

# Tugas Practice Quiz Open Source

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## #Number 1

```
t_test <- function(xbar, miu, stadev, n, alfa, pilihan_uji="upper" ){
  df <- n-1
  t_value <- (xbar - miu)/ (stadev/sqrt(n))

  if (pilihan_uji == "two_sided") {
    p_value <- 2*pt(abs(t_value), df)
  } else if (pilihan_uji == "lower") {
    p_value <- pt(t_value, df)
  } else if (pilihan_uji == "upper") {
    p_value <- (1-pt(t_value, df))
  } else {
    warning("pilihan Uji yang anda masukkan tidak sesuai")
  }

  return(list(p_value = p_value))
}
```

## #Number 2

```
xbar = 16
miu = 16.43
stadev = 0.8
n = 15
alfa = 0.05

lower <- t_test(xbar,miu,stadev,n,alfa, pilihan_uji="lower")
paste("Uji Lower Tail:\n")
```

```
## [1] "Uji Lower Tail:\n"
```

```
paste("P-Value:", lower$p_value, "\n")
```

```
## [1] "P-Value: 0.0280993701831434 \n"
```

```
if(lower$p_value<alfa){
  print("H0 Ditolak")
}else{
  print("H0 Gagal Ditolak")
}
```

```
## [1] "H0 Ditolak"
```

```
upper <- t_test(xbar,miu,stadev,n,alfa, pilihan_uji="upper")
paste("Uji Upper Tail:\n")
```

```
## [1] "Uji Upper Tail:\n"
```

```
paste("P-Value:", upper$p_value, "\n")
```

```
## [1] "P-Value: 0.971900629816857 \n"
```

```
if(upper$p_value<alfa){
  print("H0 Ditolak")
}else{
  print("H0 Gagal Ditolak")
}
```

```
## [1] "H0 Gagal Ditolak"
```

```
two_sided <- t_test(xbar,miu,stadev,n,alfa, pilihan_uji="two_sided")
paste("Uji Two Sided:\n")
```

```
## [1] "Uji Two Sided:\n"
```

```
paste("P-Value:", two_sided$p_value, "\n")
```

```
## [1] "P-Value: 1.94380125963371 \n"
```

```
if(two_sided$p_value<alfa){
  print("H0 Ditolak")
}else{
  print("H0 Gagal Ditolak")
}
```

```
## [1] "H0 Gagal Ditolak"
```

### #Number 3

```
cek_integer<- function(vector, int) {
  if(round(int)!=int || is.numeric(vector)!=TRUE){
    warning("angka yang anda masukkan bukan bilangan bulat")
  }
  if(int %in% vector){
    return(TRUE)
  }else{
    return(FALSE)
  }
}
```

```
cek_integer(c(1:100),100.5)
```

```
## Warning in cek_integer(c(1:100), 100.5): angka yang anda masukkan bukan
## bilangan bulat
```

```
## [1] FALSE
```

```
cek_integer(c(1:100),100)
```

```
## [1] TRUE
```

```
cek_integer(c(1:100),101)
```

```
## [1] FALSE
```

**#Number 4**

```
library(numbers)
```

```
## Warning: package 'numbers' was built under R version 4.3.3
```

```
cek_prima <- function(a){
  if(isPrime(a)){
    print("TRUE")
  }else{
    print("FALSE")
  }
}
cek_prima(2)
```

```
## [1] "TRUE"
```

