

# Kira Plastinina Customer Clustering.

## 1. Problem Definition.

Kira Plastinina is a Russian fashion designer and entrepreneur that runs a fashion retail brand - Kira Plastinina. The brand mostly sold its products through a series of now defunct retail stores, the brand is now mostly sold through its e-commerce platform <https://kiraplastinina.com/>

The company has been keeping customer records from the above sales points, the marketing and sales team would like to use the past one year's data to better understand their customer demographic. The team would like to understand what clusters the customers belong to, this will be used in both sales and advertising to better target specific ads and sales strategies to the clusters based on their characteristics.

Working as a consultant for the two departments we will be helping the teams understand their customer clusters by helping them identify unifying characteristics of the cluster.

## 2. Data Sourcing

The data used for the analysis was sourced from here.

The data contains data from the interactions of customers with the e-retail platform and includes records of duration and type of content that a customer was interacting with, their status as a new customer or a return customer and whether they interacted with the platform on a weekend or week day.

## 3. Loading and Checking the Data

```
kira <- read.csv("http://bit.ly/EcommerceCustomersDataset")
```

```
head(kira)
```

```
##      Administrative Administrative_Duration Informational Informational_Duration
## 1                0                      0                0                      0
## 2                0                      0                0                      0
## 3                0                      -1                0                      -1
## 4                0                      0                0                      0
## 5                0                      0                0                      0
## 6                0                      0                0                      0
##      ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
## 1                1          0.000000 0.20000000 0.2000000          0
## 2                2          64.000000 0.00000000 0.1000000          0
## 3                1          -1.000000 0.20000000 0.2000000          0
## 4                2           2.666667 0.05000000 0.1400000          0
## 5               10          627.500000 0.02000000 0.0500000          0
## 6               19          154.216667 0.01578947 0.0245614          0
##      SpecialDay Month OperatingSystems Browser Region TrafficType
## 1             0   Feb                1      1      1          1
## 2             0   Feb                2      2      1          2
## 3             0   Feb                4      1      9          3
## 4             0   Feb                3      2      2          4
## 5             0   Feb                3      3      1          4
## 6             0   Feb                2      2      1          3
```

```
##      VisitorType Weekend Revenue
## 1 Returning_Visitor FALSE FALSE
## 2 Returning_Visitor FALSE FALSE
## 3 Returning_Visitor FALSE FALSE
## 4 Returning_Visitor FALSE FALSE
## 5 Returning_Visitor TRUE FALSE
## 6 Returning_Visitor FALSE FALSE
```

```
tail(kira)
```

```
##      Administrative Administrative_Duration Informational
## 12325      0      0      1
## 12326      3     145      0
## 12327      0      0      0
## 12328      0      0      0
## 12329      4      75      0
## 12330      0      0      0
##      Informational_Duration ProductRelated ProductRelated_Duration BounceRates
## 12325      0      16      503.000 0.000000000
## 12326      0      53     1783.792 0.007142857
## 12327      0      5      465.750 0.000000000
## 12328      0      6      184.250 0.083333333
## 12329      0     15      346.000 0.000000000
## 12330      0      3      21.250 0.000000000
##      ExitRates PageValues SpecialDay Month OperatingSystems Browser Region
## 12325 0.03764706 0.00000      0 Nov      2      2      1
## 12326 0.02903061 12.24172      0 Dec      4      6      1
## 12327 0.02133333 0.00000      0 Nov      3      2      1
## 12328 0.08666667 0.00000      0 Nov      3      2      1
## 12329 0.02105263 0.00000      0 Nov      2      2      3
## 12330 0.06666667 0.00000      0 Nov      3      2      1
##      TrafficType      VisitorType Weekend Revenue
## 12325      1 Returning_Visitor FALSE FALSE
## 12326      1 Returning_Visitor TRUE FALSE
## 12327      8 Returning_Visitor TRUE FALSE
## 12328     13 Returning_Visitor TRUE FALSE
## 12329     11 Returning_Visitor FALSE FALSE
## 12330      2      New_Visitor TRUE FALSE
```

```
dim(kira)
```

```
## [1] 12330      18
```

Our data has 12,330 rows and 18 columns

```
str(kira)
```

```
## 'data.frame': 12330 obs. of 18 variables:
## $ Administrative : int 0 0 0 0 0 0 1 0 0 ...
## $ Administrative_Duration: num 0 0 -1 0 0 0 -1 -1 0 0 ...
## $ Informational : int 0 0 0 0 0 0 0 0 0 ...
## $ Informational_Duration : num 0 0 -1 0 0 0 -1 -1 0 0 ...
```

```
## $ ProductRelated      : int  1 2 1 2 10 19 1 1 2 3 ...
## $ ProductRelated_Duration: num  0 64 -1 2.67 627.5 ...
## $ BounceRates         : num  0.2 0 0.2 0.05 0.02 ...
## $ ExitRates           : num  0.2 0.1 0.2 0.14 0.05 ...
## $ PageValues          : num  0 0 0 0 0 0 0 0 0 0 ...
## $ SpecialDay          : num  0 0 0 0 0 0 0.4 0 0.8 0.4 ...
## $ Month               : Factor w/ 10 levels "Aug","Dec","Feb",...: 3 3 3 3 3 3 3 3 3 3 ...
## $ OperatingSystems    : int  1 2 4 3 3 2 2 1 2 2 ...
## $ Browser             : int  1 2 1 2 3 2 4 2 2 4 ...
## $ Region              : int  1 1 9 2 1 1 3 1 2 1 ...
## $ TrafficType         : int  1 2 3 4 4 3 3 5 3 2 ...
## $ VisitorType         : Factor w/ 3 levels "New_Visitor",...: 3 3 3 3 3 3 3 3 3 3 ...
## $ Weekend             : logi  FALSE FALSE FALSE FALSE TRUE FALSE ...
## $ Revenue             : logi  FALSE FALSE FALSE FALSE FALSE FALSE ...
```

```
colnames(kira)
```

```
## [1] "Administrative"      "Administrative_Duration"
## [3] "Informational"       "Informational_Duration"
## [5] "ProductRelated"     "ProductRelated_Duration"
## [7] "BounceRates"        "ExitRates"
## [9] "PageValues"         "SpecialDay"
## [11] "Month"              "OperatingSystems"
## [13] "Browser"            "Region"
## [15] "TrafficType"        "VisitorType"
## [17] "Weekend"            "Revenue"
```

```
sapply(kira, class) # checking
```

```
##      Administrative Administrative_Duration      Informational
##      "integer"          "numeric"          "integer"
## Informational_Duration      ProductRelated ProductRelated_Duration
##      "numeric"          "integer"          "numeric"
##      BounceRates          ExitRates          PageValues
##      "numeric"          "numeric"          "numeric"
##      SpecialDay          Month      OperatingSystems
##      "numeric"          "factor"          "integer"
##      Browser          Region      TrafficType
##      "integer"          "integer"          "integer"
##      VisitorType      Weekend      Revenue
##      "factor"          "logical"          "logical"
```

## 4. Data Cleaning

### Checking for and Dealing with Null Values

```
colSums(is.na(kira))
```

```
##      Administrative Administrative_Duration      Informational
##      14          14          14
## Informational_Duration      ProductRelated ProductRelated_Duration
```

```
##          14          14          14
##      BounceRates      ExitRates      PageValues
##          14          14          0
##      SpecialDay      Month      OperatingSystems
##          0          0          0
##      Browser      Region      TrafficType
##          0          0          0
##      VisitorType      Weekend      Revenue
##          0          0          0
```

The dataset contains 14 null values in the following columns - Administrative, Administrative\_Duration, Infomational, Informational\_Duration, ProductRelated, ProductRelated\_Duration, BounceRates and ExitRates. This a small portion of the overall dataset,dropping them will not reduce the quantity of our data significantly, we shall therefore drop the null values using na.omit.

```
kira <- na.omit(kira) #Creates a new dataset where all the null values have been dropped
```

Checking our data to see if the new dataset has all the null values dropped

```
colSums(is.na(kira))
```

```
##      Administrative Administrative_Duration      Informational
##          0          0          0
##      Informational_Duration      ProductRelated ProductRelated_Duration
##          0          0          0
##      BounceRates      ExitRates      PageValues
##          0          0          0
##      SpecialDay      Month      OperatingSystems
##          0          0          0
##      Browser      Region      TrafficType
##          0          0          0
##      VisitorType      Weekend      Revenue
##          0          0          0
```

Our dataset no longer contains any null values.

### Checking for and Dealing with Duplicates

```
duplicates = kira[duplicated(kira),]
dim(duplicates)
```

```
## [1] 117  18
```

There are 117 duplicated rows in our dataset. The number of duplicates is small in comparison to the whole dataset, We shall therefore drop the duplicates.

```
kira <- kira[!duplicated(kira),]
```

Checking to confirm that our duplicates have been dropped.

```
dup <- kira[duplicated(kira),]  
  
dim(dup)
```

```
## [1]  0 18
```

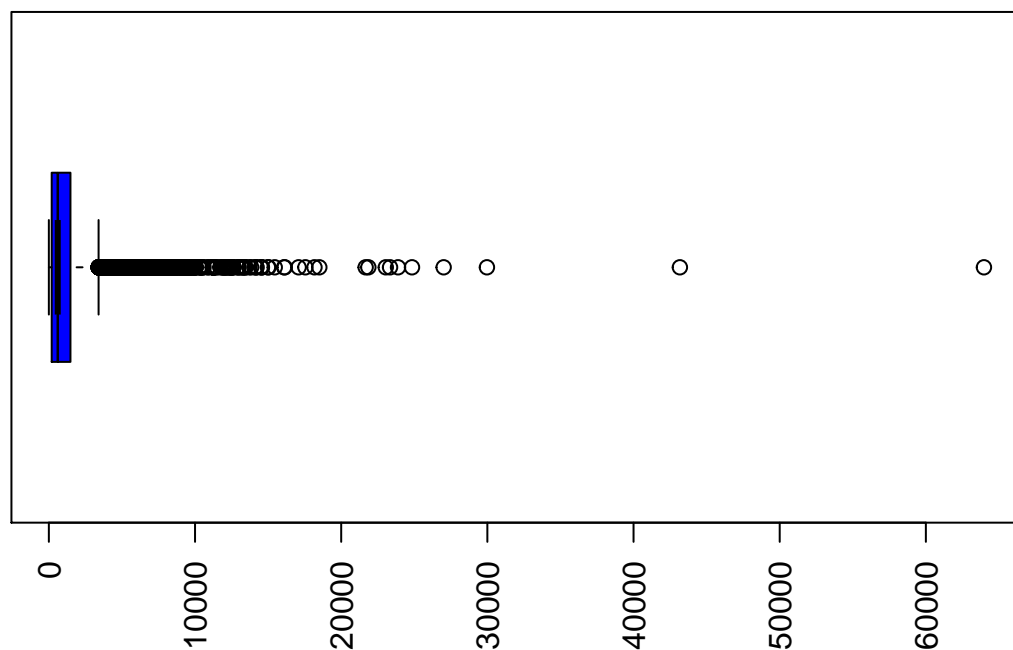
Our dataset no longer contains any duplicates.

### Checkign for and Dealing with Outliers

We shall check for outliers in some of the columns.

```
boxplot(kira$ProductRelated_Duration,  
        main = "Boxplot for Product Related Duration",  
        at = c(1),  
        names = c("Product Related Duration"),  
        las = 2,  
        col = c("blue"),  
        horizontal = TRUE,  
        notch = TRUE)
```

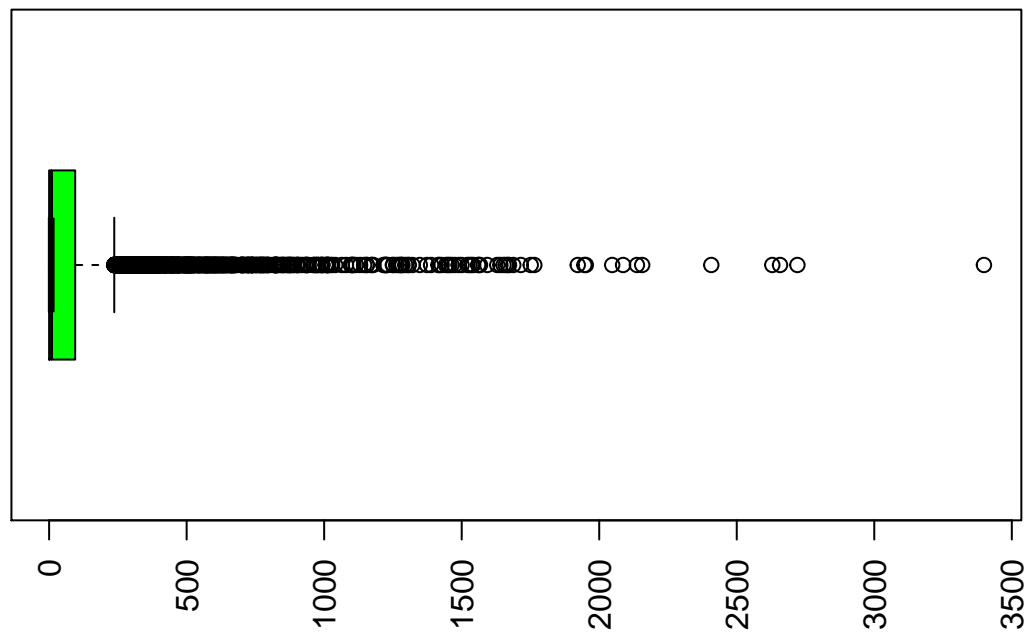
### Boxplot for Product Related Duration



```
boxplot(kira$Administrative_Duration,  
        main = "Boxplot for Administrative Duration",  
        at = c(1),  
        names = c("Administrative Duration"),
```

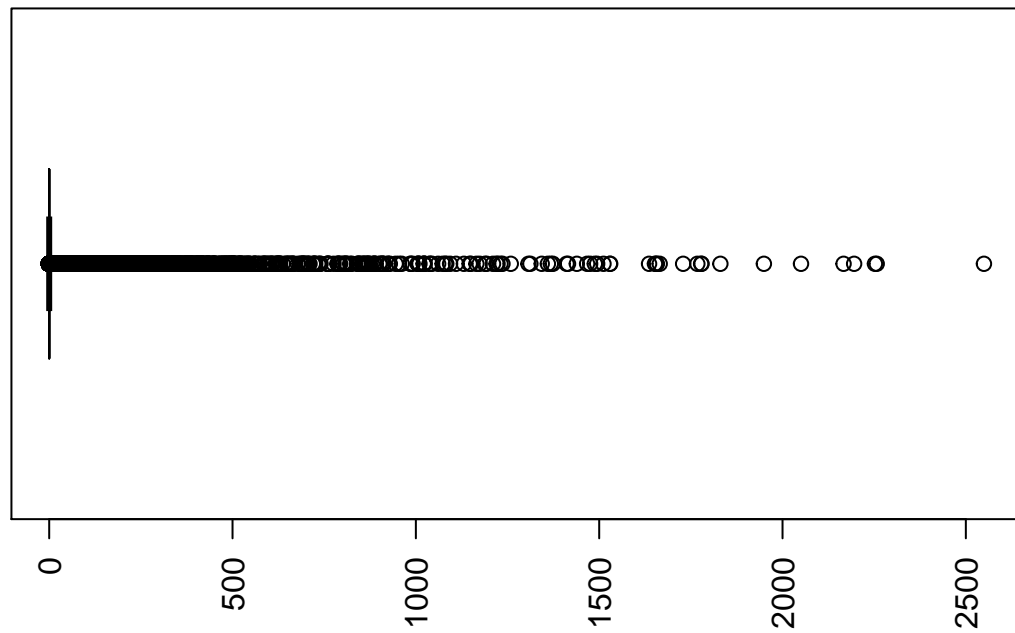
```
las = 2,
col = c("green"),
horizontal = TRUE,
notch = TRUE)
```

## Boxplot for Administrative Duration



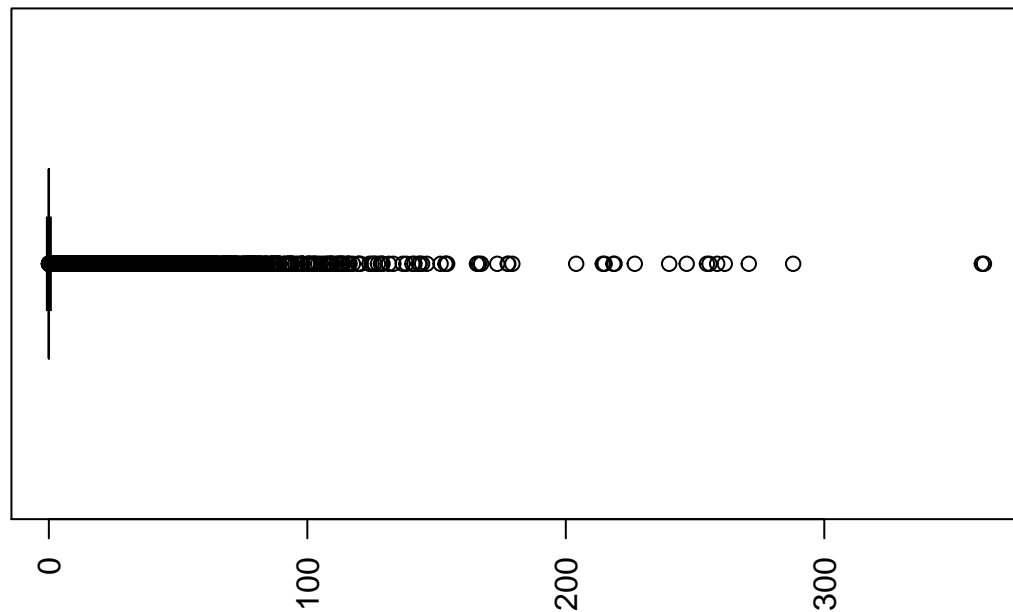
```
boxplot(kira$Informational_Duration,
        main = "Boxplot for Information Duration",
        at = c(1),
        names = c("Information Duration"),
        las = 2,
        col = c("purple"),
        horizontal = TRUE,
        notch = TRUE)
```

## Boxplot for Information Duration



```
boxplot(kira$PageValues,  
        main = "Boxplot for Page Values",  
        at = c(1),  
        names = c("Page Values"),  
        las = 2,  
        col = c("yellow"),  
        horizontal = TRUE,  
        notch = TRUE)
```

## Boxplot for Page Values



## 5.Exploratory Data Analysis

**Univariate Data Analysis** We will use the summary function to make our work easier in determining the measures of central tendency and dispersion for all the columns

```
summary(kira)
```

```
## Administrative Administrative_Duration Informational
## Min. : 0.00 Min. : -1.00 Min. : 0.0000
## 1st Qu.: 0.00 1st Qu.: 0.00 1st Qu.: 0.0000
## Median : 1.00 Median : 9.00 Median : 0.0000
## Mean : 2.34 Mean : 81.68 Mean : 0.5088
## 3rd Qu.: 4.00 3rd Qu.: 94.75 3rd Qu.: 0.0000
## Max. :27.00 Max. :3398.75 Max. :24.0000
##
## Informational_Duration ProductRelated ProductRelated_Duration
## Min. : -1.00 Min. : 0.00 Min. : -1.0
## 1st Qu.: 0.00 1st Qu.: 8.00 1st Qu.: 193.6
## Median : 0.00 Median : 18.00 Median : 609.5
## Mean : 34.84 Mean : 32.06 Mean : 1207.5
## 3rd Qu.: 0.00 3rd Qu.: 38.00 3rd Qu.: 1477.6
## Max. :2549.38 Max. :705.00 Max. :63973.5
##
## BounceRates ExitRates PageValues SpecialDay
```



```
## Min. :0.00000 Min. :0.00000 Min. : 0.000 Min. :0.00000
## 1st Qu.:0.00000 1st Qu.:0.01422 1st Qu.: 0.000 1st Qu.:0.00000
## Median :0.00293 Median :0.02500 Median : 0.000 Median :0.00000
## Mean :0.02045 Mean :0.04150 Mean : 5.952 Mean :0.06197
## 3rd Qu.:0.01667 3rd Qu.:0.04848 3rd Qu.: 0.000 3rd Qu.:0.00000
## Max. :0.20000 Max. :0.20000 Max. :361.764 Max. :1.00000
##
##      Month      OperatingSystems      Browser      Region
## May :3328 Min. :1.000 Min. : 1.000 Min. :1.000
## Nov :2983 1st Qu.:2.000 1st Qu.: 2.000 1st Qu.:1.000
## Mar :1853 Median :2.000 Median : 2.000 Median :3.000
## Dec :1706 Mean :2.124 Mean : 2.358 Mean :3.153
## Oct : 549 3rd Qu.:3.000 3rd Qu.: 2.000 3rd Qu.:4.000
## Sep : 448 Max. :8.000 Max. :13.000 Max. :9.000
## (Other):1332
##      TrafficType      VisitorType      Weekend      Revenue
## Min. : 1.000 New_Visitor : 1693 Mode :logical Mode :logical
## 1st Qu.: 2.000 Other : 81 FALSE:9343 FALSE:10291
## Median : 2.000 Returning_Visitor:10425 TRUE :2856 TRUE :1908
## Mean : 4.075
## 3rd Qu.: 4.000
## Max. :20.000
##
```

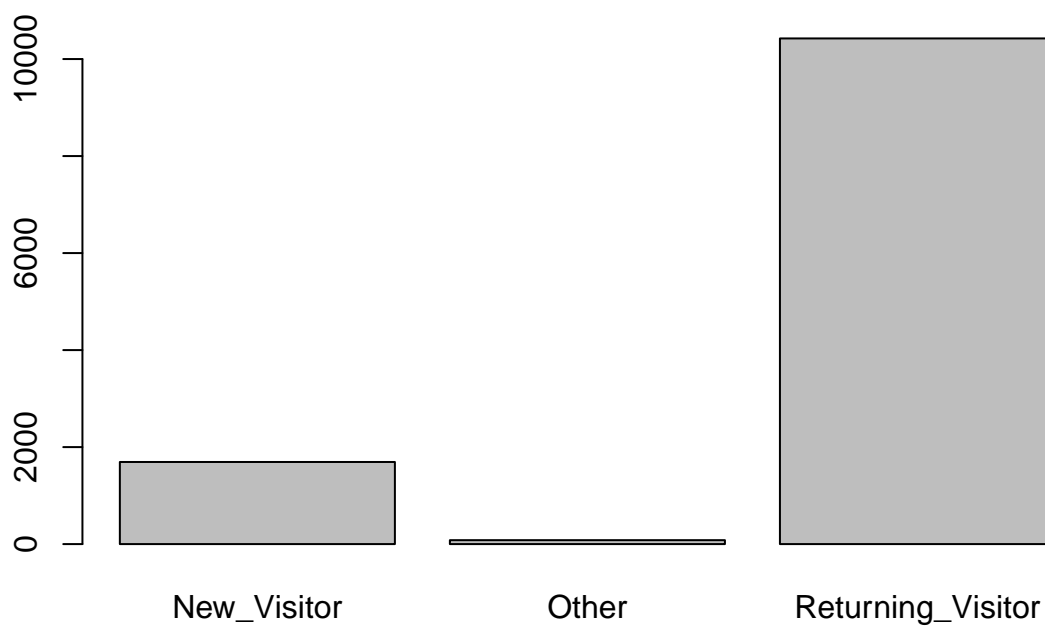
Some of the observations from the above are the following:

The mean for the administrative columns is 2.34, with a maximum of 27 and a minimum of 0. The minimum for administrative duration is -1, with a maximum of 3398.75 and a mean of 81.68, this shows that the data may have some outliers

```
table(kira$VisitorType)
```

```
##
##      New_Visitor      Other Returning_Visitor
##      1693      81      10425
```

```
barplot(table(kira$VisitorType))
```

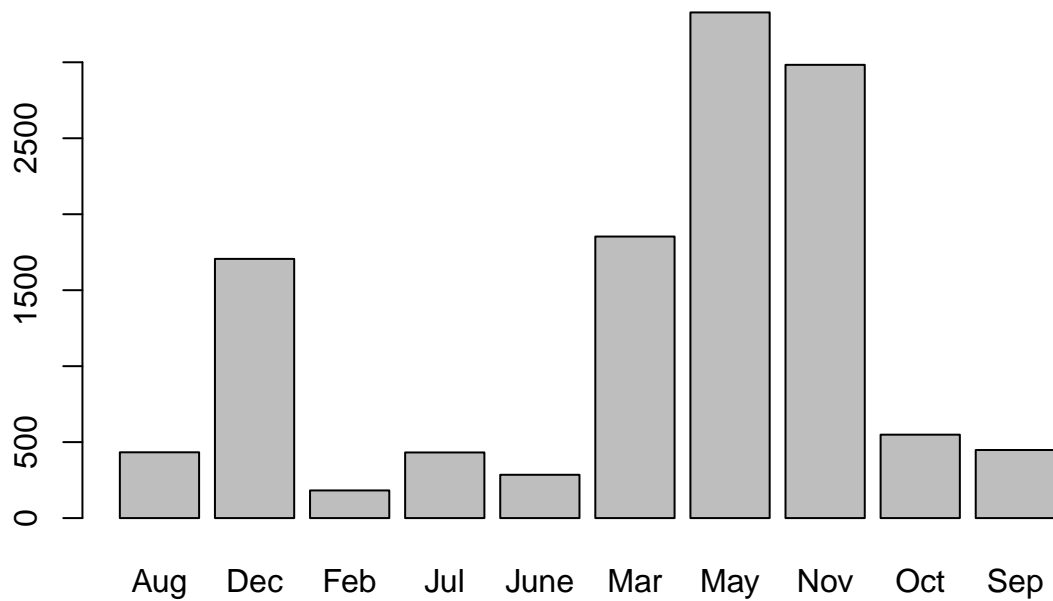


Returning visitors make up the highest chunk of customers.

```
table(kira$Month)
```

```
##  
## Aug Dec Feb Jul June Mar May Nov Oct Sep  
## 433 1706 182 432 285 1853 3328 2983 549 448
```

```
barplot(table(kira$Month))
```

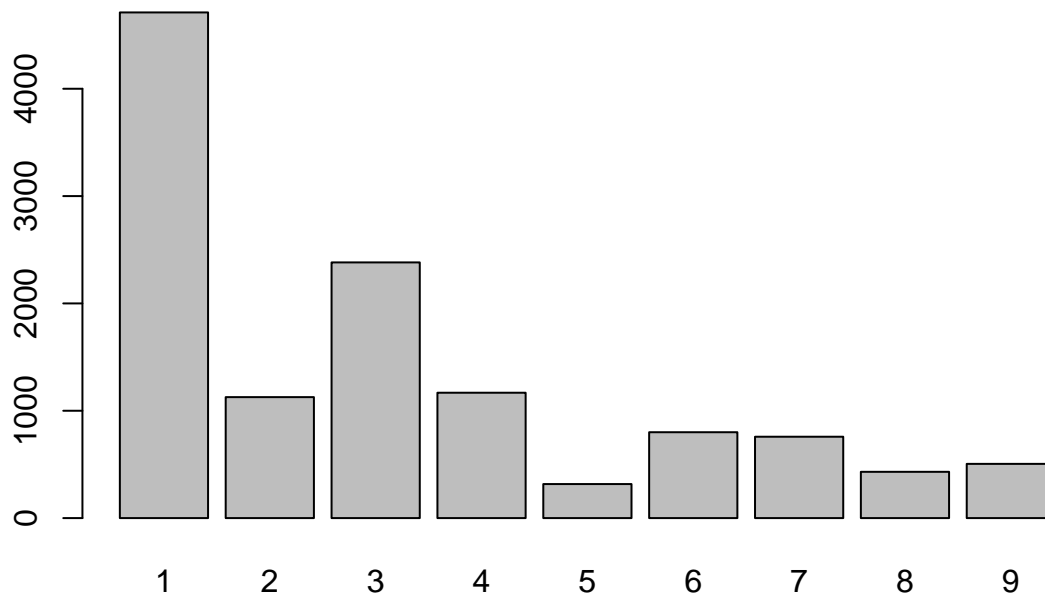


There was a higher number of customers visiting the website towards the end of the year from the 6th to the 8th month

```
table(kira$Region)
```

```
##
##   1    2    3    4    5    6    7    8    9
## 4711 1127 2382 1168 317  800  758  431  505
```

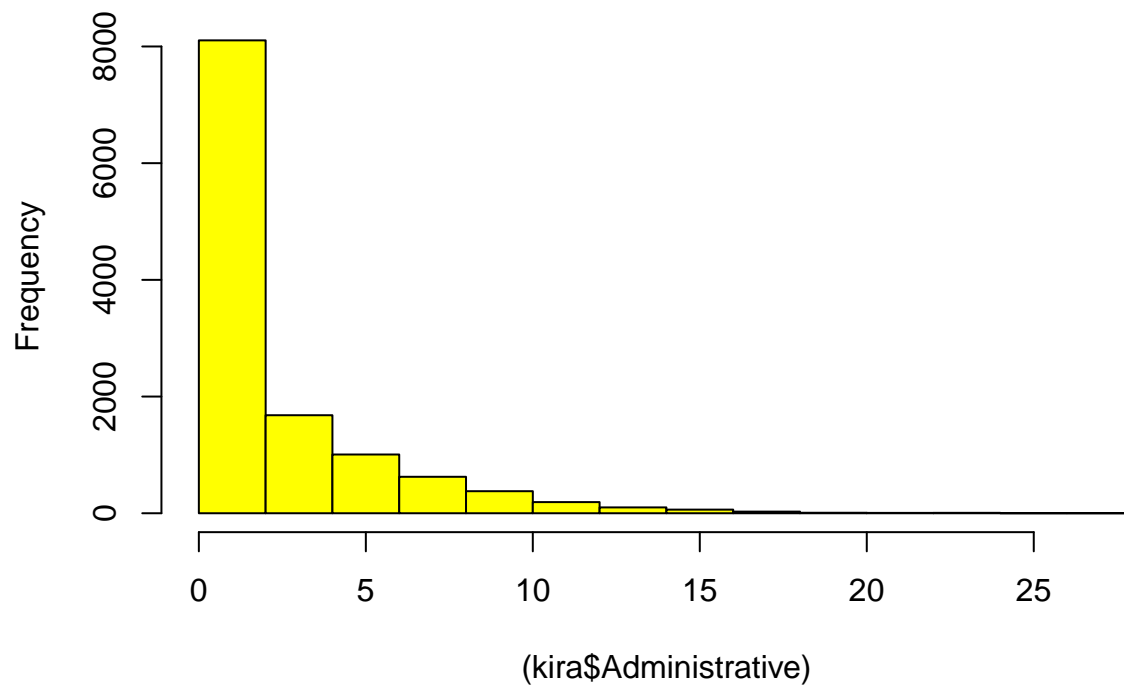
```
barplot(table(kira$Region))
```



Most of the visitors were from the first four regions, with the highest number being specifically from the first region

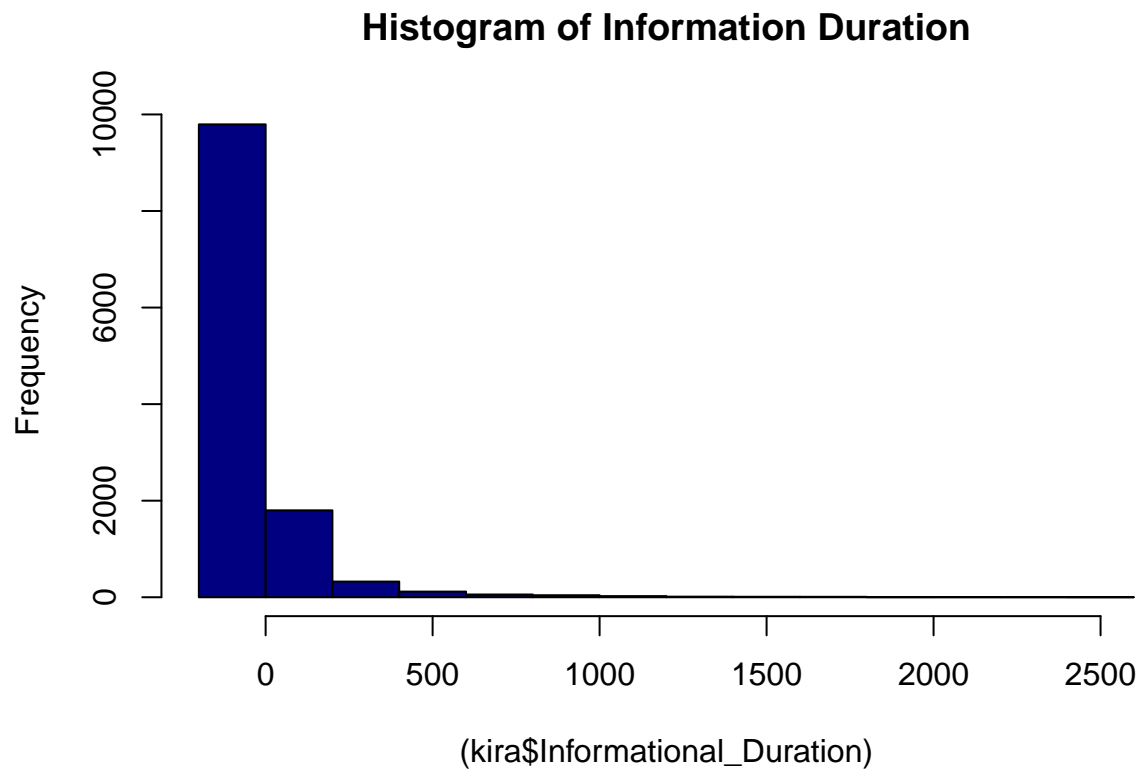
```
#histogram of Administrative Duration  
hist((kira$Administrative), col = 'yellow', main = "Histogram of Administrative Duration")
```

## Histogram of Administrative Duration



The administrative column is skewed to the left with a few outliers to the left.

