

## Assignment 9

Select the following packages

```
library(stringr)
library(babynames)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

### Problem 1

```
#a
str_subset(words, "^y")
```

```
## [1] "year"      "yes"      "yesterday" "yet"      "you"      "young"
```

```
#b
str_subset(words, "^y", negate = TRUE)
```

```
## [1] "a"      "able"    "about"   "absolute" "accept"
## [6] "account" "achieve" "across"  "act"      "active"
## [11] "actual"  "add"     "address" "admit"    "advertise"
## [16] "affect"  "afford"  "after"   "afternoon" "again"
## [21] "against" "age"     "agent"   "ago"      "agree"
## [26] "air"     "all"     "allow"   "almost"   "along"
## [31] "already" "alright" "also"    "although" "always"
## [36] "america" "amount"  "and"     "another"  "answer"
## [41] "any"     "apart"   "apparent" "appear"   "apply"
## [46] "appoint" "approach" "appropriate" "area"    "argue"
## [51] "arm"     "around"  "arrange" "art"      "as"
## [56] "ask"     "associate" "assume"  "at"       "attend"
## [61] "authority" "available" "aware"   "away"     "awful"
## [66] "baby"    "back"    "bad"     "bag"      "balance"
```

## [71]	"ball"	"bank"	"bar"	"base"	"basis"
## [76]	"be"	"bear"	"beat"	"beauty"	"because"
## [81]	"become"	"bed"	"before"	"begin"	"behind"
## [86]	"believe"	"benefit"	"best"	"bet"	"between"
## [91]	"big"	"bill"	"birth"	"bit"	"black"
## [96]	"bloke"	"blood"	"blow"	"blue"	"board"
## [101]	"boat"	"body"	"book"	"both"	"bother"
## [106]	"bottle"	"bottom"	"box"	"boy"	"break"
## [111]	"brief"	"brilliant"	"bring"	"britain"	"brother"
## [116]	"budget"	"build"	"bus"	"business"	"busy"
## [121]	"but"	"buy"	"by"	"cake"	"call"
## [126]	"can"	"car"	"card"	"care"	"carry"
## [131]	"case"	"cat"	"catch"	"cause"	"cent"
## [136]	"centre"	"certain"	"chair"	"chairman"	"chance"
## [141]	"change"	"chap"	"character"	"charge"	"cheap"
## [146]	"check"	"child"	"choice"	"choose"	"Christ"
## [151]	"Christmas"	"church"	"city"	"claim"	"class"
## [156]	"clean"	"clear"	"client"	"clock"	"close"
## [161]	"closes"	"clothe"	"club"	"coffee"	"cold"
## [166]	"colleague"	"collect"	"college"	"colour"	"come"
## [171]	"comment"	"commit"	"committee"	"common"	"community"
## [176]	"company"	"compare"	"complete"	"compute"	"concern"
## [181]	"condition"	"confer"	"consider"	"consult"	"contact"
## [186]	"continue"	"contract"	"control"	"converse"	"cook"
## [191]	"copy"	"corner"	"correct"	"cost"	"could"
## [196]	"council"	"count"	"country"	"county"	"couple"
## [201]	"course"	"court"	"cover"	"create"	"cross"
## [206]	"cup"	"current"	"cut"	"dad"	"danger"
## [211]	"date"	"day"	"dead"	"deal"	"dear"
## [216]	"debate"	"decide"	"decision"	"deep"	"definite"
## [221]	"degree"	"department"	"depend"	"describe"	"design"
## [226]	"detail"	"develop"	"die"	"difference"	"difficult"
## [231]	"dinner"	"direct"	"discuss"	"district"	"divide"
## [236]	"do"	"doctor"	"document"	"dog"	"door"
## [241]	"double"	"doubt"	"down"	"draw"	"dress"
## [246]	"drink"	"drive"	"drop"	"dry"	"due"
## [251]	"during"	"each"	"early"	"east"	"easy"
## [256]	"eat"	"economy"	"educate"	"effect"	"egg"
## [261]	"eight"	"either"	"elect"	"electric"	"eleven"
## [266]	"else"	"employ"	"encourage"	"end"	"engine"
## [271]	"english"	"enjoy"	"enough"	"enter"	"environment"
## [276]	"equal"	"especial"	"europe"	"even"	"evening"
## [281]	"ever"	"every"	"evidence"	"exact"	"example"
## [286]	"except"	"excuse"	"exercise"	"exist"	"expect"
## [291]	"expense"	"experience"	"explain"	"express"	"extra"
## [296]	"eye"	"face"	"fact"	"fair"	"fall"
## [301]	"family"	"far"	"farm"	"fast"	"father"
## [306]	"favour"	"feed"	"feel"	"few"	"field"
## [311]	"fight"	"figure"	"file"	"fill"	"film"
## [316]	"final"	"finance"	"find"	"fine"	"finish"
## [321]	"fire"	"first"	"fish"	"fit"	"five"
## [326]	"flat"	"floor"	"fly"	"follow"	"food"
## [331]	"foot"	"for"	"force"	"forget"	"form"
## [336]	"fortune"	"forward"	"four"	"france"	"free"

## [341]	"friday"	"friend"	"from"	"front"	"full"
## [346]	"fun"	"function"	"fund"	"further"	"future"
## [351]	"game"	"garden"	"gas"	"general"	"germany"
## [356]	"get"	"girl"	"give"	"glass"	"go"
## [361]	"god"	"good"	"goodbye"	"govern"	"grand"
## [366]	"grant"	"great"	"green"	"ground"	"group"
## [371]	"grow"	"guess"	"guy"	"hair"	"half"
## [376]	"hall"	"hand"	"hang"	"happen"	"happy"
## [381]	"hard"	"hate"	"have"	"he"	"head"
## [386]	"health"	"hear"	"heart"	"heat"	"heavy"
## [391]	"hell"	"help"	"here"	"high"	"history"
## [396]	"hit"	"hold"	"holiday"	"home"	"honest"
## [401]	"hope"	"horse"	"hospital"	"hot"	"hour"
## [406]	"house"	"how"	"however"	"hullo"	"hundred"
## [411]	"husband"	"idea"	"identify"	"if"	"imagine"
## [416]	"important"	"improve"	"in"	