Computer Systems Software

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Abstract: This article is dedicated to teaching young people the basics of information technologies and computer networks.

Keywords: software, computer networks, programs, Intel Core i7, UltraSPARC, OMAP4430 and ATmega168 processors.

It is increasingly important for today's computer engineering and software engineering and related field professionals to understand how computers, computer systems, and computer networks work, and to be able to use them in their daily work.

In terms of computer data work, i.e. how calculation processes are structured, data copying and writing operations from one place to another, working with databases, implementing security conditions in computer systems and computer networks, and software tools created for working with multimedia tools. efficient use, in their practical application - it is required to have knowledge of software of computer systems.

Currently, various systems created and being created on the basis of computer and telecommunication networks, as well as systems such as distributed and whole computing systems, can be considered as appropriate computers. By studying this science of computer architecture, the student will have the opportunity to learn about how a computer is built, how it works, and how to program it. Due to the acquisition of knowledge related to how the computer is structured, how it works, and programming, the student's ability to communicate with the computer as a specialist and the level of effective use of computer capabilities will increase. In the field of computing, the published literature on how computers are built focuses on how the tools that make up computers are built, what they are for, and how they can be described. These literatures are intended more for computer professionals.

Developments over the past 10-15 years have shown that it makes sense for any computer professional in their career, especially computer engineering, software engineering, and telecommunications professionals, to learn computer hardware and software together. Studying computer hardware and software together means studying how a computer and its components are structured and how data processing processes are carried out in them. In this case, it is necessary to know very well what algorithms data processing programs are based on, to express these algorithms in words, and to know the stages up to reflection as a practical program.

The first chapter of this study guide introduces basic concepts related to modern computer architecture and information related to the numerical and logical foundations of computers. There are explanations about digital logic objects - valves, elements that perform simple logic functions, triggers that are memory elements, registers built on their basis and their role in computer architecture.

The second chapter talks about how the main and auxiliary memory devices of the computer are structured. The main focus is on how to record, store, address and recall instantaneous information in binary form.

The third chapter explains the structure of computer processors and how they work. There, he presented the structure and performance of eight, sixteen and thirty-two-bit processors, comparing them with each other. This chapter introduces modern computer processors - Intel Core i7,

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UltraSPARC, OMAP4430, and ATmega168 processors - and the concepts related to parallel computer architectures.

The fourth chapter is based on learning the basics of assembly language programming. The main focus is on how to understand the structure of computer architecture based on the study and creation of programs written in the assembly language.

The fifth chapter talks about computer data input-output architecture, computer buses and their principles of operation. Structure and characteristics of PCI, PCI Express and USB busses used in today's computers are reviewed.

Books

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