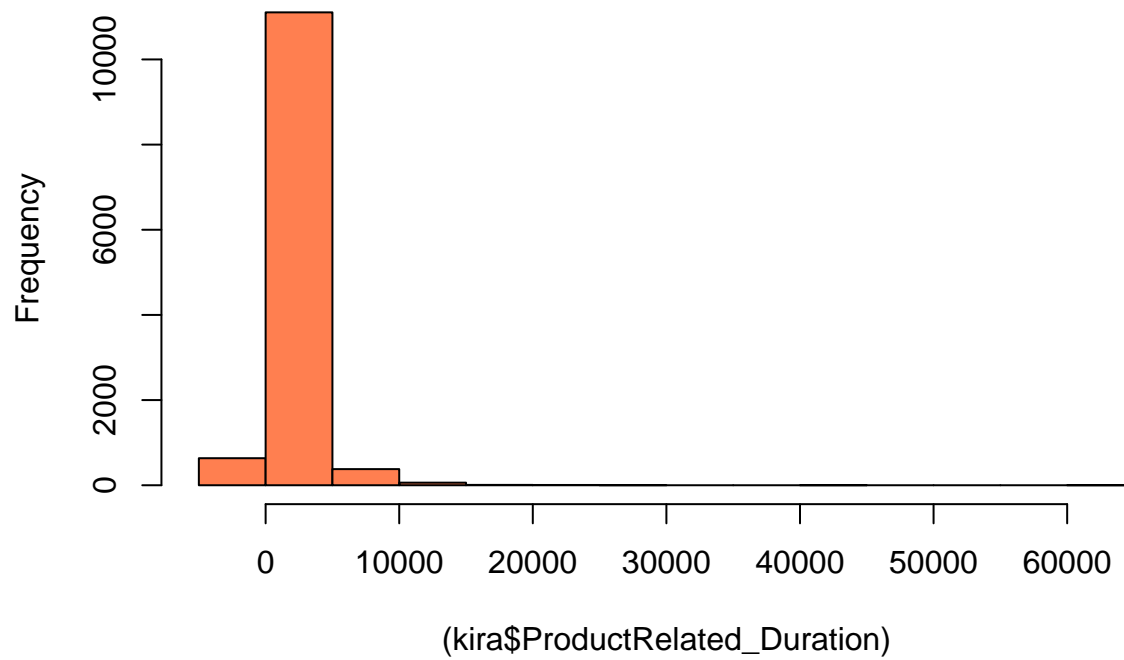
```
#histogram of Information Duration  
hist((kira$Informational_Duration), col = 'navyblue', main = "Histogram of Information Duration")
```



The information duration column is also skewed to the left, with most data points being less than 500 and a few number of outliers

```
#histogram of Product Related Duration  
hist((kira$ProductRelated_Duration), col = 'coral', main = "Histogram of Product Related Duration")
```

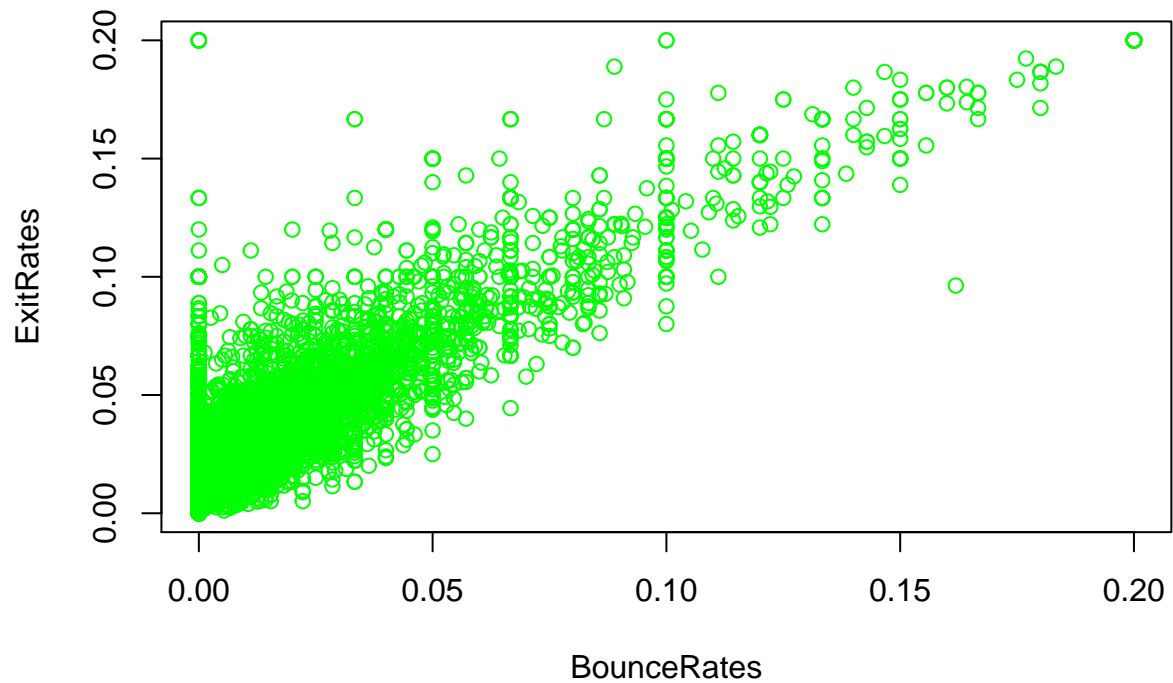
## Histogram of Product Related Duration



### Bivariate Data Analysis

```
plot(ExitRates ~ BounceRates, dat = kira,  
     col = "green",  
     main = "Bounce vs Exit Rates Scatter Plot")
```

### Bounce vs Exit Rates Scatter Plot

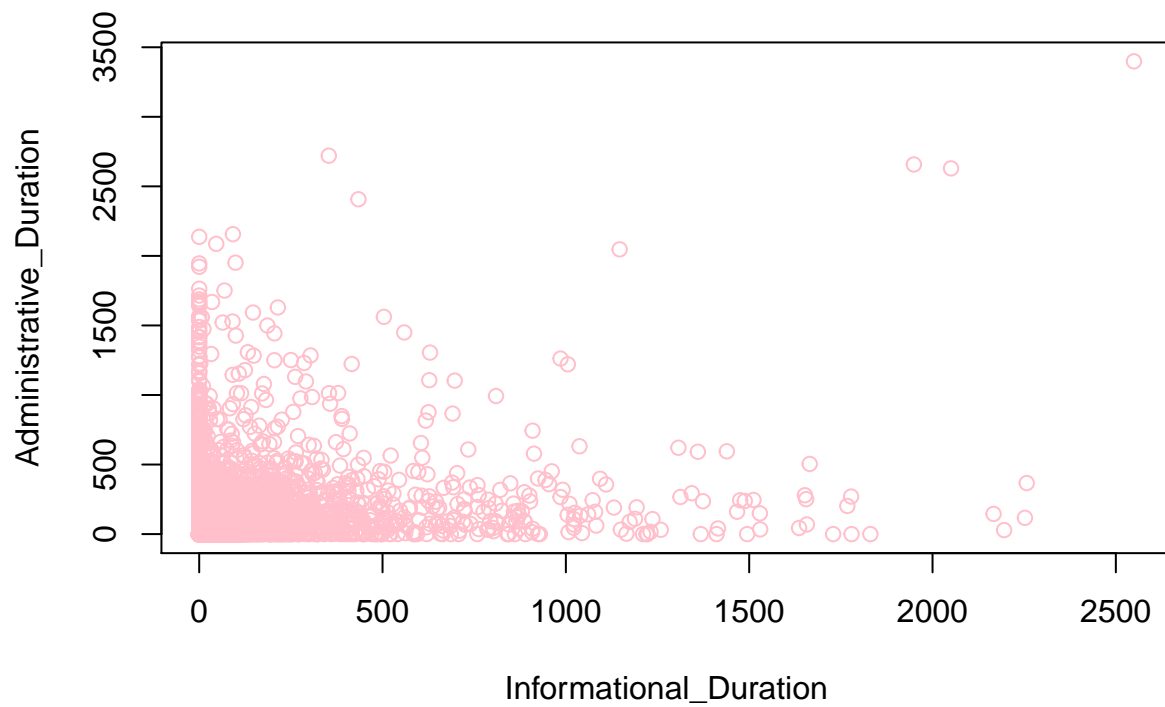


There is a positive linear correlation between Exit rates and bounce rate.

```
plot(Administrative_Duration ~ Informational_Duration, dat = kira,  
     col = "pink",  
     main = "Administrative_Duration vs Informational_Duration Scatter Plot")
```

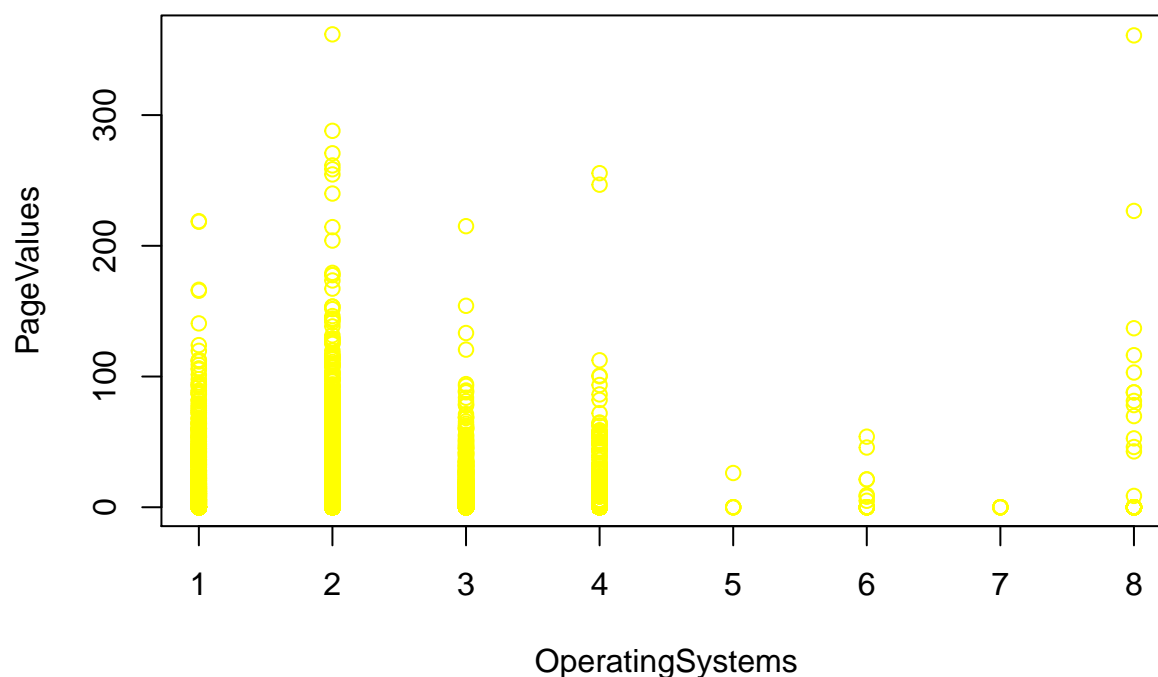


## Administrative\_Duration vs Informational\_Duration Scatter Plot



```
plot(PageValues ~ OperatingSystems, dat = kira,  
     col = "yellow",  
     main = "PageValues vs OperatingSystems")
```

## PageValues vs OperatingSystems



```
my_data <- kira[, c(1,2,3,4,5,6,7,8,9,10,12,13,14,15)]
```

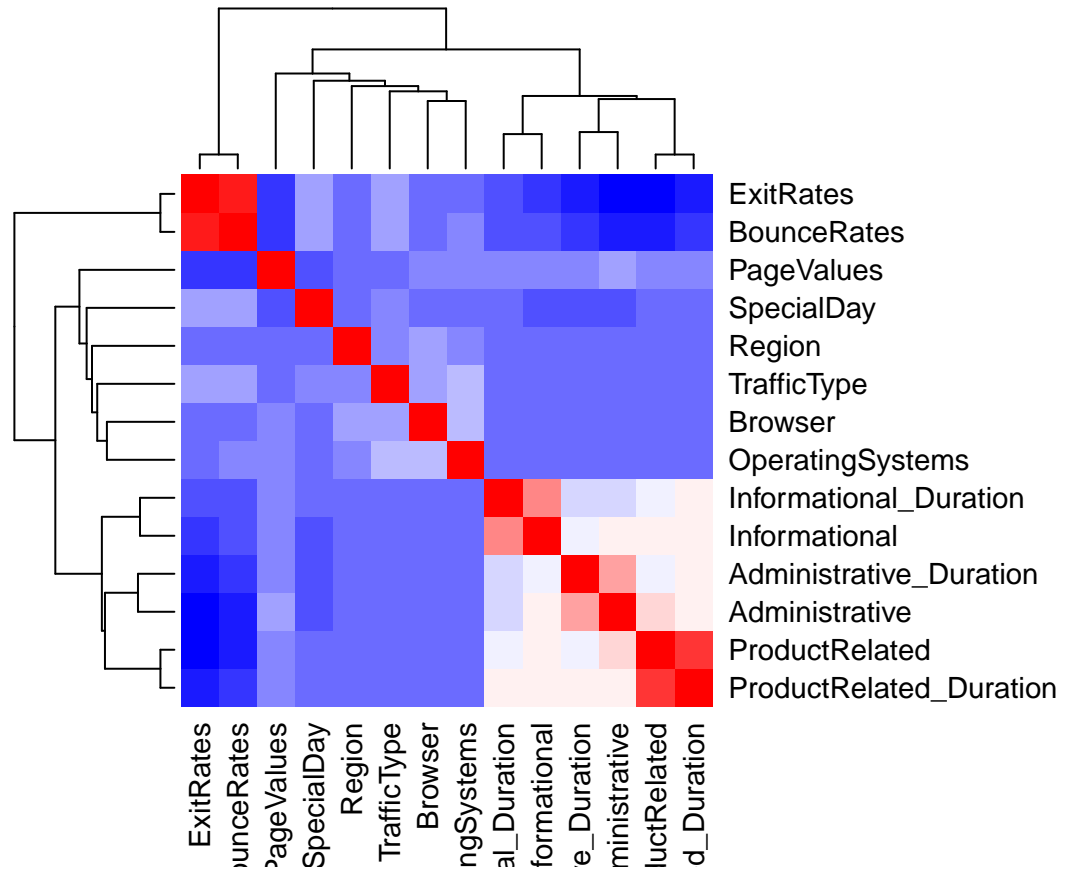
```
res <- cor(my_data)
round(res, 2)
```

```
##           Administrative Administrative_Duration Informational
## Administrative           1.00             0.60             0.38
## Administrative_Duration    0.60             1.00             0.30
## Informational              0.38             0.30             1.00
## Informational_Duration     0.25             0.24             0.62
## ProductRelated            0.43             0.29             0.37
## ProductRelated_Duration    0.37             0.35             0.39
## BounceRates               -0.21            -0.14            -0.11
## ExitRates                 -0.31            -0.20            -0.16
## PageValues                0.10             0.07             0.05
## SpecialDay               -0.10            -0.07            -0.05
## OperatingSystems          -0.01            -0.01            -0.01
## Browser                  -0.03            -0.02            -0.04
## Region                   -0.01            -0.01            -0.03
## TrafficType              -0.03            -0.02            -0.04
##           Informational_Duration ProductRelated
## Administrative           0.25           0.43
## Administrative_Duration  0.24           0.29
## Informational            0.62           0.37
## Informational_Duration   1.00           0.28
```

## ProductRelated	0.28	1.00			
## ProductRelated_Duration	0.35	0.86			
## BounceRates	-0.07	-0.19			
## ExitRates	-0.10	-0.29			
## PageValues	0.03	0.05			
## SpecialDay	-0.03	-0.03			
## OperatingSystems	-0.01	0.00			
## Browser	-0.02	-0.01			
## Region	-0.03	-0.04			
## TrafficType	-0.03	-0.04			
##	ProductRelated_Duration	BounceRates	ExitRates		
## Administrative	0.37	-0.21	-0.31		
## Administrative_Duration	0.35	-0.14	-0.20		
## Informational	0.39	-0.11	-0.16		
## Informational_Duration	0.35	-0.07	-0.10		
## ProductRelated	0.86	-0.19	-0.29		
## ProductRelated_Duration	1.00	-0.17	-0.25		
## BounceRates	-0.17	1.00	0.90		
## ExitRates	-0.25	0.90	1.00		
## PageValues	0.05	-0.12	-0.17		
## SpecialDay	-0.04	0.09	0.12		
## OperatingSystems	0.00	0.03	0.02		
## Browser	-0.01	-0.02	0.00		
## Region	-0.03	0.00	0.00		
## TrafficType	-0.04	0.09	0.09		
##	PageValues	SpecialDay	OperatingSystems	Browser	Region
## Administrative	0.10	-0.10	-0.01	-0.03	-0.01
## Administrative_Duration	0.07	-0.07	-0.01	-0.02	-0.01
## Informational	0.05	-0.05	-0.01	-0.04	-0.03
## Informational_Duration	0.03	-0.03	-0.01	-0.02	-0.03
## ProductRelated	0.05	-0.03	0.00	-0.01	-0.04
## ProductRelated_Duration	0.05	-0.04	0.00	-0.01	-0.03
## BounceRates	-0.12	0.09	0.03	-0.02	0.00
## ExitRates	-0.17	0.12	0.02	0.00	0.00
## PageValues	1.00	-0.06	0.02	0.05	0.01
## SpecialDay	-0.06	1.00	0.01	0.00	-0.02
## OperatingSystems	0.02	0.01	1.00	0.21	0.07
## Browser	0.05	0.00	0.21	1.00	0.09
## Region	0.01	-0.02	0.07	0.09	1.00
## TrafficType	0.01	0.05	0.18	0.10	0.04
##	TrafficType				
## Administrative	-0.03				
## Administrative_Duration	-0.02				
## Informational	-0.04				
## Informational_Duration	-0.03				
## ProductRelated	-0.04				
## ProductRelated_Duration	-0.04				
## BounceRates	0.09				
## ExitRates	0.09				
## PageValues	0.01				
## SpecialDay	0.05				
## OperatingSystems	0.18				
## Browser	0.10				
## Region	0.04				

```
## TrafficType 1.00
```

```
col<- colorRampPalette(c("blue", "white", "red"))(20)
heatmap(x = res, col = col, symm = TRUE)
```



## 6. Implementing the Solution

### Data Preparation

To be able to effectively create a ML model we will prepare our data to ensure

```
library(CatEncoders)
```

```
## Warning: package 'CatEncoders' was built under R version 3.6.3
```

```
##
```

```
## Attaching package: 'CatEncoders'
```

```
## The following object is masked from 'package:base':
```

```
##
```

```
## transform
```

```
factors <- names(which(sapply(kira, is.factor)))
# Label Encoder
for (i in factors){
  encode <- LabelEncoder.fit(kira[, i])
  kira[, i] <- transform(encode, kira[, i])
}
```

```
head(kira)
```

```
##      Administrative Administrative_Duration Informational Informational_Duration
## 1              0              0              0              0
## 2              0              0              0              0
## 3              0             -1              0             -1
## 4              0              0              0              0
## 5              0              0              0              0
## 6              0              0              0              0
##      ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
## 1              1          0.000000 0.20000000 0.2000000 0
## 2              2          64.000000 0.00000000 0.1000000 0
## 3              1          -1.000000 0.20000000 0.2000000 0
## 4              2           2.666667 0.05000000 0.1400000 0
## 5             10          627.500000 0.02000000 0.0500000 0
## 6             19          154.216667 0.01578947 0.0245614 0
##      SpecialDay Month OperatingSystems Browser Region TrafficType VisitorType
## 1              0    3              1      1      1              1              3
## 2              0    3              2      2      1              2              3
## 3              0    3              4      1      9              3              3
## 4              0    3              3      2      2              4              3
## 5              0    3              3      3      1              4              3
## 6              0    3              2      2      1              3              3
##      Weekend Revenue
## 1    FALSE    FALSE
## 2    FALSE    FALSE
## 3    FALSE    FALSE
## 4    FALSE    FALSE
## 5     TRUE    FALSE
## 6    FALSE    FALSE
```

```
kira$Revenue <- ifelse(kira$Revenue == "TRUE",1,0)
kira$Weekend <- ifelse(kira$Weekend == "TRUE", 1,0)
```

```
head(kira)
```

```
##      Administrative Administrative_Duration Informational Informational_Duration
## 1              0              0              0              0
## 2              0              0              0              0
## 3              0             -1              0             -1
## 4              0              0              0              0
## 5              0              0              0              0
## 6              0              0              0              0
##      ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
```

```
## 1      1      0.000000 0.20000000 0.2000000      0
## 2      2     64.000000 0.00000000 0.1000000      0
## 3      1    -1.000000 0.20000000 0.2000000      0
## 4      2     2.666667 0.05000000 0.1400000      0
## 5     10    627.500000 0.02000000 0.0500000      0
## 6     19   154.216667 0.01578947 0.0245614      0
##   SpecialDay Month OperatingSystems Browser Region TrafficType VisitorType
## 1          0      3              1      1      1          1          3
## 2          0      3              2      2      1          2          3
## 3          0      3              4      1      9          3          3
## 4          0      3              3      2      2          4          3
## 5          0      3              3      3      1          4          3
## 6          0      3              2      2      1          3          3
##   Weekend Revenue
## 1          0      0
## 2          0      0
## 3          0      0
## 4          0      0
## 5          1      0
## 6          0      0
```

```
kira_new <- kira[,1:17]
```

```
head(kira_new)
```

```
##   Administrative Administrative_Duration Informational Informational_Duration
## 1          0              0              0              0
## 2          0              0              0              0
## 3          0             -1              0             -1
## 4          0              0              0              0
## 5          0              0              0              0
## 6          0              0              0              0
##   ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
## 1          1      0.000000 0.20000000 0.2000000      0
## 2          2     64.000000 0.00000000 0.1000000      0
## 3          1    -1.000000 0.20000000 0.2000000      0
## 4          2     2.666667 0.05000000 0.1400000      0
## 5         10    627.500000 0.02000000 0.0500000      0
## 6         19   154.216667 0.01578947 0.0245614      0
##   SpecialDay Month OperatingSystems Browser Region TrafficType VisitorType
## 1          0      3              1      1      1          1          3
## 2          0      3              2      2      1          2          3
## 3          0      3              4      1      9          3          3
## 4          0      3              3      2      2          4          3
## 5          0      3              3      3      1          4          3
## 6          0      3              2      2      1          3          3
##   Weekend
## 1          0
## 2          0
## 3          0
## 4          0
## 5          1
## 6          0
```

```

kira_class <- kira[, "Revenue"]

head(kira_class)

## [1] 0 0 0 0 0 0

normalize <- function(x) {
  return ((x - min(x)) / (max(x) - min(x)))
}

kira_new$Administrative <- normalize(kira_new$Administrative)
kira_new$Administrative_Duration <- normalize(kira_new$Administrative_Duration)
kira_new$Informational <- normalize(kira_new$Informational_Duration)
kira_new$Informational_Duration <- normalize(kira_new$Administrative)
kira_new$ProductRelated <- normalize(kira_new$ProductRelated)
kira_new$ProductRelated_Duration <- normalize(kira_new$ProductRelated_Duration)

```

## K-Means Clustering

K-means clustering (MacQueen 1967) is one of the most commonly used unsupervised machine learning algorithm for partitioning a given data set into a set of k groups (i.e. k clusters), where k represents the number of groups pre-specified by the analyst. It classifies objects in multiple groups (i.e., clusters), such that objects within the same cluster are as similar as possible (i.e., high intra-class similarity), whereas objects from different clusters are as dissimilar as possible (i.e., low inter-class similarity). In k-means clustering, each cluster is represented by its center (i.e, centroid) which corresponds to the mean of points assigned to the cluster.

## Baseline Model

Our baseline model will K-Mean model created based on estimations for the best number of clusters(5). To improve our mode, we will find the optimal number of clusters for the data provided and use them to recreate our model.

```

set.seed(123)

result<- kmeans(kira_new,5)
result$size

## [1] 1863 8850 1087 33 366

table(result$cluster, kira_class)

```

```

##      kira_class
##      0      1
## 1 1699 164
## 2 8126 724
## 3 392 695
## 4 4 29
## 5 70 296

```

```
# Getting the value of cluster center datapoint value(5 centers for k=5)
# ---
#
result$centers
```

```
##      Administrative Administrative_Duration Informational Informational_Duration
## 1      0.07298066          0.02151095      0.011260905          0.07298066
## 2      0.08233522          0.02303164      0.013692915          0.08233522
## 3      0.14146990          0.03819704      0.023175163          0.14146990
## 4      0.08866442          0.02496343      0.015317613          0.08866442
## 5      0.09815827          0.02850167      0.009725559          0.09815827
##      ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
## 1      0.04024471          0.01704738 0.031391964 0.053190300 0.6962122
## 2      0.04523284          0.01853524 0.020823543 0.043090133 0.8168167
## 3      0.05557491          0.02461597 0.005167580 0.018452329 27.9652118
## 4      0.06017623          0.02039977 0.001238571 0.008652429 205.3060273
## 5      0.04656435          0.01972077 0.002732525 0.014849306 73.5393284
##      SpecialDay      Month OperatingSystems Browser Region TrafficType
## 1 0.06666667 6.288782      2.381106 2.462158 3.247987 11.998926
## 2 0.06691525 6.116723      2.070621 2.315254 3.129492 2.433333
## 3 0.03164673 6.359706      2.101196 2.405704 3.176633 3.725851
## 4 0.00000000 6.181818      2.393939 3.181818 4.030303 5.333333
## 5 0.01420765 6.221311      2.161202 2.650273 3.098361 4.346995
##      VisitorType Weekend
## 1      2.717123 0.2442297
## 2      2.744520 0.2319774
## 3      2.628335 0.2235511
## 4      1.969697 0.3030303
## 5      2.341530 0.2595628
```

```
# Getting the cluster vector that shows the cluster where each record falls
# ---
#
result$cluster
```

```
##      1      2      3      4      5      6      7      8      9     10     11     12     13
##      2      2      2      2      2      2      2      2      2      2      2      2      2
##     14     15     16     17     18     19     20     21     22     23     24     25     26
##      2      2      2      2      2      2      2      2      2      2      2      2      2
##     27     28     29     30     31     32     33     34     35     36     37     38     39
##      2      2      2      5      2      2      2      2      2      2      2      2      2
##     40     41     42     43     44     45     46     47     48     49     50     51     52
##      2      2      2      2      2      2      2      2      2      2      2      2      2
##     53     54     55     56     57     58     59     60     61     62     63     64     65
##      2      2      2      2      2      3      2      2      2      2      3      2      2
##     66     67     68     69     70     71     72     73     74     75     76     77     78
##      3      2      2      2      2      2      2      2      2      2      2      2      2
##     79     80     81     82     83     84     85     86     87     88     89     90     91
##      2      2      2      2      2      2      2      2      2      2      2      2      2
##     92     93     94     95     96     97     98     99    100    101    102    103    104
##      2      2      2      2      2      2      2      2      2      2      3      2      2
##    105    106    107    108    109    110    111    112    113    114    115    116    117
##      2      2      2      2      2      2      2      2      2      2      2      2      2
```



##	118	119	120	121	122	123	124	125	126	127	128	129	130
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	131	132	133	134	135	136	137	138	139	140	141	142	143
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	144	145	146	147	148	149	150	151	152	153	154	155	156
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	157	158	160	161	162	163	164	165	166	167	168	169	170
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	171	172	173	174	175	176	177	178	180	181	182	183	184
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	185	186	187	188	189	190	191	192	193	194	195	196	197
##	1	2	2	2	2	3	2	2	2	2	2	2	3
##	198	199	200	201	202	203	204	205	206	207	208	209	210
##	2	5	5	4	1	2	1	1	2	3	2	2	2
##	211	212	213	214	215	216	217	218	219	220	221	222	223
##	2	2	1	2	2	2	2	2	2	1	3	2	2
##	224	225	226	227	228	229	230	231	232	233	234	235	236
##	1	2	1	2	2	3	2	1	2	2	3	2	2
##	237	238	239	240	241	242	243	244	245	246	247	248	249
##	1	2	2	2	2	2	2	2	2	2	2	2	2
##	250	251	252	253	254	255	256	257	258	259	260	261	262
##	2	2	2	2	2	2	2	2	1	2	1	2	2
##	263	264	265	266	267	268	269	270	271	272	273	274	275
##	2	2	2	5	2	1	2	2	2	2	1	2	1
##	276	277	278	279	280	281	282	283	284	285	286	287	288
##	2	3	2	2	2	2	5	2	2	2	2	2	2
##	289	290	291	292	293	294	295	296	297	298	299	300	301
##	2	1	2	2	2	2	3	5	2	2	2	2	1
##	302	303	304	305	306	307	308	309	310	311	312	313	314
##	2	2	2	2	2	2	2	1	1	1	2	2	2
##	315	316	317	318	319	320	321	322	323	324	325	326	327
##	2	2	2	1	2	2	2	2	2	2	2	2	2
##	328	329	330	331	332	333	334	335	336	337	338	339	340
##	2	1	2	2	2	2	2	2	2	2	2	2	2
##	341	342	343	344	345	346	347	348	349	350	351	352	353
##	2	2	2	2	2	1	2	2	2	2	2	2	3
##	354	355	356	357	358	359	360	361	362	363	364	365	366
##	2	2	2	2	2	2	2	2	2	2	2	2	3
##	367	368	369	370	371	372	373	374	375	376	377	378	379
##	2	2	2	2	2	2	1	2	2	2	2	2	1
##	380	381	382	383	384	385	386	387	388	389	390	391	392
##	3	2	2	2	2	2	2	2	2	2	2	3	2
##	393	394	395	396	397	398	399	400	401	402	403	404	405
##	2	2	2	2	1	2	2	2	5	2	2	2	2
##	406	407	408	409	410	411	412	413	414	415	416	417	418
##	2	2	2	3	2	2	2	1	1	2	1	2	2
##	420	421	422	423	424	425	426	427	428	429	430	431	432
##	2	2	2	2	2	3	2	2	2	2	1	2	2
##	433	434	435	436	437	438	439	440	441	442	443	444	445
##	2	2	1	2	2	2	2	2	2	2	2	1	1
##	446	447	448	449	450	451	452	453	454	455	456	458	459
##	1	2	2	3	2	2	2	2	2	2	1	5	2
##	460	461	462	463	464	465	466	467	468	469	470	471	472
##	2	1	2	1	2	2	2	2	2	2	2	2	2

##	473	474	475	476	477	478	479	480	481	482	483	485	486
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	487	488	489	490	491	492	493	494	495	496	497	498	499
##	2	2	2	1	2	1	2	2	2	2	1	2	2
##	500	501	502	503	504	505	506	507	508	509	510	511	512
##	2	2	2	3	2	1	2	1	2	2	2	3	2
##	514	515	516	517	518	519	520	521	522	523	524	525	526
##	2	2	2	2	2	1	2	1	2	2	2	2	1
##	527	528	529	530	531	532	533	534	535	536	537	538	539
##	2	2	2	2	2	2	2	2	2	2	2	1	1
##	540	541	542	543	544	545	546	547	548	549	550	551	552
##	2	2	2	2	2	3	2	2	1	2	2	2	2
##	553	554	556	557	558	559	560	561	562	563	564	565	566
##	2	2	2	1	2	2	2	2	1	2	1	2	2
##	567	568	569	570	571	572	573	574	575	576	577	578	579
##	2	2	1	2	1	2	2	2	2	2	2	2	2
##	580	581	582	583	584	585	586	587	588	589	591	592	593
##	2	2	2	1	2	2	1	1	1	2	2	2	2
##	594	595	596	597	598	599	600	601	602	603	604	605	606
##	1	2	2	2	2	2	2	2	2	2	3	2	2
##	607	608	609	610	611	612	613	614	615	616	617	618	619
##	2	1	2	5	2	2	2	2	3	1	2	2	2
##	620	621	622	623	624	625	626	627	628	629	630	631	632
##	2	2	3	2	2	2	2	2	2	2	2	3	2
##	633	634	635	636	637	638	639	640	641	642	643	644	645
##	2	2	2	2	2	5	2	2	2	2	2	2	2
##	646	647	648	649	650	651	652	653	654	655	656	657	658
##	2	1	3	2	2	1	2	2	2	2	2	2	2
##	659	661	662	663	664	665	666	667	668	669	670	671	672
##	2	2	2	1	2	2	2	2	1	2	2	2	2
##	673	674	675	676	677	678	679	680	681	682	683	684	685
##	2	2	2	3	2	1	2	2	2	2	2	2	2
##	686	687	688	689	690	691	692	693	694	695	696	697	698
##	2	2	1	1	2	2	2	1	2	2	5	2	3
##	699	700	701	702	703	704	705	706	707	708	709	710	711
##	2	1	1	2	3	2	2	2	2	2	2	1	2
##	712	713	714	715	716	717	718	719	720	721	722	723	724
##	1	2	2	1	2	2	2	2	2	2	2	2	2
##	725	726	727	728	729	730	731	732	733	734	735	736	737
##	2	2	1	2	2	2	1	2	2	2	2	1	2
##	738	739	740	741	742	743	744	745	746	747	748	749	750
##	2	1	1	2	2	1	2	2	2	2	2	1	2
##	751	752	753	754	755	756	757	758	759	760	761	762	763
##	2	2	5	2	2	2	3	2	3	2	3	2	2
##	764	765	766	767	768	769	770	771	772	773	774	776	777
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	778	779	780	781	782	783	784	785	786	787	788	789	790
##	1	2	2	2	1	2	3	2	2	2	2	2	2
##	791	792	793	794	795	796	797	798	799	800	801	802	803
##	2	2	1	1	2	2	1	2	1	1	1	1	3
##	804	805	806	807	808	809	810	811	812	813	814	815	816
##	2	2	2	5	2	2	2	2	2	2	3	2	2
##	817	818	819	820	821	822	823	824	825	826	827	828	829
##	2	1	2	2	2	2	2	2	2	2	2	2	3

##	830	831	832	833	834	835	836	837	838	839	840	841	842
##	2	2	2	2	2	1	1	2	2	2	1	1	2
##	843	844	845	846	847	848	849	850	851	852	853	854	855
##	2	2	2	1	2	1	3	2	2	2	2	2	2
##	856	857	858	859	860	861	862	863	864	865	866	867	868
##	2	2	2	3	1	2	2	1	5	2	2	2	1
##	869	870	871	872	874	875	876	877	878	879	880	881	882
##	2	2	2	1	2	2	2	1	3	3	2	2	2
##	883	884	885	886	887	888	889	891	892	893	894	895	896
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	897	898	899	900	901	902	903	904	905	906	907	908	909
##	3	1	2	2	2	3	2	5	1	2	2	1	2
##	910	911	912	913	914	915	916	917	918	919	920	921	922
##	1	1	2	2	2	2	2	2	2	2	2	2	1
##	924	925	926	927	928	929	930	931	932	933	934	935	936
##	2	2	2	2	2	2	1	1	2	2	1	2	2
##	937	938	939	940	941	942	943	944	945	946	947	949	950
##	2	1	2	3	2	2	2	2	3	1	2	2	1
##	951	952	953	954	955	956	957	958	959	960	961	962	963
##	2	2	2	1	3	5	2	2	2	1	2	2	2
##	964	965	966	967	968	969	970	971	972	973	974	976	977
##	2	2	2	2	2	2	2	1	2	2	2	2	2
##	978	979	980	981	982	983	984	985	986	987	988	989	990
##	2	2	1	2	2	2	3	2	2	2	2	2	2
##	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003
##	2	2	2	1	2	2	2	2	2	2	2	1	2
##	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016
##	1	1	2	2	2	2	2	2	2	2	1	1	1
##	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029
##	2	2	2	1	2	1	2	2	2	1	2	2	2
##	1030	1031	1032	1033	1034	1036	1037	1038	1039	1040	1041	1042	1043
##	1	3	2	3	1	2	2	1	1	2	2	2	5
##	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
##	2	2	2	2	2	2	3	4	1	2	2	2	1
##	1057	1058	1059	1060	1061	1062	1063	1064	1065	1067	1068	1069	1070
##	2	2	1	2	2	2	2	2	2	2	5	2	1
##	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083
##	2	2	2	2	2	2	2	2	2	2	2	1	2
##	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096
##	1	2	2	2	2	1	2	2	2	3	2	2	1
##	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109
##	1	2	2	2	2	2	2	2	2	3	3	2	2
##	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1121	1122	1123
##	2	2	2	2	1	2	3	2	1	2	2	2	1
##	1124	1125	1126	1127	1128	1129	1130	1131	1132	1138	1139	1140	1141
##	2	2	2	2	1	2	1	2	3	2	2	2	2
##	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154
##	1	2	2	2	2	1	2	2	2	2	2	1	2
##	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167
##	1	2	2	2	2	1	1	2	2	2	2	2	2
##	1168	1169	1170	1172	1173	1174	1175	1176	1178	1179	1180	1181	1182
##	1	1	2	3	1	2	2	3	2	2	1	2	2
##	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195
##	3	2	2	2	2	2	1	2	1	2	2	2	2

##	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208
##	3	2	2	1	2	1	2	2	2	2	2	2	2
##	1209	1210	1211	1212	1213	1216	1217	1218	1219	1220	1221	1222	1223
##	2	2	2	2	2	2	2	2	1	5	2	2	2
##	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236
##	2	2	2	2	2	2	2	2	2	2	3	2	2
##	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262
##	2	2	3	3	1	2	1	1	1	2	3	2	2
##	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275
##	3	2	2	2	2	1	2	1	2	2	2	2	2
##	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288
##	2	2	2	2	2	2	1	2	2	2	2	1	2
##	1289	1290	1291	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302
##	2	2	2	2	2	2	2	1	1	5	2	2	2
##	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315
##	2	2	3	2	2	2	2	2	2	2	2	2	1
##	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1327	1328	1329
##	3	3	2	2	2	2	3	2	3	2	2	2	3
##	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
##	2	2	2	2	5	2	1	1	2	2	3	1	2
##	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355
##	1	2	2	2	2	2	2	2	2	2	2	3	2
##	1356	1358	1359	1360	1361	1362	1363	1364	1365	1366	1368	1369	1370
##	2	2	2	1	2	2	5	2	2	2	2	2	2
##	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1383	1384
##	2	2	1	2	1	2	2	2	2	3	2	2	2
##	1385	1386	1387	1388	1389	1390	1392	1393	1394	1396	1397	1398	1399
##	2	2	2	2	5	2	2	2	1	1	2	2	2
##	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412
##	2	2	2	2	1	1	2	2	2	2	2	2	2
##	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425
##	2	5	1	3	2	1	1	2	2	2	2	5	3
##	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1438	1439
##	2	2	2	2	2	2	2	5	2	2	3	2	2
##	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452
##	2	2	1	1	2	2	1	2	2	2	2	2	2
##	1453	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466
##	2	2	2	2	2	1	2	2	2	2	2	2	2
##	1467	1468	1469	1470	1471	1472	1473	1478	1479	1480	1481	1482	1483
##	2	2	1	2	2	2	2	1	2	3	2	1	2
##	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496
##	2	2	2	1	3	2	2	3	4	2	2	2	2
##	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509
##	2	3	2	2	2	2	2	2	1	1	2	2	3
##	1510	1511	1512	1513	1514	1515	1517	1518	1519	1520	1521	1522	1523
##	2	2	3	3	2	1	2	2	2	2	2	2	1
##	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536
##	2	1	2	2	2	2	1	1	2	2	2	2	2
##	1537	1538	1539	1540	1541	1542	1543	1544	1545	1546	1547	1548	1549
##	2	2	1	2	1	2	2	2	2	2	2	2	2
##	1550	1551	1552	1553	1554	1555	1556	1557	1558	1559	1560	1561	1562
##	1	2	2	3	2	2	2	2	2	2	2	2	2

##	1563	1564	1565	1566	1567	1568	1569	1570	1571	1572	1573	1575	1576
##	2	2	3	2	3	2	2	2	2	5	2	2	2
##	1577	1578	1579	1580	1581	1582	1583	1584	1585	1586	1587	1588	1589
##	2	2	2	5	1	2	1	2	1	2	3	2	2
##	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600	1601	1602
##	2	2	2	1	2	2	2	2	2	1	2	2	2
##	1603	1604	1605	1606	1607	1608	1610	1611	1612	1613	1614	1615	1616
##	1	2	2	3	2	2	2	2	2	2	2	2	2
##	1617	1618	1619	1620	1621	1622	1623	1624	1625	1626	1627	1628	1629
##	2	1	1	2	2	2	3	2	2	1	2	2	2
##	1630	1631	1632	1633	1634	1635	1636	1637	1638	1639	1640	1641	1642
##	2	2	2	2	2	2	3	2	5	1	2	1	2
##	1643	1644	1645	1646	1647	1648	1649	1650	1651	1652	1653	1654	1655
##	2	3	2	2	2	1	2	2	2	2	2	2	2
##	1656	1657	1658	1659	1660	1661	1662	1663	1664	1665	1666	1667	1668
##	2	2	2	1	1	2	1	2	2	3	2	3	2
##	1669	1670	1671	1672	1673	1674	1675	1676	1677	1678	1679	1680	1681
##	3	2	2	2	5	2	2	2	2	1	2	2	2
##	1682	1683	1684	1685	1686	1687	1688	1689	1690	1691	1692	1693	1694
##	1	2	2	1	1	2	2	2	2	2	2	2	2
##	1695	1696	1697	1699	1700	1701	1702	1703	1704	1705	1706	1707	1708
##	2	2	5	2	2	2	2	2	1	1	2	2	2
##	1709	1710	1711	1712	1713	1714	1715	1716	1717	1718	1719	1720	1721
##	2	3	2	2	2	2	2	2	2	2	2	5	2
##	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734
##	1	2	1	1	1	2	2	2	1	2	3	2	2
##	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747
##	2	2	2	1	2	3	1	1	2	2	1	2	2
##	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760
##	1	2	2	2	2	2	2	2	1	2	1	2	2
##	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773
##	2	2	2	2	2	2	2	2	2	2	3	2	2
##	1774	1775	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787
##	3	2	1	2	2	2	3	2	2	2	2	2	1
##	1788	1789	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800
##	2	1	5	2	2	2	2	2	1	2	2	2	2
##	1801	1802	1803	1804	1806	1807	1808	1809	1810	1811	1812	1813	1814
##	2	2	2	2	2	2	2	2	1	2	1	3	2
##	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
##	2	2	1	2	2	2	2	2	2	2	2	2	1
##	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1841
##	2	2	3	2	2	1	2	2	2	2	2	1	2
##	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854
##	2	3	2	2	3	2	2	2	2	2	3	2	2
##	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1868
##	2	2	3	1	2	2	3	2	2	1	2	2	1
##	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881
##	2	2	1	2	2	2	2	1	2	2	2	2	2
##	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
##	2	2	2	2	2	2	2	3	1	3	3	2	2
##	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
##	2	1	1	1	2	1	1	2	2	2	2	2	3