"include"	"income"
## [421]	"increase"	"indeed"	"individual"	"industry"	"inform"
## [426]	"inside"	"instead"	"insure"	"interest"	"into"
## [431]	"introduce"	"invest"	"involve"	"issue"	"it"
## [436]	"item"	"jesus"	"job"	"join"	"judge"
## [441]	"jump"	"just"	"keep"	"key"	"kid"
## [446]	"kill"	"kind"	"king"	"kitchen"	"knock"
## [451]	"know"	"labour"	"lad"	"lady"	"land"
## [456]	"language"	"large"	"last"	"late"	"laugh"
## [461]	"law"	"lay"	"lead"	"learn"	"leave"
## [466]	"left"	"leg"	"less"	"let"	"letter"
## [471]	"level"	"lie"	"life"	"light"	"like"
## [476]	"likely"	"limit"	"line"	"link"	"list"
## [481]	"listen"	"little"	"live"	"load"	"local"
## [486]	"lock"	"london"	"long"	"look"	"lord"
## [491]	"lose"	"lot"	"love"	"low"	"luck"
## [496]	"lunch"	"machine"	"main"	"major"	"make"
## [501]	"man"	"manage"	"many"	"mark"	"market"
## [506]	"marry"	"match"	"matter"	"may"	"maybe"
## [511]	"mean"	"meaning"	"measure"	"meet"	"member"
## [516]	"mention"	"middle"	"might"	"mile"	"milk"
## [521]	"million"	"mind"	"minister"	"minus"	"minute"
## [526]	"miss"	"mister"	"moment"	"monday"	"money"
## [531]	"month"	"more"	"morning"	"most"	"mother"
## [536]	"motion"	"move"	"mrs"	"much"	"music"
## [541]	"must"	"name"	"nation"	"nature"	"near"
## [546]	"necessary"	"need"	"never"	"new"	"news"
## [551]	"next"	"nice"	"night"	"nine"	"no"
## [556]	"non"	"none"	"normal"	"north"	"not"
## [561]	"note"	"notice"	"now"	"number"	"obvious"
## [566]	"occasion"	"odd"	"of"	"off"	"offer"
## [571]	"office"	"often"	"okay"	"old"	"on"
## [576]	"once"	"one"	"only"	"open"	"operate"
## [581]	"opportunity"	"oppose"	"or"	"order"	"organize"
## [586]	"original"	"other"	"otherwise"	"ought"	"out"
## [591]	"over"	"own"	"pack"	"page"	"paint"
## [596]	"pair"	"paper"	"paragraph"	"pardon"	"parent"
## [601]	"park"	"part"	"particular"	"party"	"pass"
## [606]	"past"	"pay"	"pence"	"pension"	"people"

## [611]	"per"	"percent"	"perfect"	"perhaps"	"period"
## [616]	"person"	"photograph"	"pick"	"picture"	"piece"
## [621]	"place"	"plan"	"play"	"please"	"plus"
## [626]	"point"	"police"	"policy"	"politic"	"poor"
## [631]	"position"	"positive"	"possible"	"post"	"pound"
## [636]	"power"	"practise"	"prepare"	"present"	"press"
## [641]	"pressure"	"presume"	"pretty"	"previous"	"price"
## [646]	"print"	"private"	"probable"	"problem"	"proceed"
## [651]	"process"	"produce"	"product"	"programme"	"project"
## [656]	"proper"	"propose"	"protect"	"provide"	"public"
## [661]	"pull"	"purpose"	"push"	"put"	"quality"
## [666]	"quarter"	"question"	"quick"	"quid"	"quiet"
## [671]	"quite"	"radio"	"rail"	"raise"	"range"
## [676]	"rate"	"rather"	"read"	"ready"	"real"
## [681]	"realise"	"really"	"reason"	"receive"	"recent"
## [686]	"reckon"	"recognize"	"recommend"	"record"	"red"
## [691]	"reduce"	"refer"	"regard"	"region"	"relation"
## [696]	"remember"	"report"	"represent"	"require"	"research"
## [701]	"resource"	"respect"	"responsible"	"rest"	"result"
## [706]	"return"	"rid"	"right"	"ring"	"rise"
## [711]	"road"	"role"	"roll"	"room"	"round"
## [716]	"rule"	"run"	"safe"	"sale"	"same"
## [721]	"saturday"	"save"	"say"	"scheme"	"school"
## [726]	"science"	"score"	"scotland"	"seat"	"second"
## [731]	"secretary"	"section"	"secure"	"see"	"seem"
## [736]	"self"	"sell"	"send"	"sense"	"separate"
## [741]	"serious"	"serve"	"service"	"set"	"settle"
## [746]	"seven"	"sex"	"shall"	"share"	"she"
## [751]	"sheet"	"shoe"	"shoot"	"shop"	"short"
## [756]	"should"	"show"	"shut"	"sick"	"side"
## [761]	"sign"	"similar"	"simple"	"since"	"sing"
## [766]	"single"	"sir"	"sister"	"sit"	"site"
## [771]	"situate"	"six"	"size"	"sleep"	"slight"
## [776]	"slow"	"small"	"smoke"	"so"	"social"
## [781]	"society"	"some"	"son"	"soon"	"sorry"
## [786]	"sort"	"sound"	"south"	"space"	"speak"
## [791]	"special"	"specific"	"speed"	"spell"	"spend"
## [796]	"square"	"staff"	"stage"	"stairs"	"stand"
## [801]	"standard"	"start"	"state"	"station"	"stay"
## [806]	"step"	"stick"	"still"	"stop"	"story"
## [811]	"straight"	"strategy"	"street"	"strike"	"strong"
## [816]	"structure"	"student"	"study"	"stuff"	"stupid"
## [821]	"subject"	"succeed"	"such"	"sudden"	"suggest"
## [826]	"suit"	"summer"	"sun"	"sunday"	"supply"
## [831]	"support"	"suppose"	"sure"	"surprise"	"switch"
## [836]	"system"	"table"	"take"	"talk"	"tape"
## [841]	"tax"	"tea"	"teach"	"team"	"telephone"
## [846]	"television"	"tell"	"ten"	"tend"	"term"
## [851]	"terrible"	"test"	"than"	"thank"	"the"
## [856]	"then"	"there"	"therefore"	"they"	"thing"
## [861]	"think"	"thirteen"	"thirty"	"this"	"thou"
## [866]	"though"	"thousand"	"three"	"through"	"throw"
## [871]	"thursday"	"tie"	"time"	"to"	"today"
## [876]	"together"	"tomorrow"	"tonight"	"too"	"top"

