Institute for Informatics of the Ludwig-Maximilians-Universität München Winter semester 2025/26
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Mock Examination in the Seminar

Scientific and Technical English for Computer Scientists

You have **90 minutes** at your disposal. Written or electronic aids are not permitted except for normal watches. Carrying forbidden devices, even turned off, will be considered a cheating attempt.

Write your full name and matriculation number legibly on this cover sheet, as well as your name in the header on each sheet. Hand in all sheets. Leave them stapled together. Use only **pens** and **neither** the color **red nor green**.

Check that you have received all the sheets. Questions can be found on **pages 2–12**. There are 10 questions for a total of 100 points; 50 points are sufficient to pass.

You may use the blank pages at the end for your own notes. If you use these pages to answer, clearly mark what belongs to which question and indicate in the corresponding question where all parts of your answer can be found. Cross out everything that should not be graded.

With your signature, you confirm that you are sufficiently healthy at the beginning of the examination and that you accept the examination bindingly.

Last name (in CAPITAL LETTERS):

First name (in CAPITAL LETTERS):

Matriculation number:

Program of study:

Hereby I confirm the correctness of the above information:

_____
Signature

Please leave the following table blank:

Question	1	2	3	4	5	6	7	8	9	10	$\sum$
Points	10	10	10	10	10	10	10	10	10	10	100
Score											

Question 1 (British vs. American English): **(10 points)**

Underline five British specificities in the text below, and explain how they would be expressed in American English.

I learnt at school that $x + y = y + x$, without realising that this equation is at the centre of algebra. Now I am a maths professor at a renowned university. Against my better judgement, I modelled my behaviour after that of my teachers – hoping to become a first class educator one day.

Question 2 (Informality): **(10 points)**

Underline five informal expressions in the text below, and suggest a more formal alternative for each.

> The algorithm boils down to two nested loops that allocate memory on the fly and print its content to the console. Thankfully, we did not have to develop the algorithm from scratch. We could base it on some code snippets written in the seventies by Donald E. Knuth.

Question 3 (Gender Neutrality): (10 points)

Rephrase the following text to make it gender-neutral. Perform the modifications in place.

> As the user moves from location to location, we can move his activity with him. If the activity of a user in the system is associated with him at all times and is made available to him at all spaces, then a user can seamlessly perform his activity as he desires. Particularly, upon arrival at a space, he can continue any session of work that he currently has in any space of the ubiquitous system.

Question 4 (Verbosity): **(10 points)**

Underline five verbose expressions in the text below, and suggest a more concise alternative for each.

> In order to estimate the error in an approximate manner, it is important to note that there are multiple sources of error that are applicable. For instance, let us consider transmission errors as an example. For all intents and purposes, the difficulty in estimating such errors resides in the fact that the signal cannot be observed in a reliable manner during transmission.

Question 5 (Irregular Plurals): **(10 points)**

Underline five irregular plurals in the following text, and give in each case the singular form.

> Automata theory and formal languages form the basis of vast corpora of scientific research, which largely take the form of errata or addenda to previously published papers, theses, and even textbooks. Tables and indices were compiled to facilitate lookup.

Question 6 (*Shall* vs. *Will*): (10 points)

There are two main approaches to the issue of *shall* vs. *will*: traditional and modern. The following text is written in the traditional style. Rewrite it to use the modern approach. Perform the modifications in place.

> At the beginning of the examination, students shall write their name in legible uppercase letters on the cover sheet. They shall also put their identification card on their desk. Once this is done, we shall start the chronometer. Will everyone finish on time? We shall find out.

Question 7 (*Which* Hunting): (10 points)

Replace all "wicked" *which*'s by *that*'s and all wrong *that*'s by *which*'s in the following text. You can assume that the punctuation is correct. Perform the modifications in place.

You can borrow the book which I have just finished reading. The book, that I bought last year, but that I did not find the time to read until now, is a Japanese thriller. Incidentally, books that are acquired but which pile up in one's home without being read are called *tsundoku* in Japanese. In the book, Mariko ate the last piece of sushi that she was saving in the fridge. The sushi, which she had bought near the fish market, had gone bad. And where was the dress which she planned to wear tomorrow? Anyway, she stopped by the supermarket to buy new sushi. The supermarket, that was still open, thankfully had plenty of sushi options. It also had sashimi, that is not as well known abroad but which is equally tasty.

Question 8 (Punctuation): **(10 points)**

The following text contains some punctuation mistakes. Underline five such mistakes, and correct them directly in the text.

I wonder, whether I was born to become a teacher? Consider the assertion: $2+2=4$. How can I teach this to pupils, (and perhaps to students as well) without invoking Giuseppe Peano's axioms? I see the need for intuition, however strong logical foundations are also desirable. This is, where Kurt Gödel's paper, "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I" comes into play.

Question 9 (Revision): **(10 points)**

The following 191-word abstract is long and verbose. Shorten it by at least 25% using the haircut and amputation approaches while preserving its essence.

> Autonomous, or self-driving, cars are emerging as the solution to several problems primarily caused by humans on roads, such as accidents and traffic congestion. However, those benefits come with great challenges in the verification and validation (V&V) for safety assessment. In fact, due to the possibly unpredictable nature of Artificial Intelligence (AI), its use in autonomous cars creates concerns that need to be addressed using appropriate V&V processes that can address trustworthy AI and safe autonomy. In this study, the relevant research literature in recent years has been systematically reviewed and classified in order to investigate the state-of-the-art in the software V&V of autonomous cars. By appropriate criteria, a subset of primary studies has been selected for more in-depth analysis. The first part of the review addresses certification issues against reference standards, challenges in assessing machine learning, as well as general V&V methodologies. The second part investigates more specific approaches, including simulation environments and mutation testing, corner cases and adversarial examples, fault injection, software safety cages, techniques for cyber-physical systems, and formal methods. Relevant approaches and related tools have been discussed and compared in order to highlight open issues and opportunities.

The question continues on the next page.

Continuation of Question 9:

Question 10 (Contents): **(10 points)**

As part of a university seminar, you are asked to write a scientific paper about the Levenshtein distance. After some initial research, you decide that you want to cover the following points in your paper:

a) Levenshtein distance supports the following operations: insertion, deletion, and substitution

b) Levenshtein distance is a type of edit distance

c) The Levenshtein distance is given by the recursive function lev(xs,ys) characterized by the following formulas:

```
forall xs. lev(xs, []) = length(xs)
forall ys. lev([], ys) = length(ys)
forall x y xs ys. x = y --> lev(x # xs, y # ys) = lev(xs, ys)
forall x y xs ys. x \neq y -->
  lev(x # xs, y # ys) = a + min(lev(xs, y#ys), lev(x#xs, ys), lev(xs, ys))
```

d) Named after the Soviet mathematician Vladimir Levenshtein

e) Jaro distance supports the following operation: transposition

f) The edit distance quantifies how many operations are necessary to transform one string into another string

g) Is a metric for measuring the difference between two strings

h) First published in 1965

i) Damerau–Levenshtein distance supports the following operations: insertion, deletion, substitution, and transposition

j) Hamming distance supports the following operation: substitution

Create a table of contents for your paper, and assign each of the points (a)–(j) to the appropriate section.