, Ladin, Friulan, Romansh, Catalan/Valencian, Aragonese, Spanish, Asturian, Galician, and Portuguese. Medieval Latin was used as a literary language from the 9th century to the Renaissance which used Renaissance Latin. Later, Early Modern Latin and New Latin evolved. Latin was the language of international communication, scholarship and science until well into the 18th century, when vernaculars (including the Romance languages) supplanted it. Ecclesiastical Latin remains the official language of the Holy See and the Roman Rite of the Catholic Church. Latin is a highly inflected language, with three distinct genders, six or seven noun cases, five declensions, four verb conjugations, six tenses, three persons, three moods, two voices, two or three aspects, and two numbers. The Latin alphabet is derived from the Etruscan and Greek alphabets and ultimately from the Phoenician alphabet.



### French

A Romance language of the Indo-European family. It descended from the Vulgar Latin of the Roman Empire, as did all Romance languages. French evolved from Gallo-Romance, the Latin spoken in Gaul, and more specifically in Northern Gaul. Its closest relatives are the other langues d'oïl—languages historically spoken in northern France and in southern Belgium, which French (Francien) largely supplanted.

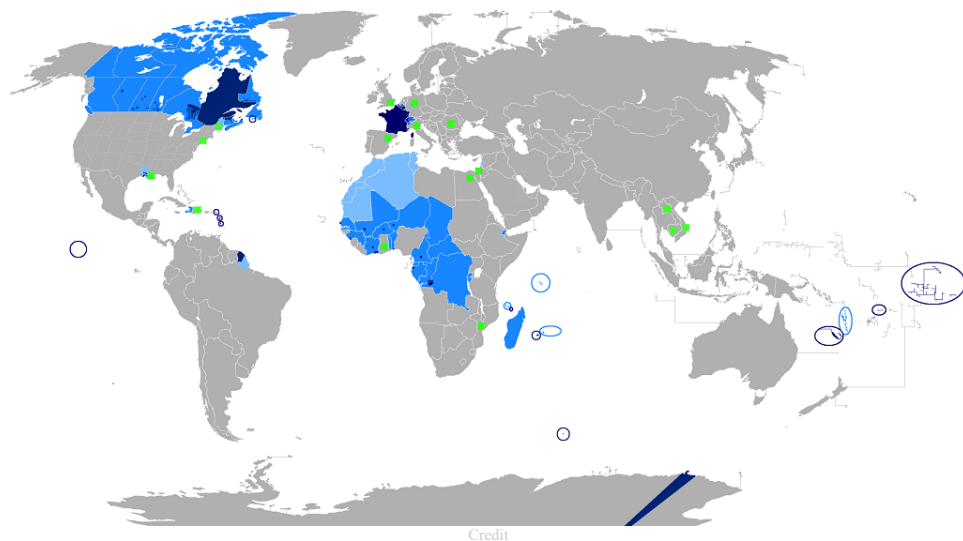
French was also influenced by native Celtic languages of Northern Roman Gaul like Gallia Belgica and by the (Germanic) Frankish language of the post-Roman Frankish invaders. Today, owing to France's past overseas expansion, there are numerous French-based creole languages, most notably Haitian Creole. A French-speaking

## Appendix 12 - Languages

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person or nation may be referred to as Francophone in both English and French.

French is an official language in 29 countries across multiple continents, most of which are members of the Organisation internationale de la Francophonie (OIF), the community of 84 countries which share the official use or teaching of French. French is also one of six official languages used in the United Nations. It is spoken as a first language (in descending order of the number of speakers) in France; the Democratic Republic of Congo; Algeria; Morocco; Canada (provinces of Quebec, Ontario and New Brunswick as well as other Francophone regions); Cameroon; Belgium (Wallonia and the Brussels-Capital Region); Ivory Coast; Tunisia; western Switzerland (Romandy—all or part of the cantons of Bern, Fribourg, Geneva, Jura, Neuchâtel, Vaud, Valais); Monaco; parts of Luxembourg; parts of the United States (the states of Louisiana, Maine, New Hampshire and Vermont); northwestern Italy (autonomous region of Aosta Valley); and various communities elsewhere.



