Experiment 11

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3. Aim: To Generate a random sample from binomial distribution and test the goodness of fit.

```
library(grid)
library(vcd)
x = rbinom(350,10,0.5)
table(x)
```

```
## x
##  1  2  3  4  5  6  7  8  9 10
##  2 16 35 74 74 89 41 14  4  1
```

```
gf = goodfit(x,type="binomial",method="MinChisq")
summary(gf)
```

```
##
##   Goodness-of-fit test for binomial distribution
##
##              X^2 df  P(> X^2)
## Pearson 7.736462  9 0.5609072
```

4. Aim: To Generate a random sample from Poisson distribution and test the goodness of fit.

```
y = rpois(300,5)
table(y)
```

```
## y
##  0  1  2  3  4  5  6  7  8  9 10 11 12
##  3 10 24 35 66 52 39 29 18 13  4  4  3
```

```
Gf = goodfit(y,type="pois",method="MinChisq")
summary(Gf)
```

```
##
##   Goodness-of-fit test for poisson distribution
##
##              X^2 df  P(> X^2)
## Pearson 8.768947 11 0.6432099
```

5. Aim: To Generate a sample size 100 between 1:10 with replacement and check whether Binomial or Poisson distribution fits well to this data.

```
z = sample(1:10,100,replace = T)
table(z)
```

```
## z
##  1  2  3  4  5  6  7  8  9 10
##  9  8 12  7 12 11 16  7  6 12
```

```
summary(goodfit(z,type="binomial",method = "MinChisq"))
```

```
##
##   Goodness-of-fit test for binomial distribution
##
##              X^2 df      P(> X^2)
## Pearson 687.0532  9 4.196972e-142
```

```
summary(goodfit(z,type="pois",method = "MinChisq"))
```

```
##
##   Goodness-of-fit test for poisson distribution
##
##              X^2 df     P(> X^2)
## Pearson 38.46821  9 1.436258e-05
```

6. Aim: To Check the normality of the given data using (i) Shapiro-Wilk normality test (ii) Anderson-darling test, and (iii) normal quantile plot (Q-Q plot).

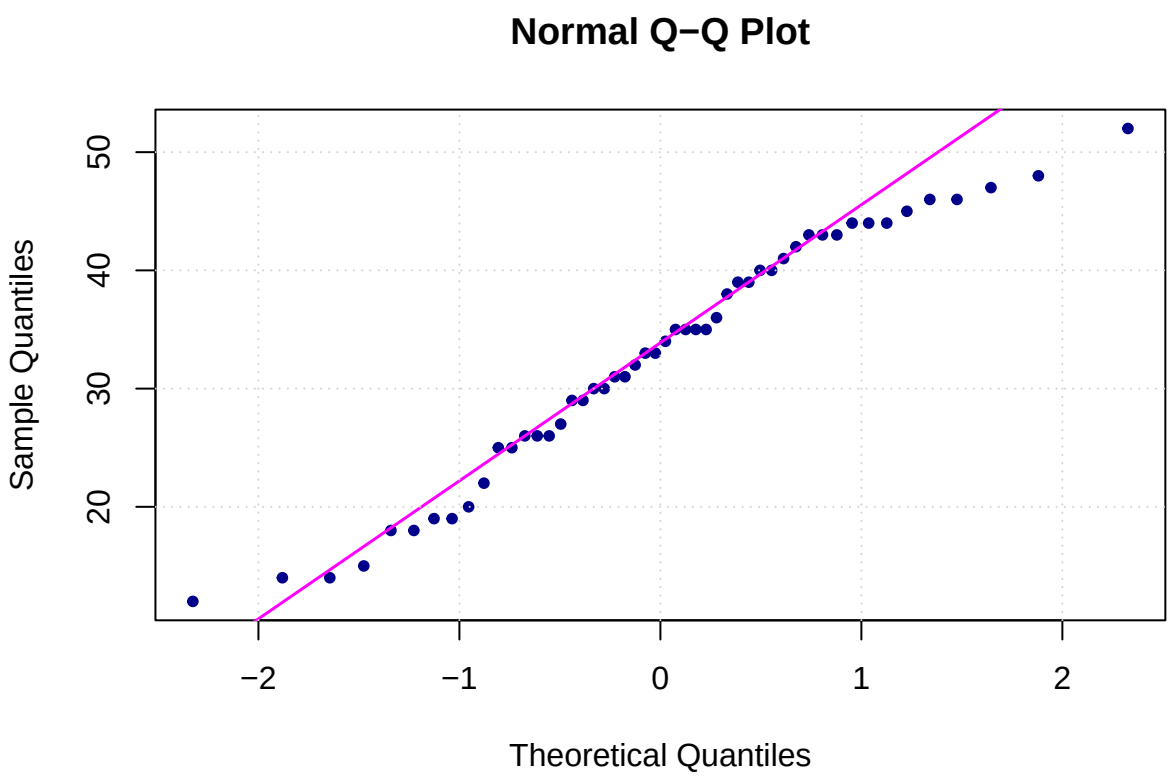
```
library(nortest)
h = c(40,26,39,14,42,18,25,43,46,27,15,44,40,38,31,
46,52,25,35,35,19,47,19,26,35,44,48,32,30,20,33,29,
34,41,43,18,35,30,14,26,43,22,33,44,45,36,39,31,12,
29)

# Define
# H_0: Data follows Normal Distribution
# H_1: Data does not follow Normal Distribution

# (i) Shapiro-Wilk normality test
shapiro.test(h)
```

```
##
##  Shapiro-Wilk normality test
##
## data:  h
## W = 0.96541, p-value = 0.1498
```

```
# (ii) Anderson Daring Test
ad.test(h)
```

```
##
##  Anderson-Darling normality test
##
## data:  h
## A = 0.49819, p-value = 0.2016
```

```r
# (iii) normal quantile plot (Q-Q plot)
qqnorm(h, col="blue4",pch = 20)
qqline(h, col="magenta",lwd = 1.5)
grid()
```



H_0 is accepted.