library**(**ggplot2**)**

library**(**microbenchmark**)**

small\_ite **<-** 25

large\_ite **<-** 150

fibonacci\_seq **<-** vector**(**mode**=**"numeric", length**=**small\_ite**)**

log\_factorial\_seq **<-** vector**(**mode**=**"numeric", length**=**large\_ite**)**

sum\_log\_factorial\_seq **<-** vector**(**mode**=**"numeric", length**=**large\_ite**)**

**for** **(**i **in** 1**:**large\_ite**)** **{**

log\_factorial\_seq**[**i**]** **<-** mean**(**microbenchmark**::**microbenchmark**(**log\_factorial**(**i**))$**time**)**

sum\_log\_factorial\_seq**[**i**]** **<-** mean**(**microbenchmark**::**microbenchmark**(**sum\_log\_factorial**(**i**))$**time**)**

**}**

**for** **(**i **in** 1**:**small\_ite**)** **{**

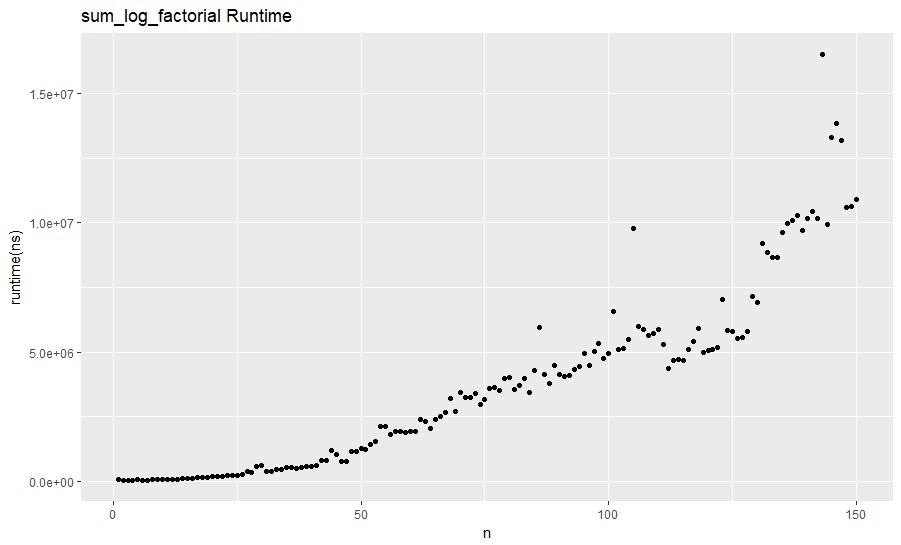
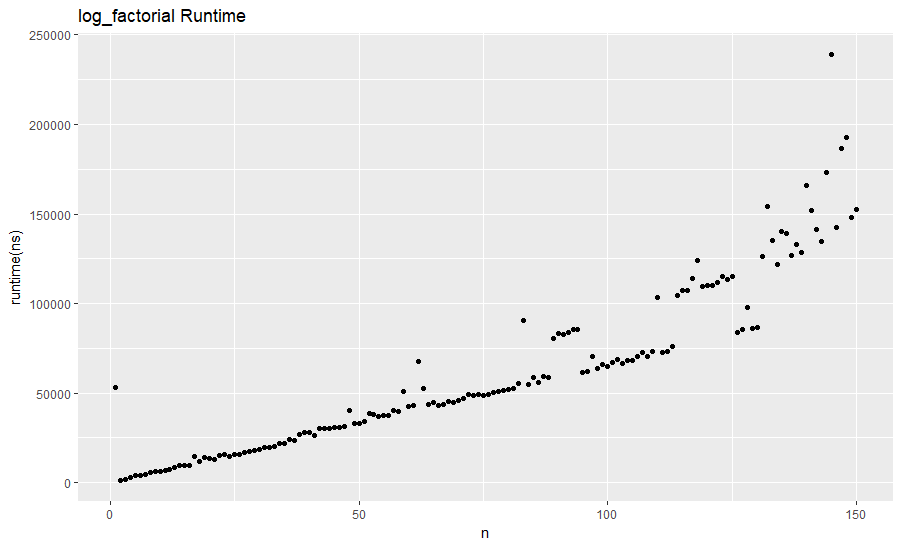
fibonacci\_seq**[**i**]** **<-** mean**(**microbenchmark**::**microbenchmark**(**fibonacci**(**i**))$**time**)**

**}**

ggplot2**::**qplot**(**x**=**seq**(**large\_ite**)**, y**=**log\_factorial\_seq, xlab**=**"n", ylab**=**"runtime(ns)"**)** **+** ggtitle**(**"log\_factorial Runtime"**)**

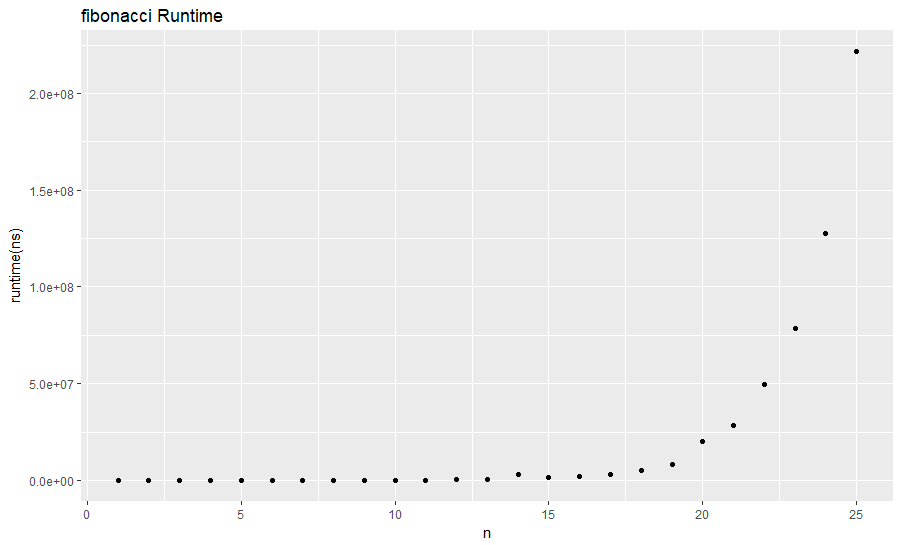
ggplot2**::**qplot**(**x**=**seq**(**large\_ite**)**, y**=**sum\_log\_factorial\_seq, xlab**=**"n", ylab**=**"runtime(ns)"**)** **+** ggtitle**(**"sum\_log\_factorial Runtime"**)**

ggplot2**::**qplot**(**x**=**seq**(**small\_ite**)**, y**=**fibonacci\_seq, xlab**=**"n", ylab**=**"runtime(ns)"**)** **+** ggtitle**(**"fibonacci Runtime"**)**



Runtime:

Runtime:



Runtime: