TEACHING STUDENTS TO DRAW SHARP, NON-PASSING, RIGHT ANGLES USING THE AUTOCAD PROGRAM THROUGH THE SCIENCE OF COMPUTER GRAPHICS IN HIGHER EDUCATION INSTITUTIONS

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Abstract: *In the article, the goal of improving students' learning efficiency using modern technologies in teaching computer graphics is a priority way. This subject provides students with information on how to use the three-dimensional drawing and modeling capabilities of the AutoCAD program and create an environment for analyzing and learning the drawings drawn in the three-dimensional program interface.*

Key words: *AutoCAD, drawing, plane ,axonometry, detail cutting, size, AutoCAD LT, Auto Desk.*

INTRODUCTION

Prosperity of our country, prosperity of our people is one of the main tasks assigned to the education system. Accomplishing this enormous task requires solving a wide range of issues. One of such important issues is the training of highly qualified specialists who have matured in all aspects. For this, it is necessary to carry out appropriate educational and educational work, to make the educational process equal to the educational process conducted in developed democratic countries, and to apply modern pedagogical and information technologies to the educational process more widely. The 21st century is the century of development and organization of new techniques and technologies based on computers. The prosperity of our country directly depends on the activities of students studying in the field of construction of buildings and structures. Therefore, young people who have received thorough education in higher educational institutions, who love their profession, who have studied its secrets in depth in every way, who have sufficient professional skills, will be able to improve the future of our country. This issue largely depends on the conditions created for their education, including educational literature created for young people. Today, there are many computer graphics programs, which differ from each other depending on the field of application. Specialists in each field choose a graphic program that is convenient for their activities. The limits of the programs will also be focused on a specific field. So, when choosing a graphic program, it is necessary to take into account its capabilities. In most cases, it is necessary to master other programs or subjects before using a graphic program. And with that, graphics programs become more complex.

AutoCad (Automated Computer Aided Drafting and Design) is translated as "automated drawing and design with the help of a computer." It is a CAD system designed for the preparation of technical documents that allows you to create drawings of almost any complexity. CAD AutoCad was "invented" by the American company AutoDesk, the world

leader in the development of CAD. AutoCad appeared in the early 90s. From the 2004 version to the present day (2011), AutoCad uses the same working mechanisms. The new versions differ from the previous ones with some additional functions, which do not change the main mechanisms of operation, but only complement and improve them. However, be aware that newer versions of AutoCad documentation may not work with older versions (just like any other software). However, when saving documents in newer versions, they can be saved in a format compatible with earlier versions of AutoCad.

What kind of computer do you need to work with AutoCad? For comfortable work, you need a full Pentium or Athlon processor (the more cores and the higher the frequency, the better); RAM at least 1 GB (preferably 2 GB); the monitor is at least 17 inches, but 19 inches is better, and if you want to work "hard" with AutoCad, then get 21 inches. My advice, if possible - get the 24" - for the price, they are no more expensive than the 21-22". Personally, I bought myself a 24-inch SAMSUNG, and I think it is not "big" for AutoCad, what about monitors with a smaller diagonal. AutoCAD and AutoCAD LT are very similar, but not identical. In today's review, we will look at the main differences between these versions, after which you will have no doubts about which AutoCAD to choose for your company:

3D capabilities. Perhaps this is one of the main differences between the LT version and the full version of AutoCAD. If you want to design in 3D, then only the full version is suitable for you. AutoCAD LT version allows you to open and view 3D models created in the full version of AutoCAD. But you can't edit. By the way, the function of viewing 3D drawings is limited in the LT version. Unlike the full version where you can view the model from different trajectories, only a few viewing angles will be available to you.

Customization (customization). The full version of AutoCAD supports programming languages such as LISP, VBA and .NET. Using them, you can increase the functionality of the program, automate workflows, add various applications and extensions. The programming option is not supported in the LT version.

Network license. The full version of AutoCAD has the ability to use a network license. For a design organization, this means you can purchase 10 AutoCAD licenses for 20 (or more) computers in your office. AutoCAD is installed on all computers in the office. In the program itself, you can work with 10 at the same time possible different computers. That is, the program can be used from any computer, but in turn. You can even buy one network license for 20 computers, access to it from any computer, only designers have to wait a long time for their turn to work in the program. AutoCAD LT does not have a network license. That is, the program works only on the computer where it was originally installed.