```
## [881] "total"      "touch"      "toward"     "town"       "trade"
## [886] "traffic"    "train"      "transport"  "travel"     "treat"
## [891] "tree"       "trouble"    "true"       "trust"      "try"
## [896] "tuesday"    "turn"       "twelve"     "twenty"     "two"
## [901] "type"       "under"      "understand" "union"      "unit"
## [906] "unite"      "university" "unless"     "until"      "up"
## [911] "upon"       "use"        "usual"      "value"      "various"
## [916] "very"       "video"      "view"       "village"    "visit"
## [921] "vote"       "wage"       "wait"       "walk"       "wall"
## [926] "want"       "war"        "warm"       "wash"       "waste"
## [931] "watch"      "water"      "way"        "we"         "wear"
## [936] "wednesday"  "wee"        "week"       "weigh"      "welcome"
## [941] "well"       "west"       "what"       "when"       "where"
## [946] "whether"     "which"      "while"      "white"      "who"
## [951] "whole"     "why"        "wide"       "wife"       "will"
## [956] "win"        "wind"       "window"     "wish"       "with"
## [961] "within"     "without"    "woman"      "wonder"     "wood"
## [966] "word"       "work"       "world"      "worry"      "worse"
## [971] "worth"     "would"      "write"      "wrong"
```

```
#c
str_subset(words, "x$")
```

```
## [1] "box" "sex" "six" "tax"
```

```
#d
str_subset(words, "^x|x$")
```

```
## [1] "box" "sex" "six" "tax"
```

```
#e
str_subset(words, "^[aeiou].*^[aeiou]$")
```

```
## [1] "about"      "accept"     "account"    "across"     "act"
## [6] "actual"     "add"        "address"    "admit"      "affect"
## [11] "afford"     "after"      "afternoon"  "again"      "against"
## [16] "agent"      "air"        "all"        "allow"      "almost"
## [21] "along"      "already"    "alright"    "although"   "always"
## [26] "amount"     "and"        "another"    "answer"     "any"
## [31] "apart"      "apparent"   "appear"     "apply"      "appoint"
## [36] "approach"   "arm"        "around"     "art"        "as"
## [41] "ask"        "at"         "attend"     "authority"   "away"
## [46] "awful"      "each"       "early"      "east"       "easy"
## [51] "eat"        "economy"    "effect"     "egg"        "eight"
## [56] "either"     "elect"      "electric"   "eleven"     "employ"
## [61] "end"        "english"    "enjoy"      "enough"     "enter"
## [66] "environment" "equal"      "especial"   "even"       "evening"
## [71] "ever"       "every"      "exact"      "except"     "exist"
## [76] "expect"     "explain"    "express"    "identify"   "if"
## [81] "important"  "in"         "indeed"     "individual" "industry"
## [86] "inform"     "instead"    "interest"   "invest"     "it"
## [91] "item"       "obvious"    "occasion"   "odd"        "of"
```