##	1921	1922	1923	1924	1925	1927	1928	1929	1930	1931	1932	1933	1935
##	1	1	2	5	2	2	1	2	2	2	2	2	2
##	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
##	2	2	2	2	2	2	5	2	1	2	1	2	2
##	1949	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
##	1	2	2	2	2	2	2	1	1	2	2	2	2
##	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
##	2	3	2	2	2	3	2	2	2	2	2	2	2
##	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
##	2	2	2	2	2	1	2	2	3	2	2	2	2
##	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
##	2	2	2	2	2	1	2	2	2	5	1	2	2
##	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
##	2	2	2	2	2	3	2	2	2	2	2	2	2
##	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
##	3	2	2	2	2	1	1	2	2	2	5	2	2
##	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2041	2042	2043
##	2	2	2	2	2	2	2	3	2	2	2	2	2
##	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
##	1	2	3	2	2	2	1	2	2	2	2	2	1
##	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071
##	2	2	2	2	2	2	3	2	2	5	2	2	5
##	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084
##	2	2	3	2	3	3	1	2	2	2	2	2	1
##	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097
##	3	2	3	2	2	2	2	5	2	2	1	2	1
##	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110
##	2	2	2	2	1	2	2	2	2	2	1	3	1
##	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123
##	2	2	2	2	2	3	1	2	3	2	2	2	2
##	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136
##	1	2	2	2	2	1	2	2	3	2	2	2	2
##	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149
##	2	2	2	2	2	1	2	2	3	2	2	2	2
##	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162
##	2	2	2	2	3	2	2	2	2	2	2	2	1
##	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175
##	2	2	3	2	2	2	2	3	2	3	2	2	3
##	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201
##	5	1	1	2	3	3	2	2	2	2	2	1	1
##	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214
##	2	5	2	1	2	2	2	3	2	2	1	2	3
##	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227
##	2	3	3	2	2	2	2	2	3	2	2	2	2
##	2228	2229	2230	2231	2232	2233	2234	2235	2237	2238	2239	2240	2241
##	2	2	2	2	3	2	2	2	2	2	2	2	1
##	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254
##	2	3	3	2	2	2	3	2	3	2	2	2	1
##	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267
##	2	2	2	2	3	4	3	2	2	2	2	2	1
##	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280
##	2	1	2	2	3	2	2	5	2	1	2	3	2

##	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293
##	1	3	2	1	2	1	2	2	2	2	3	2	3
##	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306
##	2	2	2	2	2	1	2	3	2	2	2	3	2
##	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319
##	1	2	2	3	1	2	2	2	2	2	2	2	2
##	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332
##	2	2	2	1	2	1	2	1	2	2	2	2	2
##	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345
##	2	2	2	2	2	2	2	2	3	2	2	1	2
##	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358
##	1	2	2	1	2	2	2	1	1	2	2	2	2
##	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371
##	2	3	3	2	2	2	2	2	2	2	1	2	2
##	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384
##	3	1	2	2	2	2	2	2	2	2	2	2	2
##	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397
##	2	2	2	2	2	2	2	2	5	1	2	1	2
##	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410
##	2	2	2	2	1	2	2	2	2	2	2	2	2
##	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423
##	2	2	5	2	2	1	2	2	2	3	1	2	2
##	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436
##	2	1	2	3	2	2	1	2	2	1	2	2	1
##	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449
##	2	2	2	2	3	2	2	2	2	2	2	2	2
##	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462
##	2	1	2	2	2	1	2	2	2	1	2	2	2
##	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475
##	2	2	3	2	5	1	5	2	2	2	2	2	2
##	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488
##	2	3	2	2	2	2	2	3	2	2	2	1	2
##	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501
##	2	2	2	2	2	2	2	2	2	3	1	2	2
##	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514
##	2	2	2	1	2	2	2	2	2	2	2	2	2
##	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540
##	2	2	2	2	1	2	2	1	1	2	1	2	3
##	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553
##	2	2	3	2	2	1	2	2	1	2	2	2	2
##	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566
##	3	2	2	2	3	2	1	2	2	1	2	2	1
##	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579
##	2	2	2	1	2	2	1	2	5	1	2	1	2
##	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592
##	3	3	1	2	3	3	2	2	2	2	4	2	2
##	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605
##	2	2	2	2	2	2	3	1	1	2	5	2	5
##	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618
##	1	2	1	2	2	2	2	2	2	3	2	1	2
##	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631
##	3	2	2	2	1	2	1	3	2	2	2	2	2

##	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645
##	2	3	2	2	2	1	2	2	1	2	2	2	2
##	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658
##	2	2	2	2	2	2	1	2	1	2	2	2	2
##	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671
##	2	4	2	2	2	1	2	2	2	2	2	2	2
##	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684
##	2	1	2	1	2	2	2	2	2	2	2	2	1
##	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697
##	2	2	2	3	2	2	2	2	2	2	2	1	2
##	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710
##	2	2	1	2	2	2	1	2	1	2	2	3	2
##	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723
##	2	2	2	2	2	1	1	3	2	2	2	3	2
##	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736
##	2	2	2	2	1	2	2	2	1	2	2	2	2
##	2737	2738	2739	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750
##	2	2	2	2	2	2	1	2	3	2	2	2	2
##	2751	2752	2753	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764
##	2	2	2	2	5	2	2	2	2	2	2	2	2
##	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777
##	2	2	1	1	2	3	2	2	2	2	2	1	1
##	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790
##	2	2	3	2	2	3	2	3	2	2	2	2	5
##	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803
##	2	3	2	2	5	2	2	2	1	2	2	3	2
##	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816
##	2	2	2	1	2	2	2	3	2	2	3	2	2
##	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829
##	2	1	2	2	2	2	2	2	2	2	2	2	2
##	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842
##	5	2	2	2	2	1	2	2	3	2	1	2	2
##	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855
##	2	2	2	2	2	2	1	2	2	2	2	2	2
##	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868
##	1	2	2	2	3	3	2	2	2	2	2	2	2
##	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881
##	2	2	1	2	2	5	1	2	2	1	2	2	1
##	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894
##	2	1	1	3	2	2	3	2	1	2	2	2	2
##	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907
##	2	2	1	2	2	2	2	3	3	2	2	3	2
##	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920
##	2	2	2	1	2	2	5	2	2	2	2	2	2
##	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933
##	1	1	3	2	2	3	2	3	2	2	2	2	2
##	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946
##	2	2	2	2	2	2	3	2	2	5	2	2	2
##	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959
##	2	2	2	2	3	2	2	2	2	2	5	2	2
##	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972
##	2	2	2	2	2	2	2	2	2	3	2	1	2
##	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985
##	2	2	2	3	1	1	2	2	2	1	2	2	2



##	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998
##	2	2	2	2	2	2	2	2	3	1	2	1	2
##	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011
##	2	2	2	2	1	2	2	2	2	2	2	2	2
##	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024
##	3	1	2	5	2	2	2	2	2	2	2	2	2
##	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037
##	2	2	2	2	2	3	2	2	1	2	2	1	2
##	3038	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050
##	2	3	2	3	2	2	2	2	2	1	2	2	2
##	3051	3052	3053	3054	3055	3056	3057	3058	3059	3060	3061	3062	3063
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	3064	3065	3066	3067	3068	3069	3070	3071	3072	3073	3074	3075	3076
##	2	3	1	2	2	2	2	2	1	2	2	1	1
##	3077	3078	3079	3080	3081	3082	3083	3084	3085	3086	3087	3088	3089
##	2	2	2	2	2	2	2	2	2	2	1	2	1
##	3090	3091	3092	3093	3094	3095	3096	3097	3098	3099	3100	3101	3102
##	2	2	2	2	2	3	1	2	2	2	2	1	2
##	3103	3104	3105	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115
##	2	2	2	3	2	2	2	2	4	1	2	2	2
##	3116	3117	3118	3119	3120	3121	3122	3123	3124	3125	3126	3127	3128
##	2	2	1	1	3	2	2	2	2	2	2	2	2
##	3129	3130	3131	3132	3133	3134	3135	3136	3137	3138	3139	3140	3141
##	2	3	5	2	2	3	2	2	2	1	2	2	2
##	3142	3143	3144	3145	3146	3147	3148	3149	3150	3151	3152	3153	3154
##	1	2	2	1	2	2	2	2	3	1	1	2	3
##	3155	3156	3157	3158	3159	3160	3161	3162	3163	3164	3165	3166	3167
##	2	2	1	2	2	1	1	2	2	2	5	2	1
##	3168	3169	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	3180
##	2	2	2	2	3	2	2	2	1	2	2	2	2
##	3181	3182	3183	3184	3185	3186	3187	3188	3189	3190	3191	3192	3193
##	1	2	1	2	5	2	2	2	2	2	5	2	2
##	3194	3195	3196	3197	3198	3199	3200	3201	3202	3203	3204	3205	3206
##	3	5	2	2	2	2	1	5	2	2	2	2	2
##	3207	3208	3209	3210	3211	3212	3213	3214	3215	3216	3217	3218	3219
##	2	3	2	2	2	2	2	2	2	2	2	2	2
##	3220	3221	3222	3223	3224	3225	3226	3227	3228	3229	3230	3231	3233
##	3	3	2	1	2	2	2	1	2	2	2	2	2
##	3234	3235	3236	3237	3238	3239	3240	3241	3242	3243	3244	3245	3246
##	2	2	2	2	2	2	2	3	2	2	2	2	2
##	3247	3248	3249	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259
##	2	2	3	2	2	2	2	2	2	2	2	1	2
##	3260	3261	3262	3263	3264	3265	3266	3267	3268	3269	3270	3271	3272
##	2	2	2	2	2	2	2	3	2	3	2	1	5
##	3274	3275	3276	3277	3278	3279	3280	3281	3283	3284	3285	3286	3287
##	2	2	2	2	2	2	2	2	1	2	1	1	3
##	3288	3289	3290	3291	3292	3293	3294	3295	3296	3297	3298	3299	3300
##	2	2	2	2	2	2	3	2	1	2	2	2	2
##	3301	3302	3303	3304	3305	3306	3307	3308	3309	3310	3311	3312	3313
##	2	1	2	1	2	1	2	5	2	2	2	2	5
##	3314	3315	3316	3317	3318	3319	3320	3321	3322	3323	3324	3325	3326
##	2	2	2	2	5	2	2	3	2	2	2	1	2
##	3327	3328	3329	3330	3331	3332	3333	3334	3335	3336	3337	3338	3339
##	2	2	1	2	2	2	2	2	2	2	2	2	5

##	3340	3341	3342	3343	3344	3345	3346	3347	3348	3349	3350	3351	3352
##	2	4	3	1	2	2	2	2	2	1	1	2	2
##	3353	3354	3355	3356	3357	3358	3359	3360	3361	3362	3363	3364	3365
##	2	2	2	5	1	2	2	2	3	1	2	2	2
##	3366	3367	3368	3369	3370	3371	3372	3373	3374	3375	3376	3377	3378
##	1	2	2	2	2	3	2	2	2	2	2	1	2
##	3379	3380	3381	3382	3383	3384	3385	3386	3387	3388	3389	3390	3391
##	2	2	5	5	2	2	2	2	2	2	2	2	2
##	3392	3393	3394	3395	3396	3397	3398	3399	3400	3401	3402	3403	3404
##	2	2	3	2	2	2	2	2	2	2	2	3	2
##	3405	3406	3407	3408	3409	3410	3411	3412	3413	3414	3415	3416	3417
##	2	2	1	2	2	1	2	2	2	2	2	2	2
##	3418	3419	3420	3421	3422	3423	3424	3425	3426	3427	3428	3429	3430
##	2	2	2	3	2	2	2	2	3	2	2	2	2
##	3431	3432	3433	3434	3435	3436	3437	3438	3439	3440	3441	3442	3443
##	2	1	1	2	1	5	2	2	1	2	2	2	3
##	3444	3445	3446	3447	3448	3449	3450	3451	3452	3453	3454	3455	3456
##	2	2	2	2	1	2	3	2	2	2	2	2	1
##	3457	3458	3459	3460	3461	3462	3463	3464	3465	3466	3467	3468	3469
##	1	2	2	2	2	1	2	2	2	1	2	2	3
##	3470	3471	3472	3473	3474	3475	3476	3477	3478	3479	3480	3481	3482
##	2	2	2	2	2	2	2	2	2	2	2	1	2
##	3483	3484	3485	3486	3487	3488	3489	3490	3491	3492	3493	3494	3495
##	2	2	2	2	2	2	3	2	2	3	2	1	2
##	3496	3497	3498	3499	3500	3501	3502	3503	3504	3505	3506	3507	3508
##	2	2	1	1	1	2	2	1	2	2	3	2	2
##	3509	3510	3511	3512	3513	3514	3515	3516	3517	3518	3519	3520	3521
##	2	2	2	2	3	2	5	2	2	2	2	1	2
##	3522	3523	3524	3525	3526	3527	3528	3529	3530	3531	3532	3533	3534
##	1	2	3	3	3	2	2	3	4	2	2	2	2
##	3535	3536	3537	3538	3539	3540	3541	3542	3543	3544	3545	3546	3547
##	2	2	2	3	2	2	3	1	5	2	3	1	5
##	3548	3549	3550	3551	3552	3553	3554	3555	3556	3557	3558	3559	3560
##	2	2	2	1	2	2	2	2	2	2	2	1	2
##	3561	3562	3563	3564	3565	3566	3567	3568	3569	3570	3571	3572	3573
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	3574	3575	3576	3577	3579	3580	3581	3582	3583	3584	3585	3586	3587
##	2	2	2	2	2	1	1	5	5	2	2	2	2
##	3588	3589	3590	3591	3592	3593	3594	3595	3596	3597	3598	3599	3600
##	2	2	1	1	2	2	2	3	2	2	2	2	2
##	3601	3602	3603	3604	3605	3606	3607	3608	3609	3610	3611	3612	3613
##	2	2	3	2	2	1	2	2	2	1	2	2	2
##	3614	3615	3616	3617	3618	3619	3620	3621	3622	3623	3624	3625	3626
##	3	2	2	2	1	2	2	2	2	2	2	2	2
##	3627	3628	3629	3630	3631	3632	3633	3634	3635	3636	3637	3638	3639
##	2	2	5	2	2	2	1	2	3	2	2	2	2
##	3640	3641	3642	3643	3644	3645	3646	3647	3648	3649	3650	3652	3653
##	1	2	2	2	2	2	1	3	2	2	1	2	2
##	3654	3655	3656	3657	3658	3659	3660	3661	3662	3663	3665	3666	3667
##	1	2	2	2	2	2	2	2	2	2	3	1	2
##	3668	3669	3670	3671	3672	3673	3674	3675	3676	3677	3678	3679	3680
##	2	2	2	2	2	2	2	2	2	2	1	2	2
##	3681	3682	3683	3684	3685	3686	3687	3688	3689	3690	3691	3692	3693
##	2	2	2	1	2	2	2	2	2	2	2	2	2

##	3694	3695	3696	3697	3698	3699	3700	3701	3702	3703	3704	3705	3706
##	2	2	2	2	2	2	2	2	2	3	2	2	2
##	3707	3708	3709	3710	3711	3712	3713	3714	3715	3716	3717	3718	3719
##	1	2	2	2	2	2	2	2	5	2	2	2	2
##	3720	3721	3723	3724	3725	3726	3727	3728	3729	3730	3731	3732	3733
##	1	2	2	2	2	2	2	2	2	2	2	2	2
##	3734	3735	3736	3737	3738	3739	3740	3741	3742	3743	3744	3745	3746
##	2	2	2	2	2	2	1	2	5	2	1	2	2
##	3747	3748	3749	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759
##	1	1	1	2	2	2	3	2	2	2	2	2	2
##	3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770	3771	3772
##	2	2	2	2	2	3	2	2	2	3	2	2	2
##	3773	3774	3775	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785
##	3	2	2	2	2	2	5	2	2	2	1	1	2
##	3786	3787	3788	3789	3790	3791	3792	3793	3794	3795	3796	3797	3798
##	1	2	2	3	2	1	2	2	2	1	2	2	5
##	3799	3800	3801	3802	3803	3804	3805	3806	3807	3808	3809	3810	3811
##	2	3	2	2	2	2	2	2	1	2	2	2	2
##	3812	3813	3814	3815	3816	3817	3818	3819	3820	3821	3822	3823	3824
##	2	3	2	2	5	1	5	2	2	2	2	2	2
##	3825	3826	3827	3828	3829	3830	3831	3832	3833	3834	3835	3836	3837
##	2	5	2	2	1	2	2	2	2	2	1	2	2
##	3838	3839	3840	3841	3842	3843	3844	3845	3846	3847	3848	3849	3850
##	2	2	2	1	1	2	2	2	2	2	3	2	2
##	3851	3852	3853	3854	3855	3856	3857	3858	3859	3860	3861	3862	3863
##	1	2	2	2	1	2	2	2	2	2	2	2	2
##	3864	3865	3866	3867	3868	3869	3870	3871	3872	3873	3874	3875	3876
##	2	3	2	1	2	2	3	2	2	1	2	2	2
##	3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887	3888	3889
##	2	2	2	2	2	2	1	2	2	1	2	2	2
##	3890	3891	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902	3903
##	1	2	2	2	1	3	2	2	2	5	2	2	2
##	3904	3905	3906	3907	3908	3909	3910	3911	3912	3913	3914	3915	3916
##	2	2	2	1	2	2	2	2	2	2	2	2	2
##	3917	3918	3919	3920	3921	3922	3923	3924	3925	3926	3927	3928	3929
##	1	2	2	2	3	2	2	2	2	2	2	2	2
##	3930	3931	3932	3933	3934	3935	3936	3937	3938	3939	3940	3941	3942
##	2	2	1	2	2	3	2	2	2	2	2	2	2
##	3943	3944	3945	3946	3947	3948	3949	3950	3951	3952	3953	3954	3955
##	2	2	3	2	2	5	2	1	2	3	2	2	2
##	3956	3957	3958	3959	3960	3961	3962	3963	3964	3965	3966	3967	3968
##	3	2	2	3	2	2	2	2	2	2	2	3	3
##	3969	3970	3971	3972	3973	3974	3975	3976	3977	3978	3979	3980	3981
##	1	3	2	2	2	2	1	2	2	2	3	2	2
##	3982	3983	3984	3985	3986	3987	3988	3989	3990	3991	3992	3993	3994
##	2	2	2	2	2	2	1	2	2	2	2	2	2
##	3995	3996	3997	3998	3999	4000	4001	4002	4003	4004	4005	4006	4007
##	2	2	2	2	2	2	2	2	5	2	2	5	5
##	4008	4009	4010	4011	4012	4013	4014	4015	4016	4017	4018	4019	4020
##	2	2	2	2	2	5	2	2	2	2	2	1	2
##	4021	4022	4023	4024	4025	4026	4027	4028	4029	4030	4031	4032	4033
##	2	2	1	3	1	2	2	3	2	2	1	2	2
##	4034	4035	4036	4037	4038	4039	4040	4041	4042	4043	4044	4045	4046
##	2	2	1	2	2	2	1	2	1	2	3	2	2

##	4047	4048	4049	4050	4051	4052	4053	4054	4055	4056	4057	4058	4059
##	2	2	3	3	5	2	2	2	2	2	2	1	2
##	4060	4061	4062	4063	4064	4065	4066	4067	4068	4069	4070	4071	4072
##	1	2	1	2	2	2	2	2	2	2	4	5	2
##	4073	4074	4075	4076	4077	4078	4079	4080	4081	4082	4083	4084	4085
##	1	1	2	3	2	2	2	2	1	2	2	2	2
##	4086	4087	4088	4089	4090	4091	4092	4093	4094	4095	4096	4097	4098
##	2	2	1	2	2	1	2	2	2	2	1	3	2
##	4099	4100	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111
##	2	2	1	2	1	1	2	2	1	2	2	2	2
##	4112	4113	4114	4115	4116	4117	4118	4119	4120	4121	4122	4123	4124
##	2	5	2	2	2	2	2	3	2	2	2	3	2
##	4125	4126	4127	4128	4129	4130	4131	4132	4133	4134	4135	4136	4137
##	3	2	2	3	2	2	3	2	2	2	3	2	2
##	4138	4139	4140	4141	4142	4143	4144	4145	4146	4147	4148	4149	4150
##	1	2	2	1	2	2	2	2	2	2	5	2	2
##	4151	4152	4153	4154	4155	4156	4157	4158	4159	4160	4161	4162	4163
##	2	2	1	3	2	2	2	2	1	2	5	1	1
##	4165	4166	4167	4168	4169	4170	4171	4172	4173	4174	4175	4176	4177
##	2	1	2	1	2	2	1	2	2	2	2	2	1
##	4178	4179	4180	4181	4182	4184	4185	4186	4187	4188	4189	4190	4191
##	2	2	2	2	2	5	3	5	1	2	1	2	2
##	4192	4193	4194	4195	4196	4197	4198	4199	4200	4201	4202	4203	4204
##	2	2	2	5	2	2	2	2	2	2	1	2	2
##	4205	4206	4207	4208	4209	4210	4211	4212	4213	4214	4215	4216	4217
##	2	2	2	2	2	2	2	2	2	2	2	2	3
##	4218	4219	4220	4221	4222	4223	4224	4225	4226	4227	4228	4229	4230
##	2	2	2	2	2	3	2	2	1	2	2	2	2
##	4231	4233	4234	4235	4236	4237	4238	4239	4240	4241	4242	4243	4244
##	2	3	1	2	2	2	2	2	2	2	2	2	2
##	4245	4246	4247	4248	4249	4250	4251	4252	4253	4254	4255	4256	4257
##	2	2	2	3	2	5	1	2	1	1	1	1	2
##	4258	4259	4260	4261	4262	4263	4264	4265	4266	4267	4268	4269	4270
##	1	2	3	3	2	2	2	2	2	2	2	2	2
##	4271	4272	4273	4274	4275	4276	4277	4278	4279	4280	4281	4282	4283
##	2	3	2	1	1	2	1	3	2	3	2	1	3
##	4284	4285	4286	4287	4288	4289	4290	4291	4292	4293	4294	4295	4296
##	2	2	2	2	2	1	2	2	1	2	5	1	2
##	4297	4298	4299	4300	4301	4302	4303	4304	4305	4306	4307	4308	4309
##	2	2	2	2	2	2	3	5	2	1	2	3	3
##	4310	4311	4312	4313	4314	4315	4316	4317	4318	4319	4320	4321	4322
##	2	2	2	2	3	2	2	2	3	2	1	2	2
##	4323	4324	4325	4326	4327	4328	4329	4330	4331	4332	4333	4334	4335
##	2	2	2	2	3	2	1	1	2	1	3	2	1
##	4336	4337	4338	4339	4340	4341	4342	4343	4345	4346	4347	4348	4349
##	2	2	2	1	5	2	2	2	2	2	2	2	2
##	4350	4351	4352	4353	4354	4355	4356	4357	4358	4359	4360	4361	4362
##	1	2	2	2	2	2	2	2	2	5	3	5	2
##	4363	4364	4365	4366	4367	4368	4369	4370	4371	4372	4373	4374	4376
##	2	2	1	2	2	2	2	2	2	2	2	2	2
##	4377	4378	4379	4380	4381	4382	4383	4384	4385	4386	4387	4388	4389
##	2	1	2	2	2	2	2	2	2	2	2	1	2
##	4390	4391	4392	4393	4394	4395	4396	4397	4398	4399	4400	4401	4402
##	2	2	2	3	1	1	2	3	2	2	2	3	2

##	4403	4405	4406	4407	4408	4409	4410	4411	4412	4413	4414	4415	4416
##	2	2	2	2	1	2	1	1	2	2	2	2	2
##	4417	4418	4419	4420	4421	4422	4423	4424	4425	4426	4428	4429	4430
##	2	2	2	3	2	2	1	2	2	2	2	2	1
##	4431	4432	4433	4434	4435	4436	4437	4438	4439	4440	4441	4442	4443
##	2	5	1	3	2	1	5	2	2	2	1	1	2
##	4444	4445	4446	4447	4448	4449	4450	4451	4452	4453	4454	4455	4456
##	2	2	2	2	3	2	2	2	2	2	2	2	2
##	4457	4458	4459	4460	4461	4462	4463	4465	4466	4467	4468	4469	4470
##	2	2	5	1	1	2	2	2	3	2	2	2	2
##	4471	4472	4473	4474	4475	4476	4477	4478	4479	4480	4481	4482	4483
##	2	2	2	2	2	2	2	2	2	1	1	2	2
##	4484	4485	4486	4487	4488	4489	4491	4492	4493	4494	4495	4496	4497
##	1	2	2	2	2	3	2	2	2	5	2	2	3
##	4498	4499	4500	4501	4502	4503	4504	4505	4506	4507	4508	4509	4510
##	2	2	2	2	2	2	1	3	2	2	2	2	2
##	4511	4512	4513	4514	4515	4516	4517	4518	4519	4520	4521	4522	4523
##	3	2	2	2	2	1	1	2	1	3	2	2	2
##	4524	4525	4526	4527	4528	4529	4530	4531	4532	4533	4534	4535	4536
##	3	1	2	2	2	2	5	2	2	3	1	2	2
##	4537	4538	4539	4540	4541	4542	4543	4544	4545	4546	4547	4548	4549
##	2	2	2	2	2	2	1	2	2	2	3	2	3
##	4550	4551	4552	4554	4555	4556	4557	4558	4559	4560	4561	4562	4563
##	2	2	2	2	1	2	2	2	3	1	2	2	2
##	4564	4565	4566	4567	4568	4569	4570	4571	4572	4573	4574	4575	4576
##	2	3	2	2	2	2	2	2	2	2	5	2	1
##	4577	4578	4579	4580	4581	4582	4583	4584	4585	4586	4587	4588	4589
##	2	2	2	2	2	2	2	2	2	2	1	2	2
##	4590	4591	4592	4593	4594	4595	4596	4597	4598	4599	4600	4601	4602
##	1	2	3	2	2	2	2	2	2	3	2	2	2
##	4603	4604	4605	4606	4607	4608	4609	4610	4611	4612	4613	4614	4615
##	2	1	2	2	2	2	2	1	2	2	2	1	2
##	4616	4617	4618	4619	4620	4621	4622	4623	4624	4625	4626	4627	4628
##	2	2	3	2	1	1	3	3	5	2	1	2	2
##	4629	4630	4631	4632	4633	4634	4635	4636	4637	4638	4639	4640	4641
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	4642	4643	4644	4645	4646	4647	4648	4649	4650	4651	4652	4653	4654
##	5	5	1	2	2	2	2	2	2	2	5	2	1
##	4655	4656	4657	4658	4659	4660	4661	4662	4663	4664	4665	4666	4667
##	1	2	2	3	2	3	2	2	2	2	2	2	2
##	4668	4669	4670	4671	4672	4673	4674	4675	4676	4677	4678	4679	4680
##	2	2	2	2	2	1	2	1	2	2	2	2	3
##	4681	4682	4683	4684	4685	4686	4687	4688	4689	4690	4691	4692	4693
##	2	2	1	2	2	2	2	2	2	2	2	2	2
##	4694	4695	4696	4697	4698	4699	4700	4701	4702	4703	4704	4705	4706
##	2	3	2	2	2	2	1	3	2	3	2	2	2
##	4707	4708	4709	4710	4711	4712	4713	4714	4715	4716	4717	4718	4719
##	3	3	2	1	1	2	2	2	2	2	2	2	1
##	4720	4721	4722	4723	4724	4725	4726	4727	4728	4729	4730	4731	4732
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	4733	4734	4735	4736	4737	4738	4739	4740	4741	4742	4743	4744	4745
##	2	2	2	2	2	2	2	2	2	2	2	1	2
##	4746	4747	4748	4749	4750	4751	4752	4753	4754	4755	4756	4757	4758
##	2	2	2	2	2	3	1	2	2	2	2	2	2

##	4759	4760	4761	4762	4763	4764	4765	4766	4767	4768	4769	4770	4771
##	2	2	2	3	2	2	2	2	2	2	2	2	2
##	4772	4773	4774	4775	4776	4777	4778	4779	4780	4781	4782	4783	4784
##	2	2	2	3	2	3	2	2	2	3	2	2	2
##	4785	4786	4787	4788	4789	4790	4791	4792	4793	4794	4795	4796	4797
##	2	1	2	2	1	2	3	2	2	5	2	2	2
##	4798	4799	4800	4801	4802	4803	4804	4805	4806	4807	4808	4809	4810
##	2	2	2	3	2	1	1	1	2	2	2	3	2
##	4811	4812	4813	4814	4815	4816	4817	4819	4820	4821	4822	4823	4824
##	2	1	2	2	2	2	3	2	2	3	3	2	2
##	4825	4826	4827	4828	4829	4830	4831	4832	4833	4834	4835	4836	4837
##	1	1	2	2	1	1	2	2	2	2	2	1	2
##	4838	4839	4840	4841	4842	4843	4844	4845	4846	4847	4848	4849	4850
##	2	2	2	2	3	1	2	2	2	2	1	2	2
##	4851	4852	4853	4854	4855	4856	4857	4858	4859	4860	4861	4862	4863
##	2	2	2	2	2	2	2	2	1	2	2	2	2
##	4864	4865	4866	4867	4868	4869	4870	4871	4872	4873	4874	4875	4876
##	1	1	5	2	2	2	1	2	1	2	2	3	2
##	4877	4878	4879	4880	4881	4882	4883	4885	4886	4887	4888	4889	4890
##	2	1	3	2	2	1	2	2	2	2	2	2	3
##	4891	4892	4893	4894	4895	4896	4897	4898	4899	4900	4901	4902	4903
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	4904	4905	4906	4907	4908	4909	4910	4911	4912	4913	4915	4916	4917
##	3	2	1	2	2	2	2	2	2	2	2	2	2
##	4918	4919	4920	4921	4922	4923	4924	4925	4926	4927	4928	4929	4930
##	2	3	1	3	1	5	3	2	2	2	2	3	2
##	4931	4932	4933	4934	4935	4936	4937	4938	4939	4940	4941	4942	4943
##	2	2	3	2	2	2	2	2	2	2	2	5	2
##	4944	4945	4946	4947	4948	4949	4950	4951	4952	4953	4954	4955	4956
##	2	2	3	2	2	2	2	2	2	2	3	1	2
##	4957	4958	4959	4960	4961	4962	4963	4964	4965	4966	4967	4968	4969
##	2	1	2	2	2	2	2	1	2	2	5	2	2
##	4970	4971	4972	4973	4974	4975	4976	4977	4978	4979	4980	4981	4982
##	2	2	2	2	1	2	3	2	2	2	2	2	2
##	4983	4984	4985	4986	4987	4988	4989	4990	4991	4992	4993	4994	4995
##	2	2	2	2	3	3	2	2	2	1	3	2	2
##	4996	4997	4998	4999	5000	5001	5002	5003	5004	5005	5006	5007	5008
##	2	3	2	5	1	2	2	2	2	2	3	2	2
##	5009	5010	5011	5012	5013	5014	5015	5016	5017	5018	5019	5020	5021
##	2	2	1	1	2	2	2	1	2	2	3	2	2
##	5022	5023	5024	5025	5026	5027	5028	5029	5030	5031	5032	5033	5034
##	2	2	3	2	2	2	2	2	3	5	2	2	2
##	5035	5036	5037	5038	5040	5041	5042	5043	5045	5046	5047	5048	5049
##	5	2	2	2	2	2	2	2	2	2	2	2	2
##	5050	5051	5052	5053	5054	5055	5056	5058	5059	5060	5061	5062	5063
##	1	2	2	2	2	1	2	3	3	1	2	2	1
##	5064	5065	5066	5067	5068	5069	5070	5071	5072	5073	5074	5075	5076
##	2	2	2	2	2	1	2	2	2	3	1	2	3
##	5077	5078	5079	5080	5081	5082	5083	5084	5085	5086	5087	5088	5089
##	2	1	2	2	2	2	5	2	2	1	2	1	2
##	5090	5091	5092	5093	5094	5095	5096	5097	5098	5099	5100	5101	5102
##	3	2	1	1	2	2	1	2	2	2	2	3	2
##	5103	5104	5105	5106	5107	5108	5109	5110	5111	5112	5113	5114	5115
##	2	2	2	2	2	2	2	2	2	2	2	2	1

##	5116	5117	5118	5120	5121	5122	5123	5124	5125	5126	5127	5128	5129
##	1	2	2	2	1	1	2	3	2	2	2	2	2
##	5130	5131	5132	5133	5134	5135	5136	5137	5138	5139	5140	5141	5142
##	1	5	2	2	2	2	2	2	1	1	2	2	2
##	5143	5144	5145	5146	5147	5148	5149	5150	5151	5152	5153	5154	5155
##	3	2	2	2	2	2	2	2	2	2	1	2	2
##	5156	5157	5158	5159	5160	5161	5162	5163	5164	5165	5166	5167	5168
##	2	1	1	2	3	1	1	2	2	1	2	2	2
##	5169	5170	5171	5172	5173	5174	5175	5176	5177	5178	5179	5180	5181
##	2	1	2	2	2	2	3	2	2	1	2	2	2
##	5182	5183	5184	5185	5186	5187	5188	5189	5190	5191	5192	5193	5194
##	2	2	2	2	2	1	2	3	2	3	3	2	2
##	5195	5196	5197	5198	5201	5202	5203	5204	5205	5206	5207	5208	5209
##	2	2	2	2	2	2	2	2	2	2	2	2	3
##	5210	5211	5212	5213	5214	5215	5216	5217	5218	5219	5220	5221	5222
##	1	2	2	2	2	2	3	2	2	2	2	2	2
##	5223	5224	5225	5226	5227	5228	5229	5230	5231	5232	5233	5234	5235
##	2	2	2	1	3	2	2	2	2	2	2	3	2
##	5236	5237	5238	5239	5240	5241	5242	5243	5244	5245	5246	5247	5248
##	2	2	2	2	2	2	2	3	2	5	2	2	2
##	5249	5250	5251	5252	5253	5254	5256	5257	5258	5259	5260	5261	5262
##	3	2	2	2	2	2	2	2	2	1	2	3	2
##	5263	5264	5265	5266	5267	5268	5269	5270	5271	5272	5273	5274	5275
##	2	2	1	2	3	2	2	2	2	1	2	2	1
##	5276	5278	5279	5280	5281	5282	5283	5284	5285	5286	5288	5289	5290
##	2	3	2	2	3	1	2	2	2	2	5	2	5
##	5291	5292	5293	5294	5295	5296	5297	5298	5299	5300	5301	5302	5303
##	2	2	1	2	2	5	1	1	2	2	2	2	2
##	5304	5305	5306	5307	5308	5309	5310	5311	5312	5313	5314	5315	5316
##	2	2	2	2	1	1	2	2	2	2	2	2	2
##	5317	5318	5319	5320	5321	5322	5323	5324	5325	5326	5327	5328	5329
##	2	2	2	2	2	2	2	2	2	2	2	2	1
##	5330	5331	5332	5333	5334	5335	5336	5337	5338	5339	5340	5341	5342
##	2	1	2	2	2	1	1	2	3	3	2	1	2
##	5343	5344	5345	5346	5347	5348	5349	5350	5351	5352	5353	5354	5355
##	2	1	2	1	2	1	2	2	1	2	2	2	2
##	5357	5358	5359	5360	5361	5362	5363	5364	5365	5366	5367	5368	5369
##	2	2	2	1	2	2	2	1	2	3	2	2	2
##	5370	5371	5372	5373	5374	5375	5376	5377	5378	5379	5380	5381	5382
##	2	2	2	2	2	3	2	2	1	1	2	2	1
##	5383	5384	5385	5386	5387	5388	5389	5390	5391	5392	5393	5394	5395
##	2	2	2	3	1	2	2	3	2	3	2	2	3
##	5396	5397	5398	5399	5400	5401	5402	5403	5404	5405	5406	5407	5409
##	2	2	3	2	2	2	5	2	2	2	1	2	1
##	5410	5411	5412	5413	5414	5415	5416	5417	5418	5419	5420	5421	5422
##	2	3	2	2	3	1	2	1	2	2	2	2	2
##	5423	5424	5425	5426	5427	5428	5429	5430	5431	5432	5433	5434	5435
##	2	3	2	2	1	2	2	2	2	2	1	2	3
##	5436	5437	5438	5439	5440	5441	5442	5443	5444	5445	5446	5447	5448
##	2	2	3	2	2	2	3	2	3	2	2	2	2
##	5449	5450	5451	5452	5453	5454	5455	5456	5457	5458	5459	5460	5461
##	2	2	2	2	2	2	1	2	2	3	3	2	3
##	5462	5463	5464	5465	5466	5467	5468	5469	5470	5471	5472	5473	5474
##	2	2	2	4	2	2	2	2	2	2	2	2	2

