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CS150 - Intro CS Insights

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Assignment 2

This is an exercise to Compare How Both Your Own Summarization of POS Chapter 2 and ChatGPT's Results can be improved - or not - by feedback from comparing them and critically assessing their differences (with you as human judge of what makes a significant difference). It will be interesting to see if a majority (or all) of you report comparable experiences or if some significant differences are reported between your experiences.

Summarize the highlights of POS Chapter 2 on Universal Building Blocks of Computers using your own language ½ to one page. Compare it critically with a ChatGPT-generated ½ page version. Then do a second ChatGPT run by restating your prompt to make it closer to your original points (those not covered by ChatGPT) and comment in a few sentences on whether this helped get the ChatGPT result closer to your original summary or not. If not, comment how this would make you update your own summary - that is, state in a few sentences which of ChatGPT points would you incorporate as improvements to your original.

Chapter 2 of POS, "Universal Building Blocks", talks about the fundamental concepts and ideas behind basic logic and

algorithms. POS Chapter 2 sheds light on boolean logic which serves as an essential facilitation for converting input into output. The boolean construction set includes the *and*, *or*, and *inverse* functions. It is described that this fundamental set of boolean functions provide enough capabilities to design and implement algorithms. This can be achieved by combining various inputs and outputs of boolean functions to other inputs of boolean functions. Chapter 2 uses the example of the tic-tac-toe game to explain how inputs of 0 or 1 can be converted to outputs of 0 or 1; that is each player's letter *X* or *O* can be mapped to either a 0 or a 1. Chapter 2 provides a neat formula to calculate the total possible number of combinations of input signals that can be passed to a binary function with *n* inputs: $f(n) = 2^n$ possible combinations. Chapter 2 emphasizes that the binary system can also represent letters, large numbers, and even other abstract objects. The different entities simply need to be encoded to a subset of *0's* and *1's* creating an encoded string of binary digits. Chapter 2 also dives into the notion of finite-state machines which can solve problems which involve sequences of input in time. This means that in order for finite-state machines to compute, they require the current input, the previous input, the current state, and a set of instructions or logic (known as a transition-function) to move from the current state to the specified state based on the

input passed. The state of the machine is denoted by all of its previously received input; the state of the finite-state machine is saved in a memory-like device known as a register. It is important to note that finite-state machines cannot recognize all sequences of input so they are limited in power due to their finite memory.

ChatGPT's summary of POS Chapter 2 covers approximately 10% of what was actually stated or explained in the chapter. However, it does provide a plethora of other related concepts and terms that are analogous to the title of the chapter. GPT uses generalization to provide an overview of what the chapter could possibly contain based on its name, "Universal Building Blocks of Computers". I would say that it offers compelling information and insight but it goes overboard with the precise summary; in essence, it provided information that was relative to the topics mentioned in the chapter, but those that were not actually included. I would definitely recommend adding some points by ChatGPT into my own summary as it enhances or further dives deep into the topics mentioned in the actual chapter.