Comparing Fibonacci number calculation algorithms

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Algorithmen Übungen SS19 BIOINF20

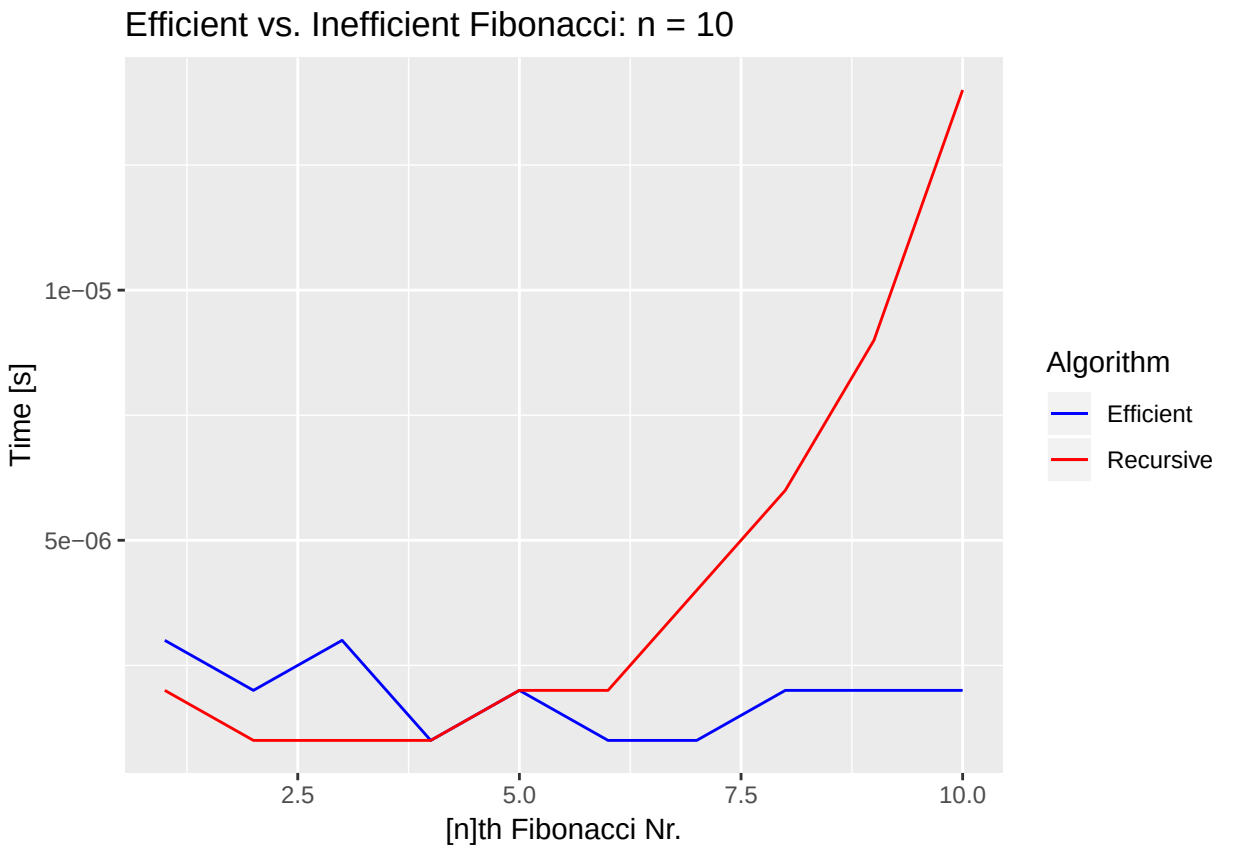
Aufgabe A1

Vergleich der Laufzeiten der beiden Algorithmen (Effizient bzw. Rekursiv)