**#Number 5**

```
Faktorial <- function(n){
  if(n==0){
    return(1)
  } else{
    z = 1
    for(i in 1:n){
      z = z * i
    }
    return(z)
  }
}
Faktorial(3)
```

```
## [1] 6
```

```
Faktorial(0)
```

```
## [1] 1
```

```
#Number 6
```

```
data("iris")
p <- iris
mean_max_scaling <- function(z){
  xnew <- (z-min(z))/(max(z)-min(z))
  return(xnew)
}

Hasil <- mean_max_scaling(p$Sepal.Length)
Hasil
```

```
##      [1] 0.22222222 0.16666667 0.11111111 0.08333333 0.19444444 0.30555556
##      [7] 0.08333333 0.19444444 0.02777778 0.16666667 0.30555556 0.13888889
##     [13] 0.13888889 0.00000000 0.41666667 0.38888889 0.30555556 0.22222222
##     [19] 0.38888889 0.22222222 0.30555556 0.22222222 0.08333333 0.22222222
##     [25] 0.13888889 0.19444444 0.19444444 0.25000000 0.25000000 0.11111111
##     [31] 0.13888889 0.30555556 0.25000000 0.33333333 0.16666667 0.19444444
##     [37] 0.33333333 0.16666667 0.02777778 0.22222222 0.19444444 0.05555556
##     [43] 0.02777778 0.19444444 0.22222222 0.13888889 0.22222222 0.08333333
##     [49] 0.27777778 0.19444444 0.75000000 0.58333333 0.72222222 0.33333333
##     [55] 0.61111111 0.38888889 0.55555556 0.16666667 0.63888889 0.25000000
##     [61] 0.19444444 0.44444444 0.47222222 0.50000000 0.36111111 0.66666667
##     [67] 0.36111111 0.41666667 0.52777778 0.36111111 0.44444444 0.50000000
##     [73] 0.55555556 0.50000000 0.58333333 0.63888889 0.69444444 0.66666667
##     [79] 0.47222222 0.38888889 0.33333333 0.33333333 0.41666667 0.47222222
##     [85] 0.30555556 0.47222222 0.66666667 0.55555556 0.36111111 0.33333333
##     [91] 0.33333333 0.50000000 0.41666667 0.19444444 0.36111111 0.38888889
##     [97] 0.38888889 0.52777778 0.22222222 0.38888889 0.55555556 0.41666667
##    [103] 0.77777778 0.55555556 0.61111111 0.91666667 0.16666667 0.83333333
##    [109] 0.66666667 0.80555556 0.61111111 0.58333333 0.69444444 0.38888889
##    [115] 0.41666667 0.58333333 0.61111111 0.94444444 0.94444444 0.47222222
##    [121] 0.72222222 0.36111111 0.94444444 0.55555556 0.66666667 0.80555556
##    [127] 0.52777778 0.50000000 0.58333333 0.80555556 0.86111111 1.00000000
##    [133] 0.58333333 0.55555556 0.50000000 0.94444444 0.55555556 0.58333333
##    [139] 0.47222222 0.72222222 0.66666667 0.72222222 0.41666667 0.69444444
##    [145] 0.66666667 0.66666667 0.55555556 0.61111111 0.52777778 0.44444444
```

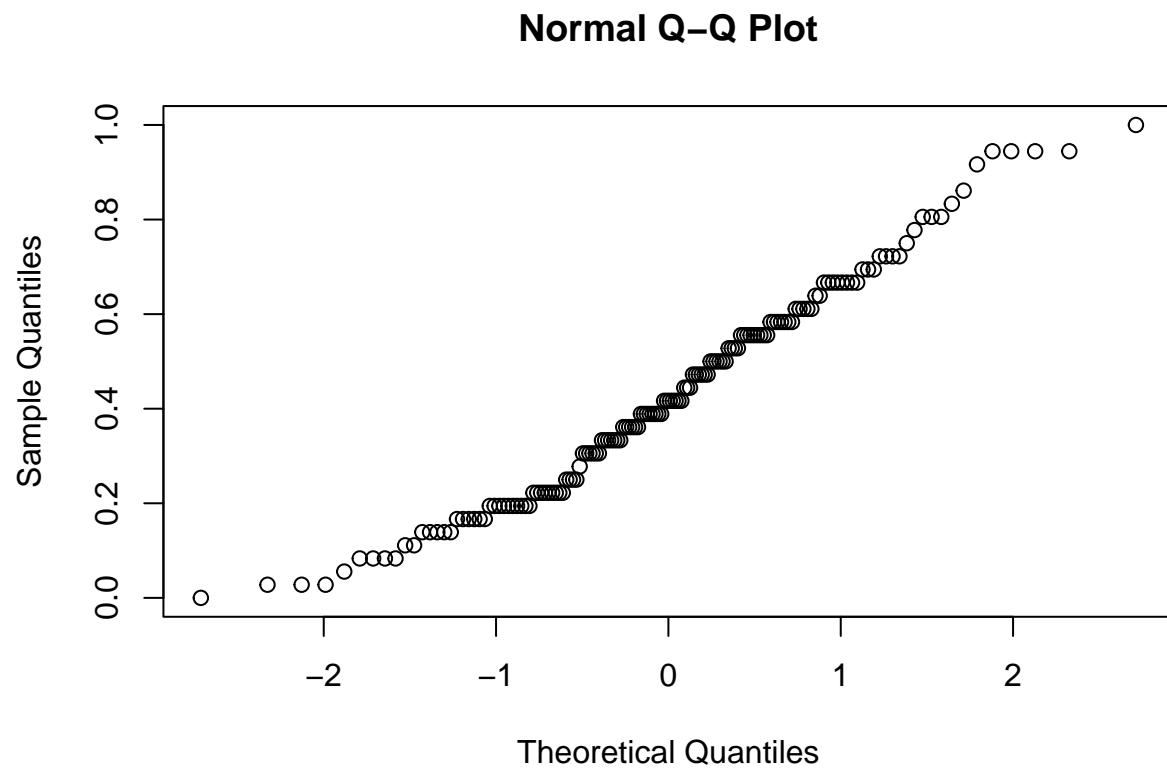
```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.3.3
```