##	5475	5476	5477	5478	5479	5480	5481	5482	5483	5484	5485	5486	5487
##	3	2	2	2	2	5	3	2	2	3	2	2	2
##	5488	5489	5490	5491	5492	5493	5494	5495	5496	5497	5498	5499	5500
##	2	2	2	2	5	2	2	5	1	5	2	2	2
##	5501	5502	5503	5504	5505	5506	5507	5508	5509	5510	5511	5512	5513
##	2	2	2	2	2	2	2	5	2	3	2	2	2
##	5514	5515	5516	5517	5518	5519	5520	5521	5522	5523	5524	5525	5526
##	2	2	2	2	2	2	2	2	2	2	2	5	2
##	5527	5528	5529	5530	5531	5532	5533	5534	5535	5536	5537	5538	5539
##	1	2	1	2	3	2	2	2	2	2	2	2	2
##	5540	5541	5542	5543	5544	5545	5546	5547	5548	5549	5550	5551	5552
##	2	2	2	5	2	1	2	2	2	3	2	2	2
##	5553	5554	5555	5556	5557	5558	5559	5560	5561	5562	5563	5564	5565
##	2	2	1	2	3	2	2	2	2	2	2	2	2
##	5566	5567	5568	5569	5570	5571	5572	5573	5574	5575	5576	5577	5578
##	2	2	2	2	3	2	3	3	2	2	2	2	2
##	5579	5580	5581	5582	5583	5584	5585	5586	5587	5588	5589	5590	5591
##	2	3	2	2	1	2	2	2	3	2	2	1	2
##	5592	5593	5594	5595	5596	5597	5598	5599	5600	5601	5602	5603	5604
##	2	1	1	2	2	2	2	2	1	2	1	2	2
##	5605	5606	5607	5608	5609	5610	5611	5612	5613	5614	5615	5616	5617
##	2	2	2	3	1	2	2	2	2	2	2	2	2
##	5618	5619	5620	5621	5622	5623	5624	5625	5626	5627	5628	5629	5630
##	1	2	3	2	2	2	2	2	1	3	2	2	2
##	5631	5632	5633	5634	5635	5636	5637	5638	5639	5640	5641	5642	5643
##	2	2	2	2	2	5	2	2	2	2	2	1	2
##	5644	5645	5646	5647	5648	5649	5650	5651	5652	5653	5654	5655	5656
##	2	3	3	2	2	2	2	2	3	2	2	2	2
##	5657	5658	5659	5660	5661	5662	5663	5664	5665	5666	5667	5668	5669
##	2	1	2	3	2	2	2	2	1	2	2	2	2
##	5670	5671	5672	5673	5674	5675	5676	5677	5678	5679	5680	5681	5682
##	2	2	2	2	2	2	2	1	2	2	2	2	2
##	5683	5684	5685	5686	5687	5688	5689	5690	5691	5692	5693	5694	5695
##	2	2	2	2	2	2	2	3	1	1	2	3	1
##	5696	5697	5698	5699	5700	5701	5702	5703	5704	5705	5706	5707	5708
##	2	2	3	2	1	2	2	2	2	2	2	2	3
##	5709	5710	5711	5712	5713	5714	5715	5716	5717	5718	5719	5720	5721
##	1	2	2	2	2	2	1	2	2	2	2	3	2
##	5722	5723	5724	5725	5726	5727	5728	5729	5730	5731	5732	5733	5734
##	2	2	2	2	2	1	2	2	3	2	3	2	2
##	5735	5736	5737	5738	5739	5740	5741	5742	5743	5744	5745	5746	5747
##	2	2	2	1	2	2	2	2	2	2	5	2	1
##	5748	5749	5750	5751	5752	5753	5754	5755	5756	5757	5758	5759	5760
##	2	2	2	2	2	3	2	2	2	3	2	3	3
##	5761	5762	5763	5764	5765	5766	5767	5768	5769	5770	5771	5772	5773
##	3	5	2	2	2	2	2	2	3	2	2	1	2
##	5774	5775	5776	5777	5778	5779	5780	5781	5782	5783	5784	5785	5786
##	4	2	2	1	2	2	2	1	2	3	2	1	2
##	5787	5788	5789	5790	5791	5792	5793	5794	5795	5796	5797	5798	5799
##	1	2	2	2	2	2	2	2	2	2	2	2	2
##	5800	5801	5802	5803	5804	5805	5806	5807	5808	5809	5810	5811	5812
##	2	2	2	2	3	2	2	2	2	2	2	2	2
##	5813	5814	5815	5816	5817	5818	5819	5820	5821	5822	5823	5824	5825
##	3	2	2	2	2	2	1	2	2	5	2	2	2



##	5826	5827	5828	5829	5830	5831	5832	5833	5834	5835	5836	5837	5838
##	2	1	3	2	2	2	2	1	2	2	2	2	3
##	5839	5840	5841	5842	5843	5844	5845	5846	5847	5848	5849	5850	5851
##	2	1	2	2	1	2	2	2	2	2	2	2	2
##	5852	5853	5854	5855	5856	5857	5858	5859	5860	5861	5862	5863	5864
##	3	2	2	2	2	2	2	2	1	2	2	2	2
##	5865	5866	5867	5868	5869	5870	5871	5872	5873	5874	5875	5876	5877
##	2	2	2	2	2	3	1	2	2	2	2	2	2
##	5878	5879	5880	5881	5882	5883	5884	5885	5886	5887	5888	5889	5890
##	5	1	2	2	3	2	2	2	2	2	2	2	3
##	5891	5892	5893	5894	5895	5896	5897	5898	5899	5900	5901	5902	5903
##	2	1	2	2	2	2	1	2	2	2	2	2	2
##	5904	5905	5906	5907	5908	5909	5910	5911	5912	5913	5914	5915	5916
##	1	2	2	3	2	2	2	2	2	2	2	2	2
##	5917	5918	5919	5920	5921	5922	5923	5924	5925	5926	5927	5928	5929
##	1	2	2	2	2	2	2	2	2	2	1	2	2
##	5930	5931	5932	5933	5934	5935	5936	5937	5938	5939	5940	5941	5942
##	2	2	2	2	2	2	1	2	3	3	2	2	1
##	5943	5944	5945	5946	5947	5948	5949	5950	5951	5952	5953	5954	5955
##	2	2	2	2	2	2	2	1	2	2	2	2	2
##	5956	5957	5958	5959	5960	5961	5962	5963	5964	5965	5966	5967	5968
##	1	3	2	2	1	2	2	2	2	2	3	5	2
##	5969	5970	5971	5972	5973	5974	5975	5976	5977	5978	5979	5980	5981
##	2	2	2	2	2	2	2	2	2	2	5	2	2
##	5982	5983	5984	5985	5986	5987	5988	5989	5990	5991	5992	5993	5994
##	3	2	2	3	2	3	2	2	2	2	2	2	2
##	5995	5996	5997	5998	5999	6000	6001	6002	6003	6004	6005	6006	6007
##	3	1	1	2	3	2	2	2	3	2	1	2	2
##	6008	6009	6010	6011	6012	6013	6014	6015	6016	6017	6018	6019	6020
##	3	2	2	1	2	1	2	2	1	2	2	2	1
##	6021	6022	6023	6024	6025	6026	6027	6028	6029	6030	6031	6032	6033
##	2	2	2	2	2	2	2	5	2	1	2	2	2
##	6034	6035	6036	6037	6038	6039	6040	6041	6042	6043	6044	6045	6046
##	2	2	2	2	2	2	2	2	1	2	3	2	2
##	6047	6048	6049	6050	6051	6052	6053	6054	6055	6056	6057	6058	6059
##	2	3	1	1	2	3	2	2	5	2	2	2	2
##	6060	6061	6062	6063	6064	6065	6066	6067	6068	6069	6070	6071	6072
##	2	2	1	2	2	2	2	2	2	2	2	2	2
##	6073	6074	6075	6076	6077	6078	6079	6080	6081	6082	6083	6084	6085
##	1	3	2	2	3	5	1	2	2	2	3	2	2
##	6086	6087	6088	6089	6090	6091	6092	6093	6094	6095	6096	6097	6098
##	3	2	2	2	2	2	3	2	2	2	2	2	2
##	6099	6100	6101	6102	6103	6104	6105	6106	6107	6108	6109	6110	6111
##	1	2	2	2	2	2	2	3	1	2	2	2	4
##	6112	6113	6114	6115	6116	6117	6118	6119	6120	6121	6122	6123	6124
##	2	2	2	1	1	3	2	2	2	2	2	2	1
##	6125	6126	6127	6128	6129	6130	6131	6132	6133	6134	6135	6136	6137
##	1	1	2	3	2	2	2	2	2	2	1	2	2
##	6138	6139	6140	6141	6142	6143	6144	6145	6146	6147	6148	6149	6150
##	2	2	1	2	3	2	2	2	2	2	2	1	2
##	6151	6152	6153	6154	6155	6156	6157	6158	6159	6160	6161	6162	6163
##	2	2	2	3	2	2	2	3	2	2	2	2	2
##	6164	6165	6166	6167	6168	6169	6170	6171	6172	6173	6174	6175	6176
##	5	2	2	2	3	2	2	2	2	2	2	2	2

##	6177	6178	6179	6180	6181	6182	6183	6184	6185	6186	6187	6188	6189
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	6190	6191	6192	6193	6194	6195	6196	6197	6198	6199	6200	6201	6202
##	2	2	3	2	2	2	2	2	3	2	1	2	3
##	6203	6204	6205	6206	6207	6208	6209	6210	6211	6212	6213	6214	6215
##	2	3	2	3	2	2	3	2	2	3	2	2	2
##	6216	6217	6218	6219	6220	6221	6222	6223	6224	6225	6226	6227	6228
##	2	5	1	2	2	2	1	5	2	1	2	2	2
##	6229	6230	6231	6232	6233	6234	6235	6236	6237	6238	6239	6240	6241
##	2	2	2	5	2	2	1	3	2	1	3	3	1
##	6242	6243	6244	6245	6246	6247	6248	6249	6250	6251	6252	6253	6254
##	2	3	3	1	2	2	2	1	2	2	2	2	2
##	6255	6256	6257	6258	6259	6260	6261	6262	6263	6264	6265	6266	6267
##	2	1	2	5	2	2	1	2	1	3	2	2	3
##	6268	6269	6270	6271	6272	6273	6274	6275	6276	6277	6278	6279	6280
##	2	2	2	3	2	2	2	2	2	5	2	1	2
##	6281	6282	6283	6284	6285	6286	6287	6288	6289	6290	6291	6292	6293
##	2	2	2	2	2	2	2	2	2	3	2	2	3
##	6294	6295	6296	6297	6298	6299	6300	6301	6302	6303	6304	6305	6306
##	2	2	2	2	2	2	1	2	2	1	2	2	2
##	6307	6308	6309	6310	6311	6312	6313	6314	6315	6316	6317	6318	6319
##	3	5	2	2	2	2	5	2	2	2	1	3	3
##	6320	6321	6322	6323	6324	6325	6326	6327	6328	6329	6330	6331	6332
##	2	2	2	2	2	2	2	2	1	2	3	2	2
##	6333	6334	6335	6336	6337	6338	6339	6340	6341	6342	6343	6344	6345
##	2	1	2	2	2	2	2	2	2	2	2	2	2
##	6346	6347	6348	6349	6350	6351	6352	6353	6354	6355	6356	6357	6358
##	2	2	3	1	2	3	2	2	2	2	2	2	2
##	6359	6360	6361	6362	6363	6364	6365	6366	6367	6368	6369	6370	6371
##	2	2	5	2	2	2	2	2	2	2	2	2	2
##	6372	6373	6374	6375	6376	6377	6378	6379	6380	6381	6382	6383	6384
##	3	2	2	2	1	2	2	2	2	2	2	1	2
##	6385	6386	6387	6388	6389	6390	6391	6392	6393	6394	6395	6396	6397
##	2	2	5	3	2	2	2	3	1	2	1	2	2
##	6398	6399	6400	6401	6402	6403	6404	6405	6406	6407	6408	6409	6410
##	2	5	2	2	2	2	2	2	2	5	3	2	3
##	6411	6412	6413	6414	6415	6416	6417	6418	6419	6420	6421	6422	6423
##	2	2	2	2	2	2	5	2	5	2	2	2	2
##	6424	6425	6426	6427	6428	6429	6430	6431	6432	6433	6434	6435	6436
##	1	2	2	2	2	2	4	2	5	1	2	2	3
##	6437	6438	6439	6440	6441	6442	6443	6444	6445	6446	6447	6448	6449
##	2	2	2	2	3	5	2	2	2	2	2	2	2
##	6450	6451	6452	6453	6454	6455	6456	6457	6458	6459	6460	6461	6462
##	3	2	2	2	2	2	2	2	1	2	2	2	3
##	6463	6464	6465	6466	6467	6468	6469	6470	6471	6472	6473	6474	6475
##	2	2	2	2	2	3	2	2	2	1	2	3	2
##	6476	6477	6478	6479	6480	6481	6482	6483	6484	6485	6486	6487	6488
##	1	3	5	1	2	2	2	2	2	2	2	2	2
##	6489	6490	6491	6492	6493	6494	6495	6496	6497	6498	6499	6500	6501
##	3	2	2	2	2	2	1	2	2	2	2	2	2
##	6502	6503	6504	6505	6506	6507	6508	6509	6510	6511	6512	6513	6514
##	3	2	2	2	5	2	2	2	2	2	2	2	2
##	6515	6516	6517	6518	6519	6520	6521	6522	6523	6524	6525	6526	6527
##	2	2	1	2	2	2	2	3	2	2	2	2	1

##	6528	6529	6530	6531	6532	6533	6534	6535	6536	6537	6538	6539	6540
##	2	2	2	2	2	2	2	3	2	2	1	1	2
##	6541	6542	6543	6544	6545	6546	6547	6548	6549	6550	6551	6552	6553
##	2	2	2	2	2	2	2	4	2	1	1	2	2
##	6554	6555	6556	6557	6558	6559	6560	6561	6562	6563	6564	6565	6566
##	2	2	2	2	2	2	1	2	2	2	3	2	2
##	6567	6568	6569	6570	6571	6572	6573	6574	6575	6576	6577	6578	6579
##	3	2	2	2	2	2	2	2	2	2	1	2	2
##	6580	6581	6582	6583	6584	6585	6586	6587	6588	6589	6590	6591	6592
##	1	2	2	2	5	2	2	1	2	3	2	2	2
##	6593	6594	6595	6596	6597	6598	6599	6600	6601	6602	6603	6604	6605
##	2	2	1	1	3	3	2	2	2	2	1	2	1
##	6606	6607	6608	6609	6610	6611	6612	6613	6614	6615	6616	6617	6618
##	1	2	2	2	2	2	2	2	5	3	3	2	5
##	6619	6620	6621	6622	6623	6624	6625	6626	6627	6628	6629	6630	6631
##	2	2	2	2	2	3	1	2	3	2	2	2	2
##	6632	6633	6634	6635	6636	6637	6638	6639	6640	6641	6642	6643	6644
##	2	2	2	2	2	1	1	2	1	2	2	2	2
##	6645	6646	6647	6648	6649	6650	6651	6652	6653	6654	6655	6656	6657
##	2	5	2	2	2	2	3	1	2	2	2	2	2
##	6658	6659	6660	6661	6662	6663	6664	6665	6666	6667	6668	6669	6670
##	1	3	1	2	2	2	3	2	2	3	2	2	2
##	6671	6672	6673	6674	6675	6676	6677	6678	6679	6680	6681	6682	6683
##	2	2	3	2	2	1	2	2	2	5	2	2	2
##	6684	6685	6686	6687	6688	6689	6690	6691	6692	6693	6694	6695	6696
##	2	2	3	2	3	2	2	2	2	2	2	3	2
##	6697	6698	6699	6700	6701	6702	6703	6704	6705	6706	6707	6708	6709
##	2	2	2	3	1	2	2	2	2	1	2	5	2
##	6710	6711	6712	6713	6714	6715	6716	6717	6718	6719	6720	6721	6722
##	2	3	2	2	1	1	2	1	2	2	2	3	2
##	6723	6724	6725	6726	6727	6728	6729	6730	6731	6732	6733	6734	6735
##	2	2	2	2	3	2	4	2	2	2	3	2	2
##	6736	6737	6738	6739	6740	6741	6742	6743	6744	6745	6746	6747	6748
##	1	3	2	3	2	2	2	3	2	2	2	2	2
##	6749	6750	6751	6752	6753	6754	6755	6756	6757	6758	6759	6760	6761
##	3	2	2	5	2	3	2	2	2	3	2	2	3
##	6762	6763	6764	6765	6766	6767	6768	6769	6770	6771	6772	6773	6774
##	1	2	2	1	2	2	2	5	2	2	2	2	2
##	6775	6776	6777	6778	6779	6780	6781	6782	6783	6784	6785	6786	6787
##	1	2	2	1	2	2	3	3	2	3	2	2	1
##	6788	6789	6790	6791	6792	6793	6794	6795	6796	6797	6798	6799	6800
##	2	1	2	5	2	2	3	2	2	2	2	2	5
##	6801	6802	6803	6804	6805	6806	6807	6808	6809	6810	6811	6812	6813
##	2	2	2	2	2	2	2	3	2	3	2	2	4
##	6814	6815	6816	6817	6818	6819	6820	6821	6822	6823	6824	6825	6826
##	2	1	2	5	2	2	2	2	3	2	2	2	3
##	6827	6828	6829	6830	6831	6832	6833	6834	6835	6836	6837	6838	6839
##	1	2	2	2	1	3	1	3	2	2	2	2	2
##	6840	6841	6842	6843	6844	6845	6846	6847	6848	6849	6850	6851	6852
##	2	5	2	3	2	2	1	2	1	2	2	2	2
##	6853	6854	6855	6856	6857	6858	6859	6860	6861	6862	6863	6864	6865
##	1	1	2	2	2	2	3	2	2	2	2	2	2
##	6866	6867	6868	6869	6870	6871	6872	6873	6874	6875	6876	6877	6878
##	1	2	1	2	2	2	2	2	2	2	3	1	3

##	6879	6880	6881	6882	6883	6884	6885	6886	6887	6888	6889	6890	6891
##	1	2	3	2	3	2	2	1	2	3	2	2	2
##	6892	6893	6894	6895	6896	6897	6898	6899	6900	6901	6902	6903	6904
##	2	3	2	2	3	2	2	3	5	2	2	2	3
##	6905	6906	6907	6908	6909	6910	6911	6912	6913	6914	6915	6916	6917
##	1	2	2	2	2	2	3	2	2	1	2	2	1
##	6918	6919	6920	6921	6922	6923	6924	6925	6926	6927	6928	6929	6931
##	2	2	2	2	2	3	2	2	2	1	2	3	2
##	6932	6933	6934	6935	6936	6937	6938	6939	6940	6941	6942	6943	6944
##	2	2	2	2	2	2	2	2	2	3	3	1	2
##	6945	6946	6947	6948	6949	6950	6951	6952	6953	6954	6955	6956	6957
##	2	3	2	1	2	5	2	1	2	3	2	4	2
##	6958	6959	6960	6961	6962	6963	6964	6965	6966	6967	6968	6969	6970
##	2	2	2	2	2	2	2	2	2	1	1	5	2
##	6971	6972	6973	6974	6975	6976	6977	6978	6979	6980	6981	6982	6983
##	2	2	2	2	5	2	2	3	2	3	2	2	2
##	6984	6985	6986	6987	6988	6989	6990	6991	6992	6993	6994	6995	6996
##	2	2	2	1	2	2	2	2	2	2	2	1	2
##	6997	6998	6999	7000	7001	7002	7003	7004	7005	7006	7007	7008	7009
##	2	2	2	2	2	2	2	2	2	2	2	5	2
##	7010	7011	7012	7013	7014	7015	7016	7017	7018	7019	7020	7021	7022
##	1	2	2	2	2	2	2	2	2	3	2	3	2
##	7023	7024	7025	7026	7027	7028	7029	7030	7031	7032	7033	7034	7035
##	2	2	3	2	5	2	2	2	2	1	2	2	2
##	7036	7037	7038	7039	7040	7041	7042	7043	7044	7045	7046	7047	7048
##	2	5	2	2	2	2	2	1	2	2	2	2	2
##	7049	7050	7051	7052	7053	7054	7055	7056	7057	7058	7059	7060	7061
##	2	2	2	2	2	2	2	2	2	5	2	2	3
##	7062	7063	7064	7065	7066	7067	7068	7069	7070	7071	7072	7073	7074
##	2	2	2	2	2	1	2	2	3	2	2	2	2
##	7075	7076	7077	7078	7079	7080	7081	7082	7083	7084	7085	7086	7087
##	2	2	2	2	2	2	5	2	5	3	2	3	2
##	7088	7089	7090	7091	7092	7093	7094	7095	7096	7097	7098	7099	7100
##	1	2	3	2	2	2	2	2	1	2	3	3	2
##	7101	7102	7103	7104	7105	7106	7107	7108	7109	7110	7111	7112	7113
##	2	1	2	2	2	2	2	2	2	2	2	2	2
##	7114	7115	7116	7117	7118	7119	7120	7121	7122	7123	7124	7125	7126
##	2	2	2	2	2	2	2	2	2	1	2	2	2
##	7127	7128	7129	7130	7131	7132	7133	7134	7135	7136	7137	7138	7139
##	2	1	1	2	2	5	2	2	2	2	2	2	2
##	7140	7141	7142	7143	7144	7145	7146	7147	7148	7149	7150	7151	7153
##	1	3	2	3	2	2	1	2	2	2	2	2	2
##	7154	7155	7156	7157	7158	7159	7160	7161	7162	7163	7164	7165	7166
##	2	2	2	2	2	5	2	1	2	2	2	2	3
##	7167	7168	7169	7170	7171	7172	7173	7174	7175	7176	7177	7178	7179
##	5	2	2	2	2	2	2	2	2	2	2	2	2
##	7180	7181	7182	7183	7184	7185	7186	7187	7188	7189	7190	7191	7192
##	5	3	3	2	2	2	2	2	2	2	2	3	2
##	7193	7194	7195	7196	7197	7198	7199	7200	7201	7202	7203	7204	7205
##	2	2	2	1	2	3	3	2	2	3	2	2	2
##	7206	7207	7208	7209	7210	7211	7212	7213	7214	7215	7216	7217	7218
##	2	1	2	3	2	2	2	1	2	3	2	2	2
##	7219	7220	7221	7222	7223	7224	7225	7226	7227	7228	7229	7230	7231
##	2	2	1	2	2	2	2	2	2	2	2	2	1

##	7232	7233	7234	7235	7236	7237	7238	7239	7240	7241	7242	7243	7244
##	2	2	2	2	2	2	2	1	2	2	2	3	2
##	7245	7246	7247	7248	7249	7250	7251	7252	7253	7254	7255	7256	7257
##	2	2	3	2	2	2	5	2	1	2	2	2	2
##	7258	7259	7260	7261	7262	7263	7264	7265	7266	7267	7268	7269	7270
##	3	2	2	2	1	2	2	2	2	2	2	2	3
##	7271	7272	7273	7274	7275	7276	7277	7278	7279	7280	7281	7282	7283
##	2	2	3	2	2	1	2	2	5	2	2	2	2
##	7284	7285	7286	7287	7288	7289	7290	7291	7292	7293	7294	7295	7296
##	5	2	2	2	2	1	2	2	2	2	3	2	2
##	7297	7298	7299	7300	7301	7302	7303	7304	7305	7306	7307	7308	7309
##	2	2	2	2	1	2	2	2	2	2	2	3	2
##	7310	7311	7312	7313	7314	7315	7316	7317	7318	7319	7320	7321	7322
##	3	3	2	2	2	1	2	2	5	2	2	2	2
##	7323	7324	7325	7326	7327	7328	7329	7330	7331	7332	7333	7334	7335
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	7336	7337	7338	7339	7340	7341	7342	7343	7344	7345	7346	7347	7348
##	2	2	2	2	2	2	2	2	2	1	2	2	2
##	7349	7350	7351	7352	7353	7354	7355	7356	7357	7358	7359	7360	7361
##	1	2	1	2	2	3	2	2	2	2	2	2	2
##	7362	7363	7364	7365	7366	7367	7368	7369	7370	7371	7372	7373	7374
##	3	2	2	3	2	5	5	2	2	1	2	2	3
##	7375	7376	7377	7378	7379	7380	7381	7382	7383	7384	7385	7386	7387
##	2	2	2	2	3	1	2	2	1	2	3	2	3
##	7388	7389	7390	7391	7392	7393	7394	7395	7396	7397	7398	7399	7400
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	7401	7402	7403	7404	7405	7406	7407	7408	7409	7410	7411	7412	7413
##	2	2	2	2	2	2	2	3	2	2	2	5	2
##	7414	7415	7416	7417	7418	7419	7420	7421	7422	7423	7424	7425	7426
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	7427	7428	7429	7430	7431	7432	7433	7434	7435	7436	7437	7438	7439
##	3	2	2	1	2	2	3	2	1	2	2	2	2
##	7440	7441	7442	7443	7444	7445	7446	7447	7448	7449	7450	7451	7452
##	2	2	1	2	3	2	2	2	2	2	2	2	2
##	7453	7454	7455	7456	7457	7458	7459	7460	7461	7462	7463	7464	7465
##	2	2	2	2	2	1	2	2	2	2	2	2	2
##	7466	7467	7468	7469	7470	7471	7472	7473	7474	7475	7476	7477	7478
##	2	2	2	2	2	5	2	3	2	2	2	2	2
##	7479	7480	7481	7482	7483	7484	7485	7486	7487	7488	7489	7490	7491
##	1	2	3	2	2	2	2	2	2	2	1	2	2
##	7492	7493	7494	7495	7496	7497	7498	7499	7500	7501	7502	7503	7504
##	2	2	2	3	2	2	3	2	2	1	2	1	2
##	7505	7506	7507	7508	7509	7510	7511	7512	7513	7514	7515	7516	7517
##	2	2	2	3	2	2	2	2	2	1	2	2	3
##	7518	7519	7520	7521	7522	7523	7524	7525	7526	7527	7528	7529	7530
##	2	3	2	2	2	2	2	2	1	1	1	2	2
##	7531	7532	7533	7534	7535	7536	7537	7538	7539	7540	7541	7542	7543
##	2	2	3	2	2	2	2	3	2	2	1	2	2
##	7544	7545	7546	7547	7548	7549	7550	7551	7552	7553	7554	7555	7556
##	2	2	3	2	2	2	2	3	2	1	2	2	2
##	7557	7558	7559	7560	7561	7562	7563	7564	7565	7566	7567	7568	7569
##	3	2	2	3	3	2	2	2	5	2	2	2	2
##	7570	7571	7572	7573	7574	7575	7576	7577	7578	7579	7580	7581	7582
##	2	2	3	2	2	2	3	2	2	3	5	2	2

##	7583	7584	7585	7586	7587	7588	7589	7590	7591	7592	7593	7594	7595
##	2	3	2	2	2	2	2	2	1	2	3	2	2
##	7596	7597	7598	7599	7600	7601	7602	7603	7604	7605	7606	7607	7608
##	2	2	2	2	2	1	1	2	2	3	2	3	2
##	7609	7610	7611	7612	7613	7614	7615	7616	7617	7618	7619	7620	7621
##	2	2	2	2	3	2	2	2	1	3	2	5	2
##	7622	7623	7624	7625	7626	7627	7628	7629	7630	7631	7632	7633	7634
##	2	2	2	2	2	2	2	3	2	2	3	2	2
##	7635	7637	7638	7639	7640	7641	7642	7643	7644	7645	7646	7647	7648
##	2	2	2	2	2	2	2	1	2	2	2	2	2
##	7649	7650	7651	7652	7653	7654	7655	7656	7657	7658	7659	7660	7661
##	2	2	2	2	3	2	2	2	2	2	2	2	2
##	7662	7663	7664	7665	7666	7667	7668	7669	7670	7671	7672	7673	7674
##	2	1	2	2	2	2	2	3	2	2	2	2	2
##	7675	7676	7677	7678	7679	7680	7681	7682	7683	7684	7685	7686	7687
##	3	5	2	2	2	2	3	2	2	2	2	2	2
##	7688	7689	7690	7691	7692	7693	7694	7695	7696	7697	7698	7699	7700
##	2	2	3	2	2	2	2	2	2	2	1	1	2
##	7701	7702	7703	7704	7705	7706	7707	7708	7709	7710	7711	7712	7713
##	2	2	1	2	2	2	3	2	2	2	3	2	3
##	7714	7715	7716	7717	7718	7719	7720	7721	7722	7723	7724	7725	7726
##	5	2	2	1	2	3	2	2	2	1	2	3	2
##	7727	7728	7729	7730	7731	7732	7733	7734	7735	7736	7737	7738	7739
##	2	5	2	3	2	2	2	2	2	2	2	2	2
##	7740	7741	7742	7743	7744	7745	7746	7747	7748	7749	7750	7751	7752
##	2	2	2	2	3	2	2	2	2	2	2	3	1
##	7753	7754	7755	7756	7757	7758	7759	7760	7761	7762	7763	7764	7765
##	2	3	2	3	2	2	2	3	2	2	3	2	2
##	7766	7767	7768	7769	7770	7771	7772	7773	7774	7775	7776	7777	7778
##	2	2	2	2	2	3	2	3	2	3	2	2	2
##	7779	7780	7781	7782	7783	7784	7785	7786	7787	7788	7789	7790	7791
##	2	3	2	2	2	3	2	3	1	2	3	2	2
##	7792	7793	7794	7795	7796	7797	7798	7799	7800	7801	7802	7803	7804
##	1	1	3	2	2	2	2	2	2	2	2	1	2
##	7805	7806	7807	7808	7809	7810	7811	7812	7813	7814	7815	7816	7817
##	2	5	2	2	2	2	2	3	2	2	2	2	1
##	7818	7819	7820	7821	7822	7823	7824	7825	7826	7827	7828	7829	7830
##	3	2	2	2	2	3	2	2	2	2	2	1	2
##	7831	7832	7833	7834	7835	7836	7837	7838	7839	7840	7841	7842	7843
##	3	3	3	2	3	2	3	2	2	3	2	2	2
##	7844	7845	7846	7847	7848	7849	7850	7851	7852	7853	7854	7855	7856
##	1	2	2	2	1	2	3	1	2	5	3	2	2
##	7857	7858	7859	7860	7861	7862	7863	7864	7865	7866	7867	7868	7869
##	3	2	2	2	2	3	2	1	3	2	2	2	2
##	7870	7871	7872	7873	7874	7875	7876	7877	7878	7879	7880	7881	7882
##	1	3	2	3	2	3	3	3	2	2	2	3	2
##	7883	7884	7885	7886	7887	7888	7889	7890	7891	7892	7893	7894	7895
##	2	2	2	2	1	3	2	2	2	3	2	3	3
##	7896	7897	7898	7899	7900	7901	7902	7903	7904	7905	7906	7907	7908
##	2	2	3	3	3	2	2	3	2	2	2	2	2
##	7909	7910	7911	7912	7913	7914	7915	7916	7917	7918	7919	7920	7921
##	2	2	2	2	2	2	2	3	2	2	2	2	2
##	7922	7923	7924	7925	7926	7927	7928	7929	7930	7931	7932	7933	7934
##	2	2	2	2	2	2	2	2	2	2	2	2	2

##	7935	7936	7937	7938	7939	7940	7941	7942	7943	7944	7945	7946	7947
##	2	2	2	2	5	3	1	2	2	2	2	2	2
##	7948	7949	7950	7951	7952	7953	7954	7955	7956	7957	7958	7959	7960
##	1	2	2	2	2	5	2	3	2	3	1	2	2
##	7961	7962	7963	7964	7965	7966	7967	7968	7969	7970	7971	7972	7973
##	1	3	2	3	3	2	2	2	2	2	2	2	2
##	7974	7975	7976	7977	7978	7979	7980	7981	7982	7983	7984	7985	7986
##	2	2	2	2	2	2	2	3	2	2	2	2	1
##	7987	7988	7989	7990	7991	7992	7993	7994	7995	7996	7997	7998	7999
##	1	2	2	2	2	3	1	1	2	2	2	2	2
##	8000	8001	8002	8003	8004	8005	8006	8007	8008	8009	8010	8011	8012
##	2	1	1	2	1	2	2	1	2	2	2	2	2
##	8013	8014	8015	8016	8017	8018	8019	8020	8021	8022	8023	8024	8025
##	2	2	2	1	2	2	2	2	2	1	2	2	2
##	8026	8027	8028	8029	8030	8031	8032	8033	8034	8035	8036	8037	8038
##	1	5	2	2	1	1	2	1	2	2	2	2	1
##	8039	8040	8041	8042	8043	8044	8045	8046	8047	8048	8049	8050	8051
##	5	2	3	2	1	2	5	2	1	2	1	2	3
##	8052	8053	8054	8055	8056	8057	8058	8059	8060	8061	8062	8063	8064
##	2	2	1	3	1	1	2	2	1	2	2	2	2
##	8065	8066	8067	8068	8069	8070	8071	8072	8073	8074	8075	8076	8077
##	1	2	2	1	2	2	2	2	2	3	2	1	2
##	8078	8079	8080	8081	8082	8083	8084	8085	8086	8087	8088	8089	8090
##	2	3	2	2	2	1	2	5	1	2	2	2	2
##	8091	8092	8093	8094	8095	8096	8097	8098	8099	8100	8101	8102	8103
##	2	3	3	2	2	2	5	2	2	1	1	2	2
##	8104	8105	8106	8107	8108	8109	8110	8111	8112	8113	8114	8115	8116
##	2	2	1	1	1	2	2	1	1	2	2	1	1
##	8117	8118	8119	8120	8121	8122	8123	8124	8125	8126	8127	8128	8129
##	1	1	3	2	3	2	5	2	2	2	3	2	2
##	8130	8131	8132	8133	8134	8135	8136	8137	8138	8139	8140	8141	8142
##	5	2	2	1	1	2	2	2	2	2	1	1	2
##	8143	8144	8145	8146	8147	8148	8149	8150	8151	8152	8153	8154	8155
##	2	2	3	2	2	2	1	2	1	3	2	1	2
##	8156	8157	8158	8159	8160	8161	8162	8163	8164	8165	8166	8167	8168
##	1	2	2	1	1	2	2	2	1	5	2	2	3
##	8169	8170	8171	8172	8173	8174	8175	8176	8177	8178	8179	8180	8181
##	2	2	1	2	2	2	2	2	2	2	2	2	2
##	8182	8183	8184	8185	8186	8187	8188	8189	8190	8191	8192	8193	8194
##	2	2	2	2	2	2	1	3	2	2	3	2	2
##	8195	8196	8197	8198	8199	8200	8201	8202	8203	8204	8205	8206	8207
##	2	2	2	2	2	2	2	1	2	1	2	1	2
##	8208	8209	8210	8211	8212	8213	8214	8215	8216	8217	8218	8219	8220
##	2	2	1	2	2	2	2	3	1	2	3	2	2
##	8221	8222	8223	8224	8225	8226	8227	8228	8229	8230	8231	8232	8233
##	2	2	2	2	2	2	2	2	2	2	2	1	2
##	8234	8235	8236	8237	8238	8239	8240	8241	8242	8243	8244	8245	8246
##	1	2	2	1	2	2	2	1	2	2	3	1	3
##	8247	8248	8249	8250	8251	8252	8253	8254	8255	8256	8257	8258	8259
##	2	2	2	1	1	5	2	2	3	2	2	2	2
##	8260	8261	8262	8263	8264	8265	8266	8267	8268	8269	8270	8271	8272
##	2	3	2	2	2	3	2	1	2	2	2	2	2
##	8273	8274	8275	8276	8277	8278	8279	8280	8281	8282	8283	8284	8285
##	2	1	3	2	2	2	2	1	1	2	2	1	1

##	8286	8287	8288	8289	8290	8291	8292	8293	8294	8295	8296	8297	8298
##	2	2	2	1	5	3	2	2	5	2	2	3	2
##	8299	8300	8301	8302	8303	8304	8305	8306	8307	8308	8309	8310	8311
##	2	5	2	2	2	2	2	2	2	2	1	2	1
##	8312	8313	8314	8315	8316	8317	8318	8319	8320	8321	8322	8323	8324
##	2	2	1	2	2	2	2	2	2	1	2	2	2
##	8325	8326	8327	8328	8329	8330	8331	8332	8333	8334	8335	8336	8337
##	1	2	3	1	1	2	1	2	2	5	2	2	2
##	8338	8339	8340	8341	8342	8343	8344	8345	8346	8347	8348	8349	8350
##	2	1	2	5	2	2	2	2	4	1	1	2	1
##	8351	8352	8353	8354	8355	8356	8357	8358	8359	8360	8361	8362	8363
##	1	2	3	2	1	2	3	3	2	2	1	3	2
##	8364	8365	8366	8367	8368	8369	8370	8371	8372	8373	8374	8375	8376
##	2	2	2	3	1	1	3	2	2	1	1	2	1
##	8377	8378	8379	8380	8381	8382	8383	8384	8385	8386	8387	8388	8389
##	3	3	1	5	2	1	3	3	2	2	1	2	1
##	8390	8391	8392	8393	8394	8395	8396	8397	8398	8399	8400	8401	8402
##	2	2	1	2	2	2	1	2	2	1	2	2	3
##	8403	8404	8405	8406	8407	8408	8409	8410	8411	8412	8413	8414	8415
##	1	2	1	2	2	2	2	2	2	2	2	1	1
##	8416	8417	8418	8419	8420	8421	8422	8423	8424	8425	8426	8427	8428
##	2	5	2	2	3	2	1	2	2	2	2	2	1
##	8429	8430	8431	8432	8433	8434	8435	8436	8437	8438	8439	8440	8441
##	1	3	1	2	2	1	2	2	4	2	2	2	2
##	8442	8443	8444	8445	8446	8447	8448	8449	8450	8451	8452	8453	8454
##	2	2	2	2	2	2	2	1	1	2	2	2	1
##	8455	8456	8457	8458	8459	8460	8461	8462	8463	8464	8465	8466	8467
##	2	2	2	2	3	1	2	1	2	1	2	2	2
##	8468	8469	8470	8471	8472	8473	8474	8475	8476	8477	8478	8479	8480
##	1	2	2	2	2	1	2	2	2	2	2	3	1
##	8481	8482	8483	8484	8485	8486	8487	8488	8489	8490	8491	8492	8493
##	1	1	2	1	1	2	2	3	2	2	1	2	2
##	8494	8495	8496	8497	8498	8499	8500	8501	8502	8503	8504	8505	8506
##	1	1	2	5	2	2	2	2	2	2	2	1	2
##	8507	8508	8509	8510	8511	8512	8513	8514	8515	8516	8517	8518	8519
##	1	2	2	2	2	2	2	2	3	3	2	2	2
##	8520	8521	8522	8523	8524	8525	8526	8527	8528	8529	8530	8531	8532
##	2	2	2	2	2	2	1	2	2	2	1	1	1
##	8533	8534	8535	8536	8537	8538	8539	8540	8541	8542	8543	8544	8546
##	2	3	2	1	2	2	1	2	2	2	2	2	2
##	8547	8548	8549	8550	8551	8552	8553	8554	8555	8556	8557	8558	8559
##	2	3	2	2	2	1	2	1	1	2	2	1	2
##	8560	8561	8562	8563	8564	8565	8566	8567	8568	8569	8570	8571	8572
##	2	5	2	2	2	2	1	1	2	2	2	2	2
##	8573	8574	8575	8576	8577	8578	8579	8580	8581	8582	8583	8584	8585
##	2	5	2	2	1	2	2	3	2	5	2	2	2
##	8586	8587	8588	8589	8590	8591	8592	8593	8594	8595	8596	8597	8598
##	2	3	2	2	3	3	2	2	2	2	2	2	2
##	8599	8600	8601	8602	8603	8604	8605	8606	8607	8608	8609	8610	8611
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	8612	8613	8614	8615	8616	8617	8618	8619	8620	8621	8622	8623	8624
##	2	3	1	1	2	5	2	3	5	2	2	2	2
##	8625	8626	8627	8628	8629	8630	8631	8632	8633	8634	8635	8636	8637
##	2	2	2	5	1	2	2	2	2	2	1	4	2



