

lab10

June 3, 2022

```
[ ]: ## ---- load library ----  
library(tidyverse)  
library(glmnet)  
library(dbplyr)  
set.seed(123)  
  
## ---- load data ----  
got.df <- read_csv('Game_of_Thrones_Script.csv')  
glimpse(got.df)
```

```
[1]: View(got.df$Sentence)
```

Attaching packages

tidyverse 1.3.1

ggplot2	3.3.5	purrr	0.3.4
tibble	3.1.6	dplyr	1.0.9
tidyr	1.2.0	stringr	1.4.0
readr	2.1.2	forcats	0.5.1

Conflicts

```
tidyverse_conflicts()  
dplyr::filter() masks stats::filter()  
dplyr::lag()    masks stats::lag()
```

Loading required package: Matrix

Attaching package: 'Matrix'

The following objects are masked from 'package:tidyr':

expand, pack, unpack

Loaded glmnet 4.1-3

```
Attaching package: 'dbplyr'
```

```
The following objects are masked from 'package:dplyr':
```

```
ident, sql
```

```
Rows: 23911 Columns: 6  
Column specification
```

```
Delimiter: ","
```

```
chr (5): Season, Episode, Episode Title, Name, Sentence  
date (1): Release Date
```

```
Use `spec()` to retrieve the full column specification for this  
data.
```

```
Specify the column types or set `show_col_types = FALSE` to quiet  
this message.
```

```
Rows: 23,911
```

```
Columns: 6
```

```
$ `Release Date` <date> 2011-04-17, 2011-04-17, 2011-04-17,  
2011-04-17, 2011-...
```

```
$ Season <chr> "Season 1", "Season 1", "Season 1",  
"Season 1", "Seaso...
```

```
$ Episode <chr> "Episode 1", "Episode 1", "Episode  
1", "Episode 1", "E...
```

```
$ `Episode Title` <chr> "Winter is Coming", "Winter is  
Coming", "Winter is Com...
```

```
$ Name <chr> "waymar royce", "will", "waymar  
royce", "will", "gared...
```

```
$ Sentence <chr> "What do you expect? They're savages.  
One lot steals a...
```

1. 'What do you expect? They\'re savages. One lot steals a goat from another lot and before you know it, they\'re ripping each other to pieces.' 2. 'I\'ve never seen wildlings do a thing like this. I\'ve never seen a thing like this, not ever in my life.' 3. 'How close did you get?' 4. 'Close as any man would.' 5. 'We should head back to the wall.' 6. 'Do the dead frighten you?' 7. 'Our orders were to track the wildlings. We tracked them. They won\'t trouble us no more.' 8. 'You don\'t think he\'ll ask us how they died? Get back on your horse.' 9. 'Whatever did it to them could do it to us. They even killed the children.' 10. 'It\'s a good thing we\'re not children. You want to run away south, run away. Of course, they will behead you as a deserter ... If I don\'t catch you first. Get back on your horse. I won\'t say it again.' 11. 'Your dead men seem to have moved camp.' 12. 'They were here.' 13. 'See where they went.' 14. 'What is it?' 15. 'It\'s ...' 16. 'Go on. Father\'s watching.' 17. 'And your mother.' 18. 'Fine work, as always. Well done.' 19. 'Thank you.' 20. 'I

love the detail that you've managed to get in this corners. ... Quite beautiful ... the stitching ...'

21. 'And which one of you was a marksman at ten? Keep practicing, Bran. Go on.' 22. 'Don't think too much, Bran.' 23. 'Relax your bow arm.' 24. 'Quick, Bran, faster!' 25. 'Lord Stark. My lady. A guardsman just rode in from the hills. They've captured a deserter from the Night's Watch.' 26. 'Get the lads to saddle their horses.' 27. 'Do you have to?' 28. 'He swore an oath, Cat.' 29. 'The law is law, my lady.' 30. 'Tell Bran he's coming, too.' 31. 'Ned. Ten is too young to see such things.' 32. 'He won't be a boy forever. And winter is coming.' 33. 'Lad, go run back and get the rest.' 34. 'White Walkers. I saw the White Walkers. White Walkers. The White Walkers, I saw them.' 35. 'I know I broke my oath. And I know I'm a deserter. I should have gone back to the Wall and warned them. But I saw what I saw. I saw the White Walkers. People need to know. If you can get word to my family, tell them I'm no coward. Tell them I'm sorry.' 36. 'nods yes, and WILL is positioned on the tree limb that serves as a block.' 37. 'Forgive me, lord.' 38. 'In the name of Robert of the House Baratheon, first of his name ...' 39. 'Don't look away.' 40. 'King of the Andals and the First Men ...' 41. 'Father will know if you do.' 42. 'Lord of the Seven Kingdoms and protector of the realm, I, Eddard of the House Stark, Lord of Winterfell and Warden of the North, sentence you to die.' 43. 'You did well.' 44. 'You understand why I did it?' 45. 'Jon said he was a deserter.' 46. 'But do you understand why I had to kill him?' 47. 'Our way is the old way?' 48. 'The man who passes the sentence should swing the sword.' 49. 'Is it true he saw the White Walkers?' 50. 'The White Walkers have been gone for thousands of years.' 51. 'So he was lying?' 52. 'A madman sees what he sees.' 53. 'What is it?' 54. 'Mountain lion?' 55. 'There are no mountain lions in these woods.' 56. 'It's a freak.' 57. 'It's a direwolf.' 58. 'Tough old beast.' 59. 'There are no direwolves south of the Wall.' 60. 'Now there are five.' 61. 'You want to hold it?' 62. 'Where will they go? Their mother's dead.' 63. 'They don't belong down here.' 64. 'Better a quick death. They won't last without their mother.' 65. 'Right. Give it here.' 66. 'NO!' 67. 'Put away your blade.' 68. 'I take orders from your father, not you.' 69. 'Please, father!' 70. 'I'm sorry, Bran.' 71. 'Lord Stark? There are five pups. One for each of the Stark children. The direwolf is the sigil of your House. They were meant to have them.' 72. 'You will train them yourselves. You will feed them yourselves. And if they die, you will bury them yourselves.' 73. 'What about you?' 74. 'I'm not a Stark. Get on.' 75. 'What is it?' 76. 'The runt of the litter. That one's yours, Snow.' 77. 'As your brother, I feel it's my duty to warn you' 78. 'And you never worry about anything. When we were seven, you jumped off the cliffs as Casterly Rock. One hundred foot drop into the water. And you were never afraid.' 79. 'There was nothing to be afraid of until you told father. [In a whisper, mimicking] We're Lannisters. Lannisters don't act like fools.' 80. 'What if Jon Arryn told someone?' 81. 'But who would he tell?' 82. 'My husband.' 83. 'If he told the king, both our heads would be skewered on the city gates by now. Whatever Jon Arryn knew or didn't know, it died with him. And Robert will choose a new Hand of the king, someone to do his job while he's off fucking boars and hunting whores. Or is it the other way around? And life will go on.' 84. 'You should be the Hand of the king.' 85. 'That's an honor I can do without. Their days are too long, their lives are too short.' 86. 'All these years and I still feel like an outsider when I come here.' 87. 'You have five northern children. You're not an outsider.' 88. 'I wonder if the old gods agree.' 89. 'It's your gods with all the rules.' 90. 'I am so sorry, my love.' 91. 'Tell me.' 92. 'There was a raven from Kings Landing. Jon Arryn is dead. A fever took him. I know he was like a father to you.' 93. 'Your sister. The boy ...' 94. 'They both have their health. Gods be good. [pause] The raven brought more news. The king rides for Winterfell. With the queen and all the rest of them.' 95. 'He's coming this far North, there's only one thing he's after.' 96. 'You can always say no, Ned.' 97. 'We need plenty of candles for Lord Tyrion's chamber. I'm told he reads all night.' 98. 'I'm told he drinks all night.' 99. 'How much could he possibly drink? A man of his ... stature.' 100. 'We've brought up eight barrels of ale from the cellar. Perhaps we'll

find out.' 101. 'In any case, candles.' 102. 'Why\'s your mother so dead-set on us getting pretty for the king?' 103. 'It\'s for the queen, I bet. I hear she\'s [sleek as a mink?]' 104. 'I hear the prince is a right royal prick.' 105. 'Think of all those southern girls he gets to stab with his right royal prick.' 106. 'Go on, Tommy, shave him good. He\'s never met a girl he likes better than his own hair.' 107. 'Gods, but they grow fast. [Seeing BRAN on the wall] Brandon!' 108. 'I saw the king! He\'s got hundreds of people!' 109. 'How many times have I told you' 110. 'But he\'s coming right now! Down our road!' 111. 'I want you to promise me' 112. 'I promise.' 113. 'D\'you know what?' 114. 'What?' 115. 'You always look at your feet before you lie. Run and find your father. Tell him the king is close.' 116. 'Where\'s Arya? Sansa, where\'s your sister?' 117. 'Hey,, hey, hey, hey. What are you doing with that on? [Pulls off ARYA\'s helm]' 118. 'Move!' 119. 'Your Grace.' 120. 'You\'ve got fat.' 121. 'Cat!' 122. 'Your Grace.' 123. 'Nine years. Why haven\'t I seen you? Where the hell have you been?' 124. 'Guarding the North for you, Your Grace. Winterfell is yours.' 125. 'Where\'s the Imp?' 126. 'Will you shut up?' 127. 'Who have we here? You must be Robb. My, you\'re a pretty one. Your name is?' 128. 'Arya.' 129. 'Ooh. Show us your muscles. You\'ll be a soldier.' 130. 'That\'s Jaime Lannister. The queen\'s twin brother.' 131. 'Would you please shut up.' 132. 'My queen.' 133. 'My queen.' 134. 'Take me to your crypt. I want to pay my respects.' 135. 'We\'ve been riding for a month, my love. Surely the dead can wait.' 136. 'Ned.' 137. 'Where is our brother? Go find the little beast.' 138. 'Tell me about Jon Arryn.' 139. 'One minute he was fine, and then ... Burned right through him, whatever it was. I loved that man.' 140. 'We both did.' 141. 'He never had to teach you much, but me ... You remember me at 16? All I wanted to do was crack skulls and fuck girls. He showed me what was what.' 142. 'Aye.' 143. 'Don\'t look at me like that. Not his fault I didn\'t listen. I need you, Ned. Down at Kings Landing. Not up here, where you\'re no damn use to anybody. Lord Eddard Stark, I would name you the Hand of the king.' 144. 'I\'m not worthy of the honor.' 145. 'I\'m not trying to honor you. I\'m trying to get you to run my kingdom while I eat, drink, and whore my way to an early grave. Damn it, Ned, stand up. You helped me win the Iron Throne, now help me keep the damn thing. We were meant to rule together. If your sister had lived, we would have been bound by blood. Well, it\'s not too late. I have a son, you have a daughter. We\'ll join our Houses.' 146. 'Mmh. It is true what they say about the Northern girls.' 147. 'Did you hear the king\'s in Winterfell?' 148. 'I did hear something about that.' 149. 'And the queen. And her twin brother. They say that he is the most handsome man in the Seven Kingdoms.' 150. 'And the other brother?' 151. 'The queen has two brothers?' 152. 'There\'s the pretty one. And there\'s the clever one.' 153. 'I hear they call him the Imp.' 154. 'I hear he hates that nickname.' 155. 'Oh? I hear he\'s more than earned it. I hear he\'s a drunken little lecher into all manner of perversions.' 156. 'Clever girl.' 157. 'We\'ve been expecting you, Lord Tyrion.' 158. 'Have you?' 159. 'The gods gave me one blessing.' 160. 'Don\'t get up.' 161. 'M\'lord.' 162. 'Should I explain to you the meaning of a closed door in a whorehouse, brother?' 163. 'You\'ve much to teach me, no doubt. But our sister craves your attention.' 164. 'She has odd cravings, our sister.' 165. 'A family trait. Now, the Starks are feasting us at sundown. Don\'t leave me alone with these people.' 166. 'I\'m sorry, I\'ve begun the feast a bit early. And this is the first of many courses.' 167. 'I thought you might say that. But since we\'re short on time, Come on, girls. See you at sundown.' 168. 'Close the door!' 169. 'Did you have to bury her in a place like this? She should be on a hill somewhere with the sun and the clouds above her.' 170. 'She was my sister. This is where she belongs.' 171. 'She belonged with me.' 172. 'In my dreams, I kill him every night.' 173. 'It\'s done, Your Grace. The Targaryens are gone.' 174. 'Not all of them.' 175. 'Daenerys!' 176. 'Daenerys! There\'s our bride to be! Look – a gift from Illyrio. Touch it. Come on. Feel the fabric. Mmmm. Isn\'t he a gracious host?' 177. 'We\'ve been his guests for over a year and he\'s never asked us for anything.' 178. 'Illyrio is no fool. He knows I won\'t forget my friends when I come into my throne. You still slouch. Let me see. You have a woman\'s body now.

