HW10.R

Duc

2019-10-29

#1)  
blow = read.table("blowfly.txt", header = T)  
  
attach(blow)  
  
unique(flies)

## [1] 948 942 911 858 801 676 504 397 248 146 1801  
## [12] 6235 5974 8921 6610 5973 5673 3875 2361 1352 1226 912  
## [23] 521 363 229 142 82 542 939 2431 3687 4543 4535  
## [34] 5441 4412 3022 2656 1967 1295 915 551 313 167 95  
## [45] 93 60 68 5259 6673 3987 2952 3648 4222 3889 2295  
## [56] 1509 928 739 566 383 274 192 226 519 1224 2236  
## [67] 3818 6208 5996 5789 6652 7939 4868 3952 2712 1734 703  
## [78] 508 366 279 243 343 761 1025 1221 1600 2267 3290  
## [89] 3471 3637 3703 4876 5364 4890 3029 1950 1225 1076 905  
## [100] 772 628 473 539 825 1702 2868 4473 5221 6592 6400  
## [111] 4752 3521 2719 1931 1500 1082 849 774 864 1308 1624  
## [122] 2224 2423 2959 3547 7237 5218 5311 4273 3270 2281 1549  
## [133] 1091 796 610 445 894 1454 2262 2363 3847 3876 3935  
## [144] 3479 3415 3861 3571 3113 2319 1630 1297 861 659 701  
## [155] 762 1188 1778 2428 3806 4519 5646 4851 5374 4713 7367  
## [166] 7236 5245 3636 2417 1258 766 479 402 254 604 1346  
## [177] 2342 3328 3599 4081 7643 7919 6098 6896 5634 5134 4188  
## [188] 3469 2442 1790 1722 1488 1416 1369 1666 2627 3840 4044  
## [199] 4929 5111 3152 4462 4082 3026 1589 2075 1829 1386 1149  
## [210] 968 1170 1465 1676 3075 3815 4639 4424 2784 5860 5781  
## [221] 4897 3920 3835 3618 3050 3772 3517 3350 3018 2625 2412  
## [232] 2221 2619 3203 2706 2717 2175 1628 2388 3677 3156 4272  
## [243] 3771 4955 5584 3891 3501 4436 4369 3394 3869 2922 1843  
## [254] 2837 4690 5119 5839 5389 4993 4446 4243 4620 4849 3664  
## [265] 3016 2881 3821 4300 4168 5446 5477 8579 7533 6884 4127  
## [276] 5546 6313 6650 6304 4842 4352 3215 2652 2330 3123 3955  
## [287] 4494 4780 5753 5555 5712 4786 4066 2891 4404 4398 4112  
## [298] 4401 5779 6597 8091 11282 12446 13712 11017 14683 7258 6195  
## [309] 5962 4213 2775 1781 936 898 1160 3158 3386 4547 4823  
## [320] 4970 4940 5793 7836 4457 6901 8191 6766 5165 2919 3431  
## [331] 3162 2525 2290 1955 1936 2384 4666 7219 8306 8027 7010  
## [342] 8149 8949 6105 5324 5766 6214 7007 8154 9049 6883 8103  
## [353] 6803

length(unique(flies))

## [1] 353

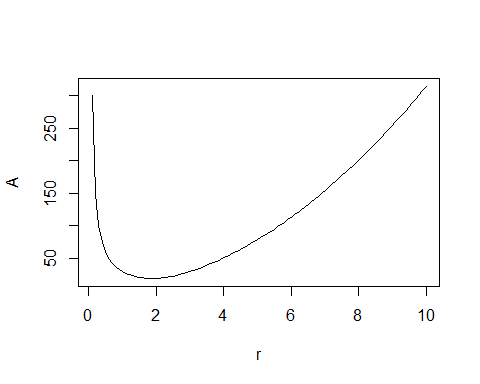
#353 numbers are unique since the first row isn't a number.  
  
