## Syntactic analysis: Exam practice

> ⓘ **Note**
>
> This document gives *examples* for tasks similar to those that will appear on the digital written exam. The solutions are provided at the end of this document, in case you first want to try solving the tasks yourself. This is not meant as an exhaustive list; the exam may also feature other types of tasks/questions than the ones shown here.

Task 5.1

Here is a dependency tree for a sentence with five tokens:
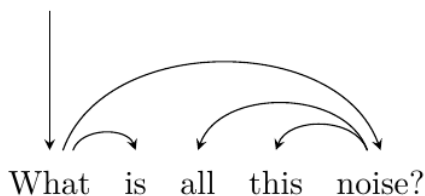
State one valid transition sequence (under the arc-standard model) that produces the dependency tree shown above!

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Task 5.2

Convert the dependency tree from Task 5.1 into a token-level annotation format (like the one used by the CoNLL-U format) by filling out the table below, assigning each token a numerical index corresponding to the head and dependent. Assume that the tokens are indexed from 1 to 5.

token	dependent	head
What		
is		
all		
this		
noise?		

Task 5.3

Assume that the dependency tree on the *left* (identical to the one in Task 5.1) is the gold-standard tree, and the tree on the *right* was predicted by a dependency parser:


What is the unlabelled attachment score (UAS) of this parser on this sentence?

Task 5.4

A dependency tree is a type of directed graph. What other properties does this graph need to have to be considered a valid dependency tree? State these properties.

Task 5.5

Is the graph shown below a valid dependency tree? State your answer and explain which of the properties the graph does and/or does not fulfill.
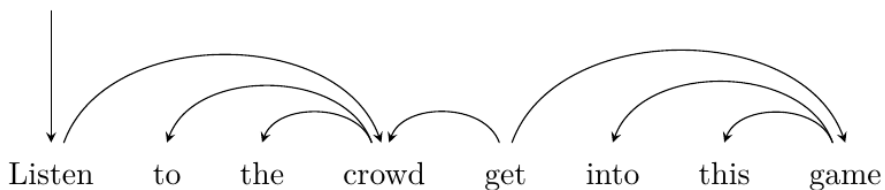
> 🗩 **Solutions begin on the next page!**

Solutions

Task 5.1

- **SH SH RA SH SH SH LA LA RA RA**

> ⓘ **Note**
>
> In this case, there is only one possible transition sequence, but for other trees, there may be several. It does not matter which one you give, as long as it produces the same tree.

Task 5.2

token	dependent	head
What	**1**	**0**
is	**2**	**1**
all	**3**	**5**
this	**4**	**5**
noise?	**5**	**1**

Task 5.3

$$\frac{4}{5}$$

Task 5.4

a) **Every node has exactly one incoming edge (or: "each token has exactly one arrow pointing at it").**
b) **Every node is reachable from the root node.**

Task 5.5

No, this is not a valid dependency tree.

a) **The token *"crowd"* has more than one incoming edge (there are two).**
b) **The second half of the sentence (*"get into this game"*) is not reachable from the root node.**