I need you to be perfect today. Can you do that for me? You don\'t want to wake the dragon, do you?' 179. 'No.' 180. 'When they write the history of my reign, sweet sister, they will say it began today.' 181. 'It\'s too hot, my lady.' 182. 'Where is he?' 183. 'The Dothraki are not known for their punctuality.' 184. 'May I present my honored guests? Viserys of House Targaryen, the third of his name. The rightful King of the Andals and the First Men. And his sister, Daenerys, of the House Targaryen.' 185. 'Do you see how long his hair is? When Dothraki are defeated in combat, they cut off their braid so the whole world can see their shame. Khal Drogo has never been defeated. He\'s a savage, of course, but he\'s one of the finest killers alive. And you will be his queen.' 186. 'Come forward, my dear.' 187. 'Where\'s he going?' 188. 'The ceremony is over.' 189. 'But he didn\'t say anything. Did he like her?' 190. 'Trust me, Your Grace. If he didn\'t like her, we\'d know.' 191. 'It won\'t be long now. Soon you will cross the Narrow Sea and take back your father\'s throne. The people drink secret toasts to your health. They cry out for their true king.' 192. 'When will they be married?' 193. 'Soon. The Dothraki never stay still for long.' 194. 'Is it true they lie with their horses?' 195. 'I wouldn\'t ask Khal Drogo.' 196. 'Do you take me for a fool?' 197. 'I take you for a king. Kings lack the caution of common men. My apologies if I\'ve given offense.' 198. 'I know how to play a man like Drogo. I give him a queen and he gives me an army.' 199. 'I don\'t want to be his queen. I want to go home.' 200. 'So do I. I want us both to go home. But they took it from us. So tell me, sweet sister, how do we go home?' 201. 202. 'You didn\'t.' 203. 'I did. And I\'d do it again, now that I\'ve seen what I\'ve seen. I chose my fate. The people of King\'s Landing did not.' 204. 'I can\'t justify what happened. I won\'t try. But the war is over now.' 205. 'Is it? When you heard her talking to her soldiers, did she sound like someone who\'s done fighting?' 206. 'She liberated the people of Slaver\'s Bay. She liberated the people of King\'s Landing. And she\'ll go on liberating until the people of the world are free and she rules them all.' 207. 'And you\'ve been by her side, counseling her. Until today.' 208. 'Until today. Varys was right. I was wrong. It was vanity to think I could guide her. Our queen\'s nature is fire and blood.' 209. 'You think our house words are stamped on our bodies when we\'re born and that\'s who we are? Then I\'d be fire and blood too. She\'s not her father, no more than you\'re Tywin Lannister.' 210. 'My father was an evil man. My sister was an evil woman. Pile up all the bodies of all the people they ever killed, there still won\'t be half as many as our beautiful queen slaughtered in a single day.' 211. 'Cersei left her no choice.' 212. 'The moment the gates fell, the battle was over.' 213. 'She saw her friend beheaded. She saw her dragon shot out of the sky.' 214. 'And she burned down a city for it.' 215. 'Ah, it\'s easy to judge when you\'re standing far from the battlefield.' 216. 'Would you have done it?' 217. 'What?' 218. 'You\'ve been up there, on a dragon\'s back. You\'ve had that power. Would you have burned the city down?' 219. 'I don\'t know.' 220. 'Yes, you do. You won\'t say because you don\'t want to betray her but you know.' 221. 'What\'s it matter what I\'d do?' 222. 'It matters more than anything. When she murdered the slavers of Astapor, I\'m sure no one but the slavers complained. After all, they were evil men.' 223. 'When she crucified hundreds of Meereenese nobles, who could argue? They were evil men. The Dothraki khals she burned alive? They would have done worse to her. Everywhere she goes, evil men die and we cheer her for it. And she grows more powerful and more sure that she is good and right. She believes her destiny is to build a better world for everyone. If you believed that if you truly believed it, wouldn\'t you kill whoever stood between you and paradise?' 224. 'I know you love her. I love her too. Not as successfully as you. But I believed in her with all my heart. Love is more powerful than reason. We all know that. Look at my brother.' 225. 'Love is the death of duty.' 226. 'You just came up with that?' 227. 'Maester Aemon said it a long time ago.' 228. 'Sometimes duty is the death of love. You are the shield that guards the realms of men. And you\'ve always tried to do the right thing. No matter the cost, you\'ve tried to protect people. Who is the greatest threat to the people now?' 229. 'It\'s a terrible thing I\'m asking. It\'s also the right thing. Do you

think I\'m the last man she\'ll execute? Who is more dangerous than the rightful heir to the Iron Throne?' 230. 'That\'s her decision. She is the queen.' 231. 'I\'m sorry it came to this.' 232. 'And your sisters? Do you see them bending the knee?' 233. 'My sisters will be loyal to the throne.' 234. 'Why do you think Sansa told me the truth about you? Because she doesn\'t want Dany to be queen.' 235. 'She doesn\'t get to choose.' 236. 'No. But you do. And you have to choose now.' 237. 'When I was a girl, my brother told me it was made with a thousand swords from Aegon\'s fallen enemies. What do a thousand swords look like in the mind of a little girl who can\'t count to twenty? I imagined a mountain of swords too high to climb. So many fallen enemies, you could only see the soles of Aegon\'s feet.' 238. 'I saw them executing Lannister prisoners in the street. They said they were acting on your orders.' 239. 'It was necessary.' 240. 'Necessary? Have you been down there? Have you seen? Children, little children, burned!' 241. 'I tried to make peace with Cersei. She used their innocence as a weapon against me. She thought it would cripple me.' 242. 'And Tyrion?' 243. 'He conspired behind my back with my enemies. How have you treated people who\'ve done the same to you, even when it broke your heart?' 244. 'Forgive him.' 245. 'I can\'t.' 246. 'You can. You can forgive all of them, make them see they made a mistake. Make them understand.' 247. 'Please, Dany.' 248. 'We can\'t hide behind small mercies. The world we need won\'t be built by men loyal to the world we have.' 249. 'The world we need is a world of mercy. It has to be.' 250. 'And it will be. It\'s not easy to see something that\'s never been before. A good world.' 251. 'How do you know? How do you know it\'ll be good?' 252. 'Because I know what is good. And so do you.' 253. 'I don\'t.' 254. 'You do. You do. You\'ve always known.' 255. 'What about everyone else? All the other people who think they know what\'s good.' 256. 'They don\'t get to choose.' 257. 'Be with me. Build the new world with me. This is our reason. It has been from the beginning, since you were a little boy with a bastardo s name and I was a little girl who couldn\'t count to twenty. We do it together. We break the wheel together.' 258. 'You are my queen. Now, and always.' 259. 'Where\'s Jon?' 260. 'He is our prisoner.' 261. 'So is Lord Tyrion. They were both to be brought to this gathering.' 262. 'We will decide what we do with our prisoners. This is our city now.' 263. 'If you look outside the walls of your city, you\'ll find thousands of Northmen who will explain to you why harming Jon Snow is not in your interest.' 264. 'And you will find thousands of Unsullied who believe that it is.' 265. 'Some of you may be quick to forgive. The Ironborn are not. I swore to follow Daenerys Targaryen.' 266. 'You swore to follow a tyrant.' 267. 'She freed us from a tyrant. Cersei is gone because of her, and Jon Snow put a knife in her heart. Let the Unsullied give him what he deserves.' 268. 'Say another word about killing my brother and I\'ll cut your throat.' 269. 'Friends, please. We\'ve been cutting each other\'s throats long enough. Torgo Nudho. Am I saying that properly?' 270. 'If it weren\'t for you and your men, we would have lost the war with the dead. This country owes you a debt it can never repay, but let us try. There is land in the Reach. Good land. The people that used to live there are gone. Make it your own. Start your own house with the Unsullied as your bannermen. We\'ve had enough war. Thousands of you, thousands of them. You know how it ends. We need to find a better way.' 271. 'We do not need payment. We need justice. Jon Snow cannot go free.' 272. 'It\'s not for you to decide.' 273. 'You are not here to speak! Everyone has heard enough words from you.' 274. 'You\'re right. And no one\'s any better for it. But it\'s not for you to decide. Jon committed his crime here. His fate is for our king to decide. Or our queen.' 275. 'We don\'t have a king or queen.' 276. 'You\'re the most powerful people in Westeros. Choose one.' 277. 'Make your choice, then.' 278. 'My lords and ladies. I suppose this is the most important moment of our lives. What we decide today will reverberate through the annals of history. I stand before you as one of the senior lords in the country. A veteran of two wars. And I like to think my experience has led to some small skill in statecraft - and underst-' 279. 'Uncle? Please sit.' 280. 'Well, we have to choose someone.' 281. 'Why just us?' 282. 'Um- We represent all the great houses, but whomever