#2)   
p = 10000  
t = 0  
i = 0   
while(p < 1000000)  
{  
 p = p + p\*0.06  
 p = p + 10000  
 t = t + 1  
}  
t

## [1] 33

#3)  
country = read.table("country.txt", header = T)  
attach(country)  
as.vector(Country[grep("^.{3}c",as.character(Country))])

## [1] "Czechoslovakia" "Liechtenstein" "Seychelles"

#4)  
area = function(r,V)  
{   
h = (3\*V)/(r^2\*pi)  
A = pi\*r\*(sqrt(r^2 + h^2))  
return(A)  
}  
  
V = 10  
r = seq(0.1,10,0.1)  
A = area(r,V)  
  
plot(r,A,type = 'l')



which(A == min(A))

## [1] 19

r[19]

## [1] 1.9

#5)  
fact = function(x)  
{  
 f = 1  
 if (x<2) return (1)  
 for (i in 2:x)  
 {  
 f = f\*i  
 }  
 f  
}  
sapply(0:10,fact)

## [1] 1 1 2 6 24 120 720 5040  
## [9] 40320 362880 3628800

#6)  
cellsT = read.table("cells.txt", header = T)  
temp = read.table("temp.txt", header = T)  
  
attach(cellsT)  
attach(temp)

## The following object is masked from country:  
##   
## Population

#a)  
lapply(cellsT,typeof)

## $cells  
## [1] "integer"  
##   
## $smoker  
## [1] "logical"  
##   
## $age  
## [1] "integer"  
##   
## $sex  
## [1] "integer"  
##   
## $weight  
## [1] "integer"

lapply(temp,typeof)

## $Temp  
## [1] "double"  
##   
## $Industry  
## [1] "integer"  
##   
## $Population  
## [1] "integer"  
##   
## $Wind  
## [1] "double"  
##   
## $Rain  
## [1] "double"  
##   
## $Wet.days  
## [1] "integer"

#b)  
cell = read.table("cells.txt", header= T)  
names(cell)[1] = "Cells"  
names(cell)[2] = "Smoker"  
names(cell)[3] = "Smoker's Age"  
names(cell)[4] = "Smoker's Gender"  
names(cell)[3] = "Smoker's Weight"  
  
temperature = read.table("temp.txt", header = T)  
names(temperature)[1] = "Temperature"  
names(temperature)[3] = "City Population"  
names(temperature)[6] = "Wet Days"  
  
#c)  
write.table(temperature)

## "Temperature" "Industry" "City Population" "Wind" "Rain" "Wet Days"  
## "1" 61.5 368 497 9.1 48.34 115  
## "2" 55.6 291 593 8.3 43.11 123  
## "3" 55.9 775 622 9.5 35.89 105  
## "4" 51 137 176 8.7 15.17 89  
## "5" 68.4 136 529 8.8 54.47 116  
## "6" 47.6 44 116 8.8 33.36 135  
## "7" 66.2 641 844 10.9 35.94 78  
## "8" 49.9 1064 1513 10.1 30.96 129  
## "9" 57.8 197 299 7.6 42.59 115  
## "10" 50.4 347 520 9.4 36.22 147  
## "11" 57.3 434 757 9.3 38.98 111  
## "12" 52.3 361 746 9.7 38.74 121  
## "13" 51.5 181 347 10.9 30.18 98  
## "14" 59.4 275 448 7.9 46 119  
## "15" 51.9 454 515 9 12.95 86  
## "16" 54 462 453 7.1 39.04 132  
## "17" 55 625 905 9.6 41.31 111  
## "18" 61 91 132 8.2 48.52 100  
## "19" 55.2 35 71 6.6 40.75 148  
## "20" 56.7 453 716 8.7 20.66 67  
## "21" 70.3 213 582 6 7.05 36  
## "22" 50.6 3344 3369 10.4 34.44 122  
## "23" 49.1 412 158 9 43.37 127  
## "24" 68.9 721 1233 10.8 48.19 103  
## "25" 54.6 1692 1950 9.6 39.93 115  
## "26" 56.6 125 277 12.7 30.58 82  
## "27" 54 80 80 9 40.25 114  
## "28" 45.7 569 717 11.8 29.07 123  
## "29" 51.1 379 531 9.4 38.79 164  
## "30" 43.5 669 744 10.6 25.94 137  
## "31" 49.7 1007 751 10.9 34.99 155  
## "32" 68.3 204 361 8.4 56.77 113  
## "33" 75.5 207 335 9 59.8 128  
## "34" 51.5 266 540 8.6 37.01 134  
## "35" 59.3 96 308 10.6 44.68 116  
## "36" 61.6 337 624 9.2 49.1 105  
## "37" 47.1 391 463 12.4 36.11 166  
## "38" 54.5 381 507 10 37 99  
## "39" 49 104 201 11.2 30.85 103  
## "40" 56.8 46 244 8.9 7.77 58  
## "41" 50 343 179 10.6 42.75 125

write.table(cell)