```
## [96] "off"      "offer"    "often"    "okay"     "old"
## [101] "on"       "only"     "open"     "opportunity" "or"
## [106] "order"    "original" "other"    "ought"    "out"
## [111] "over"     "own"      "under"    "understand" "union"
## [116] "unit"     "university" "unless"   "until"    "up"
## [121] "upon"     "usual"
```

```
#f
str_subset(words, "[a-z][a-z][a-z]$")
```

```
## [1] "act" "add" "age" "ago" "air" "all" "and" "any" "arm" "art" "ask" "bad"
## [13] "bag" "bar" "bed" "bet" "big" "bit" "box" "boy" "bus" "but" "buy" "can"
## [25] "car" "cat" "cup" "cut" "dad" "day" "die" "dog" "dry" "due" "eat" "egg"
## [37] "end" "eye" "far" "few" "fit" "fly" "for" "fun" "gas" "get" "god" "guy"
## [49] "hit" "hot" "how" "job" "key" "kid" "lad" "law" "lay" "leg" "let" "lie"
## [61] "lot" "low" "man" "may" "mrs" "new" "non" "not" "now" "odd" "off" "old"
## [73] "one" "out" "own" "pay" "per" "put" "red" "rid" "run" "say" "see" "set"
## [85] "sex" "she" "sir" "sit" "six" "son" "sun" "tax" "tea" "ten" "the" "tie"
## [97] "too" "top" "try" "two" "use" "war" "way" "wee" "who" "why" "win" "yes"
## [109] "yet" "you"
```

```
#g
str_subset(words, "[a-z]{7,}$")
```

```
## [1] "absolute" "account" "achieve" "address" "advertise"
## [6] "afternoon" "against" "already" "alright" "although"
## [11] "america" "another" "apparent" "appoint" "approach"
## [16] "appropriate" "arrange" "associate" "authority" "available"
## [21] "balance" "because" "believe" "benefit" "between"
## [26] "brilliant" "britain" "brother" "business" "certain"
## [31] "chairman" "character" "colleague" "collect" "college"
## [36] "comment" "committee" "community" "company" "compare"
## [41] "complete" "compute" "concern" "condition" "consider"
## [46] "consult" "contact" "continue" "contract" "control"
## [51] "converse" "correct" "council" "country" "current"
## [56] "decision" "definite" "department" "describe" "develop"
## [61] "difference" "difficult" "discuss" "district" "document"
## [66] "economy" "educate" "electric" "encourage" "english"
## [71] "environment" "especial" "evening" "evidence" "example"
## [76] "exercise" "expense" "experience" "explain" "express"
## [81] "finance" "fortune" "forward" "function" "further"
## [86] "general" "germany" "goodbye" "history" "holiday"
## [91] "hospital" "however" "hundred" "husband" "identify"
## [96] "imagine" "important" "improve" "include" "increase"
## [101] "individual" "industry" "instead" "interest" "introduce"
## [106] "involve" "kitchen" "language" "machine" "meaning"
## [111] "measure" "mention" "million" "minister" "morning"
## [116] "necessary" "obvious" "occasion" "operate" "opportunity"
## [121] "organize" "original" "otherwise" "paragraph" "particular"
## [126] "pension" "percent" "perfect" "perhaps" "photograph"
## [131] "picture" "politic" "position" "positive" "possible"
## [136] "practise" "prepare" "present" "pressure" "presume"
## [141] "previous" "private" "probable" "problem" "proceed"
```

## [146]	"process"	"produce"	"product"	"programme"	"project"
## [151]	"propose"	"protect"	"provide"	"purpose"	"quality"
## [156]	"quarter"	"question"	"realise"	"receive"	"recognize"
## [161]	"recommend"	"relation"	"remember"	"represent"	"require"
## [166]	"research"	"resource"	"respect"	"responsible"	"saturday"
## [171]	"science"	"scotland"	"secretary"	"section"	"separate"
## [176]	"serious"	"service"	"similar"	"situate"	"society"
## [181]	"special"	"specific"	"standard"	"station"	"straight"
## [186]	"strategy"	"structure"	"student"	"subject"	"succeed"
## [191]	"suggest"	"support"	"suppose"	"surprise"	"telephone"
## [196]	"television"	"terrible"	"therefore"	"thirteen"	"thousand"
## [201]	"through"	"thursday"	"together"	"tomorrow"	"tonight"
## [206]	"traffic"	"transport"	"trouble"	"tuesday"	"understand"
## [211]	"university"	"various"	"village"	"wednesday"	"welcome"
## [216]	"whether"	"without"	"yesterday"		