we choose, they won't just rule over lords and ladies. Maybe the decision about what's best for everyone should be left to well, everyone.' 283. 'Maybe we should give the dogs a vote as well.' 284. 'I'll ask my horse.' 285. 'I suppose you want the crown.' 286. 'Me? The Imp?' 287. 'Half the people hate me for serving Daenerys, the other half hate me for betraying her.' 288. 'Can't think of a worse choice.' 289. 'Who, then?' 290. 'I've had nothing to do but think these past few weeks. About our bloody history. About the mistakes we've made.' 291. 'What unites people? Armies? Gold? Flags? Stories. There's nothing in the world more powerful than a good story. Nothing can stop it. No enemy can defeat it. And who has a better story than Bran the Broken? The boy who fell from a high tower and lived. He knew he'd never walk again, so he learned to fly. He crossed beyond the Wall, a crippled boy, and became the Three-Eyed Raven. He is our memory, the keeper of all our stories. The wars, weddings, births, massacres, famines. Our triumphs... mm, our defeats, our past. Who better to lead us into the future?' 292. 'Bran has no interest in ruling and he can't father children.' 293. 'Good. Sons of kings can be cruel and stupid, as you well know. His will never torment us. That is the wheel our queen wanted to break.' 294. 'From now on, rulers will not be born. They will be chosen on this spot by the lords and ladies of Westeros to serve the realm.' 295. 'I know you don't want it. I know you don't care about power. But I ask you now, if we choose you will you wear the crown? Will you lead the Seven Kingdoms to the best of your abilities from this day until your last day?' 296. 'Why do you think I came all this way?' 297. 'To Brandon of House Stark... I say aye.' 298. 'Aye.' 299. 'Aye.' 300. 'Aye.' 301. 'Aye.' 302. 'Aye.' 303. 'Aye.' 304. 'Aye.' 305. 'Aye.' 306. 'Aye.' 307. 'Aye.' 308. 'Aye.' 309. 'I'm not sure I get a vote, but aye.' 310. 'Aye.' 311. 'I love you, little brother. I always will. You'll be a good king. But tens of thousands of Northmen fell in the Great War defending all of Westeros. And those who survived have seen too much and fought too hard ever to kneel again. The North will remain an independent kingdom, as it was for thousands of years.' 312. 'All hail Bran the Broken, First of His Name, King of the Andals and the First Men, Lord of the Six Kingdoms and Protector of the Realm.' 313. 'All hail Bran the Broken!' 314. 'Lord Tyrion, you will be my Hand.' 315. 'N-No, Your Grace, I don't want it.' 316. 'And I don't want to be king.' 317. 'I don't deserve it. I thought I was wise, but I wasn't. I thought I knew what was right, but I didn't. Choose Ser Davos. Choose anyone else.' 318. 'I choose you.' 319. 'You cannot.' 320. 'Yes, I can. I'm king.' 321. 'This man is a criminal. He deserves justice.' 322. 'He just got it. He's made many terrible mistakes. He's going to spend the rest of his life fixing them.' 323. 'It is not enough.' 324. 'Giving you to the Unsullied would start a war. Letting you walk free would start a war. So our new king has chosen to send you to the Night's Watch.' 325. 'There's still a Night's Watch?' 326. 'The world will always need a home for bastards and broken men.' 327. 'You shall take no wife, hold no lands, father no children. The Unsullied wanted your head of course, but Grey Worm has accepted the justice of a life sentence. Sansa and Arya wanted you freed, but they understand our new king needs to make peace. No one is very happy. Which means it's a good compromise, I suppose.' 328. 'Was it right? What I did?' 329. 'What we did.' 330. 'It doesn't feel right.' 331. 'Ask me again in ten years.' 332. 'I don't expect we'll ever see each other again.' 333. 'I wouldn't be so sure. A few years as Hand of the King would make anyone want to piss off the edge of the world.' 334. 'All the men have boarded.' 335. 'Good. We sail for the isle of Naath.' 336. 'I wish there had been another way. Can you forgive me?' 337. 'The North is free, thanks to you.' 338. 'But they lost their king.' 339. 'Ned Stark's daughter will speak for them. She's the best they could ask for.' 340. 'You can come see me, you know, at Castle Black.' 341. 'I can't.' 342. 'You think anyone will dare tell you women aren't allowed?' 343. 'I'm not going back north.' 344. 'Where are you going?' 345. 'What's west of Westeros?' 346. 'No one knows. It's where all the maps stop. That's where I'm going.' 347. 'You have your Needle?' 348. 'Right here.' 349. 'Your Grace.' 350. 'I'm sorry I wasn't there when you needed me.' 351. 'You were exactly where you

were supposed to be.' 352. 'That\'s not- Uh-' 353. 'What\'s this?' 354. 'A Song of Ice and Fire. Archmaester Ebrose\'s history of the wars following the death of King Robert. I helped him with the title.' 355. 'I suppose I come in for some heavy criticism.' 356. 'Oh, I wouldn\'t say that.' 357. 'Oh, he\'s kind to me. Never wouldo ve guessed.' 358. 'He\'s not kind?' 359. 'He-' 360. 'He what? What does he say about me?' 361. 'I don\'t believe you\'re mentioned, ahem.' 362. 'Your Grace.' 363. 'Your Grace.' 364. 'Your Grace.' 365. 'Your Grace.' 366. 'We appear to be missing a Master of Whisperers. And a Master of Laws. And a Master of War.' 367. 'Yes, Your Grace. Suitable prospects will be brought to you for an audience in the coming weeks.' 368. 'And Drogon? Any word?' 369. 'He was last spotted flying east, toward-' 370. 'The farther away, the better.' 371. 'Perhaps I can find him. Do carry on with the rest.' 372. 'As you wish, Your Grace.' 373. 'Ser Podrick.' 374. 'We serve at your pleasure, King Bran the Broken, ruler of the Six Kingdoms and Protector of the Realm. Long may he reign.' 375. 'Long may he reign.' 376. 'Long may he reign.' 377. 'Long may he reign.' 378. 'Long may he reign.' 379. 'That will improve.' 380. 'I\'m sure it will.' 381. 'Ser Bronn of the Blackwater, Lord of Highgarden, Lord Paramount of the Reach and Master of Coin, would you say the crown\'s debt to you has been paid?' 382. 'In full, my lord Hand.' 383. 'Good. Time to start incurring a new one. We have hungry people to feed. Can we expect some assistance in this regard?' 384. 'Indeed we can.' 385. 'Lord Davos, we have an armada to rebuild and ports to repair.' 386. 'We have. These projects will begin as soon as the Master of Coin and Lord of Lofty Titles provides funding.' 387. 'The Master of Coin looks forward to helping the Master of Ships, but first he has to ensure we\'re not wasting coin, or soon there won\'t be no more coin.' 388. 'Any more.' 389. 'You Master of Grammar now too?' 390. 'Grandmaester, ahem, it is my theory, based on my years of work on the Casterly Rock sewers, that clean water leads to a healthier population.' 391. 'The Archmaester has done some research on this subject and it turns out-' 392. 'The strong live and the weak don\'t.' 393. 'Find the best builders and set them to the task.' 394. 'Oh, speaking of builders, all the best brothels burned down. The Master of Coin is willing to fund reconstruction.' 395. 'Uh... the Archmaester is less than enthusiastic about the salutary effects of brothels.' 396. 'Well, I imagine he isn\'t using them properly.' 397. 'I think we can all agree that ships take precedence over brothels.' 398. 'I think that\'s a very presumptuous statement.' 399. 'I once brought a jackass and a honeycomb into a brothel.' 400. 'The Queen in the North!' 401. 'The Queen in the North! The Queen in the North! The Queen in the North! The Queen in the North! The Queen in the North!'

```
[87]: ## ---- text wrangling ----
got.df <- got.df %>%
  mutate(season = as.integer(substring(Season, nchar(Season)-1)), # last digit
         episode = as.integer(substring(Episode, 8))) # offset word 'Episode'

got.ls <- apply(got.df, 1, function(x){
  s <- x['Sentence']
  s <- gsub("'", "", s) # replace ' with '
  s <- gsub('...', ' ', s, fixed = TRUE) # replace ... with space
  s <- gsub("...", ' ', s, fixed = TRUE) # replace ... with space
  s <- gsub("''", "'", s, fixed = TRUE) # replace " with '
  s <- gsub("''", "'", s, fixed = TRUE) # replace " with '
  ss = tolower(strsplit(s, "[[:blank:]][:punct:]]")[[1]])
  return(ss)
})
```



```
# sanity check
length(got.ls) == nrow(got.df) # TRUE
```

TRUE

```
[4]: ## ---- extract all unique words as master list ----
master_words.vt <- unique(unlist(got.ls))
words_indices.ls <- lapply(got.ls, function(x){
  s = match(x, master_words.vt)
  return(s)
})

# sanity check
head(master_words.vt, n=20)
got.ls[[1]]
words_indices.ls[[1]]
```

1. 'what' 2. 'do' 3. 'you' 4. 'expect' 5. " 6. 'they' 7. 're' 8. 'savages' 9. 'one' 10. 'lot' 11. 'steals'
12. 'a' 13. 'goat' 14. 'from' 15. 'another' 16. 'and' 17. 'before' 18. 'know' 19. 'it' 20. 'ripping'

1. 'what' 2. 'do' 3. 'you' 4. 'expect' 5. " 6. 'they' 7. 're' 8. 'savages' 9. " 10. 'one' 11. 'lot' 12. 'steals'
13. 'a' 14. 'goat' 15. 'from' 16. 'another' 17. 'lot' 18. 'and' 19. 'before' 20. 'you' 21. 'know' 22. 'it'
23. " 24. 'they' 25. 're' 26. 'ripping' 27. 'each' 28. 'other' 29. 'to' 30. 'pieces'

1. 1 2. 2 3. 3 4. 4 5. 5 6. 6 7. 7 8. 8 9. 5 10. 9 11. 10 12. 11 13. 12 14. 13 15. 14 16. 15 17. 10 18. 16
19. 17 20. 3 21. 18 22. 19 23. 5 24. 6 25. 7 26. 20 27. 21 28. 22 29. 23 30. 24

```
[6]: ## ---- load GloVe db ----
con <- dplyr::src_sqlite('~/.Downloads/words2.db') # establish connection
glove <- tbl(con, 'glove') # glove table
glove %>% tally() %>% collect()

glimpse(glove)
```

also installing the dependency 'plogr'

The downloaded binary packages are in
/var/folders/82/xctgtg5353f918mx036g0f8q00000gn/T//RtmpAsWv6B/downloaded_packages

A tibble: 1 × 1 $\frac{n}{1917494}$ <int>

Rows: ??