## "Cells" "Smoker" "Smoker's Weight" "Smoker's Gender" "weight"  
## "1" 1 TRUE "young" "male" "normal"  
## "2" 0 TRUE "young" "male" "normal"  
## "3" 1 TRUE "young" "male" "normal"  
## "4" 1 TRUE "young" "male" "normal"  
## "5" 0 TRUE "young" "male" "normal"  
## "6" 2 TRUE "young" "male" "normal"  
## "7" 1 TRUE "young" "male" "normal"  
## "8" 0 TRUE "young" "male" "normal"  
## "9" 5 TRUE "young" "male" "normal"  
## "10" 1 TRUE "young" "male" "normal"  
## "11" 0 TRUE "young" "male" "normal"  
## "12" 2 TRUE "young" "male" "normal"  
## "13" 0 TRUE "young" "male" "normal"  
## "14" 1 TRUE "young" "male" "normal"  
## "15" 2 TRUE "young" "male" "normal"  
## "16" 1 TRUE "young" "male" "normal"  
## "17" 0 TRUE "young" "male" "normal"  
## "18" 1 TRUE "young" "male" "normal"  
## "19" 2 TRUE "young" "male" "normal"  
## "20" 0 TRUE "young" "male" "normal"  
## "21" 4 TRUE "young" "male" "normal"  
## "22" 1 TRUE "young" "male" "normal"  
## "23" 1 TRUE "young" "male" "normal"  
## "24" 1 TRUE "young" "male" "over"  
## "25" 0 TRUE "young" "male" "over"  
## "26" 3 TRUE "young" "male" "over"  
## "27" 1 TRUE "young" "male" "over"  
## "28" 4 TRUE "young" "male" "over"  
## "29" 0 TRUE "young" "male" "over"  
## "30" 5 TRUE "young" "male" "obese"  
## "31" 3 TRUE "young" "male" "obese"  
## "32" 5 TRUE "young" "male" "obese"  
## "33" 6 TRUE "young" "male" "obese"  
## "34" 1 TRUE "young" "male" "obese"  
## "35" 0 FALSE "young" "male" "normal"  
## "36" 0 FALSE "young" "male" "normal"  
## "37" 1 FALSE "young" "male" "normal"  
## "38" 0 FALSE "young" "male" "normal"  
## "39" 2 FALSE "young" "male" "normal"  
## "40" 0 FALSE "young" "male" "over"  
## "41" 2 FALSE "young" "male" "over"  
## "42" 0 FALSE "young" "male" "over"  
## "43" 0 FALSE "young" "male" "over"  
## "44" 2 FALSE "young" "male" "obese"  
## "45" 1 FALSE "young" "male" "obese"  
## "46" 4 FALSE "young" "male" "obese"  
## "47" 2 FALSE "young" "male" "obese"  
## "48" 0 FALSE "young" "male" "obese"  
## "49" 1 TRUE "mid" "male" "normal"  
## "50" 0 TRUE "mid" "male" "normal"  
## "51" 2 TRUE "mid" "male" "normal"  
## "52" 1 TRUE "mid" "male" "normal"  
## "53" 0 TRUE "mid" "male" "normal"  
## "54" 3 TRUE "mid" "male" "normal"  
## "55" 2 TRUE "mid" "male" "normal"  
## "56" 0 TRUE "mid" "male" "normal"  
## "57" 3 TRUE "mid" "male" "obese"  
## "58" 5 TRUE "mid" "male" "obese"  
## "59" 6 TRUE "mid" "male" "obese"  
## "60" 2 TRUE "mid" "male" "obese"  
## "61" 3 TRUE "mid" "male" "obese"  
## "62" 0 TRUE "mid" "male" "normal"  
## "63" 1 TRUE "mid" "male" "normal"  
## "64" 0 TRUE "mid" "male" "normal"  
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## "66" 1 TRUE "mid" "male" "normal"  
## "67" 0 TRUE "mid" "male" "normal"  
## "68" 2 TRUE "mid" "male" "normal"  
## "69" 0 TRUE "mid" "male" "over"  
## "70" 2 TRUE "mid" "male" "over"  
## "71" 1 TRUE "mid" "male" "over"  
## "72" 0 FALSE "mid" "male" "normal"  
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## "79" 0 FALSE "mid" "male" "normal"  
## "80" 0 FALSE "mid" "male" "over"  
## "81" 0 FALSE "mid" "male" "over"  
## "82" 0 FALSE "mid" "male" "over"  
## "83" 1 FALSE "mid" "male" "over"  
## "84" 0 FALSE "mid" "male" "over"  
## "85" 0 FALSE "mid" "male" "obese"  
## "86" 3 FALSE "mid" "male" "obese"  
## "87" 0 FALSE "mid" "male" "obese"  
## "88" 0 TRUE "old" "male" "normal"  
## "89" 1 TRUE "old" "male" "normal"  
## "90" 2 TRUE "old" "male" "normal"  
## "91" 1 TRUE "old" "male" "normal"  
## "92" 0 TRUE "old" "male" "normal"  
## "93" 1 TRUE "old" "male" "normal"  
## "94" 0 TRUE "old" "male" "normal"  
## "95" 2 TRUE "old" "male" "over"  
## "96" 3 TRUE "old" "male" "over"  
## "97" 2 TRUE "old" "male" "over"  
## "98" 4 TRUE "old" "male" "over"  
## "99" 2 TRUE "old" "male" "over"  
## "100" 3 TRUE "old" "male" "over"  
## "101" 4 TRUE "old" "male" "over"  
## "102" 1 TRUE "old" "male" "over"  
## "103" 5 TRUE "old" "male" "obese"  
## "104" 6 TRUE "old" "male" "obese"  
## "105" 0 TRUE "old" "male" "over"  
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## "110" 0 TRUE "old" "male" "over"  