```
#h
str_subset(words, "[aeiou][^aeiou]")
```

## [1]	"able"	"about"	"absolute"	"accept"	"account"
## [6]	"achieve"	"across"	"act"	"active"	"actual"
## [11]	"add"	"address"	"admit"	"advertise"	"affect"
## [16]	"afford"	"after"	"afternoon"	"again"	"against"
## [21]	"age"	"agent"	"ago"	"agree"	"air"
## [26]	"all"	"allow"	"almost"	"along"	"already"
## [31]	"alright"	"also"	"although"	"always"	"america"
## [36]	"amount"	"and"	"another"	"answer"	"any"
## [41]	"apart"	"apparent"	"appear"	"apply"	"appoint"
## [46]	"approach"	"appropriate"	"area"	"argue"	"arm"
## [51]	"around"	"arrange"	"art"	"as"	"ask"
## [56]	"associate"	"assume"	"at"	"attend"	"authority"
## [61]	"available"	"aware"	"away"	"awful"	"baby"
## [66]	"back"	"bad"	"bag"	"balance"	"ball"
## [71]	"bank"	"bar"	"base"	"basis"	"bear"
## [76]	"beat"	"beauty"	"because"	"become"	"bed"
## [81]	"before"	"begin"	"behind"	"believe"	"benefit"
## [86]	"best"	"bet"	"between"	"big"	"bill"
## [91]	"birth"	"bit"	"black"	"bloke"	"blood"
## [96]	"blow"	"board"	"boat"	"body"	"book"
## [101]	"both"	"bother"	"bottle"	"bottom"	"box"
## [106]	"boy"	"break"	"brief"	"brilliant"	"bring"
## [111]	"britain"	"brother"	"budget"	"build"	"bus"
## [116]	"business"	"busy"	"but"	"buy"	"cake"
## [121]	"call"	"can"	"car"	"card"	"care"
## [126]	"carry"	"case"	"cat"	"catch"	"cause"
## [131]	"cent"	"centre"	"certain"	"chair"	"chairman"
## [136]	"chance"	"change"	"chap"	"character"	"charge"
## [141]	"cheap"	"check"	"child"	"choice"	"choose"
## [146]	"Christ"	"Christmas"	"church"	"city"	"claim"
## [151]	"class"	"clean"	"clear"	"client"	"clock"
## [156]	"close"	"closes"	"clothe"	"club"	"coffee"
## [161]	"cold"	"colleague"	"collect"	"college"	"colour"
## [166]	"come"	"comment"	"commit"	"committee"	"common"
## [171]	"community"	"company"	"compare"	"complete"	"compute"

## [176]	"concern"	"condition"	"confer"	"consider"	"consult"
## [181]	"contact"	"continue"	"contract"	"control"	"converse"
## [186]	"cook"	"copy"	"corner"	"correct"	"cost"
## [191]	"could"	"council"	"count"	"country"	"county"
## [196]	"couple"	"course"	"court"	"cover"	"create"
## [201]	"cross"	"cup"	"current"	"cut"	"dad"
## [206]	"danger"	"date"	"day"	"dead"	"deal"
## [211]	"dear"	"debate"	"decide"	"decision"	"deep"
## [216]	"definite"	"degree"	"department"	"depend"	"describe"
## [221]	"design"	"detail"	"develop"	"difference"	"difficult"
## [226]	"dinner"	"direct"	"discuss"	"district"	"divide"
## [231]	"doctor"	"document"	"dog"	"door"	"double"
## [236]	"doubt"	"down"	"draw"	"dress"	"drink"
## [241]	"drive"	"drop"	"during"	"each"	"early"
## [246]	"east"	"easy"	"eat"	"economy"	"educate"
## [251]	"effect"	"egg"	"eight"	"either"	"elect"
## [256]	"electric"	"eleven"	"else"	"employ"	"encourage"
## [261]	"end"	"engine"	"english"	"enjoy"	"enough"
## [266]	"enter"	"environment"	"equal"	"especial"	"europe"
## [271]	"even"	"evening"	"ever"	"every"	"evidence"
## [276]	"exact"	"example"	"except"	"excuse"	"exercise"
## [281]	"exist"	"expect"	"expense"	"experience"	"explain"
## [286]	"express"	"extra"	"eye"	"face"	"fact"
## [291]	"fair"	"fall"	"family"	"far"	"farm"
## [296]	"fast"	"father"	"favour"	"feed"	"feel"
## [301]	"few"	"field"	"fight"	"figure"	"file"
## [306]	"fill"	"film"	"final"	"finance"	"find"
## [311]	"fine"	"finish"	"fire"	"first"	"fish"
## [316]	"fit"	"five"	"flat"	"floor"	"follow"
## [321]	"food"	"foot"	"for"	"force"	"forget"
## [326]	"form"	"fortune"	"forward"	"four"	"france"
## [331]	"friday"	"friend"	"from"	"front"	"full"
## [336]	"fun"	"function"	"fund"	"further"	"future"
## [341]	"game"	"garden"	"gas"	"general"	"germany"
## [346]	"get"	"girl"	"give"	"glass"	"god"
## [351]	"good"	"goodbye"	"govern"	"grand"	"grant"
## [356]	"great"	"green"	"ground"	"group"	"grow"
## [361]	"guess"	"guy"	"hair"	"half"	"hall"
## [366]	"hand"	"hang"	"happen"	"happy"	"hard"
## [371]	"hate"	"have"	"head"	"health"	"hear"
## [376]	"heart"	"heat"	"heavy"	"hell"	"help"
## [381]	"here"	"high"	"history"	"hit"	"hold"
## [386]	"holiday"	"home"	"honest"	"hope"	"horse"
## [391]	"hospital"	"hot"	"hour"	"house"	"how"
## [396]	"however"	"hullo"	"hundred"	"husband"	"idea"
## [401]	"identify"	"if"	"imagine"	"important"	"improve"
## [406]	"in"	"include"	"income"	"increase"	"indeed"
## [411]	"individual"	"industry"	"inform"	"inside"	"instead"
## [416]	"insure"	"interest"	"into"	"introduce"	"invest"
## [421]	"involve"	"issue"	"it"	"item"	"jesus"
## [426]	"job"	"join"	"judge"	"jump"	"just"
## [431]	"keep"	"key"	"kid"	"kill"	"kind"
## [436]	"king"	"kitchen"	"knock"	"know"	"labour"
## [441]	"lad"	"lady"	"land"	"language"	"large"



## [446]	"last"	"late"	"laugh"	"law"	"lay"
## [451]	"lead"	"learn"	"leave"	"left"	"leg"
## [456]	"less"	"let"	"letter"	"level"	"life"
## [461]	"light"	"like"	"likely"	"limit"	"line"
## [466]	"link"	"list"	"listen"	"little"	"live"
## [471]	