Columns: 301

Database: sqlite 3.38.5 [/Users/chase/Downloads/words2.db]

\$ Word <chr> ",", "the", ".", "and", "to", "of", "a", "in",

```

"\\"", "is", "for",...
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-0.09611000, -0.24837000, -0...
$ d002 <dbl> -0.1212300, -0.1493200, 0.0022438, -0.2578800,
-0.4546100, -0.285...
$ d003 <dbl> -0.119870, -0.017528, 0.222130, -0.358600,
0.039227, 0.063387, -0...
$ d004 <dbl> 0.0152270, -0.0284320, -0.1210200, -0.3288700,
-0.2842200, -0.601...
$ d005 <dbl> -0.191210, -0.060104, -0.048959, 0.579500,
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$ d006 <dbl> -0.0660740, -0.2646000, 0.0181350, -0.5177400,
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$ d024 <dbl> 0.467290, -0.267570, 0.175010, 0.347310,

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 -0.139850, -0.258780, 0...
 \$ d239 <dbl> 0.479010, -0.612340, -0.317600, 0.047290,
 -0.394990, -0.226340, -...
 \$ d240 <dbl> 0.2742700, 0.2028900, -0.2243000, 0.0349800,

-0.0272990, -0.07779...
 \$ d241 <dbl> 0.4164500, -0.4209100, -0.3004000, -0.0759420,
 -0.1520100, -0.417...
 \$ d242 <dbl> -0.3549200, 0.3776700, 0.2402200, 0.1559800,
 0.0844180, 0.0017983...
 \$ d243 <dbl> -0.144130, 0.036260, -0.185020, -0.059873,
 -0.371960, -0.078582, ...
 \$ d244 <dbl> -0.0100460, 0.2170800, -0.6693100, 0.0046743,
 0.0498270, -0.13130...
 \$ d245 <dbl> -0.420240, 0.125610, 0.149860, 0.155950,
 0.141280, 0.108760, -0.2...
 \$ d246 <dbl> -0.193820, -0.216820, -0.159480, -0.276130,
 -0.151260, 0.152000, ...
 \$ d247 <dbl> 0.3615600, -0.0037997, 0.1410000, 0.1356200,
 -0.1610700, -0.41862...
 \$ d248 <dbl> -0.1336400, -0.1779100, -0.0472190, 0.1348500,
 0.0040226, -0.1890...
 \$ d249 <dbl> -0.298530, -0.264310, -0.083048, -0.073724,
 0.167990, -0.335770, ...
 \$ d250 <dbl> 0.475370, 0.316780, 0.168290, 0.314210,
 -0.254290, -0.022991, 0.6...
 \$ d251 <dbl> -0.269890, -0.051229, 0.044241, 0.031234,
 -0.150740, -0.192040, -...
 \$ d252 <dbl> -0.0836620, 0.0492690, 0.3577700, -0.2351600,
 -0.5740900, 0.00179...
 \$ d253 <dbl> -0.0741000, -0.1262200, -0.2220700, 0.3100500,
 -0.1561100, -0.229...
 \$ d254 <dbl> 0.21815000, -0.10117000, 0.06749600,
 -0.10375000, 0.06840700, 0.2...
 \$ d255 <dbl> -0.3067800, 0.0172460, 0.2411100, -0.3078300,
 0.2483200, -0.64747...
 \$ d256 <dbl> -0.834990, -0.021950, -0.201810, -0.553270,
 0.168280, 0.124660, -...
 \$ d257 <dbl> -0.112870, -0.198200, 0.641220, 0.283040,
 0.072764, -0.019468, -0...
 \$ d258 <dbl> -0.3261200, 0.0372500, 0.0565600, 0.0814290,
 -0.0867280, -0.63690...
 \$ d259 <dbl> 0.1237500, -0.1679100, -0.3263500, 0.3777800,
 0.0021982, -0.21370...
 \$ d260 <dbl> 0.353410, -0.055459, 0.281110, 0.157250,
 0.135930, 0.517790, 0.19...
 \$ d261 <dbl> -0.326070, 0.576700, -0.156380, 0.011757,
 0.702240, 0.237490, -0...
 \$ d262 <dbl> 0.328530, 0.059123, -0.045039, 0.043006,
 -0.459760, 0.557590, -0...
 \$ d263 <dbl> 0.060266, 0.229310, 0.146620, -0.434230,
 -0.245060, -0.122860, 0...
 \$ d264 <dbl> -0.219910, 0.064201, -0.413620, -0.227180,

-0.338740, 0.204060, 0...
 \$ d265 <dbl> 0.3567100, 0.2742400, 0.2912200, -0.0432920,
 -0.1095200, 0.263860...
 \$ d266 <dbl> 0.295460, -0.371290, 0.480360, -0.636170,
 0.246980, -0.094897, -0...
 \$ d267 <dbl> -0.481590, -0.091375, -0.655260, -0.893900,
 -0.559190, -0.207430,...
 \$ d268 <dbl> -0.223470, -0.071342, 0.041017, -0.174060,
 -0.388660, 0.144920, -...
 \$ d269 <dbl> 0.310360, -0.037218, -0.400860, 0.411110,
 -0.133720, 0.240690, 0...
 \$ d270 <dbl> 0.2213200, -0.0126680, 0.1157400, -0.1440400,
 0.0919430, 0.524580...
 \$ d271 <dbl> -0.209940, -0.017976, 0.026230, -0.167800,
 -0.105430, 0.115110, 0...
 \$ d272 <dbl> -0.085675, -0.426220, 0.028116, -0.444380,
 -0.313190, 0.044618, -...
 \$ d273 <dbl> -0.261730, -0.100950, -0.408800, -0.730510,
 -0.299520, -0.577340,...
 \$ d274 <dbl> -0.1076400, 0.0449920, 0.1714800, 0.1095700,
 -0.2061100, 0.322070...
 \$ d275 <dbl> -0.1480200, -0.0902250, -0.5044800, 0.1312200,
 0.1797600, -0.0975...
 \$ d276 <dbl> 0.1757300, 0.2291500, 0.1008700, 0.0856230,
 0.4580000, 0.2144500,...
 \$ d277 <dbl> -0.1780400, 0.1861000, 0.3922000, 0.1250400,
 -0.0724020, 0.160750...
 \$ d278 <dbl> -0.217650, 0.363660, 0.149050, -0.403370,
 0.161180, 0.164820, 0.2...
 \$ d279 <dbl> 0.3073000, -0.2067600, 0.2096200, 0.0417650,
 -0.4164900, 0.292710...
 \$ d280 <dbl> -0.4459000, -0.3303700, -0.1150900, -0.2757400,
 -0.3010300, -0.08...
 \$ d281 <dbl> 0.039130, 0.473020, 0.320920, 0.062513,
 0.232340, 0.679360, 0.628...
 \$ d282 <dbl> -0.220650, 0.233800, -0.320450, 0.051093,
 -0.050139, 0.321150, 0...
 \$ d283 <dbl> 0.2214000, 0.0793060, 0.0350850, 0.3992600,
 0.1002600, -0.2186700...
 \$ d284 <dbl> 0.327270, 0.210830, 0.670250, 0.111490,
 0.389740, 0.267090, 0.019...
 \$ d285 <dbl> -0.4037800, 0.2101300, -0.6180800, -0.0564620,
 -0.0613420, -0.158...
 \$ d286 <dbl> 0.3302100, 0.1527500, -0.1316900, 0.2680900,
 0.2662600, -0.017671...
 \$ d287 <dbl> -0.1394200, 0.0808730, -0.0328920, -0.3956900,
 -0.1567100, -0.009...
 \$ d288 <dbl> -0.410030, -0.330130, 0.214760, 0.310330,

```

0.075136, 0.176140, 0.6...
$ d289 <dbl> -0.1752600, -0.1718100, -0.0033323, -0.0497500,
-0.4292600, -0.10...
$ d290 <dbl> 0.218520, -0.070170, 0.524060, -0.331390,
-0.120250, 0.033329, -0...
$ d291 <dbl> 0.136150, -0.041244, 0.063131, 0.477810,
0.082736, -0.021308, 0.0...
$ d292 <dbl> 0.1099900, -0.4618200, -0.2123000, -0.0212130,
-0.6246900, -0.660...
$ d293 <dbl> -0.334740, 0.027903, -0.300880, -0.212360,
0.044267, 0.090383, -0...
$ d294 <dbl> -0.046109, 0.546570, -0.451610, 0.423740,
0.606730, 0.128590, -0...
$ d295 <dbl> 0.107800, -0.258940, 0.264800, 0.140830,
-0.124580, 0.226160, -0...
$ d296 <dbl> -0.0356570, 0.3951500, 0.0759710, 0.0674980,
-0.1544300, 0.302350...
$ d297 <dbl> -0.0129210, 0.2614400, -0.4068800, -0.1267500,
-0.1633900, -0.257...
$ d298 <dbl> -0.039038, -0.540660, -0.296960, -0.370300,
0.053097, -0.489260, ...
$ d299 <dbl> 0.182740, 0.211990, 0.159390, -0.092774,
0.154580, 0.305370, -0.3...
$ d300 <dbl> 0.1465400, -0.0094357, -0.1490200, 0.3905800,
-0.3805300, 0.27273...

```

```

[7]: ## ---- fit glmnet (same as in W11) ----
## read in human-classified positive and negative words
pos_words <- scan('positive-words.txt',
                  blank.lines.skip = TRUE, comment.char = ";", what = "")
neg_words <- scan('negative-words.txt',
                  blank.lines.skip = TRUE, comment.char = ";", what = "")
# bag those into training words. 1: positive; 0: negative
train_words <- tibble(words = c(pos_words, neg_words),
                      pos = rep(1:0, c(length(pos_words), length(neg_words))))
# copy to db
train_words <- copy_to(con, train_words, name = 'train_words',
                      temporary = TRUE, overwrite = TRUE)

# joining with glove
train.df <- train_words %>%
  inner_join(glove, by = c('words' = 'Word')) %>% # joining with glove
  collect() # bring it back to R.