##	8638	8639	8640	8641	8642	8643	8644	8645	8646	8647	8648	8649	8650
##	2	2	3	1	2	2	1	2	5	2	1	5	2
##	8651	8652	8653	8654	8655	8656	8657	8658	8659	8660	8661	8662	8663
##	1	1	1	1	1	2	1	2	1	1	3	2	3
##	8664	8665	8666	8667	8668	8669	8670	8671	8672	8673	8674	8675	8676
##	3	2	3	3	2	1	2	5	2	5	2	2	3
##	8677	8678	8679	8680	8681	8682	8683	8684	8685	8686	8687	8688	8689
##	2	2	2	2	2	2	2	1	1	2	3	2	2
##	8690	8691	8692	8693	8694	8695	8696	8697	8698	8699	8700	8701	8702
##	2	2	1	1	2	2	2	2	3	2	2	1	2
##	8703	8704	8705	8706	8707	8708	8709	8710	8711	8712	8713	8714	8715
##	2	1	1	5	2	1	2	2	2	2	1	2	2
##	8716	8717	8718	8719	8720	8721	8722	8723	8724	8725	8726	8727	8728
##	2	1	2	2	2	1	2	2	1	2	2	2	3
##	8729	8730	8731	8732	8733	8734	8735	8736	8737	8738	8739	8740	8741
##	3	1	1	2	1	3	2	2	3	2	2	2	3
##	8742	8743	8744	8745	8746	8747	8748	8749	8750	8751	8752	8753	8754
##	2	2	2	2	1	2	3	2	2	1	2	2	1
##	8755	8756	8757	8758	8759	8760	8761	8762	8763	8764	8765	8766	8767
##	2	1	2	2	2	2	2	2	5	2	2	2	1
##	8768	8769	8770	8771	8772	8773	8774	8775	8776	8777	8778	8779	8780
##	1	3	2	2	2	1	2	2	2	2	2	2	2
##	8781	8782	8783	8784	8785	8786	8787	8788	8789	8790	8791	8792	8793
##	2	2	2	1	2	1	1	2	2	2	2	2	2
##	8794	8795	8796	8797	8798	8799	8800	8801	8802	8803	8804	8805	8806
##	2	4	2	2	1	3	2	3	1	3	2	1	2
##	8807	8808	8809	8810	8811	8812	8813	8814	8815	8816	8817	8818	8819
##	1	2	2	2	1	1	1	2	2	2	2	1	2
##	8820	8821	8822	8823	8824	8825	8826	8827	8828	8829	8830	8831	8832
##	2	2	2	2	1	5	2	3	2	2	2	2	2
##	8833	8834	8835	8836	8837	8838	8839	8840	8841	8842	8843	8844	8845
##	3	2	2	2	2	1	3	2	1	2	2	2	2
##	8846	8847	8848	8849	8850	8851	8852	8853	8854	8855	8856	8857	8858
##	2	2	1	1	2	3	2	2	2	1	2	2	2
##	8859	8860	8861	8862	8863	8864	8865	8866	8867	8868	8869	8870	8871
##	2	2	5	3	2	1	2	2	2	1	2	2	3
##	8872	8873	8874	8875	8876	8877	8878	8879	8880	8881	8882	8883	8884
##	3	2	2	2	2	1	2	2	5	2	2	2	3
##	8885	8886	8887	8888	8889	8890	8891	8892	8893	8894	8895	8896	8897
##	5	2	2	1	2	2	1	2	2	2	5	2	2
##	8898	8899	8900	8901	8902	8903	8904	8905	8906	8907	8908	8909	8910
##	2	2	2	3	3	2	1	1	2	1	2	2	2
##	8911	8912	8913	8914	8915	8916	8917	8918	8919	8920	8921	8922	8923
##	2	1	1	2	2	2	1	5	2	2	2	3	2
##	8924	8925	8926	8927	8928	8929	8930	8931	8932	8933	8934	8935	8936
##	2	2	2	2	2	3	2	2	3	1	2	1	2
##	8937	8938	8939	8940	8941	8942	8943	8944	8945	8946	8947	8948	8949
##	2	2	1	1	2	2	2	2	2	2	2	2	2
##	8950	8951	8952	8953	8954	8955	8956	8957	8958	8959	8960	8961	8962
##	2	2	2	2	2	2	2	1	3	2	2	2	2
##	8963	8964	8965	8966	8967	8968	8969	8970	8971	8972	8973	8974	8975
##	2	1	2	2	1	2	3	2	2	1	2	1	2
##	8976	8977	8978	8979	8980	8981	8982	8983	8984	8985	8986	8987	8988
##	2	3	2	2	2	1	2	1	1	2	2	1	2

##	8989	8990	8991	8992	8993	8994	8995	8996	8997	8998	8999	9000	9001
##	1	1	3	1	2	3	1	2	1	2	2	2	1
##	9002	9003	9004	9005	9006	9007	9008	9009	9010	9011	9012	9013	9014
##	2	1	2	1	2	2	2	1	2	1	5	2	2
##	9015	9016	9017	9018	9019	9020	9021	9022	9023	9024	9025	9026	9027
##	2	2	1	2	5	5	2	2	2	1	2	2	1
##	9028	9029	9030	9031	9032	9033	9034	9035	9036	9037	9038	9039	9040
##	1	2	1	2	3	2	2	1	2	2	1	2	2
##	9041	9042	9043	9044	9045	9046	9047	9048	9049	9050	9051	9052	9053
##	3	1	2	2	3	2	2	2	2	2	2	1	2
##	9054	9055	9056	9057	9058	9059	9060	9061	9062	9063	9064	9065	9066
##	2	5	2	2	1	2	2	1	2	1	2	2	2
##	9067	9068	9069	9070	9071	9072	9073	9074	9075	9076	9077	9078	9079
##	2	2	2	1	2	1	2	2	2	2	2	3	1
##	9080	9081	9082	9083	9084	9085	9086	9087	9088	9089	9090	9091	9092
##	2	1	3	2	2	2	2	1	2	2	3	1	2
##	9093	9094	9095	9096	9097	9098	9099	9100	9101	9102	9103	9104	9105
##	2	1	2	2	2	2	2	3	5	5	1	2	2
##	9106	9107	9108	9109	9110	9111	9112	9113	9114	9115	9116	9117	9118
##	2	1	1	1	2	2	2	1	2	5	5	2	1
##	9119	9120	9121	9122	9123	9124	9125	9126	9127	9128	9129	9130	9131
##	2	2	2	2	3	2	2	2	2	2	2	1	3
##	9132	9133	9134	9135	9136	9137	9138	9139	9140	9141	9142	9143	9144
##	2	2	2	2	2	1	2	1	2	2	2	1	2
##	9145	9146	9147	9148	9149	9150	9151	9152	9153	9154	9155	9156	9157
##	1	2	2	3	2	3	3	2	1	3	2	2	2
##	9158	9159	9160	9161	9162	9163	9164	9165	9166	9167	9168	9169	9170
##	3	2	2	2	2	2	2	2	1	1	2	2	1
##	9171	9172	9173	9174	9175	9176	9177	9178	9179	9180	9181	9182	9183
##	1	2	1	1	2	1	1	2	2	2	2	5	1
##	9184	9185	9186	9187	9188	9189	9190	9191	9192	9193	9194	9195	9196
##	1	2	2	3	2	2	2	2	2	1	2	2	2
##	9197	9198	9199	9200	9201	9202	9203	9204	9205	9206	9207	9208	9209
##	2	3	2	2	2	2	3	2	2	2	1	1	2
##	9210	9211	9212	9213	9214	9215	9216	9217	9218	9219	9220	9221	9222
##	2	2	2	2	2	3	2	3	2	1	1	2	2
##	9223	9224	9225	9226	9227	9228	9229	9230	9231	9232	9233	9234	9235
##	2	2	1	2	2	1	1	2	1	1	2	2	3
##	9236	9237	9238	9239	9240	9241	9242	9243	9244	9245	9246	9247	9248
##	1	2	2	2	4	2	1	3	2	1	2	1	2
##	9249	9250	9251	9252	9253	9254	9255	9256	9257	9258	9259	9260	9261
##	1	5	2	2	3	2	3	2	2	2	4	1	3
##	9262	9263	9264	9265	9266	9267	9268	9269	9270	9271	9272	9273	9274
##	2	2	2	2	2	3	2	2	2	2	2	2	2
##	9275	9276	9277	9278	9279	9280	9281	9282	9283	9284	9285	9286	9287
##	2	2	2	3	5	3	3	2	2	5	2	2	5
##	9288	9289	9290	9291	9292	9293	9294	9295	9296	9297	9298	9299	9300
##	2	2	2	2	2	2	3	2	2	2	3	2	1
##	9301	9302	9303	9304	9305	9306	9308	9309	9310	9311	9312	9313	9314
##	1	2	2	3	2	1	2	2	2	2	2	1	2
##	9315	9316	9317	9318	9319	9320	9321	9322	9323	9324	9325	9326	9327
##	2	2	2	2	2	2	2	1	2	2	3	2	2
##	9328	9329	9330	9331	9332	9333	9334	9335	9336	9337	9338	9339	9340
##	2	2	2	2	2	2	2	2	3	2	2	2	2

##	9341	9342	9343	9344	9345	9346	9347	9348	9349	9350	9351	9352	9353
##	2	3	2	2	2	2	2	2	2	2	3	1	2
##	9354	9355	9356	9357	9358	9359	9360	9361	9362	9363	9364	9365	9366
##	3	2	2	2	1	2	2	2	2	2	2	2	1
##	9367	9368	9369	9370	9371	9372	9373	9374	9375	9376	9377	9378	9379
##	2	1	2	2	2	2	2	1	5	2	2	2	2
##	9380	9381	9382	9383	9384	9385	9386	9387	9388	9389	9390	9391	9392
##	2	2	2	2	3	2	2	1	5	2	2	2	2
##	9393	9394	9395	9396	9397	9398	9399	9400	9401	9402	9403	9404	9405
##	1	1	2	2	1	2	1	2	2	1	2	2	2
##	9406	9407	9408	9409	9410	9411	9412	9413	9414	9415	9416	9417	9418
##	1	2	1	2	2	2	2	2	2	2	2	2	2
##	9419	9420	9421	9422	9423	9424	9425	9426	9427	9428	9429	9430	9431
##	2	2	2	1	2	2	2	3	2	2	2	2	1
##	9432	9433	9434	9435	9436	9437	9438	9439	9440	9441	9442	9443	9444
##	2	2	2	2	2	2	2	2	2	2	2	5	2
##	9445	9446	9447	9448	9449	9450	9451	9452	9453	9454	9455	9456	9457
##	2	2	2	1	2	2	2	2	2	1	2	2	2
##	9458	9459	9460	9461	9462	9463	9464	9465	9466	9467	9468	9469	9470
##	3	3	1	1	2	2	2	1	3	5	2	2	2
##	9471	9472	9473	9474	9475	9476	9477	9478	9479	9480	9481	9482	9483
##	1	2	2	2	1	3	2	1	1	2	2	3	2
##	9484	9485	9486	9487	9488	9489	9490	9491	9492	9493	9494	9496	9497
##	2	2	1	3	2	1	2	2	1	2	2	2	2
##	9498	9499	9500	9501	9502	9503	9504	9505	9506	9507	9508	9509	9510
##	2	2	2	2	2	1	3	2	2	1	1	2	1
##	9511	9512	9513	9514	9515	9516	9517	9518	9519	9520	9521	9522	9523
##	1	2	2	2	2	1	1	2	5	1	2	1	2
##	9524	9525	9526	9527	9528	9529	9530	9531	9532	9533	9534	9535	9536
##	1	3	2	2	3	2	2	1	2	5	2	1	2
##	9537	9538	9539	9540	9541	9542	9543	9544	9545	9546	9547	9548	9549
##	5	1	2	2	5	5	2	2	2	2	2	1	5
##	9550	9551	9553	9554	9555	9556	9557	9558	9559	9560	9561	9562	9563
##	2	2	1	2	1	1	1	2	3	3	2	2	2
##	9564	9565	9566	9567	9568	9570	9571	9572	9573	9574	9575	9576	9577
##	2	2	2	2	1	2	2	2	5	1	1	2	2
##	9578	9579	9580	9581	9583	9584	9585	9586	9587	9588	9589	9590	9591
##	2	2	1	2	2	2	2	2	2	2	2	2	2
##	9592	9593	9594	9595	9596	9597	9598	9599	9600	9601	9602	9603	9604
##	1	1	1	2	2	2	2	3	1	2	2	2	2
##	9605	9606	9607	9608	9609	9610	9611	9612	9613	9614	9615	9616	9617
##	2	2	2	2	1	2	3	3	1	2	2	2	2
##	9618	9619	9620	9621	9622	9623	9624	9625	9626	9627	9628	9629	9630
##	2	2	2	2	1	1	2	2	1	1	2	2	3
##	9631	9632	9633	9634	9635	9636	9637	9638	9639	9640	9641	9642	9643
##	2	1	1	3	2	2	2	2	1	2	2	2	2
##	9644	9645	9646	9647	9648	9649	9650	9651	9652	9653	9654	9655	9656
##	2	1	2	2	2	1	1	2	5	2	1	1	1
##	9657	9658	9659	9660	9661	9662	9663	9664	9665	9666	9667	9668	9669
##	2	2	2	2	2	2	2	2	2	1	2	3	1
##	9670	9671	9672	9673	9674	9675	9676	9677	9678	9679	9680	9681	9682
##	2	1	2	2	2	1	2	1	2	2	2	2	2
##	9683	9684	9685	9686	9687	9688	9689	9690	9691	9692	9693	9694	9695
##	1	1	2	5	3	2	3	3	2	2	2	1	2

##	9696	9697	9698	9699	9700	9701	9702	9703	9704	9705	9706	9707	9708
##	2	2	2	3	2	2	1	1	2	2	2	2	3
##	9709	9710	9711	9712	9713	9714	9715	9716	9717	9718	9720	9721	9722
##	2	2	1	2	3	2	5	2	2	2	2	1	2
##	9723	9724	9725	9726	9727	9728	9729	9730	9731	9732	9733	9734	9735
##	2	1	2	2	2	4	2	2	3	2	1	3	2
##	9736	9737	9738	9739	9740	9741	9742	9743	9744	9745	9746	9747	9748
##	2	3	2	2	1	2	3	3	2	1	2	2	2
##	9749	9750	9751	9752	9753	9754	9755	9756	9757	9758	9759	9760	9761
##	2	2	3	2	2	2	1	2	2	2	1	3	1
##	9762	9763	9764	9765	9766	9767	9768	9769	9771	9772	9773	9774	9775
##	2	3	2	3	2	2	1	1	2	2	2	2	2
##	9776	9777	9778	9779	9780	9781	9782	9783	9784	9785	9786	9787	9788
##	2	1	2	2	2	1	2	2	2	2	1	2	2
##	9789	9790	9791	9792	9793	9794	9795	9796	9797	9798	9799	9800	9801
##	2	2	2	2	5	5	2	1	1	2	2	2	1
##	9802	9803	9804	9805	9806	9807	9808	9809	9810	9811	9812	9813	9814
##	2	1	1	2	1	1	2	2	2	3	2	1	2
##	9815	9816	9817	9818	9819	9820	9821	9822	9823	9824	9825	9826	9827
##	2	2	5	2	3	2	2	2	1	2	2	2	1
##	9828	9829	9830	9831	9832	9833	9834	9835	9836	9837	9838	9839	9840
##	2	2	2	2	1	2	2	2	2	2	2	2	2
##	9841	9842	9843	9844	9845	9846	9847	9848	9849	9850	9851	9852	9853
##	1	2	2	3	2	1	2	2	1	2	2	3	2
##	9854	9855	9856	9857	9858	9859	9860	9861	9862	9863	9864	9865	9866
##	2	3	1	2	3	2	2	2	2	2	2	2	1
##	9867	9868	9869	9870	9871	9872	9873	9874	9875	9876	9877	9878	9880
##	2	1	1	2	2	1	2	2	3	2	2	1	3
##	9881	9882	9883	9884	9885	9886	9887	9888	9889	9890	9891	9892	9893
##	3	2	2	5	2	2	2	2	1	2	2	2	2
##	9894	9895	9896	9897	9898	9899	9900	9901	9902	9903	9904	9905	9906
##	2	2	3	2	2	2	1	1	2	5	1	2	1
##	9907	9909	9910	9911	9912	9913	9914	9915	9916	9917	9918	9919	9920
##	2	5	2	1	2	2	2	2	2	1	1	2	2
##	9921	9922	9923	9924	9925	9926	9927	9928	9929	9930	9931	9932	9933
##	2	2	2	2	2	3	2	1	1	1	2	1	2
##	9934	9935	9936	9937	9938	9939	9940	9941	9942	9943	9944	9945	9946
##	1	2	2	2	1	1	2	1	2	2	1	1	2
##	9947	9948	9949	9950	9951	9952	9953	9954	9955	9956	9957	9958	9959
##	1	2	2	2	1	2	5	2	2	2	3	2	2
##	9960	9961	9962	9963	9964	9965	9966	9967	9968	9969	9970	9971	9972
##	5	2	2	2	2	5	2	3	2	2	2	1	2
##	9973	9974	9975	9976	9977	9978	9979	9980	9981	9982	9983	9984	9985
##	2	2	2	2	1	1	3	3	2	2	2	2	1
##	9986	9987	9988	9989	9990	9991	9992	9993	9994	9995	9996	9997	9998
##	2	2	3	5	2	1	2	2	2	2	2	2	1
##	9999	10000	10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011
##	1	1	2	2	1	2	2	2	2	2	2	1	2
##	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024
##	2	2	2	2	2	3	2	2	2	1	2	3	2
##	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037
##	5	5	2	2	2	2	2	2	2	2	2	2	2
##	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050
##	2	5	2	2	2	2	2	2	2	2	3	3	2

##	10051	10052	10053	10054	10055	10056	10057	10058	10059	10060	10061	10062	10063
##	2	1	2	5	2	2	2	2	2	1	2	2	2
##	10064	10065	10066	10067	10068	10069	10070	10071	10072	10073	10074	10075	10076
##	5	2	1	1	5	2	2	3	2	2	1	2	2
##	10077	10078	10079	10080	10081	10082	10083	10084	10085	10086	10087	10088	10089
##	2	2	2	2	2	2	2	1	2	2	2	2	2
##	10090	10091	10092	10093	10094	10095	10096	10097	10098	10099	10100	10101	10102
##	2	2	2	2	2	2	2	1	5	2	1	2	2
##	10103	10104	10105	10106	10107	10108	10109	10110	10111	10112	10113	10114	10115
##	1	1	1	5	2	2	2	2	2	2	2	3	1
##	10116	10117	10118	10119	10120	10121	10122	10123	10124	10125	10126	10127	10128
##	2	2	2	2	3	2	2	1	2	1	2	1	2
##	10129	10130	10131	10132	10133	10134	10135	10136	10137	10138	10139	10140	10141
##	2	2	5	3	2	1	1	2	2	3	2	3	2
##	10142	10143	10144	10145	10146	10148	10149	10150	10151	10152	10153	10154	10155
##	1	2	2	1	1	1	2	2	2	2	1	2	1
##	10156	10157	10158	10159	10160	10161	10162	10163	10164	10165	10166	10167	10168
##	2	2	1	2	2	2	2	2	1	2	2	2	2
##	10169	10170	10171	10172	10173	10174	10175	10176	10177	10178	10179	10180	10181
##	2	2	2	1	3	2	1	2	1	5	2	1	2
##	10182	10183	10184	10185	10186	10187	10188	10189	10190	10191	10192	10193	10194
##	2	2	1	2	1	3	1	1	2	1	5	2	3
##	10195	10196	10197	10198	10199	10200	10201	10202	10203	10204	10205	10206	10207
##	1	2	2	2	3	2	1	2	2	2	2	2	2
##	10208	10209	10210	10211	10212	10213	10214	10215	10216	10217	10218	10219	10220
##	2	2	2	2	2	2	2	1	2	2	2	1	2
##	10221	10222	10224	10225	10226	10227	10228	10229	10230	10231	10232	10233	10234
##	2	2	2	2	1	2	2	2	2	2	2	1	2
##	10235	10236	10237	10238	10239	10240	10241	10242	10243	10244	10245	10246	10247
##	1	2	2	2	2	2	2	3	2	2	2	2	2
##	10248	10249	10250	10251	10252	10253	10254	10255	10256	10257	10258	10259	10260
##	5	2	2	2	1	1	1	2	2	1	2	3	2
##	10261	10262	10263	10264	10265	10266	10267	10268	10269	10271	10272	10273	10274
##	1	1	3	2	2	2	1	2	3	2	1	1	1
##	10275	10276	10277	10278	10279	10280	10281	10282	10283	10284	10285	10286	10287
##	2	2	1	2	2	2	1	2	2	2	3	5	1
##	10288	10289	10290	10291	10292	10293	10294	10295	10296	10297	10298	10299	10300
##	2	3	2	1	1	2	2	2	2	2	2	5	2
##	10301	10302	10303	10304	10305	10306	10307	10308	10309	10310	10311	10312	10313
##	2	2	1	3	2	1	2	2	2	2	1	2	2
##	10314	10315	10316	10317	10318	10319	10320	10321	10322	10323	10324	10325	10326
##	2	2	2	1	1	2	2	1	1	2	2	2	2
##	10327	10328	10329	10330	10331	10332	10333	10334	10335	10336	10337	10338	10339
##	1	2	1	2	2	2	1	2	2	2	2	2	3
##	10340	10341	10342	10343	10344	10345	10346	10347	10348	10349	10350	10351	10352
##	2	2	2	2	2	2	2	1	2	2	3	2	3
##	10353	10354	10355	10356	10357	10358	10359	10360	10361	10362	10363	10364	10365
##	3	1	3	1	1	1	1	2	1	2	2	2	3
##	10366	10367	10368	10369	10370	10371	10372	10373	10374	10375	10376	10377	10378
##	2	1	2	2	2	2	2	2	2	1	1	2	2
##	10379	10380	10381	10382	10383	10384	10385	10386	10387	10388	10389	10390	10391
##	2	1	1	3	1	2	2	5	2	5	1	1	1
##	10392	10393	10394	10395	10396	10397	10398	10399	10400	10401	10402	10403	10404
##	2	2	1	2	1	2	2	2	5	1	2	2	2

##	10405	10406	10407	10408	10409	10410	10411	10412	10413	10414	10415	10416	10417
##	1	3	2	2	2	3	2	2	3	2	3	2	2
##	10418	10419	10420	10421	10422	10423	10424	10425	10426	10427	10428	10429	10430
##	1	2	1	5	1	2	1	3	2	2	2	2	2
##	10431	10432	10433	10434	10435	10436	10437	10438	10439	10440	10441	10442	10443
##	3	2	3	1	1	5	2	2	3	5	2	1	5
##	10444	10445	10446	10447	10448	10449	10450	10451	10452	10453	10454	10455	10456
##	2	1	1	2	2	1	2	2	5	2	5	2	2
##	10457	10458	10459	10460	10461	10462	10463	10464	10465	10466	10467	10468	10469
##	2	2	2	2	2	1	2	3	2	2	3	1	2
##	10470	10471	10472	10473	10474	10475	10476	10477	10478	10479	10480	10481	10482
##	2	1	2	2	2	2	2	2	2	2	2	2	2
##	10483	10484	10485	10486	10487	10488	10489	10490	10491	10492	10493	10494	10495
##	2	1	2	2	1	2	2	1	1	2	1	2	2
##	10496	10497	10498	10499	10500	10501	10502	10503	10504	10505	10506	10507	10508
##	3	2	2	2	2	5	2	2	1	2	2	1	2
##	10509	10510	10511	10512	10513	10514	10515	10516	10517	10518	10519	10520	10521
##	2	3	2	2	2	2	5	3	2	1	2	5	1
##	10522	10523	10524	10525	10526	10527	10528	10529	10530	10531	10532	10533	10534
##	2	1	2	2	3	2	2	1	2	3	2	3	5
##	10535	10536	10537	10538	10539	10540	10541	10542	10543	10544	10545	10546	10547
##	2	2	2	1	1	2	5	2	2	2	2	1	1
##	10548	10549	10550	10551	10552	10553	10554	10555	10556	10557	10558	10559	10560
##	5	2	2	2	2	2	2	2	2	2	1	2	5
##	10561	10562	10563	10564	10565	10566	10567	10568	10569	10570	10571	10572	10574
##	2	2	2	2	2	2	2	2	2	2	1	2	1
##	10575	10576	10577	10578	10579	10580	10581	10582	10583	10584	10585	10586	10587
##	2	2	2	1	2	2	1	2	1	3	2	2	2
##	10588	10589	10590	10591	10592	10593	10594	10595	10596	10597	10598	10599	10600
##	3	2	2	2	2	3	3	2	2	1	2	2	2
##	10601	10602	10603	10604	10605	10606	10607	10608	10609	10610	10611	10612	10613
##	2	2	2	1	2	1	2	2	2	1	1	2	2
##	10614	10615	10616	10617	10618	10619	10620	10621	10622	10623	10624	10625	10626
##	1	2	2	2	1	1	1	2	3	2	3	1	2
##	10627	10628	10629	10630	10631	10633	10634	10635	10636	10637	10638	10639	10640
##	2	2	3	2	2	1	2	2	2	2	2	3	2
##	10641	10642	10643	10644	10645	10646	10647	10648	10649	10650	10651	10652	10653
##	4	3	2	2	5	2	2	1	2	2	3	2	2
##	10654	10655	10656	10657	10658	10659	10660	10661	10662	10663	10664	10665	10666
##	2	5	2	1	2	2	2	2	1	2	2	3	2
##	10667	10668	10669	10670	10671	10672	10673	10674	10675	10676	10677	10678	10679
##	2	1	2	2	2	1	2	2	2	2	2	2	3
##	10680	10681	10682	10683	10684	10685	10686	10687	10688	10689	10690	10691	10692
##	3	2	1	2	2	2	1	2	2	2	2	2	2
##	10693	10694	10695	10696	10697	10698	10699	10700	10701	10702	10703	10704	10705
##	3	1	2	2	2	2	2	1	3	1	2	2	2
##	10706	10707	10708	10709	10710	10711	10712	10713	10714	10715	10716	10717	10718
##	2	1	2	2	3	2	2	1	2	2	2	2	2
##	10719	10720	10721	10722	10723	10724	10725	10726	10727	10728	10729	10730	10731
##	2	2	2	2	2	1	2	2	2	2	2	2	2
##	10732	10733	10734	10735	10736	10737	10738	10739	10740	10741	10742	10743	10744
##	2	3	2	3	2	2	2	1	2	2	3	1	1
##	10745	10746	10747	10748	10749	10750	10751	10753	10754	10755	10756	10757	10758
##	2	1	3	2	2	1	2	2	2	2	2	1	2

##	10759	10760	10761	10762	10763	10764	10765	10766	10767	10768	10769	10770	10771
##	3	2	2	2	3	1	2	3	2	1	1	2	2
##	10772	10773	10774	10775	10776	10777	10778	10779	10780	10781	10782	10783	10784
##	1	2	2	2	5	2	2	2	2	2	2	2	2
##	10785	10786	10787	10788	10789	10790	10791	10792	10793	10794	10795	10797	10798
##	1	2	2	2	2	1	2	2	2	3	2	2	3
##	10799	10800	10801	10802	10803	10804	10805	10806	10807	10808	10809	10810	10811
##	2	1	2	2	5	1	2	2	2	2	2	1	2
##	10812	10813	10814	10815	10816	10817	10818	10819	10820	10821	10822	10823	10824
##	2	5	2	1	2	2	2	2	2	1	1	2	2
##	10825	10826	10827	10828	10829	10830	10831	10832	10833	10834	10835	10836	10837
##	2	2	2	5	1	2	2	1	1	1	5	2	2
##	10838	10839	10840	10841	10843	10844	10845	10846	10847	10848	10849	10850	10851
##	2	2	2	1	2	2	1	1	2	2	1	1	2
##	10852	10853	10854	10855	10856	10857	10858	10859	10860	10861	10862	10863	10864
##	1	2	4	2	2	1	2	2	2	2	2	5	2
##	10865	10866	10867	10868	10869	10870	10871	10872	10873	10874	10875	10876	10877
##	2	1	2	2	2	2	2	2	2	2	2	1	1
##	10878	10879	10880	10881	10882	10883	10884	10885	10886	10887	10888	10889	10890
##	4	2	2	2	3	5	5	2	2	2	1	2	2
##	10891	10892	10893	10894	10895	10896	10897	10898	10899	10900	10901	10902	10903
##	3	2	2	2	2	2	2	2	1	2	2	2	2
##	10904	10905	10906	10907	10908	10909	10910	10911	10912	10913	10914	10915	10916
##	1	3	2	2	2	2	1	3	2	2	1	2	1
##	10917	10918	10919	10920	10921	10922	10923	10924	10925	10926	10927	10928	10929
##	2	1	2	2	2	2	2	1	2	2	2	2	2
##	10930	10931	10932	10933	10934	10935	10936	10937	10938	10939	10940	10941	10942
##	2	1	2	2	1	1	2	1	1	2	2	2	3
##	10943	10944	10945	10946	10947	10948	10949	10950	10951	10952	10953	10954	10955
##	2	1	2	2	2	1	2	1	1	1	2	2	2
##	10956	10957	10958	10959	10960	10961	10962	10963	10964	10965	10966	10967	10968
##	1	3	2	2	1	2	1	2	2	2	2	1	2
##	10969	10970	10971	10972	10973	10974	10975	10976	10977	10978	10979	10980	10981
##	2	1	2	2	2	2	2	2	2	3	2	2	3
##	10982	10983	10984	10985	10986	10987	10988	10990	10991	10992	10993	10994	10995
##	2	2	2	3	1	2	3	2	2	2	1	2	2
##	10996	10997	10998	10999	11000	11001	11002	11003	11004	11005	11006	11007	11008
##	2	2	2	2	2	2	2	2	2	2	2	2	1
##	11009	11010	11011	11012	11013	11014	11015	11016	11017	11018	11019	11020	11021
##	3	2	2	2	2	3	2	2	2	2	2	2	2
##	11022	11023	11024	11025	11026	11027	11028	11029	11030	11031	11032	11033	11034
##	2	2	1	2	5	2	2	2	2	2	2	1	2
##	11035	11036	11037	11038	11039	11040	11041	11042	11043	11045	11046	11047	11048
##	2	1	2	5	4	1	2	2	2	3	2	2	2
##	11049	11050	11051	11052	11053	11054	11055	11056	11057	11058	11059	11060	11061
##	1	2	1	2	2	2	2	2	2	1	2	2	1
##	11062	11063	11064	11065	11066	11067	11068	11069	11070	11071	11072	11073	11074
##	2	1	1	2	3	2	3	2	2	2	2	2	2
##	11075	11076	11077	11078	11079	11080	11081	11082	11083	11084	11085	11086	11087
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	11088	11089	11090	11091	11092	11093	11094	11095	11096	11097	11098	11099	11100
##	2	2	2	1	2	2	1	2	2	2	3	2	2
##	11101	11102	11103	11104	11105	11106	11107	11108	11109	11110	11111	11112	11113
##	1	2	1	2	1	2	2	2	1	2	2	2	2

##	11114	11115	11116	11117	11118	11119	11120	11121	11122	11123	11124	11125	11126
##	3	2	2	2	1	1	2	3	1	5	1	2	2
##	11127	11128	11129	11130	11131	11132	11133	11134	11135	11136	11137	11138	11139
##	2	2	2	1	2	2	2	2	2	1	1	3	1
##	11140	11141	11142	11143	11144	11145	11146	11147	11148	11149	11150	11151	11152
##	1	2	1	2	1	2	2	2	1	2	3	2	2
##	11153	11154	11155	11156	11157	11158	11159	11160	11161	11162	11163	11164	11165
##	2	1	1	2	5	2	2	2	2	1	2	2	2
##	11166	11167	11168	11169	11170	11171	11172	11173	11174	11175	11176	11177	11178
##	5	2	2	2	1	2	3	1	1	2	2	2	2
##	11179	11180	11181	11182	11183	11184	11185	11186	11187	11188	11189	11190	11191
##	2	1	1	2	2	5	2	1	2	2	3	2	2
##	11192	11193	11194	11195	11196	11197	11198	11199	11200	11201	11202	11203	11204
##	2	1	1	2	4	2	1	5	5	2	2	2	5
##	11205	11207	11208	11209	11210	11211	11212	11213	11214	11215	11216	11217	11218
##	2	1	1	2	2	2	2	1	2	2	2	2	1
##	11219	11220	11221	11222	11223	11224	11225	11226	11227	11228	11229	11230	11231
##	2	2	1	2	1	2	2	2	1	2	1	2	2
##	11232	11233	11234	11235	11236	11237	11238	11239	11240	11241	11242	11243	11244
##	2	3	2	1	1	2	2	2	1	1	2	2	2
##	11245	11246	11247	11248	11249	11250	11251	11252	11253	11254	11255	11256	11257
##	2	2	1	2	2	2	1	2	2	2	2	1	3
##	11258	11259	11260	11261	11262	11263	11264	11265	11266	11267	11268	11269	11270
##	3	2	2	2	2	2	3	3	1	3	2	2	2
##	11271	11272	11273	11274	11275	11276	11277	11278	11279	11280	11281	11282	11283
##	2	2	1	3	2	2	3	2	1	2	2	1	2
##	11284	11285	11286	11287	11288	11289	11290	11291	11292	11293	11294	11295	11296
##	2	3	2	2	1	2	2	2	3	1	2	1	2
##	11297	11298	11299	11300	11301	11302	11303	11304	11305	11306	11307	11308	11309
##	1	1	2	1	2	2	2	2	2	2	2	3	2
##	11310	11311	11312	11313	11314	11315	11316	11317	11318	11319	11320	11321	11322
##	2	3	2	3	1	2	2	1	2	2	1	2	2
##	11323	11324	11325	11326	11327	11328	11329	11330	11331	11332	11333	11334	11335
##	5	2	3	1	2	2	2	2	2	2	2	2	3
##	11336	11337	11338	11339	11340	11341	11342	11343	11344	11345	11346	11347	11348
##	2	2	2	2	1	2	2	3	3	3	1	2	3
##	11349	11350	11351	11352	11353	11354	11355	11356	11357	11358	11359	11360	11361
##	2	3	2	1	2	2	2	1	3	1	3	2	2
##	11362	11363	11364	11365	11366	11367	11368	11369	11370	11371	11372	11373	11374
##	1	2	2	2	2	1	3	2	1	3	2	2	2
##	11375	11376	11377	11378	11379	11380	11381	11382	11383	11384	11385	11386	11387
##	2	2	2	3	2	3	2	2	2	2	2	5	1
##	11388	11389	11390	11391	11392	11393	11394	11395	11396	11397	11398	11399	11400
##	1	2	2	1	1	2	1	2	2	1	2	2	5
##	11401	11402	11403	11404	11406	11407	11408	11409	11410	11411	11412	11413	11414
##	2	3	2	2	2	3	2	1	2	2	1	2	2
##	11415	11416	11417	11418	11419	11420	11421	11422	11423	11424	11425	11426	11427
##	2	2	2	2	1	2	2	1	2	1	3	2	2
##	11428	11429	11430	11431	11432	11433	11434	11435	11436	11437	11438	11439	11440
##	2	3	2	3	3	5	2	1	2	1	1	2	1
##	11441	11442	11443	11444	11445	11446	11447	11448	11449	11450	11451	11452	11453
##	2	1	3	5	2	2	2	3	1	2	1	1	1
##	11454	11455	11456	11457	11458	11459	11460	11461	11462	11463	11464	11465	11466
##	2	1	2	2	2	3	2	2	2	1	2	1	1