"load"	"local"	"lock"	"london"	"long"
## [476]	"look"	"lord"	"lose"	"lot"	"love"
## [481]	"low"	"luck"	"lunch"	"machine"	"main"
## [486]	"major"	"make"	"man"	"manage"	"many"
## [491]	"mark"	"market"	"marry"	"match"	"matter"
## [496]	"may"	"maybe"	"mean"	"meaning"	"measure"
## [501]	"meet"	"member"	"mention"	"middle"	"might"
## [506]	"mile"	"milk"	"million"	"mind"	"minister"
## [511]	"minus"	"minute"	"miss"	"mister"	"moment"
## [516]	"monday"	"money"	"month"	"more"	"morning"
## [521]	"most"	"mother"	"motion"	"move"	"much"
## [526]	"music"	"must"	"name"	"nation"	"nature"
## [531]	"near"	"necessary"	"need"	"never"	"new"
## [536]	"news"	"next"	"nice"	"night"	"nine"
## [541]	"non"	"none"	"normal"	"north"	"not"
## [546]	"note"	"notice"	"now"	"number"	"obvious"
## [551]	"occasion"	"odd"	"of"	"off"	"offer"
## [556]	"office"	"often"	"okay"	"old"	"on"
## [561]	"once"	"one"	"only"	"open"	"operate"
## [566]	"opportunity"	"oppose"	"or"	"order"	"organize"
## [571]	"original"	"other"	"otherwise"	"ought"	"out"
## [576]	"over"	"own"	"pack"	"page"	"paint"
## [581]	"pair"	"paper"	"paragraph"	"pardon"	"parent"
## [586]	"park"	"part"	"particular"	"party"	"pass"
## [591]	"past"	"pay"	"pence"	"pension"	"people"
## [596]	"per"	"percent"	"perfect"	"perhaps"	"period"
## [601]	"person"	"photograph"	"pick"	"picture"	"piece"
## [606]	"place"	"plan"	"play"	"please"	"plus"
## [611]	"point"	"police"	"policy"	"politic"	"poor"
## [616]	"position"	"positive"	"possible"	"post"	"pound"
## [621]	"power"	"practise"	"prepare"	"present"	"press"
## [626]	"pressure"	"presume"	"pretty"	"previous"	"price"
## [631]	"print"	"private"	"probable"	"problem"	"proceed"
## [636]	"process"	"produce"	"product"	"programme"	"project"
## [641]	"proper"	"propose"	"protect"	"provide"	"public"
## [646]	"pull"	"purpose"	"push"	"put"	"quality"
## [651]	"quarter"	"question"	"quick"	"quid"	"quiet"
## [656]	"quite"	"radio"	"rail"	"raise"	"range"
## [661]	"rate"	"rather"	"read"	"ready"	"real"
## [666]	"realise"	"really"	"reason"	"receive"	"recent"
## [671]	"reckon"	"recognize"	"recommend"	"record"	"red"
## [676]	"reduce"	"refer"	"regard"	"region"	"relation"
## [681]	"remember"	"report"	"represent"	"require"	"research"
## [686]	"resource"	"respect"	"responsible"	"rest"	"result"
## [691]	"return"	"rid"	"right"	"ring"	"rise"
## [696]	"road"	"role"	"roll"	"room"	"round"
## [701]	"rule"	"run"	"safe"	"sale"	"same"
## [706]	"saturday"	"save"	"say"	"scheme"	"school"
## [711]	"science"	"score"	"scotland"	"seat"	"second"

## [716]	"secretary"	"section"	"secure"	"seem"	"self"
## [721]	"sell"	"send"	"sense"	"separate"	"serious"
## [726]	"serve"	"service"	"set"	"settle"	"seven"
## [731]	"sex"	"shall"	"share"	"sheet"	"shoot"
## [736]	"shop"	"short"	"should"	"show"	"shut"
## [741]	"sick"	"side"	"sign"	"similar"	"simple"
## [746]	"since"	"sing"	"single"	"sir"	"sister"
## [751]	"sit"	"site"	"situate"	"six"	"size"
## [756]	"sleep"	"slight"	"slow"	"small"	"smoke"
## [761]	"social"	"society"	"some"	"son"	"soon"
## [766]	"sorry"	"sort"	"sound"	"south"	"space"
## [771]	"speak"	"special"	"specific"	"speed"	"spell"
## [776]	"spend"	"square"	"staff"	"stage"	"stairs"
## [781]	"stand"	"standard"	"start"	"state"	"station"
## [786]	"stay"	"step"	"stick"	"still"	"stop"
## [791]	"story"	"straight"	"strategy"	"street"	"strike"
## [796]	"strong"	"structure"	"student"	"study"	"stuff"
## [801]	"stupid"	"subject"	"succeed"	"such"	"sudden"
## [806]	"suggest"	"suit"	"summer"	"sun"	"sunday"
## [811]	"supply"	"support"	"suppose"	"sure"	"surprise"
## [816]	"switch"	"system"	"table"	"take"	"talk"
## [821]	"tape"	"tax"	"teach"	"team"	"telephone"
## [826]	"television"	"tell"	"ten"	"tend"	"term"
## [831]	"terrible"	"test"	"than"	"thank"	"then"
## [836]	"there"	"therefore"	"they"	"thing"	"think"
## [841]	"thirteen"	"thirty"	"this"	"though"	"thousand"
## [846]	"through"	"throw"	"thursday"	"time"	"today"
## [851]	"together"	"tomorrow"	"tonight"	"top"	"total"
## [856]	"touch"	"toward"	"town"	"trade"	"traffic"
## [861]	"train"	"transport"	"travel"	"treat"	"trouble"
## [866]	"trust"	"tuesday"	"turn"	"twelve"	"twenty"
## [871]	"under"	"understand"	"union"	"unit"	"unite"
## [876]	"university"	"unless"	"until"	"up"	"upon"
## [881]	"use"	"usual"	"value"	"various"	"very"
## [886]	"video"	"view"	"village"	"visit"	"vote"
## [891]	"wage"	"wait"	"walk"	"wall"	"want"
## [896]	"war"	"warm"	"wash"	"waste"	"watch"
## [901]	"water"	"way"	"wear"	"wednesday"	"week"
## [906]	"weigh"	"welcome"	"well"	"west"	"what"
## [911]	"when"	"where"	"whether"	"which"	"while"
## [916]	"white"	"whole"	"wide"	"wife"	"will"
## [921]	"win"	"wind"	"window"	"wish"	"with"
## [926]	"within"	"without"	"woman"	"wonder"	"wood"
## [931]	"word"	"work"	"world"	"worry"	"worse"
## [936]	"worth"	"would"	"write"	"wrong"	"year"
## [941]	"yes"	"yesterday"	"yet"	"young"	

#i