Cost. Of course, this is one of the important selection criteria for many users. If you create drawings only in 2D format and do not plan to master 3D design, you should choose the LT version, which is almost 3 times cheaper than the full version. Companies that need 3D design or other features of the full version of AutoCAD for some projects usually use a combination of the two programs.

During its 30 years of operation, it has gained a strong position worldwide and has maintained its leadership for a long time. Keeping top positions is more difficult than winning them. This fact alone deserves a better history of the program.So, in this article, we will tell you how the AutoCAD program came about, why it got such a name, how it conquered the market, and what factors help the program to remain a leader for a long time.

"AutoCAD's mission is to bring the ideas of the future to life."

AutoCAD is the best seller of CAD. Today it is one of the most popular programs in the world in its segment. It is very multifunctional: it allows you to create not only drawings, but also visualization and animation. Where does the name AutoCAD come from? CAD: This fancy acronym stands for Computer Aided Design. It has an analogue in English, although not as beautiful: CAD (Computer-aided design - computer-aided development). This is the second part of the "name". In addition to the functional purpose associated with the CAD abbreviation, the program has a creator and developer - who takes care of its further growth and development. The creator of the program will be discussed below. As for the "Guardian", it is a well-known company with a worldwide reputation, Autodesk. So, in fact, the official name of the AutoCAD program appeared. Everything is clear, understandable and functional. Computer-based design systems and therefore AutoCAD make life easier for engineers, designers, architects, industrial designers and all related professionals. Today, it is difficult to imagine a design office that does not use CAD, at least to create a complex industrial product. Drawing boards are a thing of the distant past: inefficient, expensive (automation significantly reduces the staff of specialists working on the project) and long. Business CAD. They not only reduce costs, but also improve quality, significantly reduce development and production time, and even simplify communication processes between many project participants. By the way, thanks to information technology and CAD, now it is possible to attract technical specialists from all over the world without any difficulties and additional costs (relocation of the specialist and family members, provision of housing, obtaining a work permit for a foreign citizen etc.)

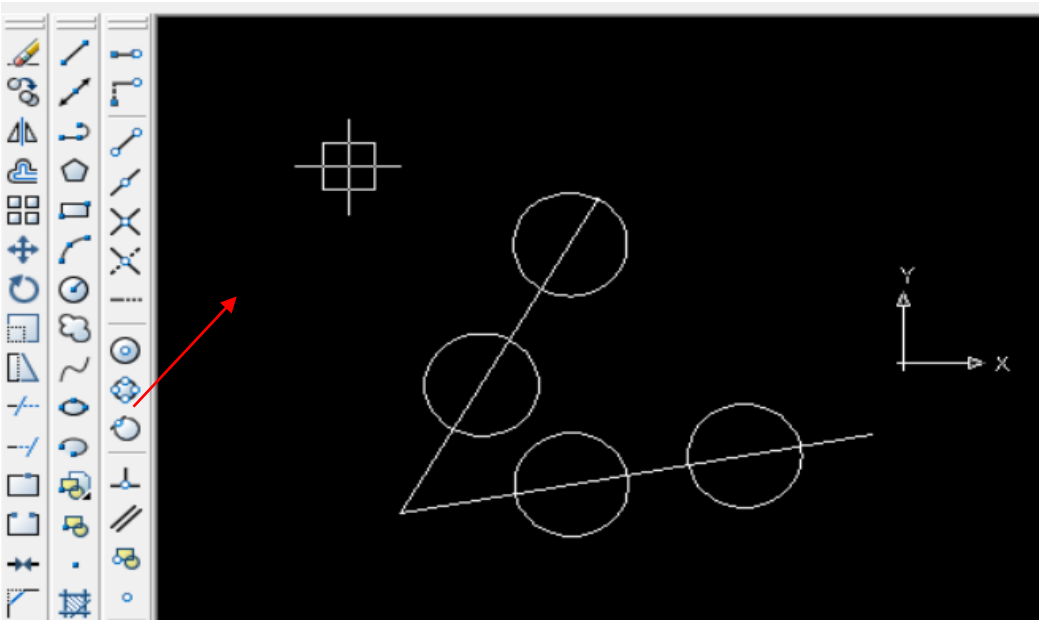
The history of creating the AutoCAD software package is closely related to the development of Autodesk. It is difficult to say which of them gave birth to whom. Especially considering that Autodesk was a single-product company in the early stages of its development and active market entry. So how did it all begin? The history of Autodesk began in 1982, in April, when a group of programmers allocated $ 60,000 from their personal savings for a startup that began to develop several programs for personal computers. The resulting company was named Desktop Solutions (which was the first working name for Autodesk). Initially, a group of 13 programmers focused their efforts on a few software products, including MicroCAD, a very simple but easy-to-use computer-aided design system. But, nevertheless, the co-founders made the main bet on Autodesk - an office program for a personal computer, which includes a calendar, an electronic document cabinet, and more. At that time, computers began to actively enter offices, and Autodesk had to save office workers from stacks of papers by automating many processes. As for MicroCAD, it was originally developed by one of the company's founders, Mike Riddle,