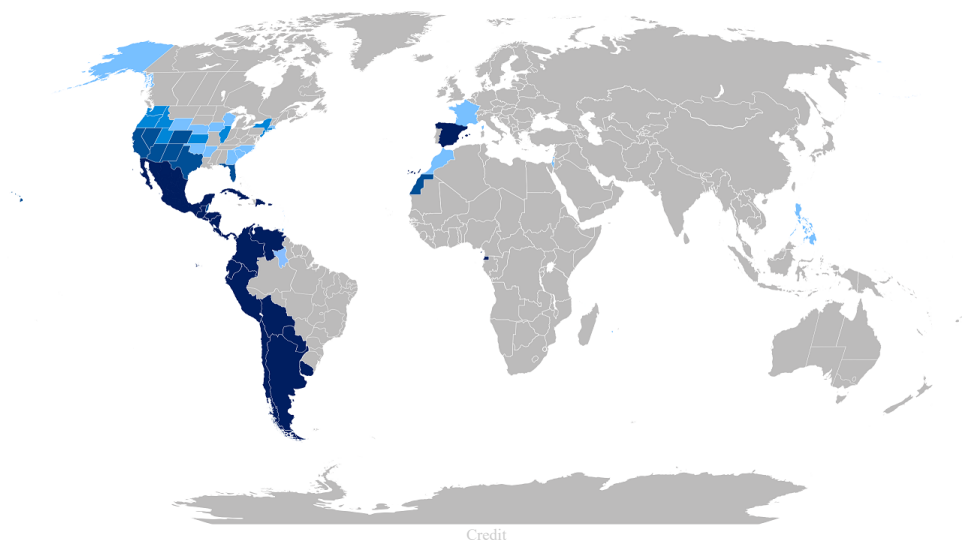
### Spanish

A Romance language that originated in the Iberian Peninsula of Europe. Today, it is a global language with nearly 500 million native speakers, mainly in Spain and the Americas. It is the world's second-most spoken native language after Mandarin Chinese, and the world's fourth-most spoken language overall after English, Mandarin Chinese, and Hindi.



## Appendix 12 - Languages

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### Italian

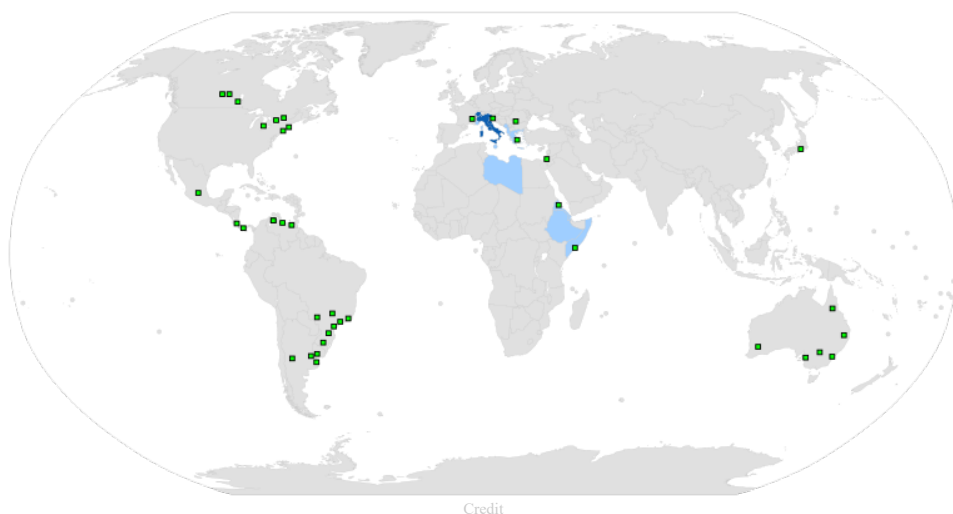
A Romance language of the Indo-European language family. Italian is the closest national language to Latin, from which it descends via vulgar Latin of the Roman Empire. Taking into account both national and regional languages, it is seen that Italian and Sardinian are together the least differentiated from Latin. Italian is an official language in Italy, Switzerland (Ticino and the Grisons), San Marino, and Vatican City. It has an official minority status in western Istria (Croatia and Slovenia).