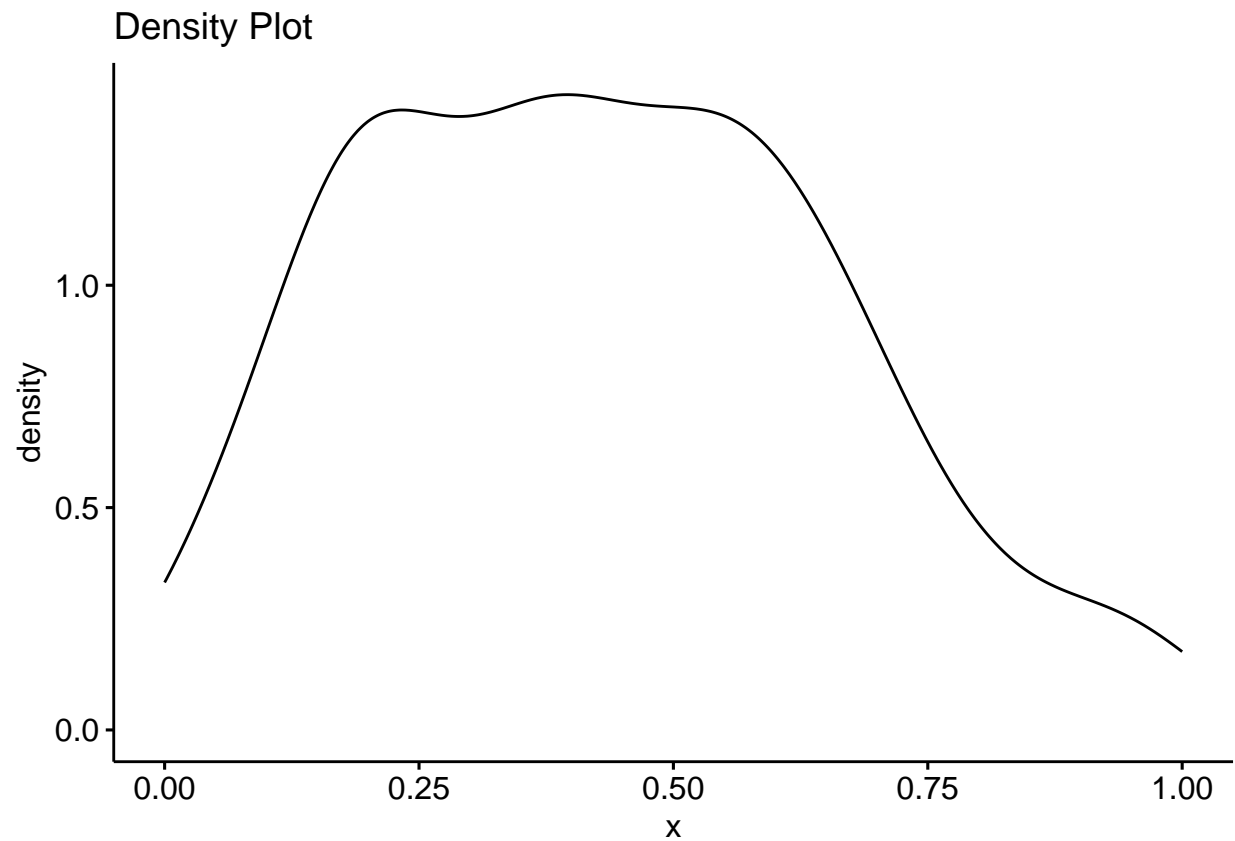
```
library(ggpubr)
```

```
## Warning: package 'ggpubr' was built under R version 4.3.3
```

```
qqnorm(Hasil)
```