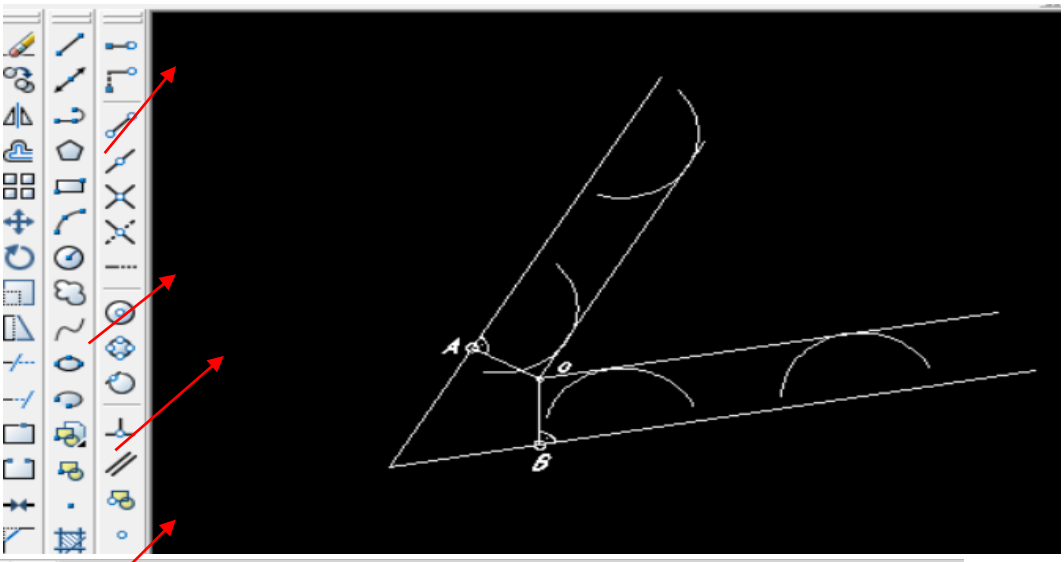
before Desktop Solutions was created. And only in May 1982, the developer transferred all rights to the program to Autodesk in exchange for future royalties.