It formerly had official status in Albania, Malta, Monaco, Montenegro (Kotor), Greece (Ionian Islands and Dodecanese), and is generally understood in Corsica by Corsican speakers (many linguists classify Corsican as an Italian dialect). It used to be an official language in the former colonial areas of Italian East Africa and Italian North Africa, where it still has a significant role in various sectors.

Italian is also spoken by large immigrant and expatriate communities in the Americas and Australia. Italian is included under the languages covered by the European Charter for Regional or Minority languages in Bosnia and Herzegovina and in Romania, although Italian is neither a co-official nor a protected language in these countries. Many speakers of Italian are native bilinguals of both Italian (either in its standard form or regional varieties) and another regional language of Italy.

## Appendix 12 - Languages

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### Brazilian Portuguese

The set of dialects of the Portuguese language native to Brazil and the most influential form of Portuguese worldwide. It is spoken by almost all of the 200 million inhabitants of Brazil and spoken widely across the Brazilian diaspora, today consisting of about two million Brazilians who have emigrated to other countries. With a population of over 205 million, Brazil is by far the world's largest Portuguese-speaking nation and the only one in the Americas.

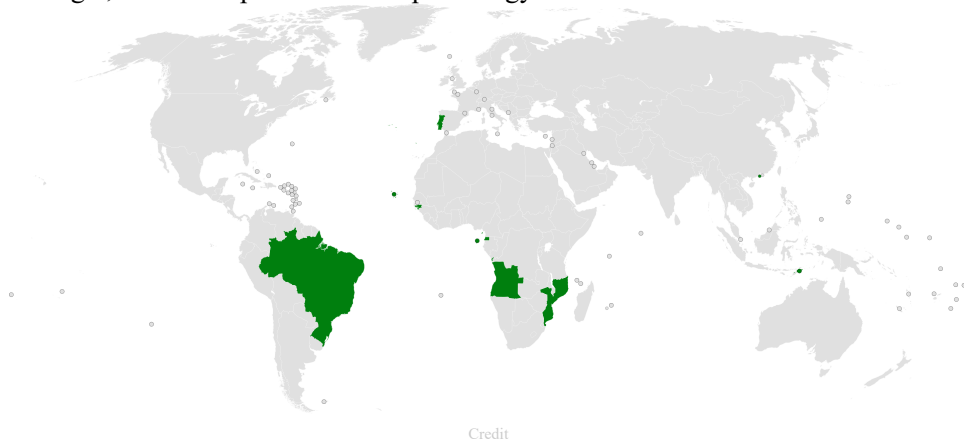


### Portuguese

A Romance language originating in the Iberian Peninsula of Europe. It is the sole official language of Portugal, Angola, Mozambique, Guinea-Bissau, Cape Verde, São Tomé and Príncipe, and Brazil, while having co-official language status in East Timor, Equatorial Guinea, and Macau. A Portuguese-speaking person or nation is referred to as "Lusophone" (lusófono). As the result of expansion during colonial times, a cultural presence of Portuguese and Portuguese creole speakers are also found around the world. Portuguese is part of the Ibero-Romance group

## Appendix 12 - Languages

that evolved from several dialects of Vulgar Latin in the medieval Kingdom of Galicia and the County of Portugal, and has kept some Celtic phonology and its lexicon.



### Catalan

Catalan (/ˈkætələn, -æn, ˌkætəˈlæn/; autonym: català or llengua catalana; Eastern Catalan: [kətəˈla]), known in the Valencian Community and Carche as Valencian, is a Western Romance language derived from Vulgar Latin. It is the official language of Andorra, and a co-official language of three autonomous communities in eastern Spain: Catalonia, the Valencian Community and the Balearic Islands. It also has semi-official status in the Italian comune of Alghero. It is also spoken in the Pyrénées-Orientales department of France and in two further areas in eastern Spain: the eastern strip of Aragon and the Carche area in the Region of Murcia. The Catalan-speaking territories are often called the Països Catalans or "Catalan Countries".

