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Serie 3

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Exercise 1

Exercise 1)

1. EASY QUESTION

stays

AE|SY QUESTION

AEEY QUSSTION

AEEi QUSSTYON

AEEINUSSTYOQ

AEEINOSSTYUQ

stays

AEEINOQSTYUS

AEEINOQSSYUT

AEEINOQSSTUY ✓

2. EASYQUESTION

AESYQUESTION

AEQSYUESTION

AEQSUYESTION

AEEQSUYSTION

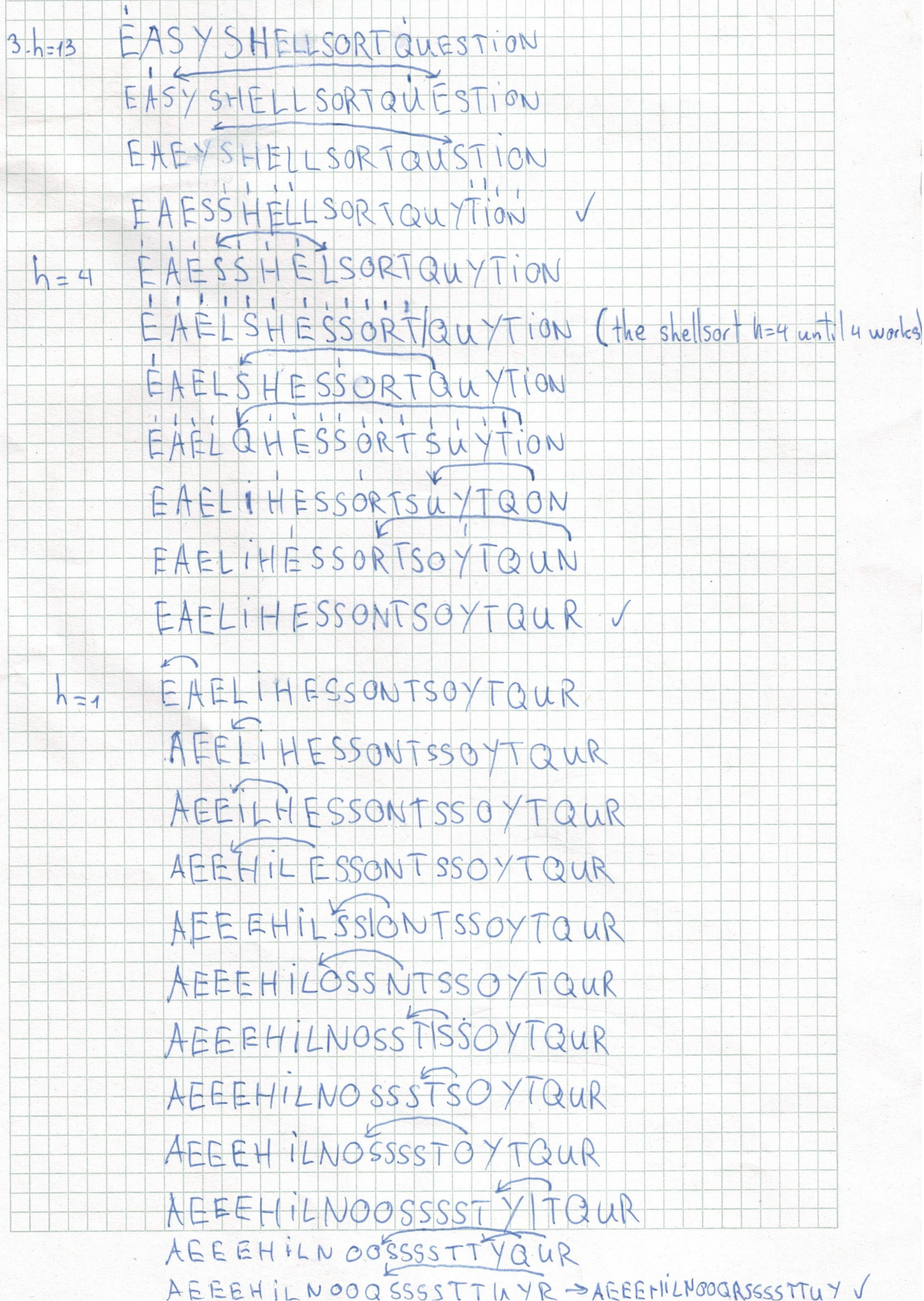
AEEQSUUYTION

AEEQUSSTYION

AEEiQUSSTYON

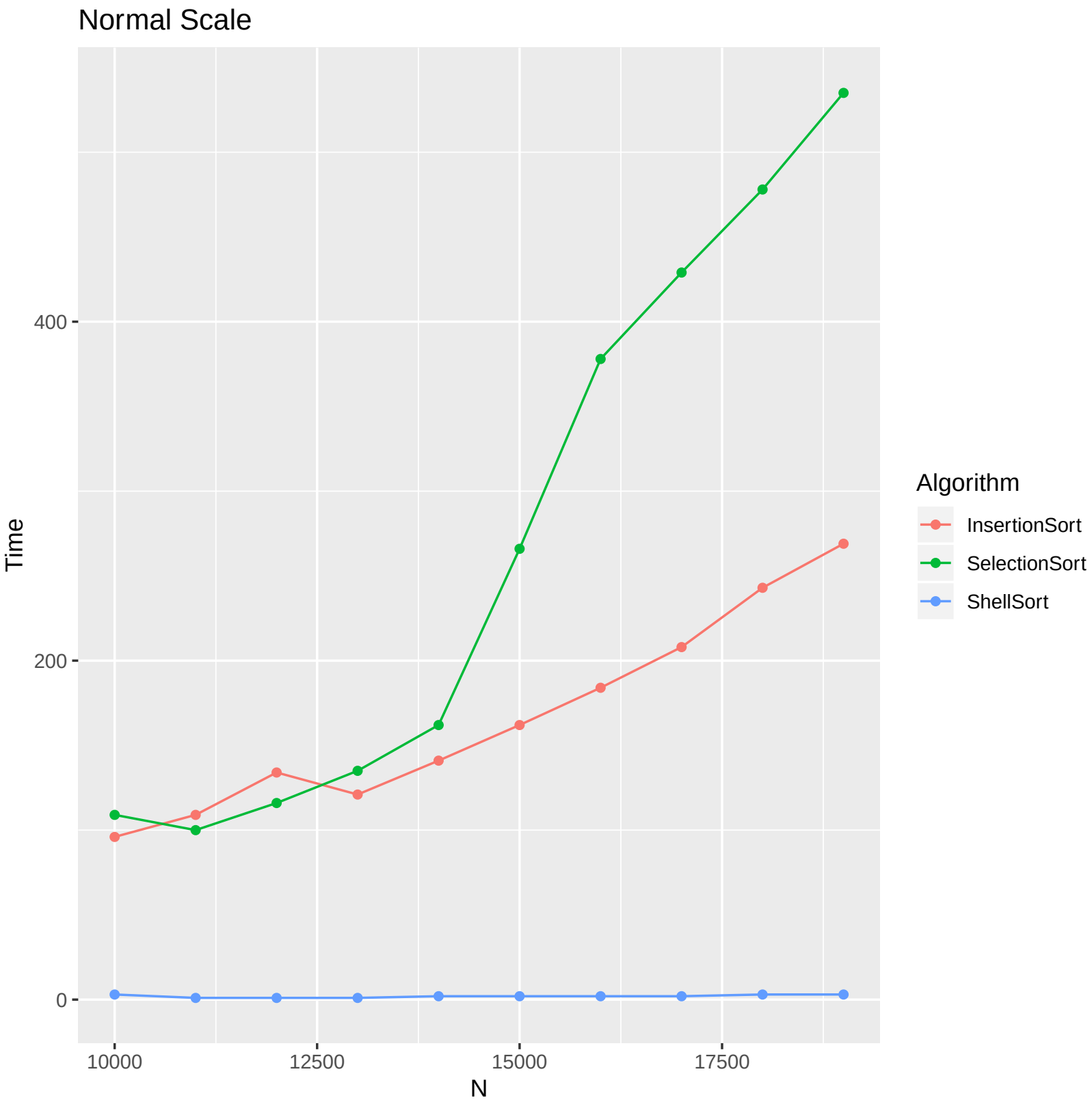
AEEiOQUSSTYN