##	11467	11468	11469	11470	11471	11472	11473	11474	11475	11476	11477	11478	11479
##	2	2	2	2	2	3	2	2	5	1	2	2	2
##	11480	11481	11482	11483	11484	11485	11486	11487	11488	11489	11490	11491	11492
##	2	1	2	3	1	2	1	1	2	1	1	2	2
##	11493	11494	11495	11496	11497	11498	11499	11500	11501	11502	11503	11504	11505
##	2	1	5	2	2	3	2	2	2	2	2	2	3
##	11506	11507	11508	11509	11510	11511	11512	11513	11514	11515	11516	11517	11518
##	2	1	1	1	2	2	5	2	2	2	2	2	2
##	11519	11520	11521	11522	11523	11525	11526	11527	11528	11529	11530	11531	11532
##	2	5	2	1	2	2	1	3	2	1	2	2	2
##	11533	11534	11535	11536	11537	11538	11539	11540	11541	11542	11543	11544	11545
##	3	3	1	2	2	2	5	1	2	3	3	2	2
##	11546	11547	11548	11549	11550	11551	11552	11553	11554	11555	11556	11557	11558
##	1	1	2	2	2	1	2	5	1	2	2	2	2
##	11559	11560	11561	11562	11563	11564	11565	11566	11567	11568	11569	11570	11571
##	2	1	1	2	2	2	2	1	2	2	1	2	1
##	11572	11573	11574	11575	11576	11577	11578	11579	11580	11581	11583	11584	11585
##	3	1	2	2	2	2	2	2	3	1	2	2	3
##	11586	11587	11588	11589	11590	11591	11592	11593	11594	11595	11596	11597	11598
##	3	2	2	2	1	2	2	2	3	2	2	2	3
##	11599	11600	11601	11602	11603	11604	11605	11606	11607	11608	11609	11610	11611
##	5	1	2	1	1	3	2	2	2	2	3	2	2
##	11612	11613	11614	11615	11616	11617	11618	11619	11620	11621	11622	11623	11624
##	2	1	2	1	1	1	2	2	3	2	2	2	1
##	11626	11627	11628	11629	11630	11631	11632	11633	11634	11635	11636	11637	11638
##	1	3	3	2	5	1	3	1	2	2	5	2	1
##	11639	11640	11641	11642	11643	11644	11645	11646	11647	11648	11649	11650	11651
##	1	2	2	1	3	1	2	2	2	2	2	2	2
##	11652	11653	11654	11655	11656	11657	11658	11660	11661	11662	11663	11664	11665
##	2	2	5	2	1	2	2	2	2	2	2	2	3
##	11666	11667	11668	11669	11670	11671	11672	11673	11674	11675	11676	11677	11678
##	2	2	2	2	1	1	3	1	1	2	1	1	2
##	11679	11680	11681	11682	11683	11684	11685	11686	11687	11688	11689	11690	11691
##	2	5	2	2	5	2	2	1	2	2	1	2	2
##	11692	11693	11694	11695	11696	11697	11698	11699	11700	11701	11702	11703	11704
##	1	2	2	3	2	2	2	2	2	1	2	2	2
##	11705	11706	11707	11708	11709	11710	11711	11712	11713	11714	11715	11716	11717
##	2	2	2	2	5	2	2	2	2	2	1	2	2
##	11718	11719	11720	11721	11722	11723	11724	11725	11726	11727	11728	11729	11730
##	2	2	1	2	2	2	2	5	2	2	2	2	2
##	11731	11732	11733	11735	11736	11737	11738	11739	11740	11741	11742	11743	11744
##	2	2	2	1	3	2	2	1	2	5	5	1	2
##	11745	11746	11747	11749	11750	11751	11752	11753	11754	11755	11756	11757	11758
##	2	2	2	2	2	2	2	2	2	2	2	1	1
##	11759	11760	11761	11762	11763	11764	11765	11766	11767	11768	11769	11770	11771
##	2	1	1	2	2	1	2	1	1	1	2	2	3
##	11772	11773	11774	11775	11776	11777	11778	11779	11780	11781	11782	11783	11784
##	1	2	2	2	1	2	2	3	3	2	3	2	2
##	11785	11786	11787	11788	11789	11790	11791	11792	11793	11794	11795	11796	11797
##	2	2	2	2	2	1	2	2	2	3	2	1	2
##	11798	11799	11800	11801	11803	11804	11805	11806	11807	11808	11809	11810	11811
##	3	2	2	2	2	2	2	2	2	2	3	3	2
##	11812	11813	11815	11816	11817	11818	11819	11820	11821	11822	11823	11824	11825
##	2	2	1	2	4	1	1	1	1	2	1	2	2

##	11826	11827	11829	11830	11831	11832	11833	11834	11835	11836	11837	11838	11839
##	2	2	2	2	2	1	2	2	1	2	2	2	2
##	11840	11841	11842	11843	11844	11845	11846	11847	11848	11849	11850	11851	11852
##	1	2	2	2	2	2	1	1	2	2	2	1	2
##	11853	11854	11855	11856	11857	11858	11859	11860	11861	11862	11863	11864	11865
##	2	2	2	2	2	3	4	2	2	3	3	2	2
##	11866	11867	11868	11869	11870	11871	11872	11873	11874	11875	11876	11877	11878
##	1	2	1	2	2	5	1	2	2	2	2	2	2
##	11879	11880	11881	11882	11883	11884	11885	11886	11887	11888	11889	11890	11891
##	1	2	2	2	2	2	1	2	3	2	2	1	2
##	11892	11893	11894	11895	11896	11897	11898	11899	11900	11901	11902	11903	11904
##	2	2	2	2	2	1	2	2	2	1	2	2	2
##	11905	11906	11907	11908	11909	11910	11911	11912	11913	11914	11915	11916	11917
##	1	1	3	2	1	1	3	2	2	2	2	2	2
##	11918	11919	11920	11921	11922	11923	11924	11925	11926	11927	11928	11929	11930
##	1	2	2	2	2	3	2	3	2	1	1	1	2
##	11931	11932	11933	11934	11936	11937	11938	11940	11941	11942	11943	11944	11945
##	2	1	2	1	2	2	2	1	2	2	2	1	2
##	11946	11947	11948	11949	11950	11951	11952	11953	11954	11955	11956	11957	11958
##	3	2	2	2	2	1	3	1	2	2	3	2	1
##	11959	11960	11961	11962	11963	11964	11965	11966	11967	11968	11969	11970	11971
##	2	2	2	2	1	1	2	2	3	2	1	1	2
##	11972	11973	11974	11975	11976	11977	11978	11979	11980	11981	11982	11983	11984
##	2	2	2	2	2	2	2	2	5	2	1	2	2
##	11985	11986	11987	11988	11989	11990	11991	11992	11993	11994	11995	11996	11997
##	2	1	1	3	2	2	2	2	1	2	2	2	2
##	11998	11999	12000	12001	12002	12003	12004	12005	12006	12007	12008	12009	12010
##	2	1	1	1	2	2	1	2	2	2	2	2	3
##	12011	12012	12013	12014	12015	12016	12017	12018	12019	12020	12021	12022	12023
##	2	2	2	2	2	2	2	2	2	2	2	1	3
##	12024	12025	12026	12027	12028	12029	12030	12031	12032	12033	12034	12035	12036
##	3	1	1	2	2	2	2	2	2	2	2	2	2
##	12037	12038	12039	12040	12041	12042	12043	12044	12045	12046	12047	12048	12049
##	2	2	2	1	1	2	2	2	2	1	1	2	1
##	12050	12051	12052	12053	12054	12055	12056	12057	12058	12059	12060	12061	12062
##	5	2	2	2	2	2	2	1	1	2	3	2	2
##	12063	12064	12065	12066	12067	12068	12069	12070	12071	12072	12073	12074	12075
##	2	2	2	2	2	2	2	2	2	2	2	2	2
##	12076	12077	12078	12079	12080	12081	12082	12083	12084	12085	12086	12087	12088
##	1	1	2	2	2	1	1	2	2	2	2	2	2
##	12089	12090	12091	12092	12093	12094	12095	12096	12097	12098	12099	12100	12101
##	5	2	2	2	2	3	2	2	3	1	2	1	2
##	12102	12103	12104	12105	12106	12107	12108	12109	12110	12111	12112	12113	12114
##	2	2	2	3	1	2	2	4	1	2	1	1	3
##	12115	12116	12117	12118	12119	12120	12121	12122	12123	12124	12125	12126	12127
##	3	5	2	5	2	2	2	2	2	2	2	2	2
##	12128	12129	12130	12131	12132	12133	12134	12135	12136	12137	12138	12139	12140
##	2	2	3	2	2	2	2	2	1	1	2	1	2
##	12141	12142	12143	12144	12145	12146	12147	12148	12149	12150	12151	12152	12153
##	2	2	2	2	2	2	2	3	3	2	2	1	2
##	12154	12155	12156	12157	12158	12159	12161	12162	12163	12164	12165	12166	12167
##	1	1	2	1	1	2	2	2	2	2	2	2	1
##	12168	12169	12170	12171	12172	12173	12174	12175	12176	12177	12178	12179	12180
##	2	1	3	2	1	1	2	2	2	2	1	3	2

```
## 12182 12183 12184 12185 12187 12188 12189 12190 12191 12192 12193 12194 12195
##      2      5      2      3      2      3      1      2      2      1      2      1      2
## 12196 12197 12198 12199 12200 12201 12202 12203 12204 12205 12206 12207 12208
##      2      2      1      1      2      2      3      2      1      2      2      2      2
## 12209 12210 12211 12212 12213 12214 12215 12216 12217 12218 12219 12220 12221
##      2      1      5      2      2      1      2      2      2      2      1      2      2
## 12222 12223 12224 12225 12226 12227 12228 12229 12230 12231 12232 12233 12234
##      1      2      5      1      2      2      2      2      2      2      2      2      3
## 12235 12236 12237 12238 12239 12240 12241 12242 12243 12244 12245 12246 12247
##      5      2      2      2      1      2      2      2      2      1      2      2      2
## 12248 12249 12250 12251 12252 12253 12254 12255 12256 12257 12258 12259 12260
##      5      2      2      2      1      3      1      1      2      2      1      2      2
## 12261 12262 12263 12264 12265 12266 12267 12268 12269 12270 12271 12272 12273
##      2      2      2      2      2      2      2      3      3      2      2      2      5
## 12274 12275 12276 12277 12278 12279 12280 12281 12282 12283 12284 12285 12286
##      2      1      2      3      2      3      1      2      2      2      2      2      2
## 12287 12288 12289 12290 12291 12292 12293 12294 12295 12296 12297 12298 12299
##      2      3      1      2      2      2      1      2      2      1      2      2      2
## 12300 12301 12302 12303 12304 12305 12306 12307 12308 12309 12310 12311 12312
##      2      2      2      2      1      2      2      2      3      2      2      2      2
## 12313 12314 12315 12316 12317 12318 12319 12320 12321 12322 12323 12324 12325
##      2      5      2      1      2      2      1      2      2      2      2      1      2
## 12326 12327 12328 12329 12330
##      2      1      1      1      2
```

## Visualizing our Clusters

```
library(factoextra) # we shall use this library to visualize the best K as well as the clusters from t
```

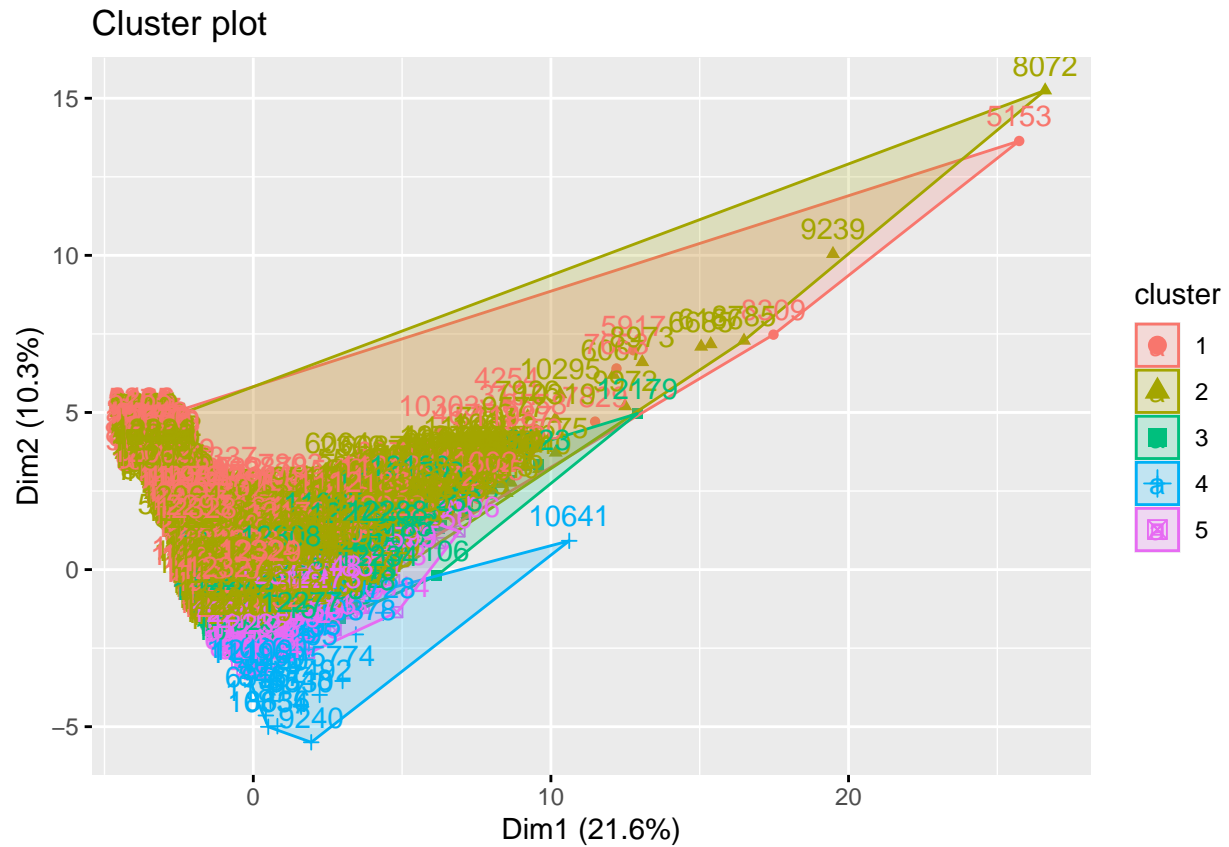
```
## Warning: package 'factoextra' was built under R version 3.6.3
```

```
## Loading required package: ggplot2
```

```
## Warning: package 'ggplot2' was built under R version 3.6.3
```

```
## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa
```

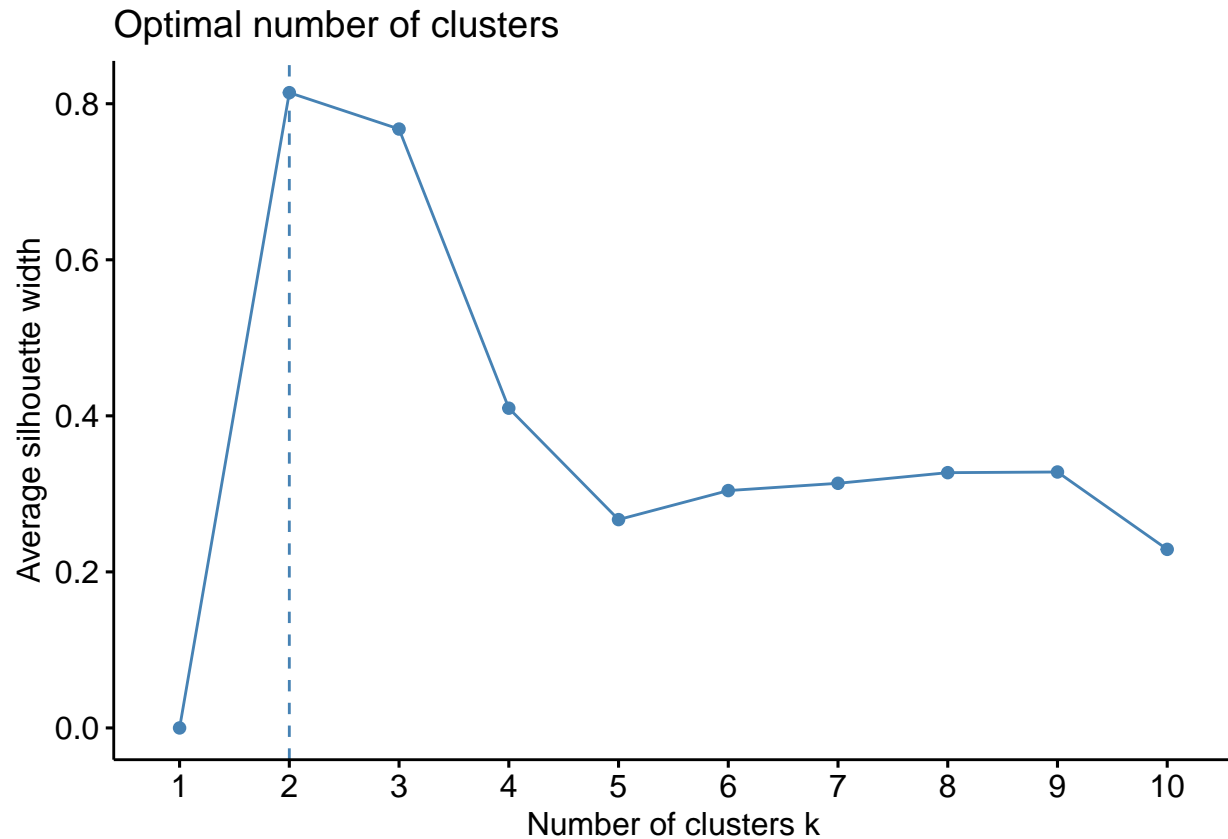
```
fviz_cluster(result, data = kira_new)
```



### Model Optimization

To create a better model, we will use the Silhouette method to determine the best K value for our mode.

```
fviz_nbclust(kira_new, kmeans, method='silhouette')
```



The optimal number of clusters is 2, we shall recreate our model using 2 as the K.

```
result<- kmeans(kira_new,2)
result$size
```

```
## [1] 11508 691
```

```
table(result$cluster, kira_class)
```

```
##      kira_class
##          0      1
## 1 10139 1369
## 2   152  539
```

```
result$centers
```

```
##      Administrative Administrative_Duration Informational Informational_Duration
## 1      0.08539953      0.02389720      0.01405188      0.08539953
## 2      0.10778796      0.03136253      0.01405034      0.10778796
##      ProductRelated ProductRelated_Duration BounceRates ExitRates PageValues
## 1      0.04531772      0.01878855 0.021491886 0.04309523 2.316999
## 2      0.04805863      0.02058766 0.003040664 0.01487603 66.498590
##      SpecialDay      Month OperatingSystems Browser      Region TrafficType
## 1 0.06489399 6.160323      2.123219 2.346107 3.155457 4.065346
```

```
## 2 0.01331404 6.295224      2.143271 2.558611 3.117221      4.228654
## VisitorType Weekend
## 1      2.734967 0.2334897
## 2      2.396527 0.2445731
```

```
result$cluster
```

```
##      1      2      3      4      5      6      7      8      9     10     11     12     13
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##     14     15     16     17     18     19     20     21     22     23     24     25     26
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##     27     28     29     30     31     32     33     34     35     36     37     38     39
##      1      1      1      2      1      1      1      1      1      1      1      1      1
##     40     41     42     43     44     45     46     47     48     49     50     51     52
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##     53     54     55     56     57     58     59     60     61     62     63     64     65
##      1      1      1      1      1      1      1      1      1      1      2      1      1
##     66     67     68     69     70     71     72     73     74     75     76     77     78
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##     79     80     81     82     83     84     85     86     87     88     89     90     91
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##     92     93     94     95     96     97     98     99    100    101    102    103    104
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    105    106    107    108    109    110    111    112    113    114    115    116    117
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    118    119    120    121    122    123    124    125    126    127    128    129    130
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    131    132    133    134    135    136    137    138    139    140    141    142    143
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    144    145    146    147    148    149    150    151    152    153    154    155    156
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    157    158    160    161    162    163    164    165    166    167    168    169    170
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    171    172    173    174    175    176    177    178    180    181    182    183    184
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    185    186    187    188    189    190    191    192    193    194    195    196    197
##      1      1      1      1      1      2      1      1      1      1      1      1      1
##    198    199    200    201    202    203    204    205    206    207    208    209    210
##      1      2      2      2      1      1      1      1      1      1      1      1      1
##    211    212    213    214    215    216    217    218    219    220    221    222    223
##      1      1      1      1      1      1      1      1      1      1      2      1      1
##    224    225    226    227    228    229    230    231    232    233    234    235    236
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    237    238    239    240    241    242    243    244    245    246    247    248    249
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    250    251    252    253    254    255    256    257    258    259    260    261    262
##      1      1      1      1      1      1      1      1      1      1      1      1      1
##    263    264    265    266    267    268    269    270    271    272    273    274    275
##      1      1      1      2      1      1      1      1      1      1      1      1      1
##    276    277    278    279    280    281    282    283    284    285    286    287    288
##      1      2      1      1      1      1      2      1      1      1      1      1      1
##    289    290    291    292    293    294    295    296    297    298    299    300    301
##      1      1      1      1      1      1      2      2      1      1      1      1      1
##    302    303    304    305    306    307    308    309    310    311    312    313    314
```

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	315	316	317	318	319	320	321	322	323	324	325	326	327
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	328	329	330	331	332	333	334	335	336	337	338	339	340
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	341	342	343	344	345	346	347	348	349	350	351	352	353
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	354	355	356	357	358	359	360	361	362	363	364	365	366
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	367	368	369	370	371	372	373	374	375	376	377	378	379
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	380	381	382	383	384	385	386	387	388	389	390	391	392
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	393	394	395	396	397	398	399	400	401	402	403	404	405
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	406	407	408	409	410	411	412	413	414	415	416	417	418
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	420	421	422	423	424	425	426	427	428	429	430	431	432
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	433	434	435	436	437	438	439	440	441	442	443	444	445
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	446	447	448	449	450	451	452	453	454	455	456	458	459
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	460	461	462	463	464	465	466	467	468	469	470	471	472
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	473	474	475	476	477	478	479	480	481	482	483	485	486
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	487	488	489	490	491	492	493	494	495	496	497	498	499
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	500	501	502	503	504	505	506	507	508	509	510	511	512
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	514	515	516	517	518	519	520	521	522	523	524	525	526
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	527	528	529	530	531	532	533	534	535	536	537	538	539
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	540	541	542	543	544	545	546	547	548	549	550	551	552
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	553	554	556	557	558	559	560	561	562	563	564	565	566
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	567	568	569	570	571	572	573	574	575	576	577	578	579
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	580	581	582	583	584	585	586	587	588	589	591	592	593
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	594	595	596	597	598	599	600	601	602	603	604	605	606
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	607	608	609	610	611	612	613	614	615	616	617	618	619
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	620	621	622	623	624	625	626	627	628	629	630	631	632
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	633	634	635	636	637	638	639	640	641	642	643	644	645
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	646	647	648	649	650	651	652	653	654	655	656	657	658
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	659	661	662	663	664	665	666	667	668	669	670	671	672

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	673	674	675	676	677	678	679	680	681	682	683	684	685
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	686	687	688	689	690	691	692	693	694	695	696	697	698
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	699	700	701	702	703	704	705	706	707	708	709	710	711
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	712	713	714	715	716	717	718	719	720	721	722	723	724
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	725	726	727	728	729	730	731	732	733	734	735	736	737
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	738	739	740	741	742	743	744	745	746	747	748	749	750
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	751	752	753	754	755	756	757	758	759	760	761	762	763
##	1	1	2	1	1	1	1	1	1	1	2	1	1
##	764	765	766	767	768	769	770	771	772	773	774	776	777
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	778	779	780	781	782	783	784	785	786	787	788	789	790
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	791	792	793	794	795	796	797	798	799	800	801	802	803
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	804	805	806	807	808	809	810	811	812	813	814	815	816
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	817	818	819	820	821	822	823	824	825	826	827	828	829
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	830	831	832	833	834	835	836	837	838	839	840	841	842
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	843	844	845	846	847	848	849	850	851	852	853	854	855
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	856	857	858	859	860	861	862	863	864	865	866	867	868
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	869	870	871	872	874	875	876	877	878	879	880	881	882
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	883	884	885	886	887	888	889	891	892	893	894	895	896
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	897	898	899	900	901	902	903	904	905	906	907	908	909
##	1	1	1	1	1	2	1	2	1	1	1	1	1
##	910	911	912	913	914	915	916	917	918	919	920	921	922
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	924	925	926	927	928	929	930	931	932	933	934	935	936
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	937	938	939	940	941	942	943	944	945	946	947	949	950
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	951	952	953	954	955	956	957	958	959	960	961	962	963
##	1	1	1	1	2	2	1	1	1	1	1	1	1
##	964	965	966	967	968	969	970	971	972	973	974	976	977
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	978	979	980	981	982	983	984	985	986	987	988	989	990
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029



##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1030	1031	1032	1033	1034	1036	1037	1038	1039	1040	1041	1042	1043
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
##	1	1	1	1	1	1	2	2	1	1	1	1	1
##	1057	1058	1059	1060	1061	1062	1063	1064	1065	1067	1068	1069	1070
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1121	1122	1123
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	1124	1125	1126	1127	1128	1129	1130	1131	1132	1138	1139	1140	1141
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1168	1169	1170	1172	1173	1174	1175	1176	1178	1179	1180	1181	1182
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	1209	1210	1211	1212	1213	1216	1217	1218	1219	1220	1221	1222	1223
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262
##	1	1	2	1	1	1	1	1	1	1	2	1	1
##	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1289	1290	1291	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1327	1328	1329
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1356	1358	1359	1360	1361	1362	1363	1364	1365	1366	1368	1369	1370
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1383	1384
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1385	1386	1387	1388	1389	1390	1392	1393	1394	1396	1397	1398	1399

##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425
##	1	2	1	1	1	1	1	1	1	1	1	2	1
##	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1438	1439
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1453	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1467	1468	1469	1470	1471	1472	1473	1478	1479	1480	1481	1482	1483
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496
##	1	1	1	1	2	1	1	1	2	1	1	1	1
##	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1510	1511	1512	1513	1514	1515	1517	1518	1519	1520	1521	1522	1523
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1537	1538	1539	1540	1541	1542	1543	1544	1545	1546	1547	1548	1549
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1550	1551	1552	1553	1554	1555	1556	1557	1558	1559	1560	1561	1562
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1563	1564	1565	1566	1567	1568	1569	1570	1571	1572	1573	1575	1576
##	1	1	1	1	2	1	1	1	1	2	1	1	1
##	1577	1578	1579	1580	1581	1582	1583	1584	1585	1586	1587	1588	1589
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600	1601	1602
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1603	1604	1605	1606	1607	1608	1610	1611	1612	1613	1614	1615	1616
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1617	1618	1619	1620	1621	1622	1623	1624	1625	1626	1627	1628	1629
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1630	1631	1632	1633	1634	1635	1636	1637	1638	1639	1640	1641	1642
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	1643	1644	1645	1646	1647	1648	1649	1650	1651	1652	1653	1654	1655
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1656	1657	1658	1659	1660	1661	1662	1663	1664	1665	1666	1667	1668
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1669	1670	1671	1672	1673	1674	1675	1676	1677	1678	1679	1680	1681
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	1682	1683	1684	1685	1686	1687	1688	1689	1690	1691	1692	1693	1694
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1695	1696	1697	1699	1700	1701	1702	1703	1704	1705	1706	1707	1708
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	1709	1710	1711	1712	1713	1714	1715	1716	1717	1718	1719	1720	1721
##	1	2	1	1	1	1	1	1	1	1	1	2	1
##	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760

##	1	1	1	1	1	1	1	1	1	1	1	1	
##	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1774	1775	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1788	1789	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	1801	1802	1803	1804	1806	1807	1808	1809	1810	1811	1812	1813	1814
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1841
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1868
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
##	1	1	1	1	1	1	1	2	1	1	2	1	1
##	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1921	1922	1923	1924	1925	1927	1928	1929	1930	1931	1932	1933	1935
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	1949	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2041	2042	2043
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071
##	1	1	1	1	1	1	1	1	1	2	1	1	2
##	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	2228	2229	2230	2231	2232	2233	2234	2235	2237	2238	2239	2240	2241
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280
##	1	1	1	1	1	1	1	2	1	1	1	2	1
##	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475

##	1	1	2	1	2	1	2	1	1	1	1	1	1
##	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605
##	1	1	1	1	1	1	2	1	1	1	2	1	2
##	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2619	2620	2621	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2737	2738	2739	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2751	2752	2753	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790
##	1	1	2	1	1	1	1	2	1	1	1	1	2
##	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933
##	1	1	1	1	1	2	1	2	1	1	1	1	1
##	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3038	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3051	3052	3053	3054	3055	3056	3057	3058	3059	3060	3061	3062	3063
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3064	3065	3066	3067	3068	3069	3070	3071	3072	3073	3074	3075	3076
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3077	3078	3079	3080	3081	3082	3083	3084	3085	3086	3087	3088	3089
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3090	3091	3092	3093	3094	3095	3096	3097	3098	3099	3100	3101	3102
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	3103	3104	3105	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	3116	3117	3118	3119	3120	3121	3122	3123	3124	3125	3126	3127	3128
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3129	3130	3131	3132	3133	3134	3135	3136	3137	3138	3139	3140	3141
##	1	1	2	1	1	2	1	1	1	1	1	1	1
##	3142	3143	3144	3145	3146	3147	3148	3149	3150	3151	3152	3153	3154
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	3155	3156	3157	3158	3159	3160	3161	3162	3163	3164	3165	3166	3167
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	3168	3169	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	3180

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3181	3182	3183	3184	3185	3186	3187	3188	3189	3190	3191	3192	3193
##	1	1	1	1	2	1	1	1	1	1	2	1	1
##	3194	3195	3196	3197	3198	3199	3200	3201	3202	3203	3204	3205	3206
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	3207	3208	3209	3210	3211	3212	3213	3214	3215	3216	3217	3218	3219
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	3220	3221	3222	3223	3224	3225	3226	3227	3228	3229	3230	3231	3233
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	3234	3235	3236	3237	3238	3239	3240	3241	3242	3243	3244	3245	3246
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3247	3248	3249	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3260	3261	3262	3263	3264	3265	3266	3267	3268	3269	3270	3271	3272
##	1	1	1	1	1	1	1	2	1	1	1	1	2
##	3274	3275	3276	3277	3278	3279	3280	3281	3283	3284	3285	3286	3287
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3288	3289	3290	3291	3292	3293	3294	3295	3296	3297	3298	3299	3300
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3301	3302	3303	3304	3305	3306	3307	3308	3309	3310	3311	3312	3313
##	1	1	1	1	1	1	1	2	1	1	1	1	2
##	3314	3315	3316	3317	3318	3319	3320	3321	3322	3323	3324	3325	3326
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	3327	3328	3329	3330	3331	3332	3333	3334	3335	3336	3337	3338	3339
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	3340	3341	3342	3343	3344	3345	3346	3347	3348	3349	3350	3351	3352
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	3353	3354	3355	3356	3357	3358	3359	3360	3361	3362	3363	3364	3365
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	3366	3367	3368	3369	3370	3371	3372	3373	3374	3375	3376	3377	3378
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3379	3380	3381	3382	3383	3384	3385	3386	3387	3388	3389	3390	3391
##	1	1	2	2	1	1	1	1	1	1	1	1	1
##	3392	3393	3394	3395	3396	3397	3398	3399	3400	3401	3402	3403	3404
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3405	3406	3407	3408	3409	3410	3411	3412	3413	3414	3415	3416	3417
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3418	3419	3420	3421	3422	3423	3424	3425	3426	3427	3428	3429	3430
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3431	3432	3433	3434	3435	3436	3437	3438	3439	3440	3441	3442	3443
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	3444	3445	3446	3447	3448	3449	3450	3451	3452	3453	3454	3455	3456
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3457	3458	3459	3460	3461	3462	3463	3464	3465	3466	3467	3468	3469
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3470	3471	3472	3473	3474	3475	3476	3477	3478	3479	3480	3481	3482
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3483	3484	3485	3486	3487	3488	3489	3490	3491	3492	3493	3494	3495
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	3496	3497	3498	3499	3500	3501	3502	3503	3504	3505	3506	3507	3508
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3509	3510	3511	3512	3513	3514	3515	3516	3517	3518	3519	3520	3521
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	3522	3523	3524	3525	3526	3527	3528	3529	3530	3531	3532	3533	3534

##	1	1	1	1	2	1	1	1	2	1	1	1	1
##	3535	3536	3537	3538	3539	3540	3541	3542	3543	3544	3545	3546	3547
##	1	1	1	1	1	1	1	1	2	1	1	1	2
##	3548	3549	3550	3551	3552	3553	3554	3555	3556	3557	3558	3559	3560
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3561	3562	3563	3564	3565	3566	3567	3568	3569	3570	3571	3572	3573
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3574	3575	3576	3577	3579	3580	3581	3582	3583	3584	3585	3586	3587
##	1	1	1	1	1	1	1	2	2	1	1	1	1
##	3588	3589	3590	3591	3592	3593	3594	3595	3596	3597	3598	3599	3600
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3601	3602	3603	3604	3605	3606	3607	3608	3609	3610	3611	3612	3613
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	3614	3615	3616	3617	3618	3619	3620	3621	3622	3623	3624	3625	3626
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	3627	3628	3629	3630	3631	3632	3633	3634	3635	3636	3637	3638	3639
##	1	1	2	1	1	1	1	1	2	1	1	1	1
##	3640	3641	3642	3643	3644	3645	3646	3647	3648	3649	3650	3652	3653
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3654	3655	3656	3657	3658	3659	3660	3661	3662	3663	3665	3666	3667
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	3668	3669	3670	3671	3672	3673	3674	3675	3676	3677	3678	3679	3680
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3681	3682	3683	3684	3685	3686	3687	3688	3689	3690	3691	3692	3693
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3694	3695	3696	3697	3698	3699	3700	3701	3702	3703	3704	3705	3706
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3707	3708	3709	3710	3711	3712	3713	3714	3715	3716	3717	3718	3719
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	3720	3721	3723	3724	3725	3726	3727	3728	3729	3730	3731	3732	3733
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3734	3735	3736	3737	3738	3739	3740	3741	3742	3743	3744	3745	3746
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	3747	3748	3749	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770	3771	3772
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	3773	3774	3775	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	3786	3787	3788	3789	3790	3791	3792	3793	3794	3795	3796	3797	3798
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	3799	3800	3801	3802	3803	3804	3805	3806	3807	3808	3809	3810	3811
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3812	3813	3814	3815	3816	3817	3818	3819	3820	3821	3822	3823	3824
##	1	1	1	1	2	1	2	1	1	1	1	1	1
##	3825	3826	3827	3828	3829	3830	3831	3832	3833	3834	3835	3836	3837
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	3838	3839	3840	3841	3842	3843	3844	3845	3846	3847	3848	3849	3850
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3851	3852	3853	3854	3855	3856	3857	3858	3859	3860	3861	3862	3863
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3864	3865	3866	3867	3868	3869	3870	3871	3872	3873	3874	3875	3876
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887	3888	3889



##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3890	3891	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902	3903
##	1	1	1	1	1	2	1	1	1	2	1	1	1
##	3904	3905	3906	3907	3908	3909	3910	3911	3912	3913	3914	3915	3916
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3917	3918	3919	3920	3921	3922	3923	3924	3925	3926	3927	3928	3929
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	3930	3931	3932	3933	3934	3935	3936	3937	3938	3939	3940	3941	3942
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3943	3944	3945	3946	3947	3948	3949	3950	3951	3952	3953	3954	3955
##	1	1	2	1	1	2	1	1	1	2	1	1	1
##	3956	3957	3958	3959	3960	3961	3962	3963	3964	3965	3966	3967	3968
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	3969	3970	3971	3972	3973	3974	3975	3976	3977	3978	3979	3980	3981
##	1	2	1	1	1	1	1	1	1	1	2	1	1
##	3982	3983	3984	3985	3986	3987	3988	3989	3990	3991	3992	3993	3994
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	3995	3996	3997	3998	3999	4000	4001	4002	4003	4004	4005	4006	4007
##	1	1	1	1	1	1	1	1	2	1	1	2	2
##	4008	4009	4010	4011	4012	4013	4014	4015	4016	4017	4018	4019	4020
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	4021	4022	4023	4024	4025	4026	4027	4028	4029	4030	4031	4032	4033
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	4034	4035	4036	4037	4038	4039	4040	4041	4042	4043	4044	4045	4046
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4047	4048	4049	4050	4051	4052	4053	4054	4055	4056	4057	4058	4059
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	4060	4061	4062	4063	4064	4065	4066	4067	4068	4069	4070	4071	4072
##	1	1	1	1	1	1	1	1	1	1	2	2	1
##	4073	4074	4075	4076	4077	4078	4079	4080	4081	4082	4083	4084	4085
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4086	4087	4088	4089	4090	4091	4092	4093	4094	4095	4096	4097	4098
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4099	4100	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4112	4113	4114	4115	4116	4117	4118	4119	4120	4121	4122	4123	4124
##	1	2	1	1	1	1	1	1	1	1	1	2	1
##	4125	4126	4127	4128	4129	4130	4131	4132	4133	4134	4135	4136	4137
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	4138	4139	4140	4141	4142	4143	4144	4145	4146	4147	4148	4149	4150
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	4151	4152	4153	4154	4155	4156	4157	4158	4159	4160	4161	4162	4163
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	4165	4166	4167	4168	4169	4170	4171	4172	4173	4174	4175	4176	4177
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4178	4179	4180	4181	4182	4184	4185	4186	4187	4188	4189	4190	4191
##	1	1	1	1	1	2	2	2	1	1	1	1	1
##	4192	4193	4194	4195	4196	4197	4198	4199	4200	4201	4202	4203	4204
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	4205	4206	4207	4208	4209	4210	4211	4212	4213	4214	4215	4216	4217
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4218	4219	4220	4221	4222	4223	4224	4225	4226	4227	4228	4229	4230
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4231	4233	4234	4235	4236	4237	4238	4239	4240	4241	4242	4243	4244