glimpse(train.df)

```

```

Rows: 6,628
Columns: 302

```

```

$ words <chr> "like", "good", "well", "great", "free",
"work", "best", "love",...
$ pos <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1,
1, 1, 0, 0, 1, 1...
$ d001 <dbl> -0.0149490, -0.0692540, 0.0882050, -0.0338190,
-0.6198400, 0.248...
$ d002 <dbl> 0.17910000, 0.37668000, 0.40155000, 0.27263000,
-0.31242000, 0.1...
$ d003 <dbl> -0.288830, -0.169580, -0.044703, -0.203010,
0.399180, -0.118110,...
$ d004 <dbl> -0.3399900, -0.2748200, -0.5097300, -0.2931000,
0.4844200, -0.02...
$ d005 <dbl> -0.030165, 0.256670, 0.116040, 0.104890,
0.174360, -0.192590, 0...
$ d006 <dbl> 0.00057625, -0.20293000, -0.16130000,
-0.21142000, 0.42494000, 0...
$ d007 <dbl> -4.0142, -4.1122, -4.3066, -3.5503, -3.1734,
-4.1861, -3.4478, -...
$ d008 <dbl> -0.561890, 0.025950, -0.084823, -0.633350,
0.094000, -0.082146, ...
$ d009 <dbl> -0.2453600, -0.2708500, 0.0882310, -0.2828000,
-0.4553900, 0.198...
$ d010 <dbl> -0.901960, -0.870030, -0.590670, -0.450470,
-0.653360, -0.076370...
$ d011 <dbl> 0.426050, -0.010262, 0.050804, -0.366120,
0.170440, 0.155270, 0...
$ d012 <dbl> 0.3004100, -0.1004800, 0.1554500, -0.1520700,
-0.1173000, 0.1261...
$ d013 <dbl> 0.3246100, -0.0617100, 0.2016600, 0.2012800,
0.5550000, 0.406120...
$ d014 <dbl> -0.094574, -0.211100, 0.125620, 0.186320,
0.213810, -0.307420, 0...
$ d015 <dbl> -0.133660, -0.376520, -0.243730, -0.073614,
-0.179440, -0.289570...
$ d016 <dbl> -0.0495020, 0.1044600, -0.3389200, -0.0831010,
0.1779900, 0.1825...
$ d017 <dbl> -0.249840, 0.054106, -0.103340, 0.079977,
-0.412120, 0.173930, -...
$ d018 <dbl> 0.0237250, -0.2522500, -0.2314800, -0.1729400,
0.3392600, -0.082...
$ d019 <dbl> -0.397180, -0.125050, -0.076147, 0.063676,
-0.305810, 0.430180, ...
$ d020 <dbl> 0.172910, -0.134610, 0.166520, 0.141480,
0.026446, -0.019610, -0...
$ d021 <dbl> 0.062534, 0.340040, 0.042690, 0.495160,
0.050631, -0.274100, 0.1...
$ d022 <dbl> -0.346460, -0.285990, 0.192940, 0.192440,
0.177180, 0.190500, 0...

```

\$ d023 <dbl> 0.2967200, 0.0485890, 0.1598800, 0.0565140,
 -0.2532600, -0.01281...
 \$ d024 <dbl> -0.119390, -0.088778, -0.055858, 0.077089,
 -0.148710, -0.145800,...
 \$ d025 <dbl> 0.1393800, -0.1075000, -0.1361900, 0.1104700,
 0.3814100, -0.1773...
 \$ d026 <dbl> -0.5058400, -0.4117500, -0.3046900, -0.2337300,
 0.0292860, -0.15...
 \$ d027 <dbl> -0.2151800, -0.1539600, 0.2580800, 0.2512100,
 -0.0211580, 0.1522...
 \$ d028 <dbl> -0.730680, 0.043628, -0.337290, 0.360610,
 -0.579240, -0.228690, ...
 \$ d029 <dbl> -0.051667, 0.256900, 0.374110, -0.048826,
 0.375810, 0.113490, -0...
 \$ d030 <dbl> -0.0699030, 0.0729770, 0.2153600, 0.1879600,
 -0.6420100, 0.17235...
 \$ d031 <dbl> -0.0716210, 0.0054217, -0.1227700, -0.0908900,
 0.0786250, -0.091...
 \$ d032 <dbl> 0.3893400, 0.1786900, -0.0451590, 0.1337800,
 0.2409600, -0.06757...
 \$ d033 <dbl> 0.170070, 0.033359, 0.127970, 0.354210,
 0.864620, 0.291370, 0.35...
 \$ d034 <dbl> 0.1908400, -0.1477600, -0.0357660, 0.3300300,
 -0.3095200, -0.282...
 \$ d035 <dbl> 0.0407750, 0.2963600, -0.0042771, 0.1161300,
 -0.1653200, -0.4763...
 \$ d036 <dbl> 0.0013094, -0.0229960, -0.4901000, -0.3640600,
 -0.2076500, -0.29...
 \$ d037 <dbl> 0.327190, -0.147270, -0.070168, -0.053876,
 -0.034054, -0.275200,...
 \$ d038 <dbl> -0.3113800, -0.1319100, -0.0302090, -0.2445100,
 -0.0596440, -0.2...
 \$ d039 <dbl> 0.3408400, -0.1010100, 0.1646900, 0.5502400,
 -0.3243000, -0.1387...
 \$ d040 <dbl> -0.1807800, -0.0874170, -0.1845700, -0.2309700,
 0.3096300, -0.35...
 \$ d041 <dbl> -0.022643, 0.378750, -0.030201, 0.203250,
 -0.366270, 0.066812, 0...
 \$ d042 <dbl> 0.32605, 0.45906, 0.23483, 0.18300, -0.16381,
 0.24935, 0.24871, ...
 \$ d043 <dbl> 0.13847000, 0.15273000, 0.10966000, 0.00010581,
 -0.89795000, 0.0...
 \$ d044 <dbl> -0.069246, -0.462570, -0.078083, -0.298430,
 -0.379140, -0.191390...
 \$ d045 <dbl> 0.0770590, 0.1097100, 0.0036198, 0.1177300,
 0.2289200, 0.1989400...
 \$ d046 <dbl> 0.1862200, 0.1121500, 0.0671840, -0.0026515,
 -0.3580800, -0.2089...

\$ d047 <dbl> -0.1587900, 0.3537000, -0.1566700, 0.3630400,
 0.3252000, 0.14688...
 \$ d048 <dbl> 0.018862, -0.070427, -0.410020, -0.323420,
 -0.515480, -0.243280,...
 \$ d049 <dbl> 0.1915700, 0.1216300, 0.0095749, 0.2419900,
 -0.5003300, 0.282060...
 \$ d050 <dbl> -0.117910, 0.141720, -0.209610, 0.178510,
 -0.055552, -0.014900, ...
 \$ d051 <dbl> 0.071837, 0.144600, -0.235420, 0.115230,
 -0.060002, -0.265070, 0...
 \$ d052 <dbl> -0.1012900, 0.2589500, -0.0055357, 0.3044000,
 0.2770800, 0.09952...
 \$ d053 <dbl> 0.0693550, -0.3322700, 0.2242300, -0.1888800,
 -0.5354200, -0.009...
 \$ d054 <dbl> 0.033117, 0.079101, -0.294340, 0.192570,
 -0.344240, -0.595660, 0...
 \$ d055 <dbl> 0.1618400, -0.3524100, -0.1696100, -0.1626100,
 -0.4868900, 0.181...
 \$ d056 <dbl> -0.3898200, -0.2289000, -0.1282800, 0.0814100,
 0.5514200, 0.2247...
 \$ d057 <dbl> -0.163560, 0.223450, 0.236650, -0.057838,
 0.057456, 0.098032, -0...
 \$ d058 <dbl> -0.121190, -0.783250, -0.281350, -0.488120,
 0.409560, -0.154080,...
 \$ d059 <dbl> 0.342460, 0.092271, -0.053361, -0.161190,
 -0.366730, -0.212580, ...
 \$ d060 <dbl> 0.05619300, -0.00085687, 0.01279700,
 0.38773000, -0.17078000, 0...
 \$ d061 <dbl> -0.0375650, 0.0909180, 0.0695320, 0.2397900,
 0.5046400, 0.148840...
 \$ d062 <dbl> -0.16854000, -0.24656000, -0.10260000,
 -0.43265000, 0.25287000, ...
 \$ d063 <dbl> 0.182140, 0.427050, 0.077044, 0.360260,
 0.163000, -0.010230, 0.2...
 \$ d064 <dbl> 0.260260, 0.390940, -0.016426, 0.389920,
 -0.096169, -0.095415, -...
 \$ d065 <dbl> -0.063287, 0.178930, -0.037890, -0.125370,
 0.117910, -0.306840, ...
 \$ d066 <dbl> -0.093168, -0.384500, 0.073247, -0.554290,
 0.426120, -0.278430, ...
 \$ d067 <dbl> -0.185050, 0.160250, -0.153580, 0.133950,
 0.300950, 0.105030, -0...
 \$ d068 <dbl> 0.130580, 0.272830, 0.112940, 0.062401,
 -0.473560, 0.036147, 0.2...
 \$ d069 <dbl> 0.212690, -0.068650, -0.083018, -0.060572,
 0.130880, -0.207300, ...
 \$ d070 <dbl> -0.419930, -0.605400, -0.555440, -0.439050,
 -0.242920, -0.656730...

\$ d071 <dbl> -0.082688, -0.093618, -0.199470, -0.374870,
 0.675930, -0.082936,...
 \$ d072 <dbl> 0.063783, -0.219830, -0.116560, -0.237120,
 0.240710, -0.188300, ...
 \$ d073 <dbl> 0.158280, 0.149380, 0.239250, -0.283850,
 0.122510, -0.294240, 0....
 \$ d074 <dbl> -0.184070, -0.368770, -0.197520, -0.252100,
 -0.122940, -0.239270...
 \$ d075 <dbl> -0.1486700, 0.0676400, 0.1576700, 0.2491400,
 -0.2238000, -0.2295...
 \$ d076 <dbl> -0.044690, -0.345060, -0.241080, -0.249940,
 -0.380180, 0.062137,...
 \$ d077 <dbl> 0.7754500, -0.0129560, 0.1630700, 0.2083500,
 0.3209800, 0.466270...
 \$ d078 <dbl> 0.1872800, -0.3263400, -0.1568000, 0.1370900,
 0.9243900, -0.1990...
 \$ d079 <dbl> 0.050465, 0.074251, 0.206910, 0.433010,
 0.328860, 0.085099, -0.0...
 \$ d080 <dbl> -0.0130030, -0.1092300, 0.1070300, -0.0537590,
 -0.2642100, -0.00...
 \$ d081 <dbl> -0.070800, 0.253410, 0.287220, -0.205180,
 0.238890, -0.187360, 0...
 \$ d082 <dbl> -0.5109900, -0.4197900, -0.5408100, -0.4912900,
 0.2951000, -0.69...
 \$ d083 <dbl> -0.408590, -0.132520, -0.029367, -0.686040,
 -0.448480, -0.104970...
 \$ d084 <dbl> -0.03560200, -0.17097000, 0.05225200,
 -0.22078000, 0.06622100, -...
 \$ d085 <dbl> -0.1042800, -0.0793560, 0.0057388, 0.0099021,
 -0.2018000, 0.2610...
 \$ d086 <dbl> -0.2234000, -0.2325000, -0.1679000, -0.1640500,
 0.3890500, -0.23...
 \$ d087 <dbl> 0.3399800, 0.0058086, 0.1592000, 0.4150200,
 0.2593100, 0.0403200...
 \$ d088 <dbl> -0.076035, 0.199930, 0.114650, 0.098981,
 0.242250, 0.058869, 0.2...
 \$ d089 <dbl> -0.032640, 0.232380, -0.098493, -0.137100,
 -0.242960, 0.411100, ...
 \$ d090 <dbl> -0.0372990, 0.2157000, -0.2772000, 0.0680070,
 -0.3694600, 0.4375...
 \$ d091 <dbl> -0.180820, -0.122460, -0.067937, -0.249180,
 0.338900, 0.061636, ...
 \$ d092 <dbl> 0.0635810, -0.1304600, -0.0152970, 0.0187340,
 0.2893700, 0.31022...
 \$ d093 <dbl> 0.0051452, -0.3174300, -0.0611620, 0.0124060,
 -0.1202700, 0.3381...
 \$ d094 <dbl> -0.4598700, 0.3314000, -0.1006900, 0.4143700,
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 \$ d258 <dbl> 0.155630, -0.144910, -0.308750, -0.195520,
 -0.644550, -0.019222,...
 \$ d259 <dbl> 0.046156, -0.389090, -0.102220, -0.206610,
 -0.567380, 0.504060, ...
 \$ d260 <dbl> 0.0075508, 0.2281700, 0.2322700, -0.0353280,
 -0.3290000, -0.0320...
 \$ d261 <dbl> -0.274850, 0.156890, 0.122870, 0.318220,
 0.273420, 0.229160, 0.5...
 \$ d262 <dbl> -0.234080, 0.095238, -0.040766, 0.234780,
 0.239320, -0.236180, 0...

\$ d263 <dbl> 0.334140, 0.299280, -0.038844, 0.146620,
 -0.123590, -0.054921, 0...
 \$ d264 <dbl> -0.336470, -0.133760, -0.412460, -0.059459,
 0.251170, 0.036014, ...
 \$ d265 <dbl> -0.099405, 0.512290, 0.298020, 0.344960,
 -0.267460, 0.396010, 0...
 \$ d266 <dbl> -0.1120800, -0.0581140, -0.1494800, -0.4131300,
 -0.0094476, -0.2...
 \$ d267 <dbl> -0.272000, 0.051375, -0.148860, 0.041587,
 -0.161960, -0.283690, ...
 \$ d268 <dbl> 0.1405100, -0.3798200, 0.0385240, 0.0304630,
 0.2717200, -0.23332...
 \$ d269 <dbl> -0.1880900, -0.0995550, -0.2701000, -0.4144400,
 -0.3176100, -0.1...
 \$ d270 <dbl> 0.02576300, 0.09856400, -0.12898000,
 0.01695400, 0.57442000, -0...
 \$ d271 <dbl> 0.0384780, -0.1960800, -0.0076717, -0.1960700,
 -0.1688500, -0.35...
 \$ d272 <dbl> 0.0083357, 0.4492000, 0.0318550, 0.4450800,
 0.3065400, -0.138350...
 \$ d273 <dbl> -0.427130, -0.205170, -0.135740, -0.486070,
 0.225190, -0.390730,...
 \$ d274 <dbl> -0.2164900, -0.0410980, 0.0185120, -0.3451300,
 0.0054951, 0.0914...
 \$ d275 <dbl> 0.030883, -0.273480, -0.067022, -0.153900,
 -0.739160, 0.056348, ...
 \$ d276 <dbl> -0.232090, 0.059709, 0.256120, 0.018211,
 -0.121870, 0.121010, 0...
 \$ d277 <dbl> 0.186090, -0.261000, -0.321570, 0.056174,
 0.633160, 0.356600, 0...
 \$ d278 <dbl> 0.3420900, 0.0540300, 0.0699100, 0.1247900,
 0.0826240, -0.086471...
 \$ d279 <dbl> 0.097109, -0.367590, -0.165410, -0.136790,
 1.259500, -0.014113, ...
 \$ d280 <dbl> -0.1661600, 0.1272500, -0.0586770, 0.0316630,
 0.0973520, -0.0334...
 \$ d281 <dbl> 1.135300, 0.678610, 0.627350, 0.720310,
 -0.069293, 0.815390, 0.1...
 \$ d282 <dbl> 0.186620, -0.463270, -0.440770, -0.091717,
 0.091564, -0.199080, ...
 \$ d283 <dbl> 0.228760, 0.177160, 0.226770, 0.119600,
 -0.779430, -0.072617, 0...
 \$ d284 <dbl> 0.081640, 0.342190, 0.179880, 0.270430,
 -0.073698, -0.030766, -0...
 \$ d285 <dbl> 0.089013, 0.490060, 0.251690, -0.022466,
 -0.128180, -0.130400, 0...
 \$ d286 <dbl> -0.14447000, 0.47282000, 0.45095000,
 0.55137000, 0.12361000, 0.1...

