**Lab #6 Show how to create a hash author： YiChen**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Names | first letter | last letter | Letters sorted | frequency |
| Ymir | y | r | d | 1 |
| Odin | o | n | f | 1 |
| Frigg | f | g | g | 1 |
| Thor | t | r | i | 1 |
| Tyr | t | r | l | 1 |
| Loki | l | i | n | 2 |
| Vidar | v | r | o | 1 |
| Njord | n | d | r | 4 |
|  |  |  | t | 2 |
|  |  |  | v | 1 |
|  |  |  | y | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Calculate a value for each word** | | | | |
| Names | Length | first letter | last letter | sum |
| Ymir | 4 | Y = 1 | R = 4 | 5 |
| Odin | 4 | O = 1 | N = 2 | 3 |
| Frigg | 5 | F = 1 | G = 1 | 2 |
| Thor | 4 | T = 2 | R = 4 | 6 |
| Tyr | 3 | T = 2 | R = 4 | 6 |
| Loki | 4 | L = 1 | I = 1 | 2 |
| Vidar | 5 | V = 1 | R = 4 | 5 |
| Njord | 5 | N = 2 | D = 1 | 3 |

|  |
| --- |
| Name sorted |
| Thor (6) |
| Tyr (6) |
| Vidar (5) |
| Ymir (5) |
| Njord (3) |
| Odin (3) |
| Frigg (2) |
| Loki (2) |

h( name )=( len(name) + g( firstLetter(name) ) + g( lastLetter(name) )) % TSize

TSize P = 8

Max = 4

|  |
| --- |
| Name sorted |
| Thor (6) |
| Tyr (6) |
| Vidar (5) |
| Ymir (5) |
| Njord (3) |
| Odin (3) |
| Frigg (2) |
| Loki (2) |

|  |  |
| --- | --- |
| First word | Thor |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 4  0  0 |
| sum | 4 |
| Mod P | 5 |

|  |  |
| --- | --- |
| Njord | 0 |
| Odin | 1 |
| Frigg | 2 |
| Tyr | 3 |
| Loki | 4 |
| Thor | 5 |
| Vidar | 6 |
| Ymir | 7 |

|  |  |
| --- | --- |
|  | g-values |
| d | 0 |
| f | ~~0~~ 4 |
| g | 0 |
| i | 0 |
| l | 0 |
| n | 0 |
| o | ~~0~~  5 |
| r | 0 |
| t | 0 |
| v | 0 |
| y | 0 |

|  |  |
| --- | --- |
| Second word | Tyr |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 3  0  0 |
| sum | 3 |
| Mod P | 3 |

|  |  |
| --- | --- |
| Fifth word | Njord |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 5 5 5 5  0 1 2 3  0 0 0 0 |
| sum | 5 6 7 8 |
| Mod P | 6 7 8 0  (hash clash!) Yay |

|  |  |
| --- | --- |
| Third word | Vidar |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 5  0  0 |
| sum | 5 |
| Mod P | 6 |

|  |  |
| --- | --- |
| Fouth word | Ymir |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 4 4 4  0 1 2  0 0 0 |
| sum | 4 5 6 |
| Mod P | 5 6 7  (hash clash!) Yay |

|  |  |
| --- | --- |
| sixth word | Odin |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | ~~4 4 4~~  4  ~~0 3 4~~  5  ~~0 0 0~~  0 |
| sum | ~~4 7 8~~  9 |
| Mod P | ~~5 8 0~~  1  (hash clash!) Yay |

|  |  |
| --- | --- |
| seventh word | Frigg |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 5 5  4 5  0 0 |
| sum | 9 10 |
| Mod P | 6 2  (hash clash!) Yay |

|  |  |
| --- | --- |
| Eighth word | Loki |
| len(name)  g( firstLetter = T )  g( lastLetter = r ) | 4 4  0 0  0 0 |
| sum | 4 4 |
| Mod P | 5 4% P+1= 4  (hash clash!) Yay |