##	1	1	1	1	1	1	1	1	1	1	1	1	
##	4245	4246	4247	4248	4249	4250	4251	4252	4253	4254	4255	4256	4257
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	4258	4259	4260	4261	4262	4263	4264	4265	4266	4267	4268	4269	4270
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4271	4272	4273	4274	4275	4276	4277	4278	4279	4280	4281	4282	4283
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	4284	4285	4286	4287	4288	4289	4290	4291	4292	4293	4294	4295	4296
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	4297	4298	4299	4300	4301	4302	4303	4304	4305	4306	4307	4308	4309
##	1	1	1	1	1	1	1	2	1	1	1	2	1
##	4310	4311	4312	4313	4314	4315	4316	4317	4318	4319	4320	4321	4322
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4323	4324	4325	4326	4327	4328	4329	4330	4331	4332	4333	4334	4335
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4336	4337	4338	4339	4340	4341	4342	4343	4345	4346	4347	4348	4349
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	4350	4351	4352	4353	4354	4355	4356	4357	4358	4359	4360	4361	4362
##	1	1	1	1	1	1	1	1	1	2	1	2	1
##	4363	4364	4365	4366	4367	4368	4369	4370	4371	4372	4373	4374	4376
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4377	4378	4379	4380	4381	4382	4383	4384	4385	4386	4387	4388	4389
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4390	4391	4392	4393	4394	4395	4396	4397	4398	4399	4400	4401	4402
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4403	4405	4406	4407	4408	4409	4410	4411	4412	4413	4414	4415	4416
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4417	4418	4419	4420	4421	4422	4423	4424	4425	4426	4428	4429	4430
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4431	4432	4433	4434	4435	4436	4437	4438	4439	4440	4441	4442	4443
##	1	2	1	1	1	1	2	1	1	1	1	1	1
##	4444	4445	4446	4447	4448	4449	4450	4451	4452	4453	4454	4455	4456
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4457	4458	4459	4460	4461	4462	4463	4465	4466	4467	4468	4469	4470
##	1	1	2	1	1	1	1	1	2	1	1	1	1
##	4471	4472	4473	4474	4475	4476	4477	4478	4479	4480	4481	4482	4483
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4484	4485	4486	4487	4488	4489	4491	4492	4493	4494	4495	4496	4497
##	1	1	1	1	1	2	1	1	1	2	1	1	2
##	4498	4499	4500	4501	4502	4503	4504	4505	4506	4507	4508	4509	4510
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4511	4512	4513	4514	4515	4516	4517	4518	4519	4520	4521	4522	4523
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4524	4525	4526	4527	4528	4529	4530	4531	4532	4533	4534	4535	4536
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	4537	4538	4539	4540	4541	4542	4543	4544	4545	4546	4547	4548	4549
##	1	1	1	1	1	1	1	1	1	1	2	1	2
##	4550	4551	4552	4554	4555	4556	4557	4558	4559	4560	4561	4562	4563
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	4564	4565	4566	4567	4568	4569	4570	4571	4572	4573	4574	4575	4576
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	4577	4578	4579	4580	4581	4582	4583	4584	4585	4586	4587	4588	4589
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4590	4591	4592	4593	4594	4595	4596	4597	4598	4599	4600	4601	4602

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4603	4604	4605	4606	4607	4608	4609	4610	4611	4612	4613	4614	4615
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4616	4617	4618	4619	4620	4621	4622	4623	4624	4625	4626	4627	4628
##	1	1	1	1	1	1	2	1	2	1	1	1	1
##	4629	4630	4631	4632	4633	4634	4635	4636	4637	4638	4639	4640	4641
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4642	4643	4644	4645	4646	4647	4648	4649	4650	4651	4652	4653	4654
##	2	2	1	1	1	1	1	1	1	1	2	1	1
##	4655	4656	4657	4658	4659	4660	4661	4662	4663	4664	4665	4666	4667
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4668	4669	4670	4671	4672	4673	4674	4675	4676	4677	4678	4679	4680
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4681	4682	4683	4684	4685	4686	4687	4688	4689	4690	4691	4692	4693
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4694	4695	4696	4697	4698	4699	4700	4701	4702	4703	4704	4705	4706
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4707	4708	4709	4710	4711	4712	4713	4714	4715	4716	4717	4718	4719
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4720	4721	4722	4723	4724	4725	4726	4727	4728	4729	4730	4731	4732
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4733	4734	4735	4736	4737	4738	4739	4740	4741	4742	4743	4744	4745
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4746	4747	4748	4749	4750	4751	4752	4753	4754	4755	4756	4757	4758
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4759	4760	4761	4762	4763	4764	4765	4766	4767	4768	4769	4770	4771
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4772	4773	4774	4775	4776	4777	4778	4779	4780	4781	4782	4783	4784
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4785	4786	4787	4788	4789	4790	4791	4792	4793	4794	4795	4796	4797
##	1	1	1	1	1	1	2	1	1	2	1	1	1
##	4798	4799	4800	4801	4802	4803	4804	4805	4806	4807	4808	4809	4810
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4811	4812	4813	4814	4815	4816	4817	4819	4820	4821	4822	4823	4824
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4825	4826	4827	4828	4829	4830	4831	4832	4833	4834	4835	4836	4837
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4838	4839	4840	4841	4842	4843	4844	4845	4846	4847	4848	4849	4850
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4851	4852	4853	4854	4855	4856	4857	4858	4859	4860	4861	4862	4863
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4864	4865	4866	4867	4868	4869	4870	4871	4872	4873	4874	4875	4876
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	4877	4878	4879	4880	4881	4882	4883	4885	4886	4887	4888	4889	4890
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4891	4892	4893	4894	4895	4896	4897	4898	4899	4900	4901	4902	4903
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4904	4905	4906	4907	4908	4909	4910	4911	4912	4913	4915	4916	4917
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4918	4919	4920	4921	4922	4923	4924	4925	4926	4927	4928	4929	4930
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	4931	4932	4933	4934	4935	4936	4937	4938	4939	4940	4941	4942	4943
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	4944	4945	4946	4947	4948	4949	4950	4951	4952	4953	4954	4955	4956

##	1	1	1	1	1	1	1	1	1	1	1	1	
##	4957	4958	4959	4960	4961	4962	4963	4964	4965	4966	4967	4968	4969
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	4970	4971	4972	4973	4974	4975	4976	4977	4978	4979	4980	4981	4982
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4983	4984	4985	4986	4987	4988	4989	4990	4991	4992	4993	4994	4995
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	4996	4997	4998	4999	5000	5001	5002	5003	5004	5005	5006	5007	5008
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	5009	5010	5011	5012	5013	5014	5015	5016	5017	5018	5019	5020	5021
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5022	5023	5024	5025	5026	5027	5028	5029	5030	5031	5032	5033	5034
##	1	1	2	1	1	1	1	1	1	2	1	1	1
##	5035	5036	5037	5038	5040	5041	5042	5043	5045	5046	5047	5048	5049
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	5050	5051	5052	5053	5054	5055	5056	5058	5059	5060	5061	5062	5063
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5064	5065	5066	5067	5068	5069	5070	5071	5072	5073	5074	5075	5076
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5077	5078	5079	5080	5081	5082	5083	5084	5085	5086	5087	5088	5089
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	5090	5091	5092	5093	5094	5095	5096	5097	5098	5099	5100	5101	5102
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5103	5104	5105	5106	5107	5108	5109	5110	5111	5112	5113	5114	5115
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5116	5117	5118	5120	5121	5122	5123	5124	5125	5126	5127	5128	5129
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	5130	5131	5132	5133	5134	5135	5136	5137	5138	5139	5140	5141	5142
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	5143	5144	5145	5146	5147	5148	5149	5150	5151	5152	5153	5154	5155
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5156	5157	5158	5159	5160	5161	5162	5163	5164	5165	5166	5167	5168
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5169	5170	5171	5172	5173	5174	5175	5176	5177	5178	5179	5180	5181
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5182	5183	5184	5185	5186	5187	5188	5189	5190	5191	5192	5193	5194
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	5195	5196	5197	5198	5201	5202	5203	5204	5205	5206	5207	5208	5209
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5210	5211	5212	5213	5214	5215	5216	5217	5218	5219	5220	5221	5222
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5223	5224	5225	5226	5227	5228	5229	5230	5231	5232	5233	5234	5235
##	1	1	1	1	2	1	1	1	1	1	1	2	1
##	5236	5237	5238	5239	5240	5241	5242	5243	5244	5245	5246	5247	5248
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	5249	5250	5251	5252	5253	5254	5256	5257	5258	5259	5260	5261	5262
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	5263	5264	5265	5266	5267	5268	5269	5270	5271	5272	5273	5274	5275
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5276	5278	5279	5280	5281	5282	5283	5284	5285	5286	5288	5289	5290
##	1	1	1	1	2	1	1	1	1	1	2	1	2
##	5291	5292	5293	5294	5295	5296	5297	5298	5299	5300	5301	5302	5303
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	5304	5305	5306	5307	5308	5309	5310	5311	5312	5313	5314	5315	5316

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5317	5318	5319	5320	5321	5322	5323	5324	5325	5326	5327	5328	5329
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5330	5331	5332	5333	5334	5335	5336	5337	5338	5339	5340	5341	5342
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5343	5344	5345	5346	5347	5348	5349	5350	5351	5352	5353	5354	5355
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5357	5358	5359	5360	5361	5362	5363	5364	5365	5366	5367	5368	5369
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5370	5371	5372	5373	5374	5375	5376	5377	5378	5379	5380	5381	5382
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5383	5384	5385	5386	5387	5388	5389	5390	5391	5392	5393	5394	5395
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	5396	5397	5398	5399	5400	5401	5402	5403	5404	5405	5406	5407	5409
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	5410	5411	5412	5413	5414	5415	5416	5417	5418	5419	5420	5421	5422
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5423	5424	5425	5426	5427	5428	5429	5430	5431	5432	5433	5434	5435
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5436	5437	5438	5439	5440	5441	5442	5443	5444	5445	5446	5447	5448
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5449	5450	5451	5452	5453	5454	5455	5456	5457	5458	5459	5460	5461
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	5462	5463	5464	5465	5466	5467	5468	5469	5470	5471	5472	5473	5474
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	5475	5476	5477	5478	5479	5480	5481	5482	5483	5484	5485	5486	5487
##	2	1	1	1	1	2	2	1	1	1	1	1	1
##	5488	5489	5490	5491	5492	5493	5494	5495	5496	5497	5498	5499	5500
##	1	1	1	1	2	1	1	2	1	2	1	1	1
##	5501	5502	5503	5504	5505	5506	5507	5508	5509	5510	5511	5512	5513
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	5514	5515	5516	5517	5518	5519	5520	5521	5522	5523	5524	5525	5526
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	5527	5528	5529	5530	5531	5532	5533	5534	5535	5536	5537	5538	5539
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5540	5541	5542	5543	5544	5545	5546	5547	5548	5549	5550	5551	5552
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	5553	5554	5555	5556	5557	5558	5559	5560	5561	5562	5563	5564	5565
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	5566	5567	5568	5569	5570	5571	5572	5573	5574	5575	5576	5577	5578
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	5579	5580	5581	5582	5583	5584	5585	5586	5587	5588	5589	5590	5591
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5592	5593	5594	5595	5596	5597	5598	5599	5600	5601	5602	5603	5604
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5605	5606	5607	5608	5609	5610	5611	5612	5613	5614	5615	5616	5617
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5618	5619	5620	5621	5622	5623	5624	5625	5626	5627	5628	5629	5630
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5631	5632	5633	5634	5635	5636	5637	5638	5639	5640	5641	5642	5643
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	5644	5645	5646	5647	5648	5649	5650	5651	5652	5653	5654	5655	5656
##	1	2	1	1	1	1	1	1	2	1	1	1	1
##	5657	5658	5659	5660	5661	5662	5663	5664	5665	5666	5667	5668	5669

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5670	5671	5672	5673	5674	5675	5676	5677	5678	5679	5680	5681	5682
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5683	5684	5685	5686	5687	5688	5689	5690	5691	5692	5693	5694	5695
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	5696	5697	5698	5699	5700	5701	5702	5703	5704	5705	5706	5707	5708
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5709	5710	5711	5712	5713	5714	5715	5716	5717	5718	5719	5720	5721
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5722	5723	5724	5725	5726	5727	5728	5729	5730	5731	5732	5733	5734
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5735	5736	5737	5738	5739	5740	5741	5742	5743	5744	5745	5746	5747
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	5748	5749	5750	5751	5752	5753	5754	5755	5756	5757	5758	5759	5760
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5761	5762	5763	5764	5765	5766	5767	5768	5769	5770	5771	5772	5773
##	2	2	1	1	1	1	1	1	1	1	1	1	1
##	5774	5775	5776	5777	5778	5779	5780	5781	5782	5783	5784	5785	5786
##	2	1	1	1	1	1	1	1	1	2	1	1	1
##	5787	5788	5789	5790	5791	5792	5793	5794	5795	5796	5797	5798	5799
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5800	5801	5802	5803	5804	5805	5806	5807	5808	5809	5810	5811	5812
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5813	5814	5815	5816	5817	5818	5819	5820	5821	5822	5823	5824	5825
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	5826	5827	5828	5829	5830	5831	5832	5833	5834	5835	5836	5837	5838
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	5839	5840	5841	5842	5843	5844	5845	5846	5847	5848	5849	5850	5851
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5852	5853	5854	5855	5856	5857	5858	5859	5860	5861	5862	5863	5864
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	5865	5866	5867	5868	5869	5870	5871	5872	5873	5874	5875	5876	5877
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5878	5879	5880	5881	5882	5883	5884	5885	5886	5887	5888	5889	5890
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	5891	5892	5893	5894	5895	5896	5897	5898	5899	5900	5901	5902	5903
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5904	5905	5906	5907	5908	5909	5910	5911	5912	5913	5914	5915	5916
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	5917	5918	5919	5920	5921	5922	5923	5924	5925	5926	5927	5928	5929
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5930	5931	5932	5933	5934	5935	5936	5937	5938	5939	5940	5941	5942
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5943	5944	5945	5946	5947	5948	5949	5950	5951	5952	5953	5954	5955
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5956	5957	5958	5959	5960	5961	5962	5963	5964	5965	5966	5967	5968
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	5969	5970	5971	5972	5973	5974	5975	5976	5977	5978	5979	5980	5981
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	5982	5983	5984	5985	5986	5987	5988	5989	5990	5991	5992	5993	5994
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	5995	5996	5997	5998	5999	6000	6001	6002	6003	6004	6005	6006	6007
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	6008	6009	6010	6011	6012	6013	6014	6015	6016	6017	6018	6019	6020

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6021	6022	6023	6024	6025	6026	6027	6028	6029	6030	6031	6032	6033
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6034	6035	6036	6037	6038	6039	6040	6041	6042	6043	6044	6045	6046
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6047	6048	6049	6050	6051	6052	6053	6054	6055	6056	6057	6058	6059
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	6060	6061	6062	6063	6064	6065	6066	6067	6068	6069	6070	6071	6072
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6073	6074	6075	6076	6077	6078	6079	6080	6081	6082	6083	6084	6085
##	1	2	1	1	1	2	1	1	1	1	1	1	1
##	6086	6087	6088	6089	6090	6091	6092	6093	6094	6095	6096	6097	6098
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6099	6100	6101	6102	6103	6104	6105	6106	6107	6108	6109	6110	6111
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	6112	6113	6114	6115	6116	6117	6118	6119	6120	6121	6122	6123	6124
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6125	6126	6127	6128	6129	6130	6131	6132	6133	6134	6135	6136	6137
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6138	6139	6140	6141	6142	6143	6144	6145	6146	6147	6148	6149	6150
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6151	6152	6153	6154	6155	6156	6157	6158	6159	6160	6161	6162	6163
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6164	6165	6166	6167	6168	6169	6170	6171	6172	6173	6174	6175	6176
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	6177	6178	6179	6180	6181	6182	6183	6184	6185	6186	6187	6188	6189
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6190	6191	6192	6193	6194	6195	6196	6197	6198	6199	6200	6201	6202
##	1	1	2	1	1	1	1	1	2	1	1	1	2
##	6203	6204	6205	6206	6207	6208	6209	6210	6211	6212	6213	6214	6215
##	1	2	1	2	1	1	1	1	1	2	1	1	1
##	6216	6217	6218	6219	6220	6221	6222	6223	6224	6225	6226	6227	6228
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	6229	6230	6231	6232	6233	6234	6235	6236	6237	6238	6239	6240	6241
##	1	1	1	2	1	1	1	1	1	1	2	2	1
##	6242	6243	6244	6245	6246	6247	6248	6249	6250	6251	6252	6253	6254
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	6255	6256	6257	6258	6259	6260	6261	6262	6263	6264	6265	6266	6267
##	1	1	1	2	1	1	1	1	1	2	1	1	2
##	6268	6269	6270	6271	6272	6273	6274	6275	6276	6277	6278	6279	6280
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	6281	6282	6283	6284	6285	6286	6287	6288	6289	6290	6291	6292	6293
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6294	6295	6296	6297	6298	6299	6300	6301	6302	6303	6304	6305	6306
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6307	6308	6309	6310	6311	6312	6313	6314	6315	6316	6317	6318	6319
##	1	2	1	1	1	1	2	1	1	1	1	1	2
##	6320	6321	6322	6323	6324	6325	6326	6327	6328	6329	6330	6331	6332
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6333	6334	6335	6336	6337	6338	6339	6340	6341	6342	6343	6344	6345
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6346	6347	6348	6349	6350	6351	6352	6353	6354	6355	6356	6357	6358
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6359	6360	6361	6362	6363	6364	6365	6366	6367	6368	6369	6370	6371

##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	6372	6373	6374	6375	6376	6377	6378	6379	6380	6381	6382	6383	6384
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	6385	6386	6387	6388	6389	6390	6391	6392	6393	6394	6395	6396	6397
##	1	1	2	1	1	1	1	2	1	1	1	1	1
##	6398	6399	6400	6401	6402	6403	6404	6405	6406	6407	6408	6409	6410
##	1	2	1	1	1	1	1	1	1	2	1	1	1
##	6411	6412	6413	6414	6415	6416	6417	6418	6419	6420	6421	6422	6423
##	1	1	1	1	1	1	2	1	2	1	1	1	1
##	6424	6425	6426	6427	6428	6429	6430	6431	6432	6433	6434	6435	6436
##	1	1	1	1	1	1	2	1	2	1	1	1	2
##	6437	6438	6439	6440	6441	6442	6443	6444	6445	6446	6447	6448	6449
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	6450	6451	6452	6453	6454	6455	6456	6457	6458	6459	6460	6461	6462
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	6463	6464	6465	6466	6467	6468	6469	6470	6471	6472	6473	6474	6475
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6476	6477	6478	6479	6480	6481	6482	6483	6484	6485	6486	6487	6488
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	6489	6490	6491	6492	6493	6494	6495	6496	6497	6498	6499	6500	6501
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6502	6503	6504	6505	6506	6507	6508	6509	6510	6511	6512	6513	6514
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	6515	6516	6517	6518	6519	6520	6521	6522	6523	6524	6525	6526	6527
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6528	6529	6530	6531	6532	6533	6534	6535	6536	6537	6538	6539	6540
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6541	6542	6543	6544	6545	6546	6547	6548	6549	6550	6551	6552	6553
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6554	6555	6556	6557	6558	6559	6560	6561	6562	6563	6564	6565	6566
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6567	6568	6569	6570	6571	6572	6573	6574	6575	6576	6577	6578	6579
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6580	6581	6582	6583	6584	6585	6586	6587	6588	6589	6590	6591	6592
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	6593	6594	6595	6596	6597	6598	6599	6600	6601	6602	6603	6604	6605
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6606	6607	6608	6609	6610	6611	6612	6613	6614	6615	6616	6617	6618
##	1	1	1	1	1	1	1	1	2	2	2	1	2
##	6619	6620	6621	6622	6623	6624	6625	6626	6627	6628	6629	6630	6631
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6632	6633	6634	6635	6636	6637	6638	6639	6640	6641	6642	6643	6644
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6645	6646	6647	6648	6649	6650	6651	6652	6653	6654	6655	6656	6657
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	6658	6659	6660	6661	6662	6663	6664	6665	6666	6667	6668	6669	6670
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6671	6672	6673	6674	6675	6676	6677	6678	6679	6680	6681	6682	6683
##	1	1	2	1	1	1	1	1	1	2	1	1	1
##	6684	6685	6686	6687	6688	6689	6690	6691	6692	6693	6694	6695	6696
##	1	1	2	1	2	1	1	1	1	1	1	2	1
##	6697	6698	6699	6700	6701	6702	6703	6704	6705	6706	6707	6708	6709
##	1	1	1	2	1	1	1	1	1	1	1	2	1
##	6710	6711	6712	6713	6714	6715	6716	6717	6718	6719	6720	6721	6722



##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6723	6724	6725	6726	6727	6728	6729	6730	6731	6732	6733	6734	6735
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	6736	6737	6738	6739	6740	6741	6742	6743	6744	6745	6746	6747	6748
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6749	6750	6751	6752	6753	6754	6755	6756	6757	6758	6759	6760	6761
##	1	1	1	2	1	1	1	1	1	2	1	1	1
##	6762	6763	6764	6765	6766	6767	6768	6769	6770	6771	6772	6773	6774
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	6775	6776	6777	6778	6779	6780	6781	6782	6783	6784	6785	6786	6787
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6788	6789	6790	6791	6792	6793	6794	6795	6796	6797	6798	6799	6800
##	1	1	1	2	1	1	1	1	1	1	1	1	2
##	6801	6802	6803	6804	6805	6806	6807	6808	6809	6810	6811	6812	6813
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	6814	6815	6816	6817	6818	6819	6820	6821	6822	6823	6824	6825	6826
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	6827	6828	6829	6830	6831	6832	6833	6834	6835	6836	6837	6838	6839
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6840	6841	6842	6843	6844	6845	6846	6847	6848	6849	6850	6851	6852
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	6853	6854	6855	6856	6857	6858	6859	6860	6861	6862	6863	6864	6865
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6866	6867	6868	6869	6870	6871	6872	6873	6874	6875	6876	6877	6878
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	6879	6880	6881	6882	6883	6884	6885	6886	6887	6888	6889	6890	6891
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6892	6893	6894	6895	6896	6897	6898	6899	6900	6901	6902	6903	6904
##	1	2	1	1	2	1	1	1	2	1	1	1	1
##	6905	6906	6907	6908	6909	6910	6911	6912	6913	6914	6915	6916	6917
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6918	6919	6920	6921	6922	6923	6924	6925	6926	6927	6928	6929	6931
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6932	6933	6934	6935	6936	6937	6938	6939	6940	6941	6942	6943	6944
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	6945	6946	6947	6948	6949	6950	6951	6952	6953	6954	6955	6956	6957
##	1	2	1	1	1	2	1	1	1	1	1	2	1
##	6958	6959	6960	6961	6962	6963	6964	6965	6966	6967	6968	6969	6970
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	6971	6972	6973	6974	6975	6976	6977	6978	6979	6980	6981	6982	6983
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	6984	6985	6986	6987	6988	6989	6990	6991	6992	6993	6994	6995	6996
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	6997	6998	6999	7000	7001	7002	7003	7004	7005	7006	7007	7008	7009
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	7010	7011	7012	7013	7014	7015	7016	7017	7018	7019	7020	7021	7022
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	7023	7024	7025	7026	7027	7028	7029	7030	7031	7032	7033	7034	7035
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	7036	7037	7038	7039	7040	7041	7042	7043	7044	7045	7046	7047	7048
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	7049	7050	7051	7052	7053	7054	7055	7056	7057	7058	7059	7060	7061
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	7062	7063	7064	7065	7066	7067	7068	7069	7070	7071	7072	7073	7074

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7075	7076	7077	7078	7079	7080	7081	7082	7083	7084	7085	7086	7087
##	1	1	1	1	1	1	2	1	2	1	1	2	1
##	7088	7089	7090	7091	7092	7093	7094	7095	7096	7097	7098	7099	7100
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	7101	7102	7103	7104	7105	7106	7107	7108	7109	7110	7111	7112	7113
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7114	7115	7116	7117	7118	7119	7120	7121	7122	7123	7124	7125	7126
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7127	7128	7129	7130	7131	7132	7133	7134	7135	7136	7137	7138	7139
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	7140	7141	7142	7143	7144	7145	7146	7147	7148	7149	7150	7151	7153
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7154	7155	7156	7157	7158	7159	7160	7161	7162	7163	7164	7165	7166
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	7167	7168	7169	7170	7171	7172	7173	7174	7175	7176	7177	7178	7179
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	7180	7181	7182	7183	7184	7185	7186	7187	7188	7189	7190	7191	7192
##	2	1	1	1	1	1	1	1	1	1	1	2	1
##	7193	7194	7195	7196	7197	7198	7199	7200	7201	7202	7203	7204	7205
##	1	1	1	1	1	2	2	1	1	1	1	1	1
##	7206	7207	7208	7209	7210	7211	7212	7213	7214	7215	7216	7217	7218
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	7219	7220	7221	7222	7223	7224	7225	7226	7227	7228	7229	7230	7231
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7232	7233	7234	7235	7236	7237	7238	7239	7240	7241	7242	7243	7244
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7245	7246	7247	7248	7249	7250	7251	7252	7253	7254	7255	7256	7257
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	7258	7259	7260	7261	7262	7263	7264	7265	7266	7267	7268	7269	7270
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	7271	7272	7273	7274	7275	7276	7277	7278	7279	7280	7281	7282	7283
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	7284	7285	7286	7287	7288	7289	7290	7291	7292	7293	7294	7295	7296
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	7297	7298	7299	7300	7301	7302	7303	7304	7305	7306	7307	7308	7309
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7310	7311	7312	7313	7314	7315	7316	7317	7318	7319	7320	7321	7322
##	2	2	1	1	1	1	1	1	2	1	1	1	1
##	7323	7324	7325	7326	7327	7328	7329	7330	7331	7332	7333	7334	7335
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7336	7337	7338	7339	7340	7341	7342	7343	7344	7345	7346	7347	7348
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7349	7350	7351	7352	7353	7354	7355	7356	7357	7358	7359	7360	7361
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7362	7363	7364	7365	7366	7367	7368	7369	7370	7371	7372	7373	7374
##	2	1	1	1	1	2	2	1	1	1	1	1	1
##	7375	7376	7377	7378	7379	7380	7381	7382	7383	7384	7385	7386	7387
##	1	1	1	1	1	1	1	1	1	1	2	1	2
##	7388	7389	7390	7391	7392	7393	7394	7395	7396	7397	7398	7399	7400
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7401	7402	7403	7404	7405	7406	7407	7408	7409	7410	7411	7412	7413
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	7414	7415	7416	7417	7418	7419	7420	7421	7422	7423	7424	7425	7426

##	1	1	1	1	1	1	1	1	1	1	1	1	
##	7427	7428	7429	7430	7431	7432	7433	7434	7435	7436	7437	7438	7439
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	7440	7441	7442	7443	7444	7445	7446	7447	7448	7449	7450	7451	7452
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7453	7454	7455	7456	7457	7458	7459	7460	7461	7462	7463	7464	7465
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7466	7467	7468	7469	7470	7471	7472	7473	7474	7475	7476	7477	7478
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	7479	7480	7481	7482	7483	7484	7485	7486	7487	7488	7489	7490	7491
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7492	7493	7494	7495	7496	7497	7498	7499	7500	7501	7502	7503	7504
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7505	7506	7507	7508	7509	7510	7511	7512	7513	7514	7515	7516	7517
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7518	7519	7520	7521	7522	7523	7524	7525	7526	7527	7528	7529	7530
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7531	7532	7533	7534	7535	7536	7537	7538	7539	7540	7541	7542	7543
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7544	7545	7546	7547	7548	7549	7550	7551	7552	7553	7554	7555	7556
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7557	7558	7559	7560	7561	7562	7563	7564	7565	7566	7567	7568	7569
##	2	1	1	2	2	1	1	1	2	1	1	1	1
##	7570	7571	7572	7573	7574	7575	7576	7577	7578	7579	7580	7581	7582
##	1	1	1	1	1	1	2	1	1	2	2	1	1
##	7583	7584	7585	7586	7587	7588	7589	7590	7591	7592	7593	7594	7595
##	1	2	1	1	1	1	1	1	1	1	2	1	1
##	7596	7597	7598	7599	7600	7601	7602	7603	7604	7605	7606	7607	7608
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7609	7610	7611	7612	7613	7614	7615	7616	7617	7618	7619	7620	7621
##	1	1	1	1	2	1	1	1	1	1	1	2	1
##	7622	7623	7624	7625	7626	7627	7628	7629	7630	7631	7632	7633	7634
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	7635	7637	7638	7639	7640	7641	7642	7643	7644	7645	7646	7647	7648
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7649	7650	7651	7652	7653	7654	7655	7656	7657	7658	7659	7660	7661
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7662	7663	7664	7665	7666	7667	7668	7669	7670	7671	7672	7673	7674
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7675	7676	7677	7678	7679	7680	7681	7682	7683	7684	7685	7686	7687
##	1	2	1	1	1	1	2	1	1	1	1	1	1
##	7688	7689	7690	7691	7692	7693	7694	7695	7696	7697	7698	7699	7700
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	7701	7702	7703	7704	7705	7706	7707	7708	7709	7710	7711	7712	7713
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	7714	7715	7716	7717	7718	7719	7720	7721	7722	7723	7724	7725	7726
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	7727	7728	7729	7730	7731	7732	7733	7734	7735	7736	7737	7738	7739
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	7740	7741	7742	7743	7744	7745	7746	7747	7748	7749	7750	7751	7752
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	7753	7754	7755	7756	7757	7758	7759	7760	7761	7762	7763	7764	7765
##	1	1	1	2	1	1	1	2	1	1	1	1	1
##	7766	7767	7768	7769	7770	7771	7772	7773	7774	7775	7776	7777	7778

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7779	7780	7781	7782	7783	7784	7785	7786	7787	7788	7789	7790	7791
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	7792	7793	7794	7795	7796	7797	7798	7799	7800	7801	7802	7803	7804
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	7805	7806	7807	7808	7809	7810	7811	7812	7813	7814	7815	7816	7817
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	7818	7819	7820	7821	7822	7823	7824	7825	7826	7827	7828	7829	7830
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	7831	7832	7833	7834	7835	7836	7837	7838	7839	7840	7841	7842	7843
##	1	1	1	1	2	1	2	1	1	2	1	1	1
##	7844	7845	7846	7847	7848	7849	7850	7851	7852	7853	7854	7855	7856
##	1	1	1	1	1	1	1	1	1	2	2	1	1
##	7857	7858	7859	7860	7861	7862	7863	7864	7865	7866	7867	7868	7869
##	1	1	1	1	1	2	1	1	2	1	1	1	1
##	7870	7871	7872	7873	7874	7875	7876	7877	7878	7879	7880	7881	7882
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	7883	7884	7885	7886	7887	7888	7889	7890	7891	7892	7893	7894	7895
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7896	7897	7898	7899	7900	7901	7902	7903	7904	7905	7906	7907	7908
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	7909	7910	7911	7912	7913	7914	7915	7916	7917	7918	7919	7920	7921
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7922	7923	7924	7925	7926	7927	7928	7929	7930	7931	7932	7933	7934
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7935	7936	7937	7938	7939	7940	7941	7942	7943	7944	7945	7946	7947
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	7948	7949	7950	7951	7952	7953	7954	7955	7956	7957	7958	7959	7960
##	1	1	1	1	1	2	1	2	1	1	1	1	1
##	7961	7962	7963	7964	7965	7966	7967	7968	7969	7970	7971	7972	7973
##	1	2	1	2	1	1	1	1	1	1	1	1	1
##	7974	7975	7976	7977	7978	7979	7980	7981	7982	7983	7984	7985	7986
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	7987	7988	7989	7990	7991	7992	7993	7994	7995	7996	7997	7998	7999
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8000	8001	8002	8003	8004	8005	8006	8007	8008	8009	8010	8011	8012
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8013	8014	8015	8016	8017	8018	8019	8020	8021	8022	8023	8024	8025
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8026	8027	8028	8029	8030	8031	8032	8033	8034	8035	8036	8037	8038
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	8039	8040	8041	8042	8043	8044	8045	8046	8047	8048	8049	8050	8051
##	2	1	1	1	1	1	2	1	1	1	1	1	1
##	8052	8053	8054	8055	8056	8057	8058	8059	8060	8061	8062	8063	8064
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	8065	8066	8067	8068	8069	8070	8071	8072	8073	8074	8075	8076	8077
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8078	8079	8080	8081	8082	8083	8084	8085	8086	8087	8088	8089	8090
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	8091	8092	8093	8094	8095	8096	8097	8098	8099	8100	8101	8102	8103
##	1	1	2	1	1	1	2	1	1	1	1	1	1
##	8104	8105	8106	8107	8108	8109	8110	8111	8112	8113	8114	8115	8116
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8117	8118	8119	8120	8121	8122	8123	8124	8125	8126	8127	8128	8129

##	1	1	2	1	1	1	2	1	1	1	1	1	1
##	8130	8131	8132	8133	8134	8135	8136	8137	8138	8139	8140	8141	8142
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	8143	8144	8145	8146	8147	8148	8149	8150	8151	8152	8153	8154	8155
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	8156	8157	8158	8159	8160	8161	8162	8163	8164	8165	8166	8167	8168
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	8169	8170	8171	8172	8173	8174	8175	8176	8177	8178	8179	8180	8181
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8182	8183	8184	8185	8186	8187	8188	8189	8190	8191	8192	8193	8194
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8195	8196	8197	8198	8199	8200	8201	8202	8203	8204	8205	8206	8207
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8208	8209	8210	8211	8212	8213	8214	8215	8216	8217	8218	8219	8220
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	8221	8222	8223	8224	8225	8226	8227	8228	8229	8230	8231	8232	8233
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8234	8235	8236	8237	8238	8239	8240	8241	8242	8243	8244	8245	8246
##	1	1	1	1	1	1	1	1	1	1	2	1	2
##	8247	8248	8249	8250	8251	8252	8253	8254	8255	8256	8257	8258	8259
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	8260	8261	8262	8263	8264	8265	8266	8267	8268	8269	8270	8271	8272
##	1	2	1	1	1	2	1	1	1	1	1	1	1
##	8273	8274	8275	8276	8277	8278	8279	8280	8281	8282	8283	8284	8285
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8286	8287	8288	8289	8290	8291	8292	8293	8294	8295	8296	8297	8298
##	1	1	1	1	2	1	1	1	2	1	1	1	1
##	8299	8300	8301	8302	8303	8304	8305	8306	8307	8308	8309	8310	8311
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	8312	8313	8314	8315	8316	8317	8318	8319	8320	8321	8322	8323	8324
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8325	8326	8327	8328	8329	8330	8331	8332	8333	8334	8335	8336	8337
##	1	1	2	1	1	1	1	1	1	2	1	1	1
##	8338	8339	8340	8341	8342	8343	8344	8345	8346	8347	8348	8349	8350
##	1	1	1	2	1	1	1	1	2	1	1	1	1
##	8351	8352	8353	8354	8355	8356	8357	8358	8359	8360	8361	8362	8363
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	8364	8365	8366	8367	8368	8369	8370	8371	8372	8373	8374	8375	8376
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8377	8378	8379	8380	8381	8382	8383	8384	8385	8386	8387	8388	8389
##	2	1	1	2	1	1	1	2	1	1	1	1	1
##	8390	8391	8392	8393	8394	8395	8396	8397	8398	8399	8400	8401	8402
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	8403	8404	8405	8406	8407	8408	8409	8410	8411	8412	8413	8414	8415
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8416	8417	8418	8419	8420	8421	8422	8423	8424	8425	8426	8427	8428
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	8429	8430	8431	8432	8433	8434	8435	8436	8437	8438	8439	8440	8441
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	8442	8443	8444	8445	8446	8447	8448	8449	8450	8451	8452	8453	8454
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8455	8456	8457	8458	8459	8460	8461	8462	8463	8464	8465	8466	8467
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8468	8469	8470	8471	8472	8473	8474	8475	8476	8477	8478	8479	8480

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8481	8482	8483	8484	8485	8486	8487	8488	8489	8490	8491	8492	8493
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8494	8495	8496	8497	8498	8499	8500	8501	8502	8503	8504	8505	8506
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	8507	8508	8509	8510	8511	8512	8513	8514	8515	8516	8517	8518	8519
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	8520	8521	8522	8523	8524	8525	8526	8527	8528	8529	8530	8531	8532
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8533	8534	8535	8536	8537	8538	8539	8540	8541	8542	8543	8544	8546
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8547	8548	8549	8550	8551	8552	8553	8554	8555	8556	8557	8558	8559
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8560	8561	8562	8563	8564	8565	8566	8567	8568	8569	8570	8571	8572
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	8573	8574	8575	8576	8577	8578	8579	8580	8581	8582	8583	8584	8585
##	1	2	1	1	1	1	1	1	1	2	1	1	1
##	8586	8587	8588	8589	8590	8591	8592	8593	8594	8595	8596	8597	8598
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	8599	8600	8601	8602	8603	8604	8605	8606	8607	8608	8609	8610	8611
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8612	8613	8614	8615	8616	8617	8618	8619	8620	8621	8622	8623	8624
##	1	1	1	1	1	2	1	1	2	1	1	1	1
##	8625	8626	8627	8628	8629	8630	8631	8632	8633	8634	8635	8636	8637
##	1	1	1	2	1	1	1	1	1	1	1	2	1
##	8638	8639	8640	8641	8642	8643	8644	8645	8646	8647	8648	8649	8650
##	1	1	1	1	1	1	1	1	2	1	1	2	1
##	8651	8652	8653	8654	8655	8656	8657	8658	8659	8660	8661	8662	8663
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	8664	8665	8666	8667	8668	8669	8670	8671	8672	8673	8674	8675	8676
##	1	1	1	1	1	1	1	2	1	2	1	1	2
##	8677	8678	8679	8680	8681	8682	8683	8684	8685	8686	8687	8688	8689
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8690	8691	8692	8693	8694	8695	8696	8697	8698	8699	8700	8701	8702
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8703	8704	8705	8706	8707	8708	8709	8710	8711	8712	8713	8714	8715
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	8716	8717	8718	8719	8720	8721	8722	8723	8724	8725	8726	8727	8728
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8729	8730	8731	8732	8733	8734	8735	8736	8737	8738	8739	8740	8741
##	1	1	1	1	1	2	1	1	2	1	1	1	1
##	8742	8743	8744	8745	8746	8747	8748	8749	8750	8751	8752	8753	8754
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8755	8756	8757	8758	8759	8760	8761	8762	8763	8764	8765	8766	8767
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	8768	8769	8770	8771	8772	8773	8774	8775	8776	8777	8778	8779	8780
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8781	8782	8783	8784	8785	8786	8787	8788	8789	8790	8791	8792	8793
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8794	8795	8796	8797	8798	8799	8800	8801	8802	8803	8804	8805	8806
##	1	2	1	1	1	2	1	2	1	1	1	1	1
##	8807	8808	8809	8810	8811	8812	8813	8814	8815	8816	8817	8818	8819
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8820	8821	8822	8823	8824	8825	8826	8827	8828	8829	8830	8831	8832

