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METHODOLOGY OF USING THREE-DIMENSIONAL DESIGN CAPABILITIES OF AN OBJECT USING COMPUTER TECHNOLOGY

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Annotation
In this article, we will examine the different areas of application of AutoCad software and Autodesk software in computer technology and analyze the capabilities of systems, three-dimensional modeling and visualization software in automated design.

Keywords: AutoCad, three-dimensional graphics, CAD, 3D modeling, 3d Max, visualization.

Introduction

Today, three-dimensional modeling and 3D-visualization play an important role in the life of society in computer technology. We witness it almost every day: project work with the help of three-dimensional graphics, architectural essays on the exterior and interior design and advertising, computer games, film films and cartoons... This list can last very long. Now it is difficult to imagine the field of architecture and construction, design without three-dimensional scenes created in modern computer modeling programs, interactive renderings and animations, realistic visualizations.
The XXI century is the age of development and organization of new techniques and technologies on the basis of computers. Therefore, like all industries, the use of computers in engineering design has become a topical problem of the present day. In this regard, the design of the computer in this article has been touched upon separately. Autodesk's AutoCAD system is currently the international standard for automatic design. Although more than 35 years have passed since the creation of the AutoCAD program, it still remains popular among the automatic design programs. Because AutoCAD is an excellent and popular program, it performs the creation of schemes and drawings of any type with high accuracy and quality. It also helps to fully realize the creative possibilities of the user of this program. Therefore, millions of specialists, scientists, engineers and students from the AutoCAD system fo in the fields of automation of their design work
The new generation of computer graphics software and technical tools based on innovative technologies has opened wide opportunities for the use of Computer-Aided

Design (ALT), 3d modeling and skulping, visualization (render), information modeling (BIM) systems through traditional methods of design, modeling and presentations. The design on the computer is based on the modeling of the geometrical model of the object, in the form of a visual graphic image – a two-or three-dimensional image. Computer graphics and Computer Aided Design (ALT) systems are the most important and necessary component comps for the professional activities of any modern designer. Many higher and secondary education institutions as well as various training centers offer training in computer modeling and visualization programs of project work. What is the reason for such interest in computer technology? Graphic information is probably in the accuracy and clarity of presentation, in its three-dimensional space, as well as in the presence of the possibility of easy editing at any stage of design. With the help of computer-aided automated design systems, interior and exterior views, equipment, small architectural forms, industrial items, that is, all the elements and the environment that surround us Even before the beginning of construction, the photorealistic visualization of the future house with all its details has practically become the standard of the sphere. The process of designing with the help of computer technology can facilitate the creative search, and significantly, by modeling how the idea will look in practice, allows you to visualize it. The free use of computer technologies allows the imagination of the designer to actively develop new ideas, as well as to model complex processes and situations become very popular in recent years, can be reliably expressed only with the help of three-dimensional computer simulation programs. Below we will get acquainted with the software, which is in high demand in the most modern field and is recommended by designers. Autodesk 3DS Max is a professional software system for creating and editing 3D modeling and animations developed by Autodesk. The program has the most modern equipment for designers and architects.

Currently, the program is considered one of the most popular in the field of engineering due to its wide functionality and possibilities of tools.Therefore, in most educational institutions that train specialists in the field of engineering, AutoCAD, the 3DS Max program is included in the curriculum. "3D modeling" is the process of creating a three-dimensional obyekt model. The prefix "D “is English,” dimensional" - means size. The task of three-dimensional modeling is to create a visually voluminous view of the desired object. "Three-dimensional graphics" is a section of computer graphics dedicated to methods of creating images or videos by modeling volumetric objects in three-dimensional space. With the help of three-dimensional graphics, it is possible to create an exact copy of a particular object and develop new,

