TECNOLÓGICO NACIONAL DE MÉXICO INSTITUTO TECNOLÓGICO DE TIJUANA

SUBDIRECCIÓN ACADÉMICA

DEPARTAMENTO DE SISTEMAS Y COMPUTACIÓN

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CARRERA
Ingeniería en informática

MATERIA
Minería de datos

TÍTULO
Práctica#3
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NOMBRE DEL MAESTRO
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Scenario: You are a Data Scientist working for a consulting firm.
One of your colleagues from the Auditing Department has asked you
to help them assess the financial statement of organization X.

You have been supplied with two vector of data: mounthly revenue and
expenses for the financial year in quiestion. Your task is to calculate
the following financial matrics:

- profit for each mounth
- profit after tax for each month (the tax rate is 30%)
- profit margin for each month - equal to profit after tax divided by revenue
- good months - where the profit after tax was greater than the mean for the year
- bad months - where the profit after tax was less then the mean for years
- the best month - where the profit after tax was max for the year
- the worst month - where the profit after tax was min for the year

All results need to be presented as vectors.

Results for dollar values need to be calculate with $0.01 precision, but need to be
presented in Units of $1,000(i.e. 1k) with no decimal point.

Results for the profit margin ratio needed to be presented in units of % with no
decimal points.

Note: Your collegue has warned you that it is okay for tax for any given month to be
negative (in accounting terms, negative tax translates into a deferred tax asset).

INPUT:
#Data
revenue <- c(14574.49, 7606.46, 8611.41, 9175.41, 8058.65, 8105.44, 11496.28, 9766.09,
10305.32, 14379.96, 10713.97, 15433.50)
expenses <- c(12051.82, 5695.07, 12319.20, 12089.72, 8658.57, 840.20, 3285.73, 5821.12,
6976.93, 16618.61, 10054.37, 3803.96)

#profit for each mounth
profit <- revenue - expenses
profit

#profit after tax for each month (the tax rate is 30%)
tax_30_per <- round(profit * 0.30, 0)
tax_30_per

#profit after tax
profit_after_tax <- profit - tax_30_per
profit_after_tax

```r
#profit margin for each month - equal to profit after tax divided by revenue
profit_margin <- round(profit_after_tax/revenue, 2)*100
profit_margin <- paste(profit_margin,"%")
profit_margin

#Calculate The Mean Profit After Tax For The 12 Months
mean_pat <- mean(profit_after_tax)
mean_pat


#good months - where the profit after tax was greater than the mean for the year
good_months <- profit_after_tax> mean_pat
good_months

#bad months - where the profit after tax was less then the mean for years
bad_months <- !good_months
bad_months

#the best month - where the profit after tax was max for the year
best_month <- profit_after_tax == max(profit_after_tax)
best_month


#the worst month - where the profit after tax was min for the year
worst_month <- profit_after_tax == min(profit_after_tax)
worst_month

#Convert All Calculations To Units Of One Thousand Dollars
revenue.1000 <- round(revenue / 1000, 0)
expenses.1000 <- round(expenses / 1000, 0)
profit.1000 <- round(profit / 1000, 0)
profit_after_tax.1000 <- round(profit_after_tax / 1000, 0)

#Print Results
revenue.1000
expenses.1000
profit.1000
profit_after_tax.1000
profit_margin
good_months
bad_months
best_month
worst_month
```

OUTPUT:

values

bad_months	logi [1:12] FALSE TRUE TRUE TRUE TRUE FALSE ...
best_month	logi [1:12] FALSE FALSE FALSE FALSE FALSE FALSE ...
expenses	num [1:12] 12052 5695 12319 12090 8659 ...
expenses.1000	num [1:12] 12 6 12 12 9 1 3 6 7 17 ...
good_months	logi [1:12] TRUE FALSE FALSE FALSE FALSE TRUE ...
mean_pat	1750.64
profit	num [1:12] 2523 1911 -3708 -2914 -600 ...
profit_after_tax	num [1:12] 1766 1338 -2596 -2040 -420 ...
profit_after_tax.1000	num [1:12] 2 1 -3 -2 0 5 6 3 2 -2 ...
profit_margin	chr [1:12] "12 %" "18 %" "-30 %" "-22 %" "-5 %" "63 %" "50 %" "28 %" "23 %" "-11 %" "4 %" "5...
profit.1000	num [1:12] 3 2 -4 -3 -1 7 8 4 3 -2 ...
revenue	num [1:12] 14574 7606 8611 9175 8059 ...
revenue.1000	num [1:12] 15 8 9 9 8 8 11 10 10 14 ...
tax_30_per	num [1:12] 757 573 -1112 -874 -180 ...
worst_month	logi [1:12] FALSE FALSE TRUE FALSE FALSE FALSE ...