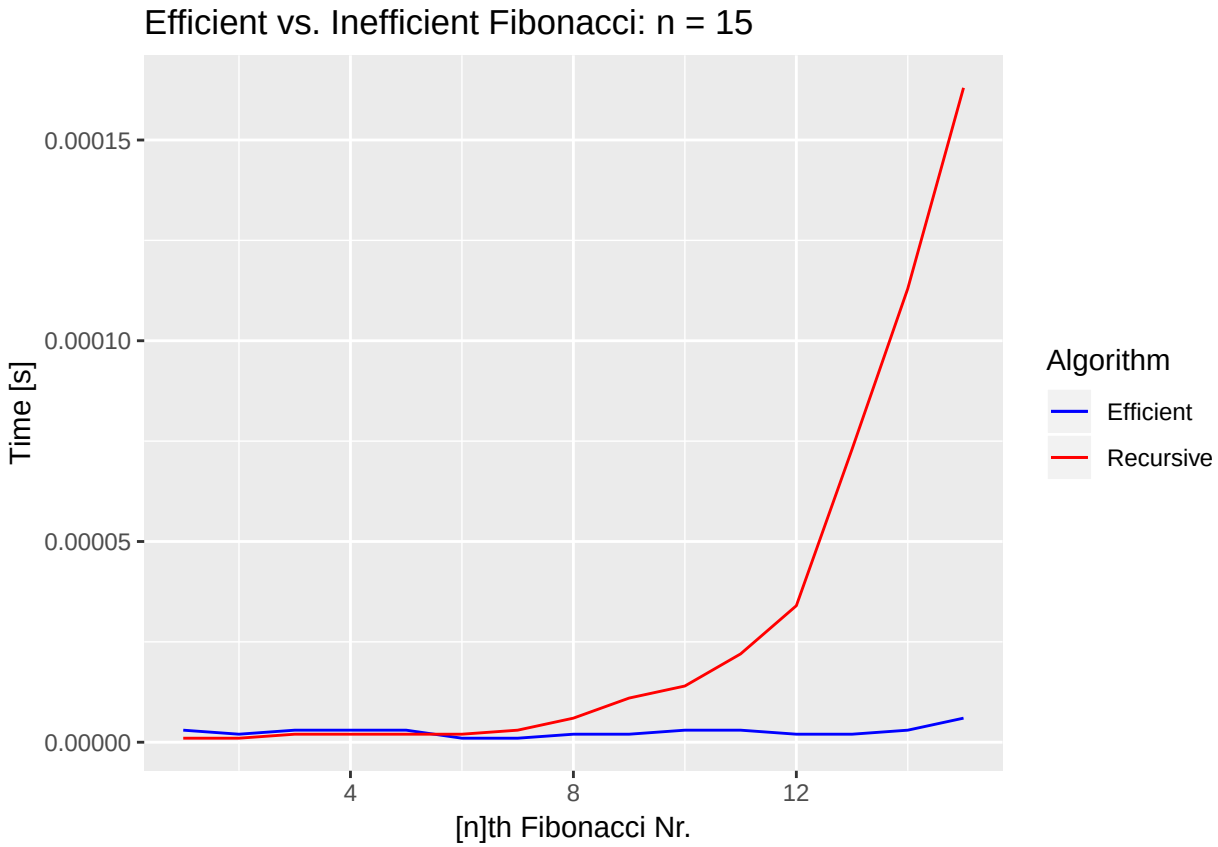
Die Messungen wurden auf folgendem System durchgeführt:
Ubuntu 18.04
Intel Core i5-6200U 2.3GHz
8GB DDR4 RAM

