



CS-C2160 - Theory of Computation, Lecture, 11.1.2022-11.4.2022

This course space end date is set to 16.12.2022 [Search Courses: CS-C2160](#)

/ departm... / Sections / compute... / 9. volu... / 9.7 cho...

[Course feedback](#) [Syllabus](#)

9. Voluntary problem set: Context-free grammars

These problems are completely **voluntary** (no bonus points given, either) that one may solve, for instance, before the exam to practise the constructions.

« [9.6 Showing that a grammar is ambiguous](#)

[Course overview](#)

Exercise description My submissions **2 / 50** ▾

Chomsky normal form for a grammar

Consider the context-free grammar:

```
S -> Tbb
T -> aTb | V
V -> aU | bU
U -> aW | bW
W -> a | b
```

Give a context-free grammar *in Chomsky normal form* that generates the same language.

Enter the grammar in the space below, one production on each line. Use this syntax:

- production: variable -> string1 | string2 ... | stringn
- variables: capital letters A,B,...,Z
- terminals: lower case letters a,b,...,z and numbers 0,1,...,9
- empty string: _ (the underscore symbol)
- start symbol: the first variable in the grammar

For instance, the grammar

```
A -> aAa | B
B -> bB | _
```

generates the language $\{a^n b^k a^n \mid n \geq 0 \text{ and } k \geq 0\}$.

Your solution:

Submit!

[9.8 Chomsky normal form for a grammar](#) »

Earned points

1 / 1



Exercise info

Exercise category
Voluntary exercises

Your submissions
2 / 50

Deadline
Sat, 31 Dec 2022 23:59:00 +0200

Total number of submitters
16

« [9.6 Showing that a grammar is ambiguous](#)

[Course overview](#)

[9.8 Chomsky normal form for a grammar](#) »

Previous activity

◀ 8. Voluntary problem set: Regular expressions

Next activity

Earlier lecture slides (2021) ▶



Tuki / Support

Opiskelijoille / Students

- MyCourses instructions for students
- email: mycourses(at)aalto.fi

Opettajille / Teachers

- MyCourses help
- MyTeaching Support form

Palvelusta

- MyCourses rekisteriseloste
- Tietosuojailmoitus
- Palvelukuvaus
- Saavutettavuusseloste

About service

- MyCourses protection of privacy
- Privacy notice
- Service description
- Accessibility summary

Service

- MyCourses registerbeskrivning
- Dataskyddsmeddelande
- Beskrivning av tjänsten
- Sammanfattning av tillgängligheten