```

$ d287 <dbl> 0.064785, -0.039460, -0.105110, -0.138640,
0.035258, 0.533080, 0...
$ d288 <dbl> 0.010417, 0.393040, 0.191540, 0.140370,
-0.494880, -0.086197, 0...
$ d289 <dbl> 0.250460, -0.023976, 0.038259, -0.217250,
0.905790, -0.113510, -...
$ d290 <dbl> -0.06917, -0.60973, -0.21491, -0.31669,
0.47882, -0.36478, -0.27...
$ d291 <dbl> 0.213020, -0.484760, 0.042501, -0.173440,
-0.318380, 0.061974, -...
$ d292 <dbl> -0.04067900, -0.33363000, -0.04389700,
-0.23784000, -0.28708000,...
$ d293 <dbl> -0.34699000, -0.07595600, -0.55051000,
-0.24187000, 0.17423000, ...
$ d294 <dbl> -0.3153600, 0.1582700, -0.2744400, -0.0125940,
0.0690320, -0.741...
$ d295 <dbl> 0.47710000, 0.29431000, 0.31041000, 0.23626000,
-0.54077000, 0.0...
$ d296 <dbl> -0.234870, -0.074275, -0.230230, -0.152350,
-0.180070, 0.156610,...
$ d297 <dbl> -0.337920, -0.289090, -0.240660, -0.213120,
-0.426890, -0.123830...
$ d298 <dbl> 0.059178, -0.220280, 0.046184, -0.184580,
0.534840, 0.296970, -0...
$ d299 <dbl> -0.1922100, 0.0889710, 0.0791350, 0.0246330,
0.2139700, 0.076879...
$ d300 <dbl> 0.456200, -0.028352, 0.095058, 0.039906,
0.202850, 0.028466, 0.4...

```

```

[8]: # create design matrix for 'glmnet'
train_x <- train.df %>%
  select(-words, -pos) %>% as.matrix()

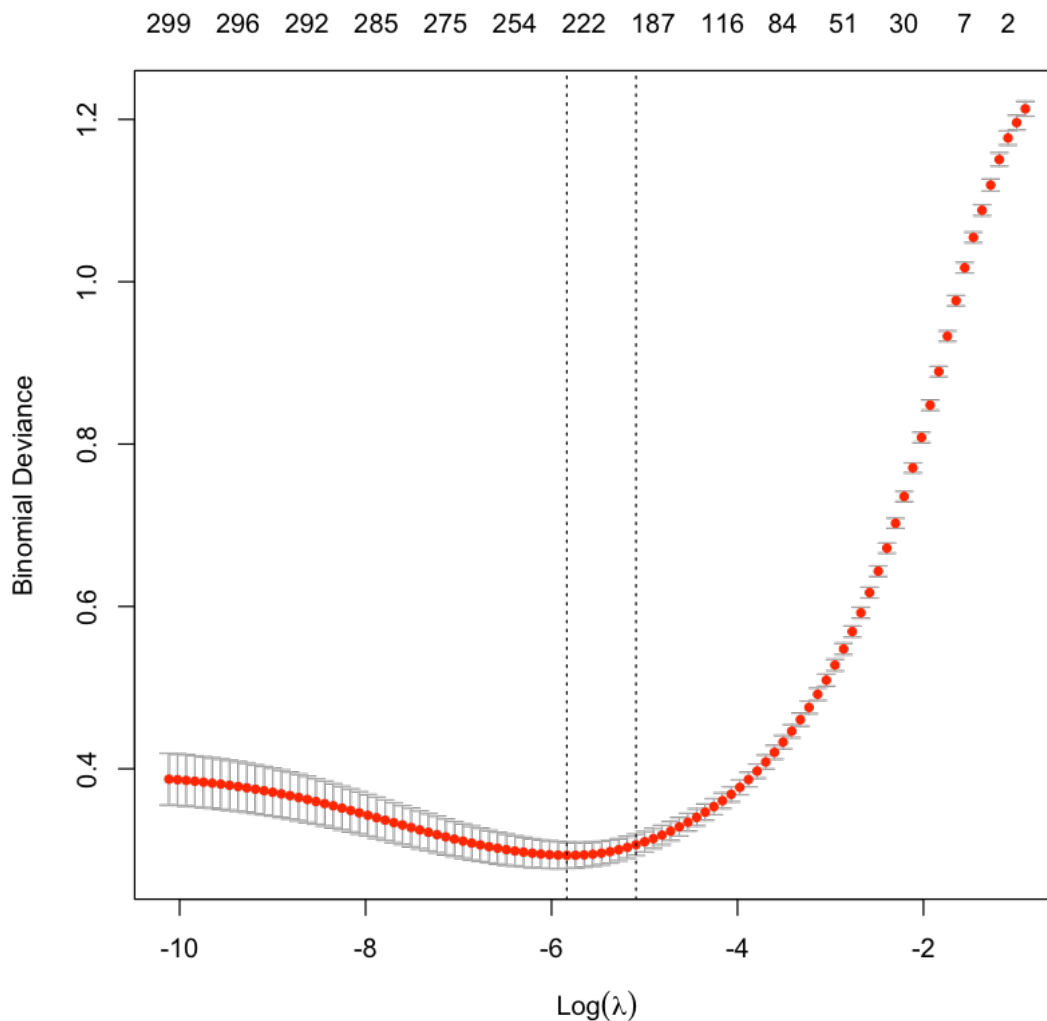
rownames(train_x) <- train.df$words
# response
train_y <- train.df$pos

# set test data
test <- sample(nrow(train_x), nrow(train_x)/5) # 20% as test data

# logistical model with a mix (50/50) mix of L1 and L2 regularisation.
fit <- cv.glmnet(train_x[-test,], train_y[-test], family = 'binomial',
  alpha = 0.5)

# eyeballing the fit
plot(fit)

```



```
[9]: ## ---- predict sentiments for ALL words in script ----
# copy all words to DB to join with glove
word_tbl <- copy_to(con,
                    tibble(ALL_WORDS = master_words.vt),
                    name = "temp_words", #create = TRUE,
                    overwrite = TRUE, temporary = TRUE)

word_df <- inner_join(word_tbl, glove, by = c('ALL_WORDS' = 'Word')) %>%
  collect()

# check the unmatched master_words -- seems mostly GoT specifics such as 'yunkish'
ss <- master_words.vt[!(master_words.vt %in% word_df$ALL_WORDS)]; View(ss)
```

