Содержание:

Introduction

Most people automatically associate Information Technology with computers and the Internet. We are in these days don’t even remember a time when we didn’t have computers, smartphones and constant high speed Internet access. We are used to being always online, talking with their friends over it, and getting everything done through the Internet, from ordering homework to organizing events.

However, in reality, Information Technology in its original form has been around for thousands of years. People have been gathering information since the beginning of time and the earliest information has provided those early human beings with ways of communicating through available technologies. Many people fail to realize that there was a process to get to where we are today.

Today historians recognize four stages of information technology development:

- Premechanical Age

- Mechanical Age

- Electromechanical Age

- Electronic Age

The Premechanical Age

The premechanical age is recognized as that period between 3000 BC and AD 1450. The communication between human beings was through the use of those early languages but there were also others who communicated by using picture drawings which later became known as petroglyphs, and the primary surface for these pictures was rock. This led to the early development of the Phoenician alphabet.

Alphabets and the ways in which they could be used soon gained in popularity and naturally this resulted in an increasing amount of recorded information. It wasn’t long before ways were discovered to manufacture paper and also writing equipment such as pens. The development of writing materials in itself was an extensive process because the very first writing materials were simply wet clay in which impressions were made. Eventually, however, the papyrus plant was discovered which led to the production of primitive forms of paper.

In those early days, the Chinese found a way to manufacture paper from rags and this kind of paper was very popular and widely used. All of these early technologies led to a lot of literate people, and this resulted in an increasing amount of information. But this created a new problem, such as how all of that information could be safely stored over a long time. This eventually resulted in the first books and eventually libraries were constructed for the safekeeping of information. Many different methods were developed such as the Egyptian scrolls which were an effective method to record all kinds of information which could then be easily stored.

The Mechanical Age

This is the stage where we finally start to see some correlation between the first forms of information technology and the systems which are currently in use. History places the mechanical age between 1450 and 1840. It was during this time that a substantial number of new technologies emerged and the interest in these kinds of technologies increased accordingly.

The slide rule was one of the inventions of this time which is basically a primitive analog computer which could be used for multiplication and division. Other technologies such as the Pascaline was invented by Pascal and this also was very popular during this time as a kind of mechanical computer. A little later another technology emerged, which was known as the difference engine which was a creation of Charles Babbage.

Several interesting machines were invented during this time and although none of these were nearly as effective as our modern-day computers this was still a very important part of the evolution process of information technology. Another problem with ancient machines was the fact that they were very large in relation with their usability but to the people living at that time they were extraordinary inventions.

The Electromechanical Age

t is during this stage of information technology that we start to see some resemblance of the technologies which have become available to us in the last couple of decades. History places the electromechanical age between 1840 and 1940. Telecommunication emerged out of those early inventions and soon after that the first telegraph was created. The man Samuel Morse was responsible for the Morse code in the early 1830s. Shortly thereafter the telephone was invented which is still a popular means of communication in our day. In the late 1800s the first radio was designed and manufactured and all of these things were important stepping stones that sped up the emergence of new technologies which eventually evolved into the information technology systems we have today.

Howard University eventually created the first digital computer in the US in 1940. But even though it was a groundbreaking event, this was a giant project because this computer was 50 feet long, 8 feet high, 2 feet wide and it weighed 50 tons. It was operated through the use of punch cards and it was nothing like our modern computers. However, this first attempt generated a lot of interest and many people soon started to investigate ways in how to make this system smaller.

The Electronic Age

This is the age in which we are living now and it started in 1940 with the creation of the first computer. One of the first fully functional computer systems was the ENIAC and this was the first high-speed digital computer. What made it special was the fact that it could be programmed to solve a whole range of complicated computing problems. This system was specifically designed for the U.S. Army for artillery firing tables. This was also a huge machine which required 680 feet and it had a total weight of 30 tons.

When it comes to the age of digital computing there are four stages of development. The first systems relied upon vacuum tubes and punch cards in systems such as the Mark I (Mark One) and the ENIAC. During this time storage of information was accomplished through the use of rotating magnetic drums. Eventually, transistors replaced vacuum tubes while magnetic tape was used in the place of punch cards. Things started to change when programming languages such as COBOL and FORTRAN were developed.

Eventually, integrated circuits took the place of transistors and metal oxide semiconductors became the preferred media for information storage. This led to the first

actual operating system and the more advanced programming language known as Basic. And eventually, the final stage of information technology was reached as we know it today when modern CPUs emerged which combined control circuits and memory on a single chip. This led to the personal computer and eventually the modern graphical user interface.

Informatics as an independent field of human activity

Development and wide distribution of electronic computers (computers) were accompanied by the emergence of various information technologies. The allocation of informatics to an independent field of human activity and its rapid development is due to:

• the emergence of integrated circuits and the invention of a microprocessor. Thanks to their use, the functions and the dimensions of the computer were significantly expanded. There were personal computers - single-user micro-computers that meet the requirements of universality and universality. In addition to computing, computers are used for creating text and graphics, processing audio and video signals, storing and managing large amounts of data and other purposes;

• the emergence and widespread use of local and global computer networks. Thanks to this, it became possible not only to process and store information, but also to transmit it over very long distances.