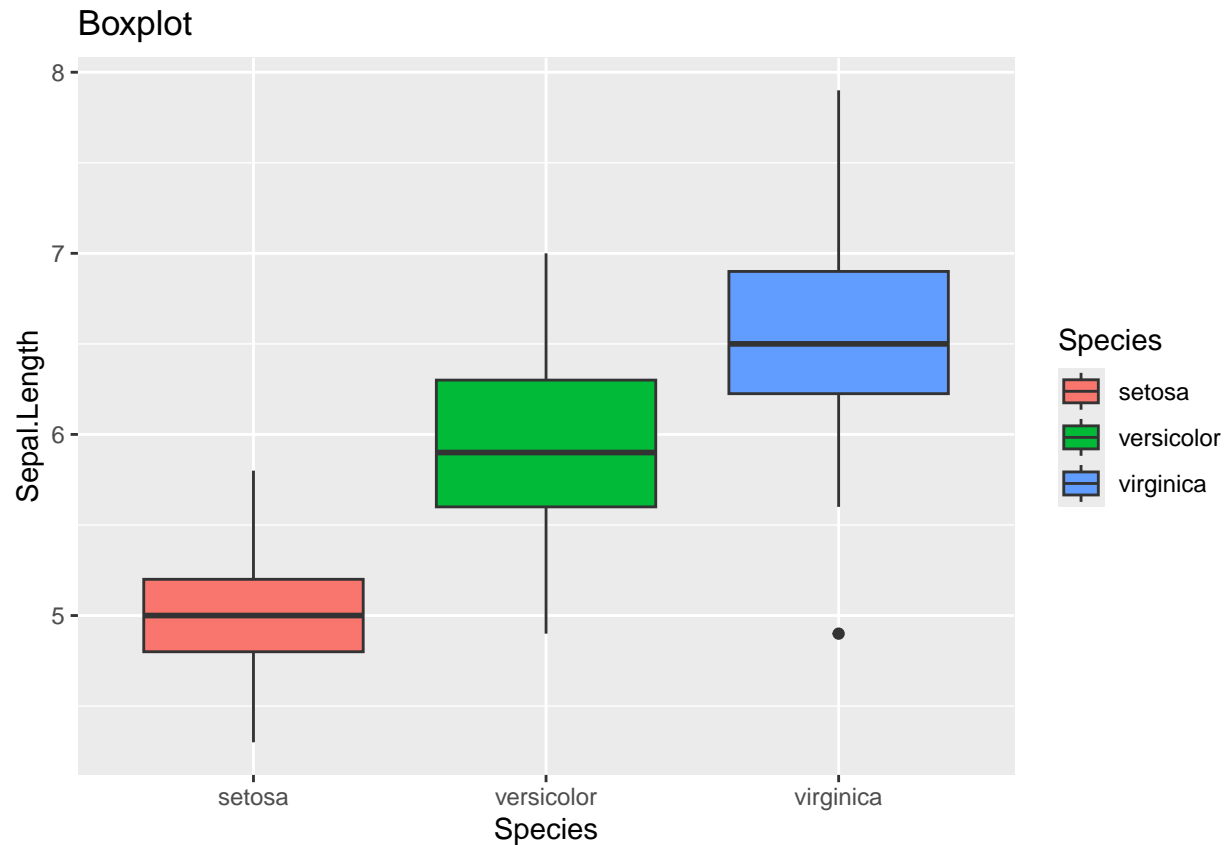
```
ggdensity(Hasil, main="Density Plot")
```