```
str_subset(words, "([aeiou]^aeiou){2}")
```

## [1]	"absolute"	"agent"	"along"	"america"	"another"
## [6]	"apart"	"apparent"	"authority"	"available"	"aware"
## [11]	"away"	"balance"	"basis"	"become"	"before"
## [16]	"begin"	"behind"	"benefit"	"business"	"character"

```
## [21] "closes"      "community"   "consider"    "cover"       "debate"
## [26] "decide"      "decision"    "definite"    "department"  "depend"
## [31] "design"      "develop"     "difference"  "difficult"   "direct"
## [36] "divide"     "document"    "during"      "economy"     "educate"
## [41] "elect"      "electric"    "eleven"      "encourage"   "environment"
## [46] "europe"     "even"        "evening"     "ever"        "every"
## [51] "evidence"    "exact"       "example"     "exercise"    "exist"
## [56] "family"     "figure"      "final"       "finance"     "finish"
## [61] "friday"     "future"      "general"     "govern"      "holiday"
## [66] "honest"     "hospital"    "however"     "identify"    "imagine"
## [71] "individual"  "interest"    "introduce"   "item"        "jesus"
## [76] "level"      "likely"      "limit"       "local"       "major"
## [81] "manage"     "meaning"     "measure"     "minister"    "minus"
## [86] "minute"     "moment"      "money"       "music"       "nature"
## [91] "necessary"   "never"       "notice"      "okay"        "open"
## [96] "operate"     "opportunity" "organize"    "original"    "over"
## [101] "paper"      "paragraph"   "parent"      "particular"  "photograph"
## [106] "police"     "policy"      "politic"     "position"    "positive"
## [111] "power"      "prepare"     "present"     "presume"     "private"
## [116] "probable"   "process"     "produce"      "product"     "project"
## [121] "proper"     "propose"     "protect"     "provide"     "quality"
## [126] "realise"    "reason"      "recent"      "recognize"   "recommend"
## [131] "record"     "reduce"      "refer"       "regard"      "relation"
## [136] "remember"   "report"      "represent"   "result"      "return"
## [141] "saturday"   "second"      "secretary"   "secure"      "separate"
## [146] "seven"     "similar"     "specific"    "strategy"    "student"
## [151] "stupid"     "telephone"   "television"  "therefore"   "thousand"
## [156] "today"     "together"    "tomorrow"    "tonight"     "total"
## [161] "toward"     "travel"      "unit"        "unite"       "university"
## [166] "upon"      "visit"      "water"      "woman"
```