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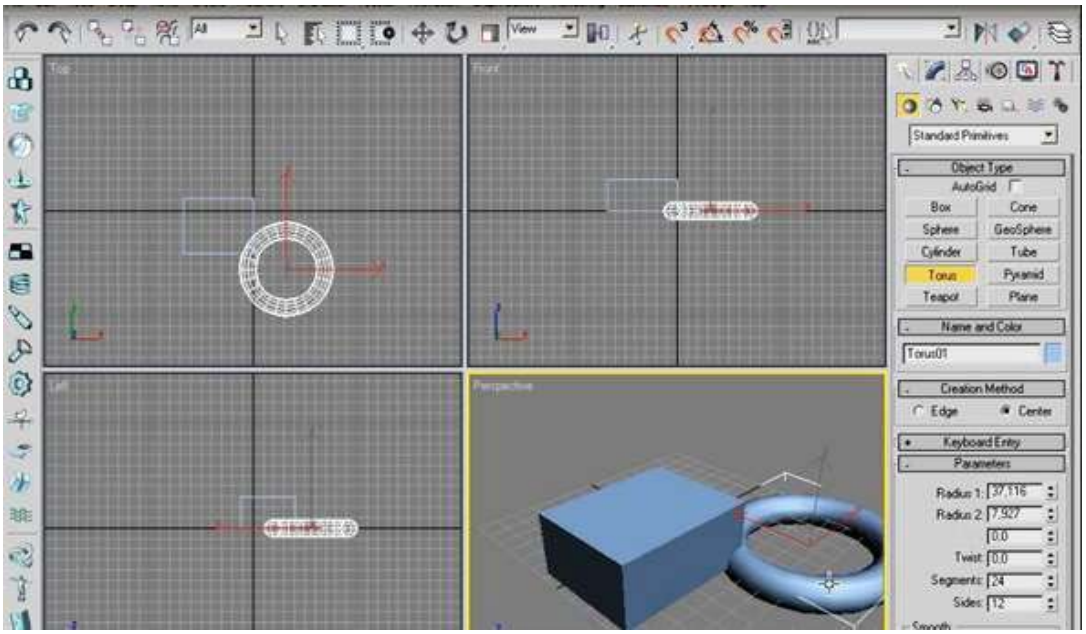
even unreal, solutions for an object that does not yet exist. In the field of Science and production, for example, automation of design work, architecture.



1-picture. Create a three-dimensional image.

To get a three-dimensional image, you need to perform the following steps:

• Modeling – the creation of a three-dimensional mathematical model of scenes and objects (Figure 2, a);

• Lighting-installation and adjustment of light sources (Figure 2, b) ;

• Texturing-the appointment of rastr or material texturing on the surfaces of models (as well as the properties of materials – transparency, reflection, fading, etc.).) (Picture 2, c);

• Animation (in some cases – - giving action to the objects;

• Dynamic simulation (in some cases) – automatic calculation of the interaction of particles, solid and soft bodies, etc., with the forces of attraction comparable to each other, such as wind, friction, etc.;

• Render- (visualization)-create a projection according to the selected physical model (Figure 2, d);

• Composition- (komponovka) – image improvement;

• Output the resulting image to the output device-a display or a special printer.