Plots der Messungen

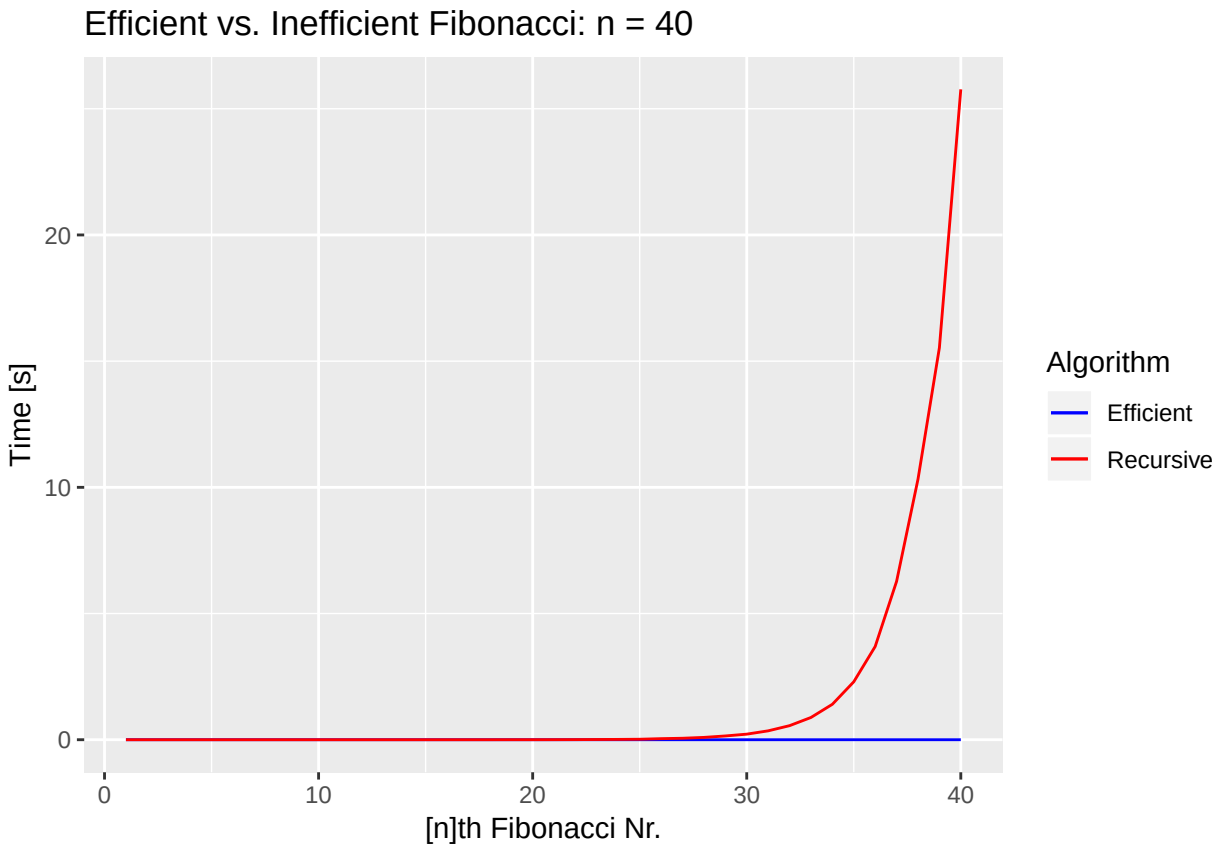
```
ggplot(data=f10, aes(x=n)) + geom_line(aes(y=f10$Efficient, color="blue")) +
  geom_line(aes(y=f10$Recursive, color="red")) +
  labs(title = "Efficient vs. Inefficient Fibonacci: n = 10", x = "[n]th Fibonacci Nr.", y = "Time [s]"
  scale_color_manual(labels = c("Efficient", "Recursive"), values = c("blue", "red"))
```



```
ggplot(data=f15, aes(x=n)) + geom_line(aes(y=f15$Efficient, color="blue")) +
  geom_line(aes(y=f15$Recursive, color="red")) +
  labs(title = "Efficient vs. Inefficient Fibonacci: n = 15", x = "[n]th Fibonacci Nr.", y = "Time [s]"
  scale_color_manual(labels = c("Efficient", "Recursive"), values = c("blue", "red"))
```




```
ggplot(data=f40, aes(x=n)) + geom_line(aes(y=f40$Efficient, color="blue")) +
  geom_line(aes(y=f40$Recursive, color="red")) +
  labs(title = "Efficient vs. Inefficient Fibonacci: n = 40", x = "[n]th Fibonacci Nr.", y = "Time [s]"
  scale_color_manual(labels = c("Efficient", "Recursive"), values = c("blue", "red"))
```



Wie man klar sehen kann ist der rekursive Algorithmus wesentlich langsamer.