Dari plot diatas dapat diketahui bahwa data hasil scaling berdistribusi normal

#Number 7

```
p <- iris
ggplot(p, aes(Species, Sepal.Length, fill = Species)) +
  geom_boxplot() +
  labs(title = "Boxplot")
```



#Number 8

```
data("swiss")
k <- swiss
k <- transform(k, IPM = (log(swiss$Education)+log(swiss$Fertility)+log(swiss$Agriculture))^(1/3)*10)
k
```

##	Fertility	Agriculture	Examination	Education	Catholic
## Courtelary	80.2	17.0	15	12	9.96
## Delemont	83.1	45.1	6	9	84.84
## Franches-Mnt	92.5	39.7	5	5	93.40
## Moutier	85.8	36.5	12	7	33.77
## Neuveville	76.9	43.5	17	15	5.16
## Porrentruy	76.1	35.3	9	7	90.57
## Broye	83.8	70.2	16	7	92.85
## Glane	92.4	67.8	14	8	97.16
## Gruyere	82.4	53.3	12	7	97.67
## Sarine	82.9	45.2	16	13	91.38
## Veveyse	87.1	64.5	14	6	98.61
## Aigle	64.1	62.0	21	12	8.52
## Aubonne	66.9	67.5	14	7	2.27
## Avenches	68.9	60.7	19	12	4.43
## Cossonay	61.7	69.3	22	5	2.82
## Echallens	68.3	72.6	18	2	24.20
## Grandson	71.7	34.0	17	8	3.30
## Lausanne	55.7	19.4	26	28	12.11

## La Vallee	54.3	15.2	31	20	2.15
## Lavaux	65.1	73.0	19	9	2.84
## Morges	65.5	59.8	22	10	5.23
## Moudon	65.0	55.1	14	3	4.52
## Nyone	56.6	50.9	22	12	15.14
## Orbe	57.4	54.1	20	6	4.20
## Oron	72.5	71.2	12	1	2.40
## Payerne	74.2	58.1	14	8	5.23
## Paysd'enhaut	72.0	63.5	6	3	2.56
## Rolle	60.5	60.8	16	10	7.72
## Vevey	58.3	26.8	25	19	18.46
## Yverdon	65.4	49.5	15	8	6.10
## Conthey	75.5	85.9	3	2	99.71
## Entremont	69.3	84.9	7	6	99.68
## Herens	77.3	89.7	5	2	100.00
## Martigwy	70.5	78.2	12	6	98.96
## Monthey	79.4	64.9	7	3	98.22
## St Maurice	65.0	75.9	9	9	99.06
## Sierre	92.2	84.6	3	3	99.46
## Sion	79.3	63.1	13	13	96.83
## Boudry	70.4	38.4	26	12	5.62
## La Chauxdfnd	65.7	7.7	29	11	13.79
## Le Locle	72.7	16.7	22	13	11.22
## Neuchatel	64.4	17.6	35	32	16.92
## Val de Ruz	77.6	37.6	15	7	4.97
## ValdeTravers	67.6	18.7	25	7	8.65
## V. De Geneve	35.0	1.2	37	53	42.34
## Rive Droite	44.7	46.6	16	29	50.43
## Rive Gauche	42.8	27.7	22	29	58.33
##	Infant.Mortality		IPM		
## Courtelary	22.2	21.32865			
## Delemont	22.2	21.84614			
## Franches-Mnt	20.2	21.41284			
## Moutier	20.3	21.54093			
## Neuveville	20.6	22.12009			
## Porrentruy	26.6	21.43016			
## Broye	23.6	21.98463			
## Glane	24.9	22.11928			
## Gruyere	21.0	21.78119			
## Sarine	24.4	22.09988			
## Veveyse	24.5	21.84567			
## Aigle	16.5	22.08540			
## Aubonne	19.1	21.80070			
## Avenches	22.7	22.12021			
## Cossonay	18.7	21.52290			
## Echallens	21.2	20.95533			
## Grandson	20.0	21.45659			
## Lausanne	20.2	21.76996			
## La Vallee	10.8	21.33518			
## Lavaux	20.0	22.01074			
## Morges	18.0	21.95005			
## Moudon	22.4	21.01597			
## Nyone	16.7	21.86333			
## Orbe	15.3	21.42348			



```
## Oron 21.0 20.44748
## Payerne 23.8 21.86165
## Paysd'enhaut 18.0 21.19866
## Rolle 16.3 21.90650
## Vevey 20.9 21.75657
## Yverdon 22.5 21.66002
## Conthey 15.1 21.15715
## Entremont 19.8 21.87789
## Herens 18.3 21.20681
## Martigwy 19.4 21.83250
## Monthey 20.2 21.28703
## St Maurice 17.8 22.03646
## Sierre 16.3 21.58771
## Sion 18.1 22.29554
## Boudry 20.3 21.81887
## La Chauxdfnd 20.5 20.50721
## Le Locle 18.9 21.30228
## Neuchatel 23.0 21.89673
## Val de Ruz 20.0 21.48998
## ValdeTravers 19.5 20.86845
## V. De Geneve 18.0 19.75361
## Rive Droite 18.2 22.24578
## Rive Gauche 19.3 21.85948
```

