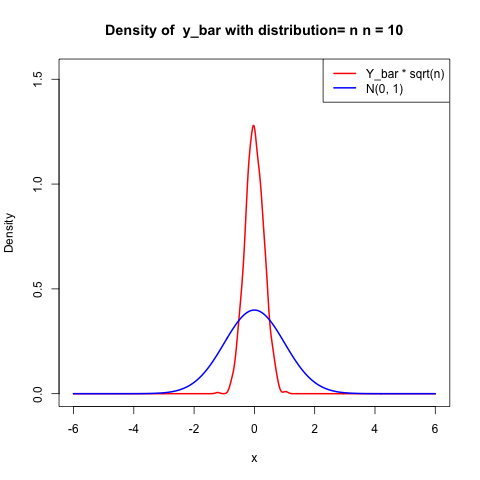
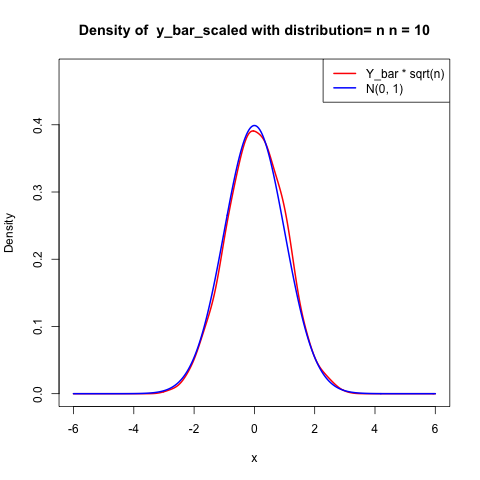
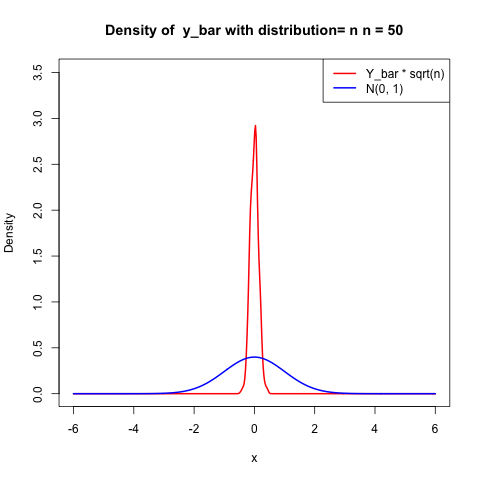
**Problem 1.Outputs of the simulations**

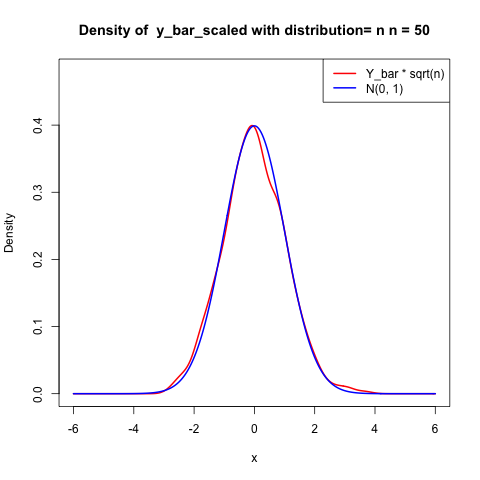
**Case1: & n = 10**

****

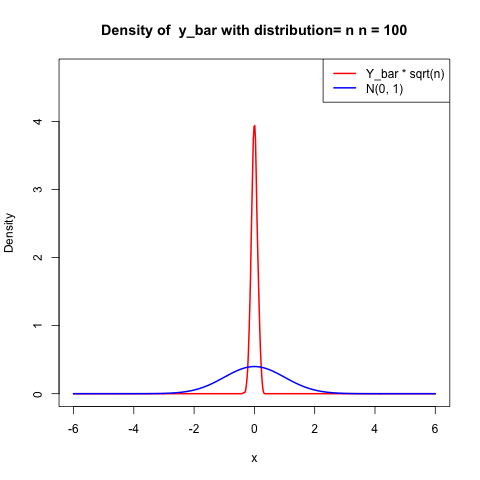
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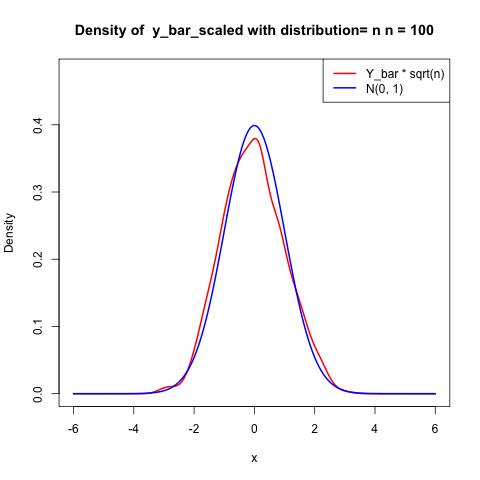
**Case2: & n = 50**