```

# create model matrix for glmnet
word_x <- word_df %>%
  select(-ALL_WORDS) %>%
  as.matrix()

# prediction, one sentiment score for each word.
senti <- predict(fit$glmnet.fit, word_x, s = fit$lambda.min)

senti_master.df <- data.frame(word = master_words.vt,
                              stringsAsFactors = FALSE) %>%
  left_join(data.frame(word = word_df$ALL_WORDS, sentiment = senti,
                      stringsAsFactors = FALSE)) %>%
  # rename(sentiment = X1) # can be 'S1' instead of 'X1' if using R4.1.x

names(senti_master.df)[2] = 'sentiment' # update to more meaningful column name

glimpse(senti_master.df)

```

1. " 2. 'mordane' 3. 'horselord' 4. 'grumpkins' 5. 'irogenia' 6. 'khals' 7. 'mikken' 8. 'tyroshi' 9. 'tarlys' 10. 'rakharo' 11. 'dothrakan' 12. 'arakh' 13. 'vroz' 14. 'bloodrider' 15. 'bharbo' 16. 'qo-hor' 17. 'dothrak' 18. 'lannisport' 19. 'horselords' 20. 'dragonglass' 21. 'maegor' 22. 'alliser' 23. 'horselordo' 24. 'houndo' 25. 'goodfolk' 26. 'redwyne' 27. 'rhaego' 28. 'horseparts' 29. 'sky-cells' 30. 'goatshit' 31. 'orys' 32. 'impunent' 33. 'virzetha' 34. 'gizikhven' 35. 'qora' 36. 'braavosi' 37. 'tytos' 38. 'childo' 39. 'mormonts' 40. 'olyvar' 41. 'maekar' 42. 'gunthor' 43. 'Impossible' 44. 'wolfswood' 45. 'graveworms' 46. 'Innocent' 47. 'dontos' 48. 'torrhen' 49. 'portan' 50. 'lazarheen' 51. 'kovarro' 52. 'rokharo' 53. 'frostfangs' 54. 'randyll' 55. 'jhaqo' 56. 'khalasaar' 57. 'saltwives' 58. 'saltwife' 59. 'mhaegen' 60. 'podrick' 61. 'lommy' 62. 'matthos' 63. 'salladhor' 64. 'pentoshi' 65. 'midanese' 66. 'lysene' 67. 'westerossee' 68. 'zuriff' 69. 'roado' 70. 'qartheen' 71. 'polliver' 72. 'ed-dardo' 73. 'xhoan' 74. 'soumai' 75. 'mthat' 76. 'dagmer' 77. 'maidenpool' 78. 'mooton' 79. 'barrow-ton' 80. 'longaxes' 81. 'haylene' 82. 'dracarys' 83. 'rewove' 84. 'meereenis' 85. 'malakko' 86. 'stones-nake' 87. 'sideface' 88. 'marbrand' 89. 'brotherfucker' 90. 'llyrio' 91. 'mopatis' 92. 'maegyr' 93. 'rhaenys' 94. 'visenya' 95. 'meraxes' 96. 'vhagar' 97. 'karstarks' 98. 'ashemark' 99. 'archmaester' 100. 'shevelathin' 101. 'shevelatesh' 102. 'chevalteesh' 103. 'foodo' 104. 'vyalthan' 105. 'rhyone' 106. 'lorathi' 107. 'thirteen' 108. 'gelmarr' 109. 'urzen' 110. 'stygg' 111. 'seagard' 112. 'faircas-tle' 113. 'giantsbane' 114. 'oxcross' 115. 'mallister' 116. 'qyburn' 117. 'westrosi' 118. 'kraznys' 119. 'thenns' 120. 'hornfoots' 121. 'anguy' 122. 'warging' 123. 'tobho' 124. 'cowardo' 125. 'win-terhell' 126. 'greizhen' 127. 'missandei' 128. 'twatbeard' 129. 'meereenese' 130. 'unbesmirched' 131. 'rattleshirt' 132. 'harrior' 133. 'karhold' 134. 'selyse' 135. 'tommard' 136. 'backstabblings' 137. 'olyver' 138. 'dareon' 139. 'tormundo' 140. 'hollor' 141. 'rytsas' 142. 'ritsas' 143. 'yunk-ish' 144. 'razdal' 145. 'eraz' 146. 'savageries' 147. 'septons' 148. 'tralalalaleeday' 149. 'prendahl' 150. 'ghezn' 151. 'naharis' 152. 'throwg' 153. 'vhag' 154. 'enog' 155. 'dothroaki' 156. 'athjahakar' 157. 'athjahaka' 158. 'hakar' 159. 'feldan' 160. 'tristifer' 161. 'derwa' 162. 'waldra' 163. 'wertha' 164. 'waldina' 165. 'jention' 166. 'nūmāzme' 167. 'ēza' 168. 'iderenna' 169. 'qopsa' 170. 'verdagon' 171. 'queensguard' 172. 'nightfort' 173. 'jaehaerys' 174. 'hodoring' 175. 'songbirdo' 176. 'desmondo' 177. 'highborns' 178. 'rylene' 179. 'nigit' 180. 'ghiscari' 181. 'dornishmen' 182. 'manwoodys' 183. 'kingsgrave' 184. 'dornishman' 185. 'ellaria' 186. 'leygood' 187. 'kaeth' 188. 'peasebury'

189. 'musgood' 190. 'elyo' 191. 'worldo' 192. 'madking' 193. 'heado' 194. 'involvedi' 195. 'kingsguards' 196. 'neverhave' 197. 'nmight' 198. 'wallto' 199. 'shuty' 200. 'backsoon' 201. 'trants' 202. 'lhara' 203. 'hizdahr' 204. 'loraq' 205. 'sweetsleep' 206. 'rorge' 207. 'yarwyck' 208. 'stokeworth' 209. 'falyse' 210. 'shouldo' 211. 'couldo' 212. 'corbray' 213. 'waynwood' 214. 'nepoticide' 215. 'volarik' 216. 'wouldo' 217. 'molestown' 218. 'mantari' 219. 'rhoynar' 220. 'mighdal' 221. 'ilyn' 222. 'ilyrio' 223. 'mossador' 224. 'nudho' 225. 'sunsnake' 226. 'stonespear' 227. 'pitfighters' 228. 'norvoshi' 229. 'viserion' 230. 'rhaegal' 231. 'belovedo' 232. '998th' 233. 'myhsa' 234. 'cerwyn' 235. 'greyguard' 236. 'grandmaester' 237. 'volantene' 238. 'estermont' 239. 'wardeness' 240. 'hardhome' 241. 'storroldo' 242. 'wolkan' 243. 'valyrians' 244. 'gotho' 245. 'turncloak' 246. 'trystane' 247. 'tamsay' 248. 'stormcrows' 249. 'wintefell' 250. 'derryk' 251. 'inadviseable' 252. 'asshei' 253. 'daznak' 254. 'lokh' 255. 'dragonslaying' 256. 'cockels' 257. 'vintnors' 258. 'canall' 259. 'valaar' 260. 'rhaenyra' 261. 'valahd' 262. 'reaved' 263. 'kennelmaster' 264. 'unella' 265. 'khaleen' 266. 'wylis' 267. 'kastark' 268. 'manderlys' 269. 'kingsmoot' 270. 'magicthat' 271. 'khalasars' 272. 'vezhven' 273. 'asatapor' 274. 'bloodmagic' 275. 'astaporhere' 276. 'godsway' 277. 'lhazareen' 278. 'khalaser' 279. 'rhalko' 280. 'bloodriders' 281. 'sheelba' 282. 'bobono' 283. 'symun' 284. 'heartsbane' 285. 'clarenzo' 286. 'mallisters' 287. 'khalassar' 288. 'upjumped' 289. 'hornwoods' 290. 'mazins' 291. 'kingslayer' 292. 'brotherhoodo' 293. 'nakloz' 294. 'septas' 295. 'kingslayers' 296. 'smalljon' 297. 'mankindo' 298. 'dragonpit' 299. 'daeneys' 300. 'drangonstone' 301. 'hornhill' 302. 'chris-sen' 303. 'daenarys' 304. 'artilletters' 305. 'naarth' 306. 'fouthen' 307. 'aegons' 308. 'revoltionaries' 309. 'vicerys' 310. 'rhaegon' 311. 'vicerion' 312. 'tarleys' 313. 'nestoris' 314. 'margerey' 315. 'lodock' 316. 'dismissively' 317. 'ravenry' 318. 'goldcloaks' 319. 'daenery' 320. 'anullments' 321. 'imbecils' 322. 'meynardo' 323. 'robett' 324. 'resheaths' 325. 'motherif' 326. 'fatherall' 327. 'sisterthat' 328. 'espringal' 329. 'ebrose'

Joining, by = "word"

Rows: 9,463

Columns: 2

```
$ word      <chr> "what", "do", "you", "expect", "", "they",
"re", "savages", ...
$ sentiment <dbl> 1.16079289, -3.99536083, 3.18039751,
1.72456677, NA, -0.1449...
```

```
[10]: # join back to the sentences in the got.df
sentiment.vt <- sapply(words_indices.ls, function(x){
  senti <- senti_master.df$sentiment[x]
  ave <- mean(senti, na.rm = TRUE)
  return(ave)
})
got.df <- got.df %>%
  mutate(sentiment = sentiment.vt)

glimpse(got.df)
```

Rows: 23,911

Columns: 9

```
$ `Release Date` <date> 2011-04-17, 2011-04-17, 2011-04-17,
2011-04-17, 2011-...
$ Season      <chr> "Season 1", "Season 1", "Season 1",
```

```

"Season 1", "Season...
$ Episode      <chr> "Episode 1", "Episode 1", "Episode
1", "Episode 1", "E...
$ `Episode Title` <chr> "Winter is Coming", "Winter is
Coming", "Winter is Com...
$ Name         <chr> "waymar royce", "will", "waymar
royce", "will", "gared...
$ Sentence     <chr> "What do you expect? They're savages.
One lot steals a...
$ season       <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, ...
$ episode      <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, ...
$ sentiment    <dbl> -0.24176478, -0.03472463, 1.30408681,
0.37492382, 0.76...

```

```

[49]: # ---- explore the data ----
# Q1: most talkative
(top5 <- head(sort(table(got.df$Name), decreasing=TRUE), 5))

top1 <- top5[1]

top5.df <- got.df %>%
  filter(Name %in% rownames(top5)) %>%
  count(Name, Season)

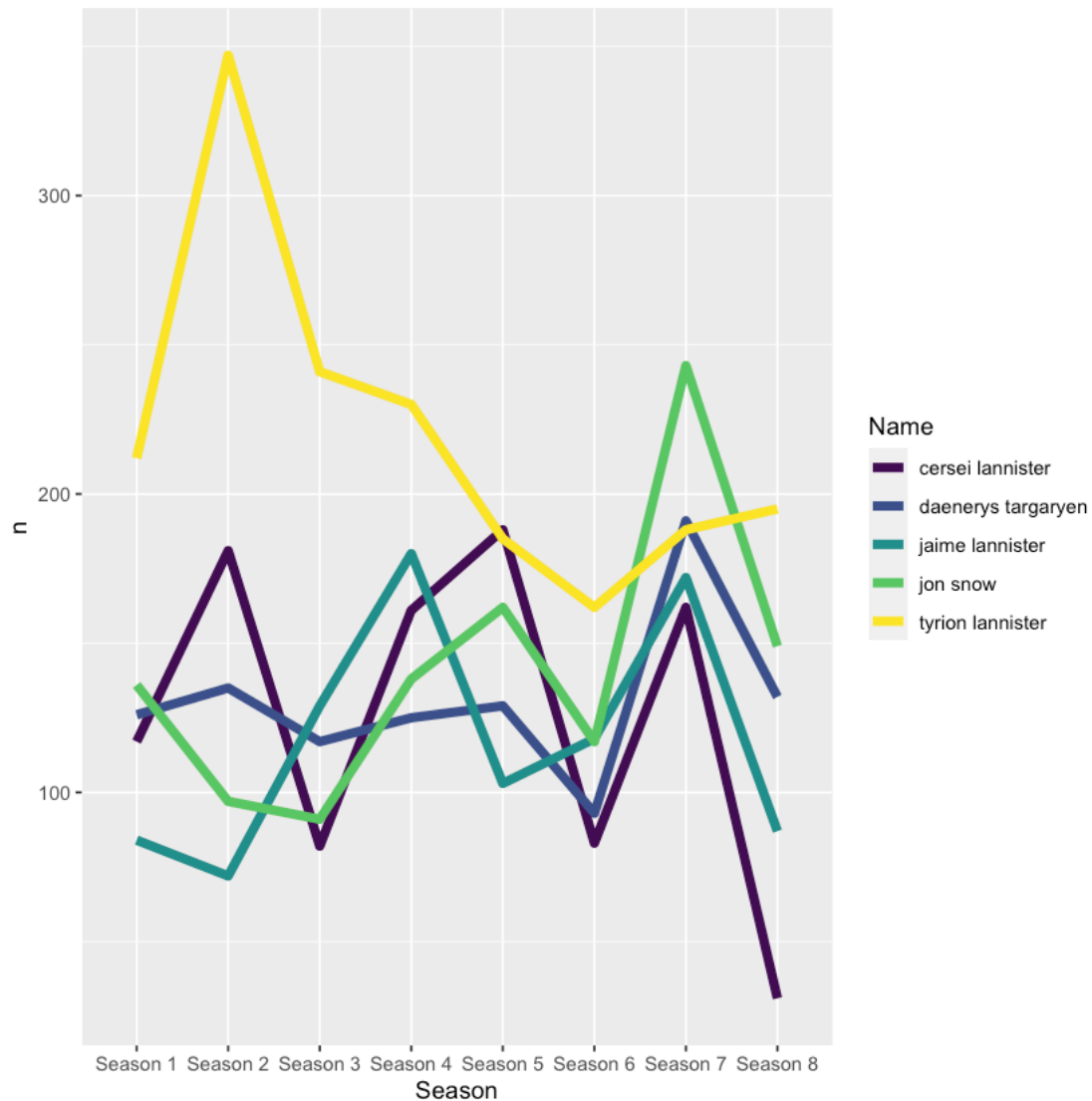
```

tyrion lannister	jon snow	daenerys targaryen	cersei lannister
1760	1133	1048	1005
jaime lannister			
945			