## #Number 9

```
kotadiatasratarata <- subset(k, IPM > mean(k$IPM))
kotadibawahratarata <- subset(k, IPM <= mean(k$IPM))

summary(kotadiatasratarata)
```

```
##      Fertility      Agriculture      Examination      Education
##  Min.   :42.80   Min.   :17.60   Min.    : 6.00   Min.    : 6.00
## 1st Qu.:64.17   1st Qu.:45.12   1st Qu.:14.00   1st Qu.: 8.00
## Median :67.90   Median :58.95   Median :16.00   Median :10.00
## Mean   :69.08   Mean   :54.25   Mean    :17.23   Mean    :12.92
## 3rd Qu.:78.70   3rd Qu.:66.75   3rd Qu.:21.75   3rd Qu.:13.00
## Max.   :92.40   Max.   :84.90   Max.    :35.00   Max.    :32.00
##      Catholic      Infant.Mortality      IPM
##  Min.    : 2.27   Min.    :16.30   Min.    :21.66
## 1st Qu.: 5.74   1st Qu.:18.43   1st Qu.:21.84
## Median :17.69   Median :20.25   Median :21.89
## Mean    :45.44   Mean    :20.53   Mean    :21.94
## 3rd Qu.:95.83   3rd Qu.:22.65   3rd Qu.:22.07
## Max.    :99.68   Max.    :24.90   Max.    :22.30
```

```
summary(kotadibawahratarata)
```

```
##      Fertility      Agriculture      Examination      Education
##  Min.   :35.00   Min.    : 1.20   Min.    : 3.00   Min.    : 1.000
## 1st Qu.:65.70   1st Qu.:18.70   1st Qu.: 7.00   1st Qu.: 3.000
## Median :72.50   Median :39.70   Median :15.00   Median : 6.000
```

##	Mean	:71.45	Mean	:46.21	Mean	:15.57	Mean	: 8.571
##	3rd Qu.:	77.60	3rd Qu.:	69.30	3rd Qu.:	22.00	3rd Qu.:	8.000
##	Max.	:92.50	Max.	:89.70	Max.	:37.00	Max.	:53.000
##	Catholic		Infant.Mortality		IPM			
##	Min.	: 2.15	Min.	:10.80	Min.	:19.75		
##	1st Qu.:	4.20	1st Qu.:	18.00	1st Qu.:	21.02		
##	Median	: 11.22	Median	:20.00	Median	:21.30		
##	Mean	: 35.82	Mean	:19.21	Mean	:21.15		
##	3rd Qu.:	90.57	3rd Qu.:	20.50	3rd Qu.:	21.43		
##	Max.	:100.00	Max.	:26.60	Max.	:21.59		