##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	8833	8834	8835	8836	8837	8838	8839	8840	8841	8842	8843	8844	8845
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	8846	8847	8848	8849	8850	8851	8852	8853	8854	8855	8856	8857	8858
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8859	8860	8861	8862	8863	8864	8865	8866	8867	8868	8869	8870	8871
##	1	1	2	2	1	1	1	1	1	1	1	1	1
##	8872	8873	8874	8875	8876	8877	8878	8879	8880	8881	8882	8883	8884
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	8885	8886	8887	8888	8889	8890	8891	8892	8893	8894	8895	8896	8897
##	2	1	1	1	1	1	1	1	1	1	2	1	1
##	8898	8899	8900	8901	8902	8903	8904	8905	8906	8907	8908	8909	8910
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8911	8912	8913	8914	8915	8916	8917	8918	8919	8920	8921	8922	8923
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	8924	8925	8926	8927	8928	8929	8930	8931	8932	8933	8934	8935	8936
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8937	8938	8939	8940	8941	8942	8943	8944	8945	8946	8947	8948	8949
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8950	8951	8952	8953	8954	8955	8956	8957	8958	8959	8960	8961	8962
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8963	8964	8965	8966	8967	8968	8969	8970	8971	8972	8973	8974	8975
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	8976	8977	8978	8979	8980	8981	8982	8983	8984	8985	8986	8987	8988
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	8989	8990	8991	8992	8993	8994	8995	8996	8997	8998	8999	9000	9001
##	1	1	2	1	1	2	1	1	1	1	1	1	1
##	9002	9003	9004	9005	9006	9007	9008	9009	9010	9011	9012	9013	9014
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	9015	9016	9017	9018	9019	9020	9021	9022	9023	9024	9025	9026	9027
##	1	1	1	1	2	2	1	1	1	1	1	1	1
##	9028	9029	9030	9031	9032	9033	9034	9035	9036	9037	9038	9039	9040
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9041	9042	9043	9044	9045	9046	9047	9048	9049	9050	9051	9052	9053
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	9054	9055	9056	9057	9058	9059	9060	9061	9062	9063	9064	9065	9066
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	9067	9068	9069	9070	9071	9072	9073	9074	9075	9076	9077	9078	9079
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	9080	9081	9082	9083	9084	9085	9086	9087	9088	9089	9090	9091	9092
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9093	9094	9095	9096	9097	9098	9099	9100	9101	9102	9103	9104	9105
##	1	1	1	1	1	1	1	1	2	2	1	1	1
##	9106	9107	9108	9109	9110	9111	9112	9113	9114	9115	9116	9117	9118
##	1	1	1	1	1	1	1	1	1	2	2	1	1
##	9119	9120	9121	9122	9123	9124	9125	9126	9127	9128	9129	9130	9131
##	1	1	1	1	2	1	1	1	1	1	1	1	2
##	9132	9133	9134	9135	9136	9137	9138	9139	9140	9141	9142	9143	9144
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9145	9146	9147	9148	9149	9150	9151	9152	9153	9154	9155	9156	9157
##	1	1	1	2	1	2	1	1	1	1	1	1	1
##	9158	9159	9160	9161	9162	9163	9164	9165	9166	9167	9168	9169	9170
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9171	9172	9173	9174	9175	9176	9177	9178	9179	9180	9181	9182	9183

##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	9184	9185	9186	9187	9188	9189	9190	9191	9192	9193	9194	9195	9196
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9197	9198	9199	9200	9201	9202	9203	9204	9205	9206	9207	9208	9209
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	9210	9211	9212	9213	9214	9215	9216	9217	9218	9219	9220	9221	9222
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9223	9224	9225	9226	9227	9228	9229	9230	9231	9232	9233	9234	9235
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9236	9237	9238	9239	9240	9241	9242	9243	9244	9245	9246	9247	9248
##	1	1	1	1	2	1	1	2	1	1	1	1	1
##	9249	9250	9251	9252	9253	9254	9255	9256	9257	9258	9259	9260	9261
##	1	2	1	1	1	1	1	1	1	1	2	1	1
##	9262	9263	9264	9265	9266	9267	9268	9269	9270	9271	9272	9273	9274
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9275	9276	9277	9278	9279	9280	9281	9282	9283	9284	9285	9286	9287
##	1	1	1	1	2	1	1	1	1	2	1	1	2
##	9288	9289	9290	9291	9292	9293	9294	9295	9296	9297	9298	9299	9300
##	1	1	1	1	1	1	2	1	1	1	2	1	1
##	9301	9302	9303	9304	9305	9306	9308	9309	9310	9311	9312	9313	9314
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9315	9316	9317	9318	9319	9320	9321	9322	9323	9324	9325	9326	9327
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9328	9329	9330	9331	9332	9333	9334	9335	9336	9337	9338	9339	9340
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9341	9342	9343	9344	9345	9346	9347	9348	9349	9350	9351	9352	9353
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9354	9355	9356	9357	9358	9359	9360	9361	9362	9363	9364	9365	9366
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9367	9368	9369	9370	9371	9372	9373	9374	9375	9376	9377	9378	9379
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	9380	9381	9382	9383	9384	9385	9386	9387	9388	9389	9390	9391	9392
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	9393	9394	9395	9396	9397	9398	9399	9400	9401	9402	9403	9404	9405
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9406	9407	9408	9409	9410	9411	9412	9413	9414	9415	9416	9417	9418
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9419	9420	9421	9422	9423	9424	9425	9426	9427	9428	9429	9430	9431
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	9432	9433	9434	9435	9436	9437	9438	9439	9440	9441	9442	9443	9444
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	9445	9446	9447	9448	9449	9450	9451	9452	9453	9454	9455	9456	9457
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9458	9459	9460	9461	9462	9463	9464	9465	9466	9467	9468	9469	9470
##	1	2	1	1	1	1	1	1	1	2	1	1	1
##	9471	9472	9473	9474	9475	9476	9477	9478	9479	9480	9481	9482	9483
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9484	9485	9486	9487	9488	9489	9490	9491	9492	9493	9494	9496	9497
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9498	9499	9500	9501	9502	9503	9504	9505	9506	9507	9508	9509	9510
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9511	9512	9513	9514	9515	9516	9517	9518	9519	9520	9521	9522	9523
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	9524	9525	9526	9527	9528	9529	9530	9531	9532	9533	9534	9535	9536



##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	9537	9538	9539	9540	9541	9542	9543	9544	9545	9546	9547	9548	9549
##	2	1	1	1	2	2	1	1	1	1	1	1	2
##	9550	9551	9553	9554	9555	9556	9557	9558	9559	9560	9561	9562	9563
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9564	9565	9566	9567	9568	9570	9571	9572	9573	9574	9575	9576	9577
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	9578	9579	9580	9581	9583	9584	9585	9586	9587	9588	9589	9590	9591
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9592	9593	9594	9595	9596	9597	9598	9599	9600	9601	9602	9603	9604
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	9605	9606	9607	9608	9609	9610	9611	9612	9613	9614	9615	9616	9617
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	9618	9619	9620	9621	9622	9623	9624	9625	9626	9627	9628	9629	9630
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9631	9632	9633	9634	9635	9636	9637	9638	9639	9640	9641	9642	9643
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	9644	9645	9646	9647	9648	9649	9650	9651	9652	9653	9654	9655	9656
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	9657	9658	9659	9660	9661	9662	9663	9664	9665	9666	9667	9668	9669
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	9670	9671	9672	9673	9674	9675	9676	9677	9678	9679	9680	9681	9682
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9683	9684	9685	9686	9687	9688	9689	9690	9691	9692	9693	9694	9695
##	1	1	1	2	2	1	1	1	1	1	1	1	1
##	9696	9697	9698	9699	9700	9701	9702	9703	9704	9705	9706	9707	9708
##	1	1	1	2	1	1	1	1	1	1	1	1	2
##	9709	9710	9711	9712	9713	9714	9715	9716	9717	9718	9720	9721	9722
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	9723	9724	9725	9726	9727	9728	9729	9730	9731	9732	9733	9734	9735
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	9736	9737	9738	9739	9740	9741	9742	9743	9744	9745	9746	9747	9748
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9749	9750	9751	9752	9753	9754	9755	9756	9757	9758	9759	9760	9761
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9762	9763	9764	9765	9766	9767	9768	9769	9771	9772	9773	9774	9775
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	9776	9777	9778	9779	9780	9781	9782	9783	9784	9785	9786	9787	9788
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9789	9790	9791	9792	9793	9794	9795	9796	9797	9798	9799	9800	9801
##	1	1	1	1	2	2	1	1	1	1	1	1	1
##	9802	9803	9804	9805	9806	9807	9808	9809	9810	9811	9812	9813	9814
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9815	9816	9817	9818	9819	9820	9821	9822	9823	9824	9825	9826	9827
##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	9828	9829	9830	9831	9832	9833	9834	9835	9836	9837	9838	9839	9840
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9841	9842	9843	9844	9845	9846	9847	9848	9849	9850	9851	9852	9853
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	9854	9855	9856	9857	9858	9859	9860	9861	9862	9863	9864	9865	9866
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9867	9868	9869	9870	9871	9872	9873	9874	9875	9876	9877	9878	9880
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9881	9882	9883	9884	9885	9886	9887	9888	9889	9890	9891	9892	9893

##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	9894	9895	9896	9897	9898	9899	9900	9901	9902	9903	9904	9905	9906
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	9907	9909	9910	9911	9912	9913	9914	9915	9916	9917	9918	9919	9920
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	9921	9922	9923	9924	9925	9926	9927	9928	9929	9930	9931	9932	9933
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9934	9935	9936	9937	9938	9939	9940	9941	9942	9943	9944	9945	9946
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	9947	9948	9949	9950	9951	9952	9953	9954	9955	9956	9957	9958	9959
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	9960	9961	9962	9963	9964	9965	9966	9967	9968	9969	9970	9971	9972
##	2	1	1	1	1	2	1	2	1	1	1	1	1
##	9973	9974	9975	9976	9977	9978	9979	9980	9981	9982	9983	9984	9985
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	9986	9987	9988	9989	9990	9991	9992	9993	9994	9995	9996	9997	9998
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	9999	10000	10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037
##	2	2	1	1	1	1	1	1	1	1	1	1	1
##	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	10051	10052	10053	10054	10055	10056	10057	10058	10059	10060	10061	10062	10063
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	10064	10065	10066	10067	10068	10069	10070	10071	10072	10073	10074	10075	10076
##	2	1	1	1	2	1	1	1	1	1	1	1	1
##	10077	10078	10079	10080	10081	10082	10083	10084	10085	10086	10087	10088	10089
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10090	10091	10092	10093	10094	10095	10096	10097	10098	10099	10100	10101	10102
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	10103	10104	10105	10106	10107	10108	10109	10110	10111	10112	10113	10114	10115
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	10116	10117	10118	10119	10120	10121	10122	10123	10124	10125	10126	10127	10128
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10129	10130	10131	10132	10133	10134	10135	10136	10137	10138	10139	10140	10141
##	1	1	2	2	1	1	1	1	1	1	1	1	1
##	10142	10143	10144	10145	10146	10148	10149	10150	10151	10152	10153	10154	10155
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10156	10157	10158	10159	10160	10161	10162	10163	10164	10165	10166	10167	10168
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10169	10170	10171	10172	10173	10174	10175	10176	10177	10178	10179	10180	10181
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	10182	10183	10184	10185	10186	10187	10188	10189	10190	10191	10192	10193	10194
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	10195	10196	10197	10198	10199	10200	10201	10202	10203	10204	10205	10206	10207
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	10208	10209	10210	10211	10212	10213	10214	10215	10216	10217	10218	10219	10220
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10221	10222	10224	10225	10226	10227	10228	10229	10230	10231	10232	10233	10234
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10235	10236	10237	10238	10239	10240	10241	10242	10243	10244	10245	10246	10247

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10248	10249	10250	10251	10252	10253	10254	10255	10256	10257	10258	10259	10260
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	10261	10262	10263	10264	10265	10266	10267	10268	10269	10271	10272	10273	10274
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10275	10276	10277	10278	10279	10280	10281	10282	10283	10284	10285	10286	10287
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	10288	10289	10290	10291	10292	10293	10294	10295	10296	10297	10298	10299	10300
##	1	2	1	1	1	1	1	1	1	1	1	2	1
##	10301	10302	10303	10304	10305	10306	10307	10308	10309	10310	10311	10312	10313
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10314	10315	10316	10317	10318	10319	10320	10321	10322	10323	10324	10325	10326
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10327	10328	10329	10330	10331	10332	10333	10334	10335	10336	10337	10338	10339
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10340	10341	10342	10343	10344	10345	10346	10347	10348	10349	10350	10351	10352
##	1	1	1	1	1	1	1	1	1	1	2	1	2
##	10353	10354	10355	10356	10357	10358	10359	10360	10361	10362	10363	10364	10365
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10366	10367	10368	10369	10370	10371	10372	10373	10374	10375	10376	10377	10378
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10379	10380	10381	10382	10383	10384	10385	10386	10387	10388	10389	10390	10391
##	1	1	1	2	1	1	1	2	1	2	1	1	1
##	10392	10393	10394	10395	10396	10397	10398	10399	10400	10401	10402	10403	10404
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	10405	10406	10407	10408	10409	10410	10411	10412	10413	10414	10415	10416	10417
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10418	10419	10420	10421	10422	10423	10424	10425	10426	10427	10428	10429	10430
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	10431	10432	10433	10434	10435	10436	10437	10438	10439	10440	10441	10442	10443
##	1	1	2	1	1	2	1	1	1	2	1	1	2
##	10444	10445	10446	10447	10448	10449	10450	10451	10452	10453	10454	10455	10456
##	1	1	1	1	1	1	1	1	2	1	2	1	1
##	10457	10458	10459	10460	10461	10462	10463	10464	10465	10466	10467	10468	10469
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	10470	10471	10472	10473	10474	10475	10476	10477	10478	10479	10480	10481	10482
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10483	10484	10485	10486	10487	10488	10489	10490	10491	10492	10493	10494	10495
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10496	10497	10498	10499	10500	10501	10502	10503	10504	10505	10506	10507	10508
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	10509	10510	10511	10512	10513	10514	10515	10516	10517	10518	10519	10520	10521
##	1	2	1	1	1	1	2	2	1	1	1	2	1
##	10522	10523	10524	10525	10526	10527	10528	10529	10530	10531	10532	10533	10534
##	1	1	1	1	1	1	1	1	1	2	1	1	2
##	10535	10536	10537	10538	10539	10540	10541	10542	10543	10544	10545	10546	10547
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	10548	10549	10550	10551	10552	10553	10554	10555	10556	10557	10558	10559	10560
##	2	1	1	1	1	1	1	1	1	1	1	1	2
##	10561	10562	10563	10564	10565	10566	10567	10568	10569	10570	10571	10572	10574
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10575	10576	10577	10578	10579	10580	10581	10582	10583	10584	10585	10586	10587
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10588	10589	10590	10591	10592	10593	10594	10595	10596	10597	10598	10599	10600

##	1	1	1	1	1	2	1	1	1	1	1	1	
##	10601	10602	10603	10604	10605	10606	10607	10608	10609	10610	10611	10612	10613
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10614	10615	10616	10617	10618	10619	10620	10621	10622	10623	10624	10625	10626
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10627	10628	10629	10630	10631	10633	10634	10635	10636	10637	10638	10639	10640
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10641	10642	10643	10644	10645	10646	10647	10648	10649	10650	10651	10652	10653
##	2	2	1	1	2	1	1	1	1	1	1	1	1
##	10654	10655	10656	10657	10658	10659	10660	10661	10662	10663	10664	10665	10666
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	10667	10668	10669	10670	10671	10672	10673	10674	10675	10676	10677	10678	10679
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10680	10681	10682	10683	10684	10685	10686	10687	10688	10689	10690	10691	10692
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10693	10694	10695	10696	10697	10698	10699	10700	10701	10702	10703	10704	10705
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	10706	10707	10708	10709	10710	10711	10712	10713	10714	10715	10716	10717	10718
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	10719	10720	10721	10722	10723	10724	10725	10726	10727	10728	10729	10730	10731
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10732	10733	10734	10735	10736	10737	10738	10739	10740	10741	10742	10743	10744
##	1	1	1	2	1	1	1	1	1	1	1	1	1
##	10745	10746	10747	10748	10749	10750	10751	10753	10754	10755	10756	10757	10758
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10759	10760	10761	10762	10763	10764	10765	10766	10767	10768	10769	10770	10771
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	10772	10773	10774	10775	10776	10777	10778	10779	10780	10781	10782	10783	10784
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	10785	10786	10787	10788	10789	10790	10791	10792	10793	10794	10795	10797	10798
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	10799	10800	10801	10802	10803	10804	10805	10806	10807	10808	10809	10810	10811
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	10812	10813	10814	10815	10816	10817	10818	10819	10820	10821	10822	10823	10824
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	10825	10826	10827	10828	10829	10830	10831	10832	10833	10834	10835	10836	10837
##	1	1	1	2	1	1	1	1	1	1	2	1	1
##	10838	10839	10840	10841	10843	10844	10845	10846	10847	10848	10849	10850	10851
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10852	10853	10854	10855	10856	10857	10858	10859	10860	10861	10862	10863	10864
##	1	1	2	1	1	1	1	1	1	1	1	2	1
##	10865	10866	10867	10868	10869	10870	10871	10872	10873	10874	10875	10876	10877
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10878	10879	10880	10881	10882	10883	10884	10885	10886	10887	10888	10889	10890
##	2	1	1	1	1	2	2	1	1	1	1	1	1
##	10891	10892	10893	10894	10895	10896	10897	10898	10899	10900	10901	10902	10903
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10904	10905	10906	10907	10908	10909	10910	10911	10912	10913	10914	10915	10916
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	10917	10918	10919	10920	10921	10922	10923	10924	10925	10926	10927	10928	10929
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10930	10931	10932	10933	10934	10935	10936	10937	10938	10939	10940	10941	10942
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10943	10944	10945	10946	10947	10948	10949	10950	10951	10952	10953	10954	10955

##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10956	10957	10958	10959	10960	10961	10962	10963	10964	10965	10966	10967	10968
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10969	10970	10971	10972	10973	10974	10975	10976	10977	10978	10979	10980	10981
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	10982	10983	10984	10985	10986	10987	10988	10990	10991	10992	10993	10994	10995
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	10996	10997	10998	10999	11000	11001	11002	11003	11004	11005	11006	11007	11008
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11009	11010	11011	11012	11013	11014	11015	11016	11017	11018	11019	11020	11021
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	11022	11023	11024	11025	11026	11027	11028	11029	11030	11031	11032	11033	11034
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	11035	11036	11037	11038	11039	11040	11041	11042	11043	11045	11046	11047	11048
##	1	1	1	2	2	1	1	1	1	1	1	1	1
##	11049	11050	11051	11052	11053	11054	11055	11056	11057	11058	11059	11060	11061
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11062	11063	11064	11065	11066	11067	11068	11069	11070	11071	11072	11073	11074
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11075	11076	11077	11078	11079	11080	11081	11082	11083	11084	11085	11086	11087
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11088	11089	11090	11091	11092	11093	11094	11095	11096	11097	11098	11099	11100
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11101	11102	11103	11104	11105	11106	11107	11108	11109	11110	11111	11112	11113
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11114	11115	11116	11117	11118	11119	11120	11121	11122	11123	11124	11125	11126
##	1	1	1	1	1	1	1	1	1	2	1	1	1
##	11127	11128	11129	11130	11131	11132	11133	11134	11135	11136	11137	11138	11139
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11140	11141	11142	11143	11144	11145	11146	11147	11148	11149	11150	11151	11152
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	11153	11154	11155	11156	11157	11158	11159	11160	11161	11162	11163	11164	11165
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	11166	11167	11168	11169	11170	11171	11172	11173	11174	11175	11176	11177	11178
##	2	1	1	1	1	1	1	1	1	1	1	1	1
##	11179	11180	11181	11182	11183	11184	11185	11186	11187	11188	11189	11190	11191
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	11192	11193	11194	11195	11196	11197	11198	11199	11200	11201	11202	11203	11204
##	1	1	1	1	2	1	1	2	2	1	1	1	2
##	11205	11207	11208	11209	11210	11211	11212	11213	11214	11215	11216	11217	11218
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11219	11220	11221	11222	11223	11224	11225	11226	11227	11228	11229	11230	11231
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11232	11233	11234	11235	11236	11237	11238	11239	11240	11241	11242	11243	11244
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11245	11246	11247	11248	11249	11250	11251	11252	11253	11254	11255	11256	11257
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11258	11259	11260	11261	11262	11263	11264	11265	11266	11267	11268	11269	11270
##	2	1	1	1	1	1	2	1	1	2	1	1	1
##	11271	11272	11273	11274	11275	11276	11277	11278	11279	11280	11281	11282	11283
##	1	1	1	2	1	1	2	1	1	1	1	1	1
##	11284	11285	11286	11287	11288	11289	11290	11291	11292	11293	11294	11295	11296
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11297	11298	11299	11300	11301	11302	11303	11304	11305	11306	11307	11308	11309

##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	11310	11311	11312	11313	11314	11315	11316	11317	11318	11319	11320	11321	11322
##	1	2	1	1	1	1	1	1	1	1	1	1	1
##	11323	11324	11325	11326	11327	11328	11329	11330	11331	11332	11333	11334	11335
##	2	1	2	1	1	1	1	1	1	1	1	1	1
##	11336	11337	11338	11339	11340	11341	11342	11343	11344	11345	11346	11347	11348
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11349	11350	11351	11352	11353	11354	11355	11356	11357	11358	11359	11360	11361
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11362	11363	11364	11365	11366	11367	11368	11369	11370	11371	11372	11373	11374
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11375	11376	11377	11378	11379	11380	11381	11382	11383	11384	11385	11386	11387
##	1	1	1	2	1	2	1	1	1	1	1	2	1
##	11388	11389	11390	11391	11392	11393	11394	11395	11396	11397	11398	11399	11400
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	11401	11402	11403	11404	11406	11407	11408	11409	11410	11411	11412	11413	11414
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11415	11416	11417	11418	11419	11420	11421	11422	11423	11424	11425	11426	11427
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11428	11429	11430	11431	11432	11433	11434	11435	11436	11437	11438	11439	11440
##	1	2	1	1	1	2	1	1	1	1	1	1	1
##	11441	11442	11443	11444	11445	11446	11447	11448	11449	11450	11451	11452	11453
##	1	1	2	2	1	1	1	1	1	1	1	1	1
##	11454	11455	11456	11457	11458	11459	11460	11461	11462	11463	11464	11465	11466
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11467	11468	11469	11470	11471	11472	11473	11474	11475	11476	11477	11478	11479
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	11480	11481	11482	11483	11484	11485	11486	11487	11488	11489	11490	11491	11492
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11493	11494	11495	11496	11497	11498	11499	11500	11501	11502	11503	11504	11505
##	1	1	2	1	1	2	1	1	1	1	1	1	2
##	11506	11507	11508	11509	11510	11511	11512	11513	11514	11515	11516	11517	11518
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	11519	11520	11521	11522	11523	11525	11526	11527	11528	11529	11530	11531	11532
##	1	2	1	1	1	1	1	2	1	1	1	1	1
##	11533	11534	11535	11536	11537	11538	11539	11540	11541	11542	11543	11544	11545
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	11546	11547	11548	11549	11550	11551	11552	11553	11554	11555	11556	11557	11558
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	11559	11560	11561	11562	11563	11564	11565	11566	11567	11568	11569	11570	11571
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11572	11573	11574	11575	11576	11577	11578	11579	11580	11581	11583	11584	11585
##	1	1	1	1	1	1	1	1	2	1	1	1	2
##	11586	11587	11588	11589	11590	11591	11592	11593	11594	11595	11596	11597	11598
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	11599	11600	11601	11602	11603	11604	11605	11606	11607	11608	11609	11610	11611
##	2	1	1	1	1	2	1	1	1	1	2	1	1
##	11612	11613	11614	11615	11616	11617	11618	11619	11620	11621	11622	11623	11624
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11626	11627	11628	11629	11630	11631	11632	11633	11634	11635	11636	11637	11638
##	1	2	1	1	2	1	2	1	1	1	2	1	1
##	11639	11640	11641	11642	11643	11644	11645	11646	11647	11648	11649	11650	11651
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11652	11653	11654	11655	11656	11657	11658	11660	11661	11662	11663	11664	11665

##	1	1	2	1	1	1	1	1	1	1	1	1	1
##	11666	11667	11668	11669	11670	11671	11672	11673	11674	11675	11676	11677	11678
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	11679	11680	11681	11682	11683	11684	11685	11686	11687	11688	11689	11690	11691
##	1	2	1	1	2	1	1	1	1	1	1	1	1
##	11692	11693	11694	11695	11696	11697	11698	11699	11700	11701	11702	11703	11704
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11705	11706	11707	11708	11709	11710	11711	11712	11713	11714	11715	11716	11717
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	11718	11719	11720	11721	11722	11723	11724	11725	11726	11727	11728	11729	11730
##	1	1	1	1	1	1	1	2	1	1	1	1	1
##	11731	11732	11733	11735	11736	11737	11738	11739	11740	11741	11742	11743	11744
##	1	1	1	1	1	1	1	1	1	2	2	1	1
##	11745	11746	11747	11749	11750	11751	11752	11753	11754	11755	11756	11757	11758
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11759	11760	11761	11762	11763	11764	11765	11766	11767	11768	11769	11770	11771
##	1	1	1	1	1	1	1	1	1	1	1	1	2
##	11772	11773	11774	11775	11776	11777	11778	11779	11780	11781	11782	11783	11784
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	11785	11786	11787	11788	11789	11790	11791	11792	11793	11794	11795	11796	11797
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11798	11799	11800	11801	11803	11804	11805	11806	11807	11808	11809	11810	11811
##	1	1	1	1	1	1	1	1	1	1	1	2	1
##	11812	11813	11815	11816	11817	11818	11819	11820	11821	11822	11823	11824	11825
##	1	1	1	1	2	1	1	1	1	1	1	1	1
##	11826	11827	11829	11830	11831	11832	11833	11834	11835	11836	11837	11838	11839
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11840	11841	11842	11843	11844	11845	11846	11847	11848	11849	11850	11851	11852
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11853	11854	11855	11856	11857	11858	11859	11860	11861	11862	11863	11864	11865
##	1	1	1	1	1	1	2	1	1	1	1	1	1
##	11866	11867	11868	11869	11870	11871	11872	11873	11874	11875	11876	11877	11878
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	11879	11880	11881	11882	11883	11884	11885	11886	11887	11888	11889	11890	11891
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	11892	11893	11894	11895	11896	11897	11898	11899	11900	11901	11902	11903	11904
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11905	11906	11907	11908	11909	11910	11911	11912	11913	11914	11915	11916	11917
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11918	11919	11920	11921	11922	11923	11924	11925	11926	11927	11928	11929	11930
##	1	1	1	1	1	2	1	1	1	1	1	1	1
##	11931	11932	11933	11934	11936	11937	11938	11940	11941	11942	11943	11944	11945
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11946	11947	11948	11949	11950	11951	11952	11953	11954	11955	11956	11957	11958
##	1	1	1	1	1	1	1	1	1	1	2	1	1
##	11959	11960	11961	11962	11963	11964	11965	11966	11967	11968	11969	11970	11971
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11972	11973	11974	11975	11976	11977	11978	11979	11980	11981	11982	11983	11984
##	1	1	1	1	1	1	1	1	2	1	1	1	1
##	11985	11986	11987	11988	11989	11990	11991	11992	11993	11994	11995	11996	11997
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	11998	11999	12000	12001	12002	12003	12004	12005	12006	12007	12008	12009	12010
##	1	1	1	1	1	1	1	1	1	1	1	1	1
##	12011	12012	12013	12014	12015	12016	12017	12018	12019	12020	12021	12022	12023

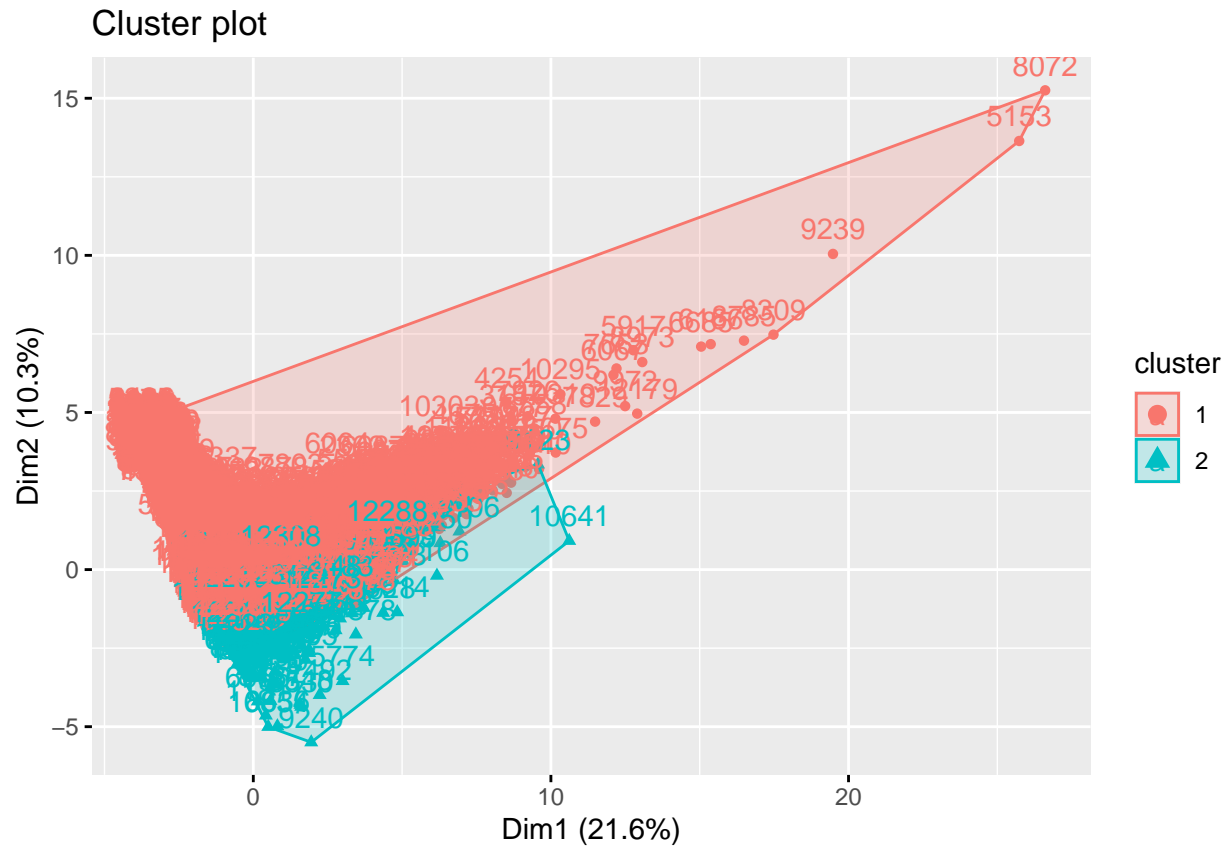
```

##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12024 12025 12026 12027 12028 12029 12030 12031 12032 12033 12034 12035 12036
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12037 12038 12039 12040 12041 12042 12043 12044 12045 12046 12047 12048 12049
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12050 12051 12052 12053 12054 12055 12056 12057 12058 12059 12060 12061 12062
##      2      1      1      1      1      1      1      1      1      1      1      1      1
## 12063 12064 12065 12066 12067 12068 12069 12070 12071 12072 12073 12074 12075
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12076 12077 12078 12079 12080 12081 12082 12083 12084 12085 12086 12087 12088
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12089 12090 12091 12092 12093 12094 12095 12096 12097 12098 12099 12100 12101
##      2      1      1      1      1      1      1      1      1      2      1      1      1
## 12102 12103 12104 12105 12106 12107 12108 12109 12110 12111 12112 12113 12114
##      1      1      1      2      1      1      1      2      1      1      1      1      2
## 12115 12116 12117 12118 12119 12120 12121 12122 12123 12124 12125 12126 12127
##      2      2      1      2      1      1      1      1      1      1      1      1      1
## 12128 12129 12130 12131 12132 12133 12134 12135 12136 12137 12138 12139 12140
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12141 12142 12143 12144 12145 12146 12147 12148 12149 12150 12151 12152 12153
##      1      1      1      1      1      1      1      2      1      1      1      1      1
## 12154 12155 12156 12157 12158 12159 12161 12162 12163 12164 12165 12166 12167
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12168 12169 12170 12171 12172 12173 12174 12175 12176 12177 12178 12179 12180
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12182 12183 12184 12185 12187 12188 12189 12190 12191 12192 12193 12194 12195
##      1      2      1      1      1      2      1      1      1      1      1      1      1
## 12196 12197 12198 12199 12200 12201 12202 12203 12204 12205 12206 12207 12208
##      1      1      1      1      1      1      1      1      1      1      1      1      1
## 12209 12210 12211 12212 12213 12214 12215 12216 12217 12218 12219 12220 12221
##      1      1      2      1      1      1      1      1      1      1      1      1      1
## 12222 12223 12224 12225 12226 12227 12228 12229 12230 12231 12232 12233 12234
##      1      1      2      1      1      1      1      1      1      1      1      1      1
## 12235 12236 12237 12238 12239 12240 12241 12242 12243 12244 12245 12246 12247
##      2      1      1      1      1      1      1      1      1      1      1      1      1
## 12248 12249 12250 12251 12252 12253 12254 12255 12256 12257 12258 12259 12260
##      2      1      1      1      1      1      1      1      1      1      1      1      1
## 12261 12262 12263 12264 12265 12266 12267 12268 12269 12270 12271 12272 12273
##      1      1      1      1      1      1      1      2      1      1      1      1      2
## 12274 12275 12276 12277 12278 12279 12280 12281 12282 12283 12284 12285 12286
##      1      1      1      2      1      1      1      1      1      1      1      1      1
## 12287 12288 12289 12290 12291 12292 12293 12294 12295 12296 12297 12298 12299
##      1      2      1      1      1      1      1      1      1      1      1      1      1
## 12300 12301 12302 12303 12304 12305 12306 12307 12308 12309 12310 12311 12312
##      1      1      1      1      1      1      1      1      2      1      1      1      1
## 12313 12314 12315 12316 12317 12318 12319 12320 12321 12322 12323 12324 12325
##      1      2      1      1      1      1      1      1      1      1      1      1      1
## 12326 12327 12328 12329 12330
##      1      1      1      1      1

```

```
fviz_cluster(result, data = kira_new)
```





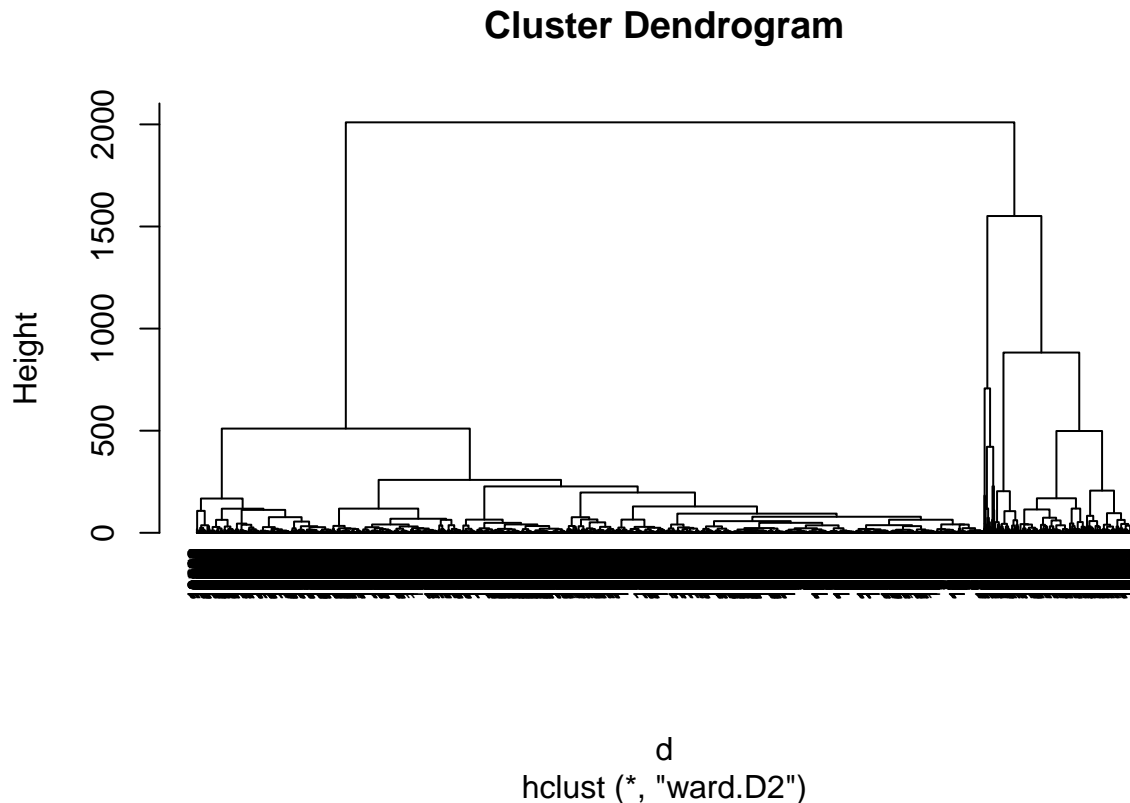
Clustering using 2 clusters results in better clustering, as seen in the above visualizations.

### Hierachical Clustering

```
#
d <- dist(kira_new, method = "euclidean")

# We then hierarchical clustering using the Ward's method
# ---
#
res.hc <- hclust(d, method = "ward.D2" )

plot(res.hc, cex = 0.6, hang = -1)
```



Using hierarchical clustering results in a very crowded visualisation. This makes it impossible to accurately interpret the meaning of this clustering technique. To better improve the model, the following techniques could be employed to reduce the number of points to be included in the visualization:

1. Additional data could be introduced to help create better way of group the data eg. country of transaction - or any other additional data point that can be used to create fewer data points
2. A sample of the data could be used to make the visualizations as opposed to the whole dataset.

## 7. Challenging the Solution.

The data provided was too big and without a way of performing feature engineering to get a smaller dataset for the Hierarchical clustering.

To be able to get a better understanding of the customer clusters using unsupervised clustering more data on the customers could be introduced to be able to have more customer characteristics to create the clusters from.

## 8. Follow up Questions.

1. Would using more unsupervised machine learning algorithms lead to a better model.
2. What data can be dropped from the above to remain with only data that is relevant for the analysis