```

[50]: top5.df %>%
  ggplot(aes(x=Season, y=n, group=Name, colour=Name)) +
  geom_line(size=2) +
  scale_colour_viridis_d()

```



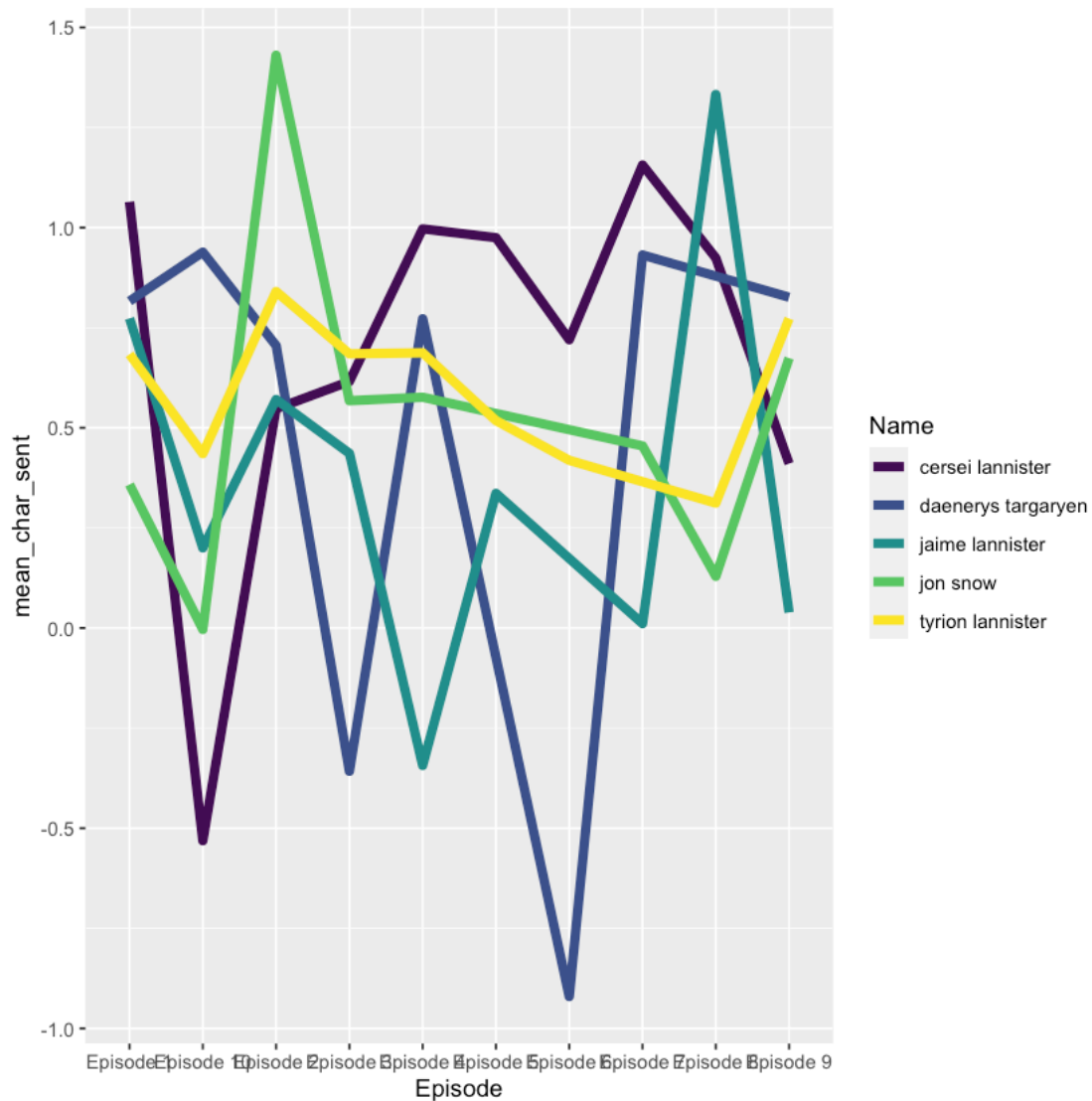
```
[56]: # plot of sentiment score over episode in Season 1.

# Q2: ...

q2.df <- got.df %>%
  filter(Name %in% rownames(top5), Season == 'Season 1') %>%
  group_by(Name, Episode) %>%
  summarise(mean_char_sent = mean(sentiment))

q2.df %>%
  ggplot(aes(x=Episode, y=mean_char_sent, group=Name, colour=Name)) +
  geom_line(size=2) +
  scale_colour_viridis_d()
```

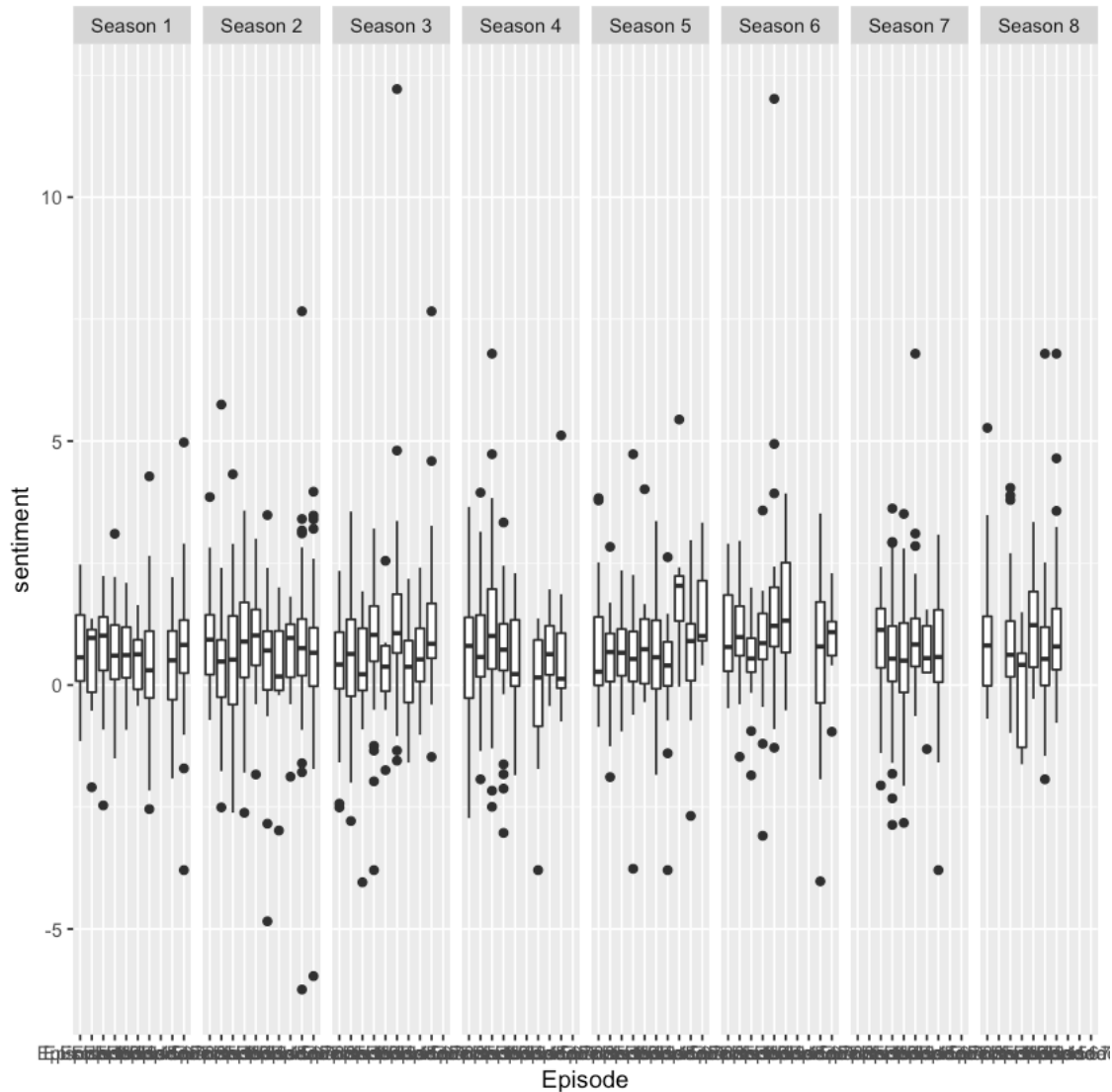

`summarise()` has grouped output by 'Name'. You can override using the `.groups` argument.



```
[82]: # Q3
ggplot(filter(got.df, Name == 'tyrion lannister'),
  aes(x=Episode, y=sentiment)) +
facet_grid(~Season) +
geom_boxplot()
```

Warning message:

"Removed 1 rows containing non-finite values (stat_boxplot)."



Tyrion Lannister's sentiment score distribution across episodes and seasons is generally positive, with a slight increase across seasons and a few significant outliers, especially on the positive end.

```
[173]: library(wordcloud)

tyrion.words <- unlist(got.ls[got.df$Name == 'tyrion lannister'])
tyrion.freqs <- data.frame(table(tyrion.words)) %>%
  mutate(word=tyrion.words) %>% dplyr::select(-tyrion.words)
tyrion.sent.freqs <- left_join(tyrion.freqs, senti_master.df) %>%
  arrange(sentiment)

wordcloud(words=tyrion.sent.freqs$word,
          freq=tyrion.sent.freqs$Freq,
```