```
#j
str_subset(words, "^[aeiou][^aeiou]+$")
```

```
## [1] "as"      "at"      "away"    "eleven"   "even"    "ever"
## [7] "if"      "in"      "it"      "item"     "of"      "okay"
## [13] "on"      "open"    "or"      "original" "over"    "unit"
## [19] "up"      "upon"
```

## Problem 2

```
str_subset(words, "^[a-z][a-z][a-z]$")
```

```
## [1] "act" "add" "age" "ago" "air" "all" "and" "any" "arm" "art" "ask" "bad"
## [13] "bag" "bar" "bed" "bet" "big" "bit" "box" "boy" "bus" "but" "buy" "can"
## [25] "car" "cat" "cup" "cut" "dad" "day" "die" "dog" "dry" "due" "eat" "egg"
## [37] "end" "eye" "far" "few" "fit" "fly" "for" "fun" "gas" "get" "god" "guy"
## [49] "hit" "hot" "how" "job" "key" "kid" "lad" "law" "lay" "leg" "let" "lie"
## [61] "lot" "low" "man" "may" "mrs" "new" "non" "not" "now" "odd" "off" "old"
## [73] "one" "out" "own" "pay" "per" "put" "red" "rid" "run" "say" "see" "set"
```

```
## [85] "sex" "she" "sir" "sit" "six" "son" "sun" "tax" "tea" "ten" "the" "tie"
## [97] "too" "top" "try" "two" "use" "war" "way" "wee" "who" "why" "win" "yes"
## [109] "yet" "you"
```

```
swapped_words <- str_replace(words, "^[a-z](.*)[a-z]$", "\\3\\2\\1")
words[swapped_words %in% words]
```

```
## [1] "a"          "america"    "area"       "Christ"     "Christmas"
## [6] "dad"        "dead"       "deal"       "dear"       "depend"
## [11] "dog"        "educate"    "else"       "encourage"  "engine"
## [16] "europe"     "evidence"   "example"    "excuse"     "exercise"
## [21] "expense"    "experience" "eye"        "god"        "health"
## [26] "high"       "knock"      "lead"       "level"      "local"
## [31] "nation"     "no"         "non"        "on"         "rather"
## [36] "read"       "refer"      "remember"   "serious"    "stairs"
## [41] "test"       "tonight"    "transport"  "treat"      "trust"
## [46] "window"     "yesterday"
```

## Problem 3

```
words |>
  str_subset("a") |>
  str_subset("e") |>
  str_subset("i") |>
  str_subset("o") |>
  str_subset("u")
```

```
## character(0)
```

No, there are no words that contain all vowels

## Problem 4

```
paste0("\\", str_replace_all("a/b/c/d/e", "/", "\\\\"), "\\") |> writeLines()
```

```
## "a\b\c\d\e"
```

## Problem 5

```
babynames |>
  distinct(name) |>
  mutate(vowel_count = str_count(name, "[aeiouAEIOU]")) |>
  slice_max(vowel_count, n = 10)
```

```
## # A tibble: 78 x 2
##   name          vowel_count
##   <chr>          <int>
## 1 Mariaguadalupe      8
## 2 Mariadelrosario     8
## 3 Marielouise         7
## 4 Mariadelourdes      7
## 5 Annielaurie         7
## 6 Mariadelosangel     7
## 7 Angelicamaria       7
## 8 Stephaniemarie      7
## 9 Mariavictoria       7
## 10 Aliciamarie        7
## # i 68 more rows
```

*# The names Mariaguadalupe and Mariadelrosario have the most vowels.*

```
babynames |>
  distinct(name) |>
  mutate(vowel_ratio = str_count(name, "[aeiouAEIOU]") / nchar(name)) |>
  slice_max(vowel_ratio, n = 10)
```

```
## # A tibble: 10 x 2
##   name    vowel_ratio
##   <chr>    <dbl>
## 1 Eua      1
## 2 Ea      1
## 3 Ai      1
## 4 Ia      1
## 5 Ii      1
## 6 Aoi     1
## 7 Io      1
## 8 Aia     1
## 9 Alaiia  0.833
## 10 Amaia  0.833
```

*# The names Eua, Ea, Ai, Ia, Ii, Aoi, Io, Aia have the highest proportion of vowels.*