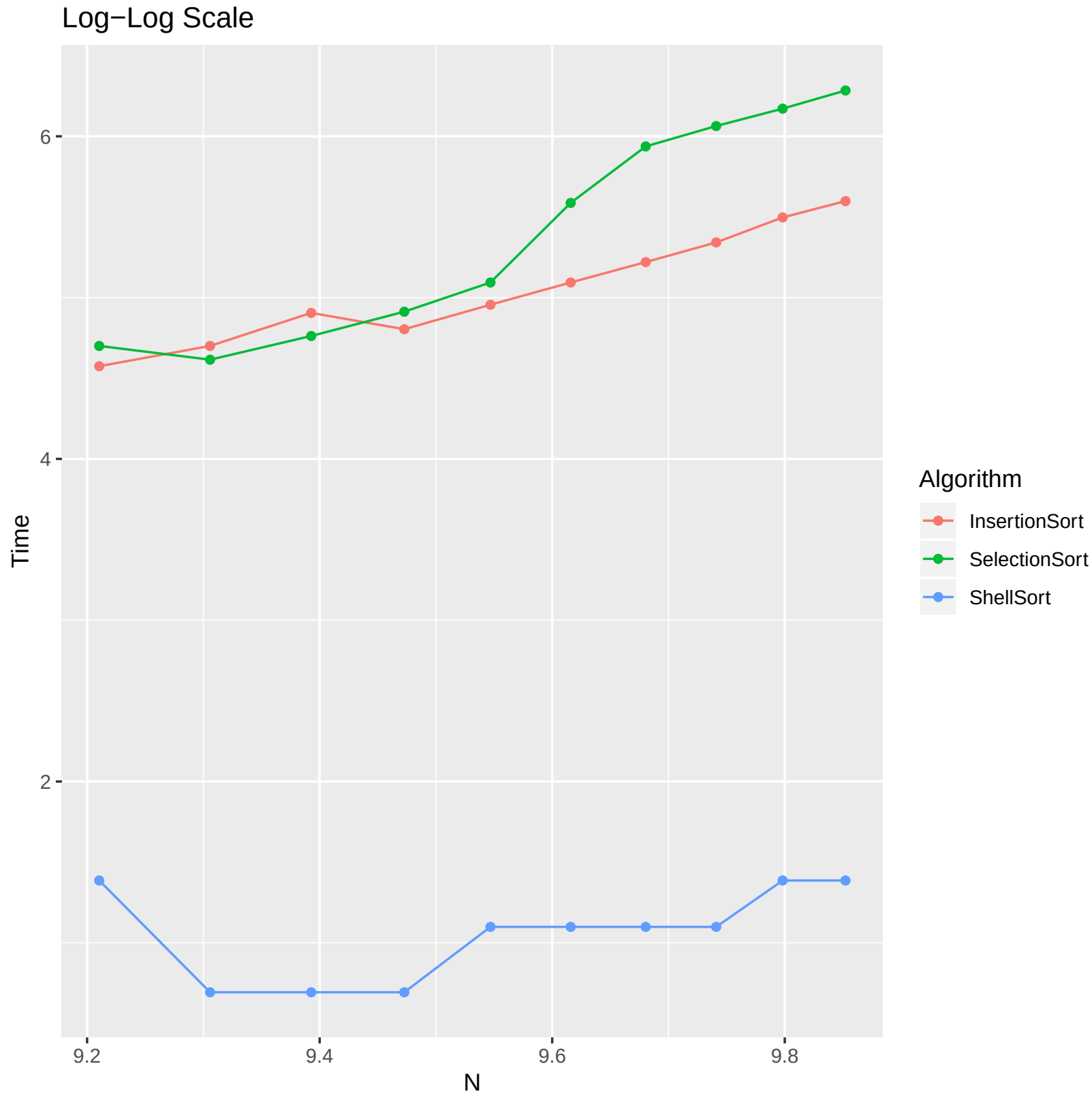
AEEINOQUSSTY ✓


3. h=13
EASYSHELLSORTQUESTION
EASYSHELLSORTQUESTION
EAEYSHELLSORTQUSTION
EAESSHELLSORTQUYTION ✓
h=4
EAESSHELSORTQUYTION
EAELSHESSORTQUYTION (the shellsort h=4 until 4 works)
EAELSHESSORTQUYTION
EAELQHESSORTSUYTION
EAELIHESSORTSUYTQON
EAELIHESSORTSOYTQUN
EAELIHESSONTSOYTQUR ✓
h=1
EAELIHESSONTSOYTQUR
AEELIHESSONTSSOYTQUR
AEEILHESSONTSSOYTQUR
AEEHILESSONTSSOYTQUR
AEEEHILSSIONTSSOYTQUR
AEEEHILOSSNTSSOYTQUR
AEEEHILNOSSTISSOYTQUR
AEEEHILNOSSSTSOYTQUR
AEEEHILNOSSSSTOYTQUR
AEEEHILNOOSSSSTYITQUR
AEEEHILNOOSSSSTTYQUR
AEEEHILNOOQSSSSTTUYR → AEEEHILNOOQRSSSSTTUY ✓

Exercise 2

As we can see in the graphs bellow, ShellSort is by far the fastest sorting algorithm. As for the other two, SelectionSort is very slow on large data but can be faster than InsertionSort in small amount of data.


Normal Scale
Time
400
200
0
10000
12500
15000
17500
N
Algorithm
InsertionSort
SelectionSort
ShellSort


Log−Log Scale
6
4
2
Time
9.2
9.4
9.6
9.8
N
Algorithm
InsertionSort
SelectionSort
ShellSort