

Exercise Sheet 4: Reading Even More Literature

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Exercise 4.1. For each of the following concepts, find the paper that introduced (i) the concept itself, and (ii) the name:

1. Turing machine
2. NP-completeness
3. Datalog[±]

Exercise 4.2. Find the following paper: Immerman, N. (1988). Nondeterministic space is closed under complementation. *SIAM Journal on Computing*, 17(5), 935–938.

1. Read the title, abstract, and introduction. What type of paper is this? What are the paper's main contributions?
2. Read the paper, skipping details as necessary. What is the overall structure of the paper? Which concepts are used, but not defined in the paper? Find out how they are defined.
3. Read the paper. Which questions do you still have?
4. The paper suggests four open problems. Try to find out which of these are still open, and what progress has been made towards solving them.

Exercise 4.3. Find and read “Notation as a Tool of Thought” by Kenneth Iverson.

1. Summarise the paper in two sentences.
2. Where and when was the paper published?
3. Who are the authors, and what are their affiliations?
4. What is the research question studied? Which solutions are proposed? How is the paper structured? What are the main contributions of the paper?
5. What are the strong points of the work? What are the weak points?
6. What did you find hard to understand? Which further information do you need?
7. Do you know any papers that show similar results?