The emergence of informatics is also due to the development of the global process of informatization of society, reflecting the general pattern of the development of civilization. Under informatization is understood the organizational scientific and technical and socio-economic process of creating conditions for satisfying the information needs of citizens of society. Informatization of society changes the habitual conditions of people's lives, their production activities, life and leisure.

Originating in the depths of cybernetics, computer science as a science rapidly expands its subject area. From the technical discipline on methods and means of data processing with the help of computer technology, informatics turns into a fundamental science about information and information processes not only in technical systems, but also in nature and society. However, unlike cybernetics, which studies systems and management processes, the sphere of research for informatics is any information systems, as well as methods and means for obtaining, storing, transferring and using information. Informatics

has only its own problem area, but also its own research methods, the use of which makes it possible to identify, analyze and understand many of the fundamental properties and patterns of natural and social phenomena in the world around us. Informatics is a complex of diverse scientific areas, such as:

• Theoretical computer science - a set of mathematical disciplines that use mathematical methods for constructing and studying models for processing, transmitting and using information;

• social informatics - the science of the processes of informatization of society;

• Biological Informatics - the science of information processes in biological systems

• social cognition - the science of developing the intellectual potential of society.

Computer science today

Currently, the most widespread view about computer science as about the technical study of methods for the automation of information processes with the help of computer and communication engineering. That is why in the United States, Canada, Latin America to refer to this discipline the most commonly used term in computer science that emphasizes its desktop orientation. At the same time in Eastern and Western Europe, more common is the term of French origin informatique (computer science), which is widespread not only in Russia but also in CIS countries. This term seems more apt, as it emphasizes the informational nature of this scientific discipline. The information and information processes are the main objects of its study.

The greatest development in Informatics received the following three research areas:

theoretical computer science (information theory, information modeling methods, theory of information systems, computational linguistics, systems theory artificial intelligence);

technical computer science {theory and methodology of creation and use of technical systems for collection, storage, processing and transmission of information, focused mainly on the use of electronic computing and communications);

applied computer science (Theory and methodology of creation and use of information technologies and systems in various fields of social practice)

It is easy to notice technical orientation and the limitations of the above mentioned studies, which cover mainly instrumental and technological part of much wider and complex issues in the study of information and information processes in nature and society, as well as some, albeit very important, its theoretical aspects. The reason for this is that computer science is a young science, which is now entering its third decade. Born in the bowels of the science of management Cybernetics, Informatics retains a lot in common. This commonality is also manifested in the terminology apparatus and in the methods of research and used tools (mathematical models, hardware and communication, system of electronic telecommunications).

But we should not forget that computer science, as with any fundamental science, has its own, different from Cybernetics objects of study – information and information processes, as well as its methods, one of which – information approach to the study of phenomena in nature and society.

Conclusion

A brief analysis of the current state of Informatics and directions for the future development of the development of the complex Sciences of information allows to draw the following in water:

1. Computer science today is rapidly progressive and strategically important area of scientific knowledge, one of "growth points" of the world of science. Based on it in the coming years will be created a new set of information science, which will become a scientific base for the coming post-industrial information society.

2. The main factors stimulating the development of computer science are, on the one hand, the process of Informatization of society, which now has taken a global character and became the core of scientific, technical, economic and social development for almost all countries of the world community, and the need to resolve the crisis in the science, where today there is a revision of many previously established concepts and ideas about the laws of nature and society.

3. In the transition to a post-industrial information society mankind must not only to form a new their environment (the InfoSphere), which will be based on diverse and deeply developed information processes, but also to find their place in this range, worthy of man's high destiny. To achieve this objective it will be necessary to develop new scientific methods to help people correctly understand and explore the opening before him

information highly dynamic picture of the world. Perceiving the unity of information laws in nature and society, and their crucial role in evolutionary processes, people must learn purposefully to affect these processes for a better future.

Thus, Informatics is not only the science of the future, but in the future, which is today.

4. Given the novelty, complex and high social importance of the research in computer science, their strategic importance to address the global crisis of civilization and its transition to sustainable and safe development, the world scientific community to urgently take concrete and effective steps for the development and coordination of these studies. Today they should not only be aimed at the achievement of the scientific objectives, the development of effective methodological and conceptual apparatus of this science, but also in obtaining practical results, helping to address the most important social, environmental and economic problems of society.

5. You need to deploy a large-scale and systematic awareness in the scientific press and the mass media to draw attention to the problems of development of computer science government agencies, business executives, influential international organizations, large research centers and universities. Today one need not to spare any effort on this work because the only way to achieve the necessary financial support for research and development in Informatics, to ensure the inflow of qualified specialists from various fields of scientific knowledge and talented youth.

6. Should review and significantly expand the list of scientific and educational specialties in the field of Informatics and deploy training on all the most important and perspective directions of its development. Currently in Russia there is only one approved scientific VAK speciality – "Theoretical fundamentals of Informatics", which, of course, not correspond to the actual state of the ongoing research and hampers the training of scientific personnel with necessary skills. So, it seems quite reasonable the suggestion by several Moscow universities about the introduction of a new scientific specialty "Social Informatics", which in recent years has repeatedly maintained in the participants of scientific workshops and conferences on the problems of social Informatics and is currently directed to the management of the Higher attestation Commission and the Ministry of science and technical policy of the Russian Federation.

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