****

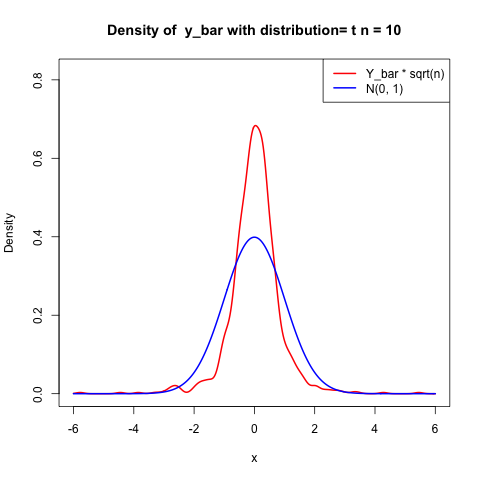
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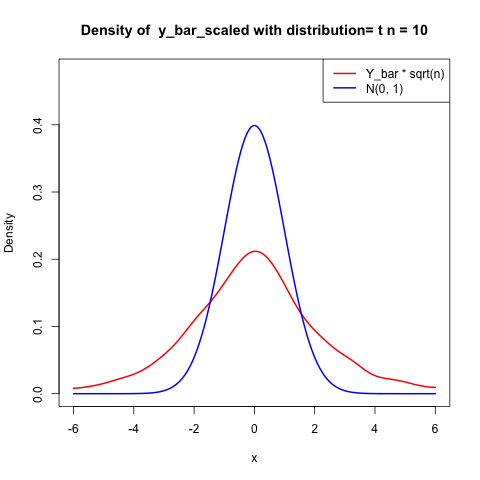
**Case3: & n = 100**

****

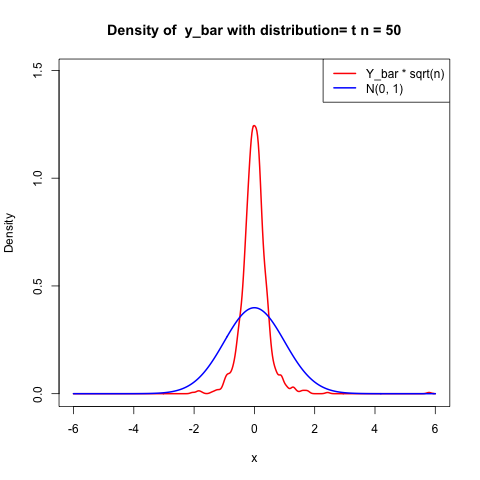
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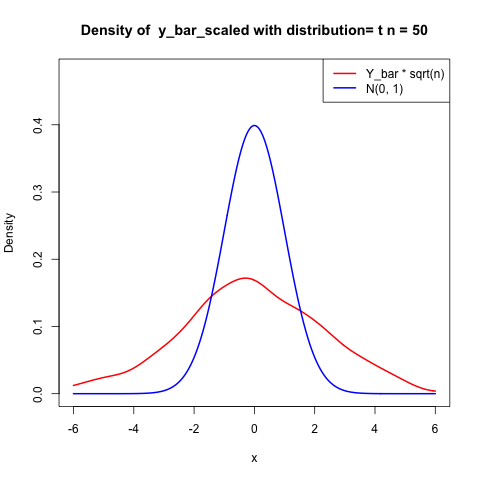
**Case4: & n = 10**

****

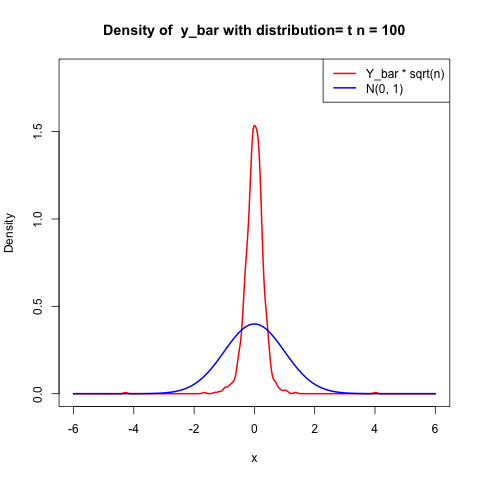
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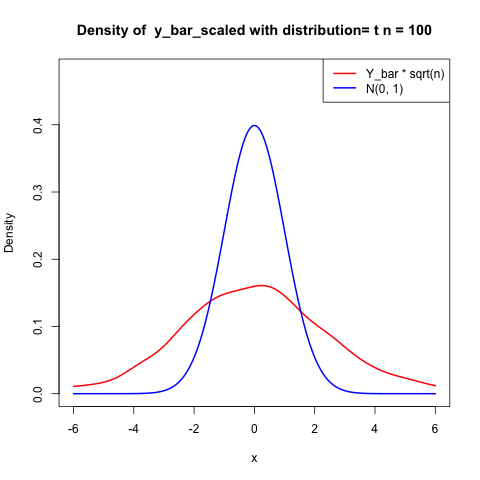
**Case5: & n = 50**