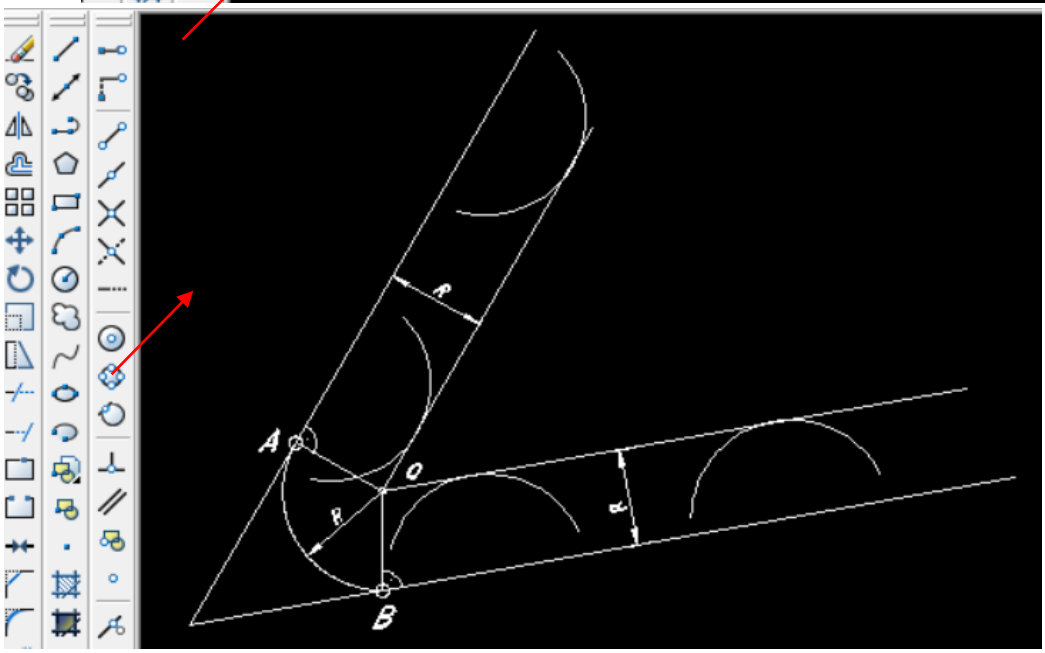
General understanding of the AutoCAD program Currently, three-dimensional computer modeling tools are in the attention of users, and this is certainly not accidental. Their use allows the high-quality execution of construction and design works and allows the user to quickly, high-quality, high-accuracy and print out drawings. Design computer modeling of these tasks a method of using AutoCAD, which is a universal graphic system environment, is proposed. This AutoCAD system was developed by the Autodesk company and is intended to be used comfortably by a large number of users during the design process. Today, AutoCAD software is the company's flagship product and the most widely used automatic drafting system package for personal computers. The most important feature of any software nowadays is the ability to use it together with other software. Because of this, the AutoCAD system has great potential and allows you to animate three-dimensional models by exporting your product to the 3D Studio system. AutoCAD files are compatible with any Microsoft Office products. AutoCAD software can work in standalone mode or on a local network. AutoCAD software requires the following resources:

- Pentium 133 processor
- 32 Mbytes of RAM
- 400-750 Mbytes of hard disk space
- 640 x 480 VGA display

The "Line" command is downloaded from the "**Черчение**" panel with the left mouse button. We draw two straight lines intersecting each other to form an acute







REFERENCES:

1. Mike Riddle and the MicroCAD drawing editor.
2. Riksiboyev T. Computer graphics.-T.:2006, 168 p.
3. A. Fedorinkov, A. Kimaev. AutoCAD 2002, M.: "DESS SOM", 2002.
4. Romanicheva E.T. AutoCAD ver.12,13,14. M.: - 1997.
5.Kuchkarova D.F., Pulatova X.A., Khaitov B.U. "Computer graphics". Methodical instruction. T.: 2009.
6. Соколова Т.Ю. AutoCAD 2009. Учебный курс(+CD).-СП.:Питер, 2008.-
7. Vohidov M.M., Mirzayev Sh.R. Binolar va inshootlar konstruksiyalari.T.2003
8.Vohidov M.M. Sanoat inshootlari fanidan «AutoCad» dasturi yordamida inshootlarnining loyihalarini kompyuterda ishlab chiqish. Buxoro2005 y., 104 bet.
9. Климачева Т.Н. AutoCAD 2008 для студентов.- М.: ДМК Пресс. 2008.

10. Рахматова, И. И. (2016). Причины, повышающие творческие способности студентов на занятиях по созданию портрета. *Учёный XXI века*, (7 (20)), 26-28.

11. Рахматова, И. И. (2016). Место и значение игры в процессе художественного воспитания. *Ученый XXI века*, 23.

12. Practical Application of Prospects Rules in Drawing
SAA Valiyev Azamjon, Ikbolkhon I. Rakhmatova
Eastern European Scientific Journal (ISSN 2199-7977), Germaniya, 82-86

13.Мурадов, Ш. К., Ташимов, Н. Э., & Рахматова, И. И. (2017). Сечение поверхностей 2-го порядка общего вида по эллипсу заданной площади. *Молодой ученый*, (50), 99-102.

14.MURADOV, S. K., TASHIMOV, N., RAXMATOVA, I., & KUKIEV, B. (2017). SECHENIE POVERXNOSTEY 2-GO PORYADKA OBshchEGO VIDA PO ELLIPSU ZADANNOY PLOshchADI. *Young Three*, *50*(184), 99-101.

15.Inomjanovna, R. I., & Rozibaevna, H. N. (2021). THE GREAT SILK ROAD CULTURAL LIFE. *ResearchJet Journal of Analysis and Inventions*, *2*(01), 1-4.