The language evolved from Vulgar Latin in the Middle Ages around the eastern Pyrenees. Nineteenth-century Spain saw a Catalan literary revival, culminating in the early 1900s.



### Walloon

A Romance language that is spoken in much of Wallonia and (to small extent) in Brussels, Belgium; some

## Appendix 12 - Languages

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villages near Givet, northern France; a clutch of communities in northeastern Wisconsin, U.S.; and in some parts of Canada. It belongs to the langue d'oïl language family, the most prominent member of which is the French language. The historical background of its formation was the territorial extension since 980 of the Principality of Liège to the south and west.

Despite its rich literature, beginning anonymously in the 16th century and with well-known authors since 1756, the use of Walloon has decreased markedly since France's annexation of Wallonia in 1795. This period definitively established French as the language of social promotion, far more than it was before. After World War I, public schools provided French-speaking education to all children, inducing a denigration of Walloon, especially when accompanied by official orders in 1952 to punish its use in schools. Subsequently, since the middle of the 20th century, generational transmission of the language has decreased, resulting in Walloon almost becoming a dead language. Today it is scarcely spoken among younger people, with vast majority of its native speakers being the elderly (aged 65 and over). In 2007, the number of people with knowledge of the language was estimated at 600,000.

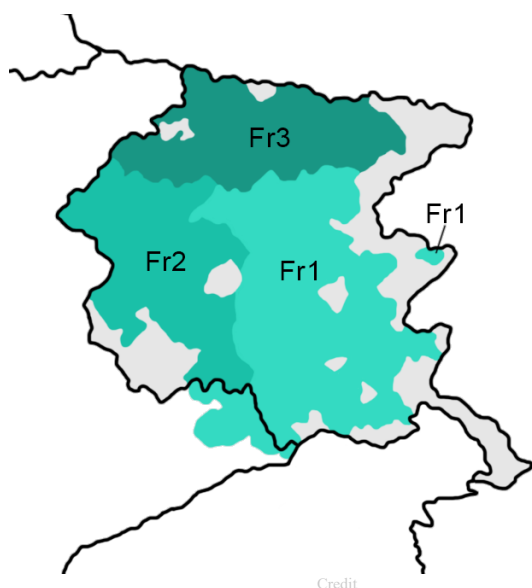


Credit

### Friulian

Friulian (/friˈuːliən/ free-OO-lee-ən) or Friulan (natively About this soundfurlan or marilenghe; Italian: friulano; German: Furlanisch; Slovene: furlanščina) is a Romance language belonging to the Rhaeto-Romance family, spoken in the Friuli region of northeastern Italy. Friulian has around 600,000 speakers, the vast majority of whom also speak Italian.

It is sometimes called Eastern Ladin since it shares the same roots as Ladin, but over the centuries, it has diverged under the influence of surrounding languages, including German, Italian, Venetian, and Slovene. Documents in Friulian are attested from the 11th century and poetry and literature date as far back as 1300. By the 20th century, there was a revival of interest in the language.



### Romanian

Romanian (obsolete spellings: Rumanian or Roumanian; autonym: *limba română* ['limba ro'minə] (About this soundlisten), or *românește*, lit. 'in Romanian') is a Balkan Romance language spoken by approximately 24–26 million people as a native language, primarily in Romania and Moldova, and by another 4 million people as a second language. According to another estimate, there are about 34 million people worldwide who can speak Romanian, of whom 30 million speak it as a native language. It is an official and national language of both Romania and Moldova and is one of the official languages of the European Union.

Romanian is a part of the Eastern Romance sub-branch of Romance languages, a linguistic group that evolved from several dialects of Vulgar Latin which separated from the Western Romance languages in the course of the period from the 5th to the 8th centuries. To distinguish it within the Eastern Romance languages, in comparative linguistics it is called *Daco-Romanian* as opposed to its closest relatives, *Aromanian*, *Megleno-Romanian* and *Istro-Romanian*. Romanian is also known as *Moldovan* in Moldova, although the Constitutional Court of Moldova ruled in 2013 that "the official language of the republic is Romanian".

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