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/Users/bps/PycharmProjects/hypothesis_tesing/venv/bin/python /Users/bps/PycharmProjects/hypothesis_tesing/main.py
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Welcome to the Hypothesis Testing calculator made by ALIAS GEORGE

Select the Calculator (type the no corresponding eg 1 for one mean Large sample)

1. One Mean Large sample
2. One Mean Small sample
3. Two Mean Large sample
4. Two Mean Small sample with both normal and  $\sigma_1 = \sigma_2$
5. Matched Pair t-Test
6. One Variance Test
7. Two Variance Test
8. One Proportion Test
9. Multi Proportion Test
10. Two Proportion Difference Test
11. R and C Analysis Test
12. Goodness Fit Test
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12. Goodness Fit Test

Select the Calculator

Discrete Distribution

1. Goodness Fit for Poisson Test
2. Goodness Fit for Binomial Test

3. Goodness Fit for Geometric Test
4. Goodness Fit for Hyper Geometric Test
5. Goodness Fit for Uniform Discrete Test

#### Continuous Distribution

6. Goodness Fit for Normal Test
7. Goodness Fit for Log Normal Test
8. Goodness Fit for Alpha Test
9. Goodness Fit for Beta Test
10. Goodness Fit for Gamma Test
11. Goodness Fit for Weibull Test
12. Goodness Fit for Exponential Test
13. Goodness Fit for Uniform Continuous Test

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#### 6. Goodness Fit for Normal Test

Level of significance: 0.05

Enter the mean  $\mu$  : 4

Enter the standard deviation  $\sigma$  : 2.5

Enter the no of Categories : 10

Does the interval is a continuous one ? eg: <10 , 10 <20 etc

1. yes

2. no

1

Enter the Enter the Highest of each interval\_0: 0

Enter the Observed Frequency for interval\_0: 4

Enter the Highest of each interval\_1: 1  
Enter the Observed Frequency for interval\_1: 5

Enter the Highest of each interval\_2: 2  
Enter the Observed Frequency for interval\_2: 10

Enter the Highest of each interval\_3: 3  
Enter the Observed Frequency for interval\_3: 13

Enter the Highest of each interval\_4: 4  
Enter the Observed Frequency for interval\_4: 18

Enter the Highest of each interval\_5: 5  
Enter the Observed Frequency for interval\_5: 16

Enter the Highest of each interval\_6: 6  
Enter the Observed Frequency for interval\_6: 9

Enter the Highest of each interval\_7: 7  
Enter the Observed Frequency for interval\_7: 9

Enter the Highest of each interval\_8: 8  
Enter the Observed Frequency for interval\_8: 4

Enter the Lowest of Interval of\_9: 8  
Enter the Observed Frequency for Interval of\_9: 2

X	Observed Frequency	Normal Probabilities of Interval area	Expected Frequency
< 0	4	0.0548	4.932
0 < 1	5	0.0603	5.427
1 < 2	10	0.0968	8.712
2 < 3	13	0.1327	11.943000000000001
3 < 4	18	0.1554	13.986
4 < 5	16	0.1554	13.986
5 < 6	9	0.1327	11.943000000000001
6 < 7	9	0.0968	8.712
7 < 8	4	0.0603	5.427
8 >	2	0.0548	4.932

Combined categories (initial,final) [(0, 1), (8, 9)]

Observed Frequency	Normal Probabilities of Interval area	Expected Frequency	Contribution to $\chi^2$
9	0.11510000000000001	10.359	0.178
10	0.0968	8.712	0.19
13	0.1327	11.943000000000001	0.094
18	0.1554	13.986	1.152
16	0.1554	13.986	0.29

	9		0.1327		11.943000000000001		0.725	
	9		0.0968		8.712		0.01	
	6		0.11510000000000001		10.359		1.834	
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Null hypothesis: Random variable has a Normal distribution with  $\mu = 4.0$  and standard deviation = 2.5.  
Alternative hypothesis: Random variable does not have the Normal distribution with  $\mu = 4.0$  and standard deviation = 2.5.

### Calculations

Total Chi\_square: 4.473

### Decision

The null must be rejected if  $\chi^2 > 14.0671$

Since  $\chi^2 = 4.473$  does not exceed 14.0671, the null hypothesis cannot be rejected; we cannot reject that the Normal distribution with  $\mu = 4.0$  and standard deviation = 2.5 provides a good fit at level  $\alpha = 0.05$ .

Process finished with exit code 0