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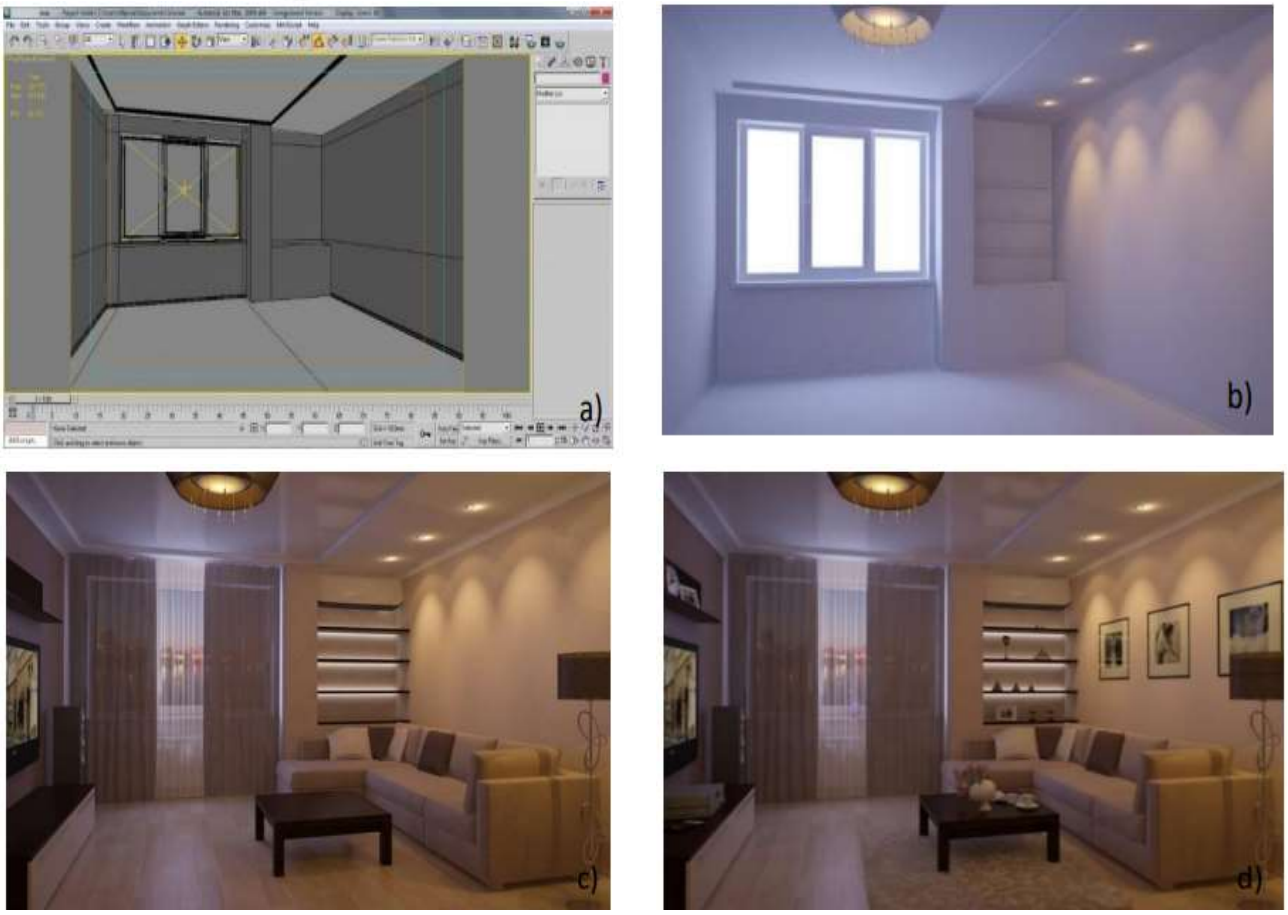

2-picture. Stages of obtaining a three-dimensional image.
a) modeling; b) Lighting; c) material issuance; d) rendering.

AutoCAD is a computer-based automated two-and three-dimensional design system developed by Autodesk. Automated design systems are an integral part of the professional activity of the designer. These information systems are used by the designer in solving specific artistic-design and design-technological problems. AutoCAD (abbreviated in English, “Automated Computer Aided Drafting and Design”, means automated drawing and design with the help of a computer) program was developed in 1982 by the company Autodesk, the world's leader in the field of graphics, and is an automated design system(CAD) that allows you to create drawings, technical documentation of any complexity (Figure 3).the program is based on

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3-picture. A project executed in Autocad.

AutoCAD creates two-dimensional drawing and three-dimensional models of objects, having established a communication between the user and the program in a dialogic mode. CAD-programs (computer aided design – Computer Aided Design)-is a systematic Komplex programs (Figure 4) for the design and development of technical documentation, replacing manual drawing with an automated process. These widely used applications help in the preparation of construction documents, the study of Design Ideas, three-dimensional modeling of the project in a computer environment.

4-picture. CAD programs of different companies.

The abbreviation in the Uzbek language refers to ALT – automated design systems, in the Russian – language abbreviation-CAD (Sistema automatizirovannogo proektirovaniya). All CAD systems, regardless of terminology, are designed to optimize design and engineering work, and, if applied correctly, will accordingly increase business productivity and provide enhanced graphics capabilities. From the above examples, it can be concluded that with the use of information technology tools,

designers will be able to use special software to quickly and accurately prepare the project, quickly enter any edits to the project, prepare the necessary technical and project documentation, as well as publish their projects and present the project before the client and the general public. Critical vision in the engineering professional creativity of computer technology, which will help solve the problems of consulting, functional and technical

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