****

****

**Case6: & n = 100**

****

****

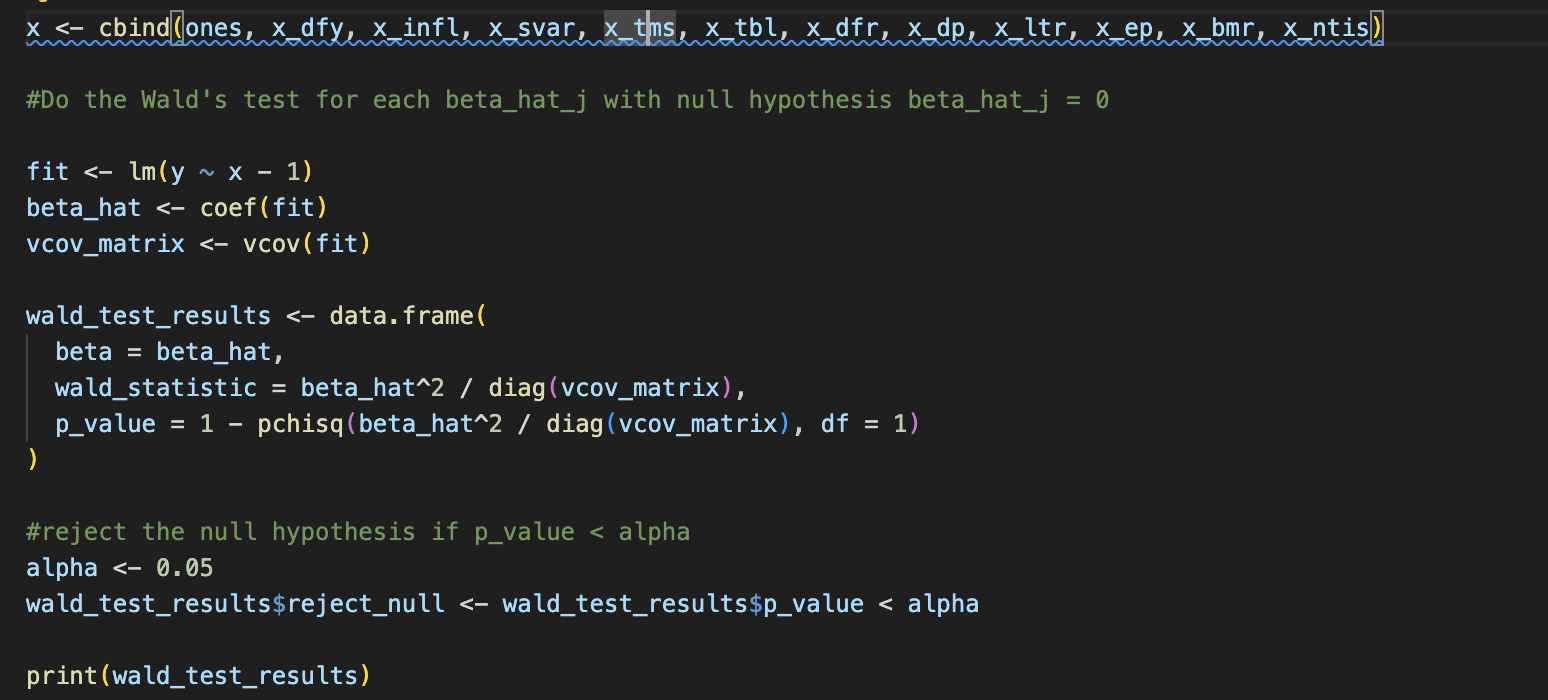
**Results observation and Analysis**

By the results above, we can easily find out that estimation of two types of random variables both converge to the expectation value of the as n becomes larger, which is just matching the **Large Sample Theorem**.