## "111" 0 FALSE "old" "male" "over"  
## "112" 1 FALSE "old" "male" "over"  
## "113" 0 FALSE "old" "male" "over"  
## "114" 0 FALSE "old" "male" "obese"  
## "115" 0 FALSE "old" "male" "obese"  
## "116" 3 FALSE "old" "male" "obese"  
## "117" 0 FALSE "old" "male" "obese"  
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## "119" 2 FALSE "old" "male" "obese"  
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## "127" 5 FALSE "old" "male" "obese"  
## "128" 0 FALSE "old" "male" "obese"  
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## "133" 0 TRUE "young" "male" "obese"  
## "134" 2 TRUE "young" "male" "obese"  
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## "151" 1 TRUE "old" "male" "obese"  
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## "214" 0 FALSE "old" "male" "normal"  
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## "224" 0 FALSE "old" "male" "normal"  
## "225" 0 FALSE "old" "male" "normal"  
## "226" 1 FALSE "old" "male" "over"  
## "227" 0 FALSE "old" "male" "over"  
## "228" 1 TRUE "young" "female" "normal"  
## "229" 2 TRUE "young" "female" "normal"  
## "230" 0 TRUE "young" "female" "normal"  
## "231" 2 TRUE "young" "female" "normal"  
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## "234" 1 TRUE "young" "female" "normal"  
## "235" 3 TRUE "young" "female" "over"  
## "236" 4 TRUE "young" "female" "over"  
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## "238" 2 TRUE "young" "female" "over"  
## "239" 4 TRUE "young" "female" "over"  
## "240" 5 TRUE "young" "female" "over"  
## "241" 0 TRUE "young" "female" "over"  
## "242" 0 TRUE "young" "female" "over"  
## "243" 0 TRUE "young" "female" "over"  
## "244" 6 TRUE "young" "female" "obese"  
## "245" 2 TRUE "young" "female" "obese"  
## "246" 7 TRUE "young" "female" "obese"  
## "247" 0 TRUE "mid" "female" "normal"  
## "248" 1 TRUE "mid" "female" "normal"  
## "249" 0 TRUE "mid" "female" "normal"  
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## "259" 3 TRUE "old" "female" "over"  
## "260" 4 TRUE "old" "female" "over"  
## "261" 3 TRUE "old" "female" "over"  
## "262" 0 TRUE "old" "female" "over"  
## "263" 6 TRUE "old" "female" "obese"  
## "264" 0 FALSE "young" "female" "normal"  
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## "267" 3 FALSE "young" "female" "normal"  
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## "272" 0 FALSE "young" "female" "normal"  
## "273" 2 FALSE "young" "female" "normal"  
## "274" 0 FALSE "young" "female" "normal"  
## "275" 1 FALSE "young" "female" "normal"  
## "276" 0 FALSE "young" "female" "normal"  
## "277" 1 FALSE "young" "female" "normal"  
## "278" 0 FALSE "young" "female" "over"  
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## "281" 1 FALSE "young" "female" "over"  
## "282" 0 FALSE "young" "female" "obese"  
## "283" 1 FALSE "young" "female" "obese"  
## "284" 0 FALSE "mid" "female" "normal"  
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## "290" 3 FALSE "mid" "female" "normal"  
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