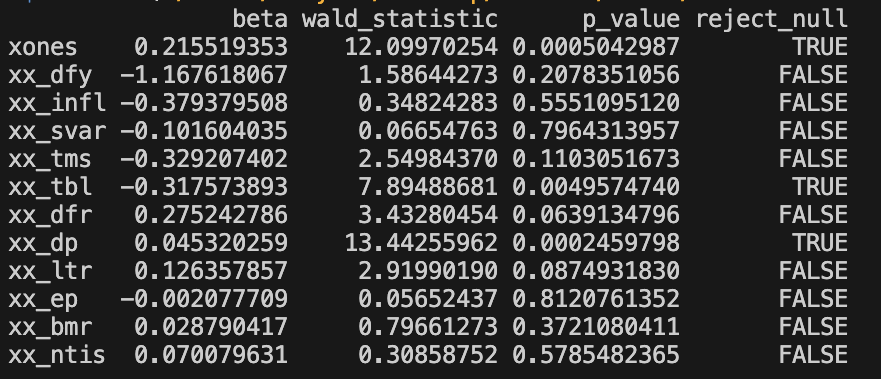
In addition, observing the scaled distribution , the case of successfully converge to normal distribution, just as central limit theorem expected. On the other hand, the case of just become flatter and flatter as n becomes larger, which is not matching to the **Central Limit Theorem**. In my inspection, It is due to the fact that the variance of the t-distribution is not defined when the degrees of freedom are 2 (according to the variance formula , which yields an infinite result). Therefore, this distribution does not meet the conditions of the Central Limit Theorem, and hence the simulation results do not converge to a normal distribution.

**Problem 2**

1.By the code below, we can conduct the Wald’s test on each with null hypothesis

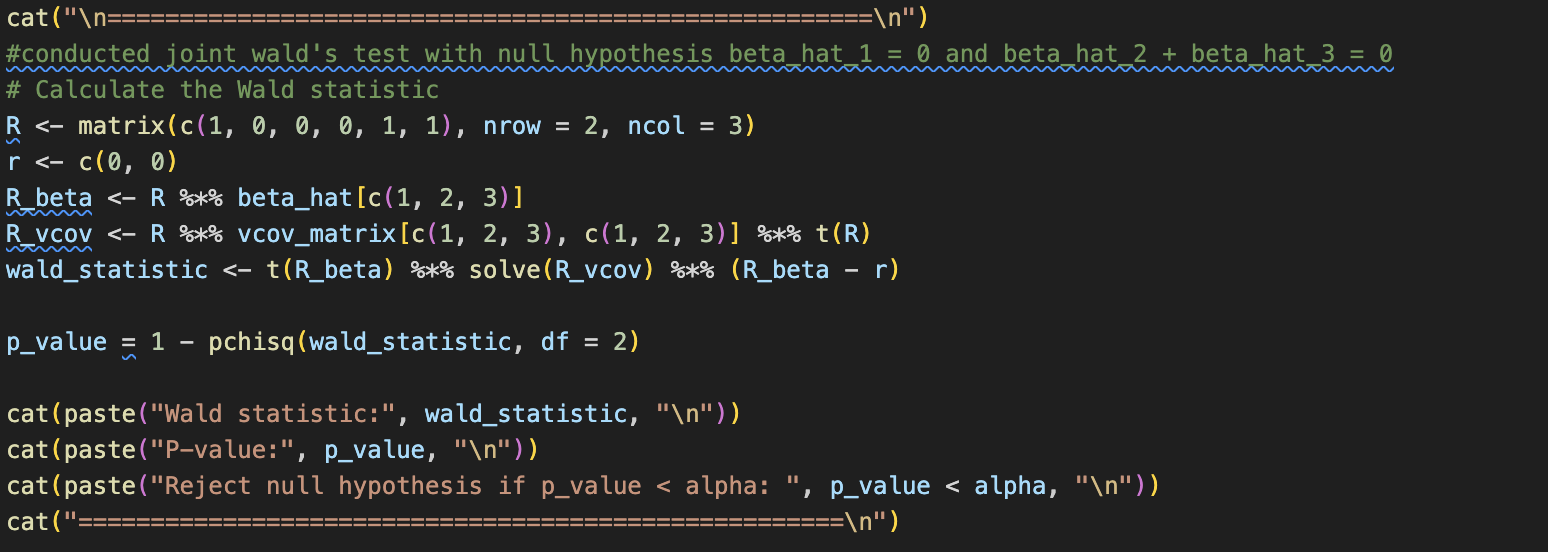


Results:

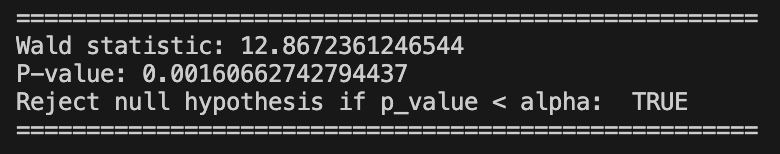


Result shows that we reject only for intercept, tbl and dp.

2. Joint Wald’s test on



Results:



Result shows that we reject the null hypothesis.