



## THE ROLE OF COMPUTER GRAPHICS IN TEACHING COMPUTER SCIENCE TO SCHOOL STUDENTS

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### ABSTRACT:

The following article deals with computer graphics and their types; software packages that work with computer graphics, including graphic design, Corel DRAW vector graphics, Photo Shop raster graphics software, and Macromedia Flash software. The use of computer graphics software in teaching computer science helps students to increase their computer literacy, enhances their ability to work with the Internet, web design, and graphics, to develop their interest in computer graphics and to develop their knowledge, skills and abilities.

**Key concepts: Graphics, media, color, raster, vector, fractal, Adobe Photo Shop, Corel Draw, Macromedia Flash.**

The concept of computer graphics combines a wide range of contemporary areas, from simple graphic design to creating and visualizing various images in real life, creating new image projects using software. This allows you to work in a multimedia environment. Computer graphics is software that is widely used in all areas of society and is based on existing and newly created programs. Computer graphics allows you to accurately describe how processes take place in three-dimensional spaces. Therefore, we can get the result graphically by entering the key values of the problem that is currently being considered through the existing application packages.

Computer Graphics is an algorithm and a method that deals with the recording, processing and storage of digital images in computer memory. Computer graphics is the process of visualizing visual information on a graphical display (monitor) screen. Unlike the way images are displayed on paper, film, etc., computer graphics can immediately delete, correct, zoom in or out, rotate, move, change color, and so on. It is used in designing books, drawing pictures and sketches, designing and modeling items, creating television shows, cartoons, making interesting films and many more.

A number of software programs can be listed as computer graphics programs. These include Microsoft Paint, Adobe Photoshop, Adobe Illustrator, Corel Draw, Macromedia, Adobe Freehand, Adobe In Design, Adobe Image Ready, Macromedia, Adobe Flash, Discreet, Cinema 4d, Alias, Autodesk Maya, Light Wave, Adobe Brush. These programs can work on computer graphics.

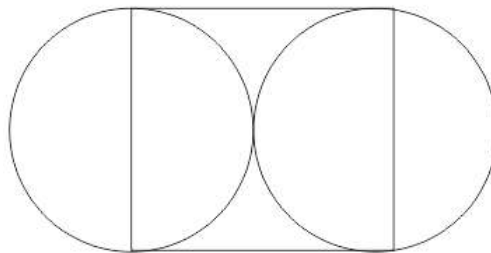
Computer graphics are now widely used not only for academics, but also for artists, designers, design and layout specialists, web site designers, and others. Therefore, one of the

challenges we face is the training of highly qualified personnel in the field of computer graphics and the provision of computer graphics literature to young readers.

One of the programs that currently work with computer graphics is Adobe Photo Shop. The word raster comes from information on television and comes from the Latin word *rastrum* - raspberry, plow. In raster graphics, the image is broken down into rows and columns, and the smaller pieces of the image are pixels. The newest version of Photo Shop is Adobe Photo Shop CC 2018. You can do the following with Photo Shop. Remove the edges of the photo and its unnecessary objects, change the size and resolution of the picture, change the image storage format, transform the image or part of it into a different plane or surface, and eliminate many shortcomings when taking a photo, for example, retention, elimination of flaws caused by changing the white balance, increasing or decreasing the brightness or contrast, and more. Performing is easy with Photo Shop.

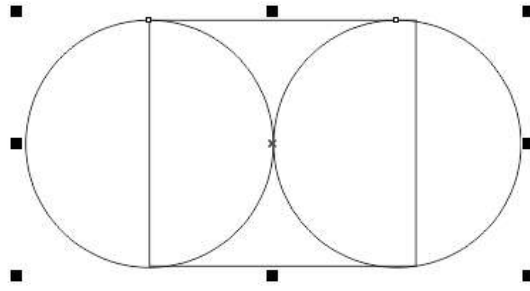
Another computer graphics application is Corel DRAW. The Corel DRAW document file format is CDR. CDR file format is a vector image or graphic created with Corel DRAW. This file format was developed by Corel for use in proprietary software products. CDR files are not supported by many images editing software. However, the file is exported to other, more popular and popular image formats using Corel DRAW. In addition, the CDR file can be opened by Corel Paint Shop Pro. The image generated in the Corel DRAW program consists of vectors. The main element of the vector graphics is the line. Software vector graphics software is designed to create images first. Such tools are used in advertising agencies, design bureaus and publishers. CDR files have a 45x45m large working space and multi-channel operation. The capabilities of the CorelDraw program are quite extensive, for example, the following sequence of flower patterns.

First of all we launch CorelDraw software and push **File >Set up (Файл>Создать)** or **Ctrl+N** buttons. Amon instruments we choose **Ellips** or **F7** buttons and draw two similar circles. Then we choose the buttons of **Rectangle** or **F6** we draw the same in the photo. We choose the line of **Instrument choice (Инструментов выбора)** and choose the shape. (1-picture)



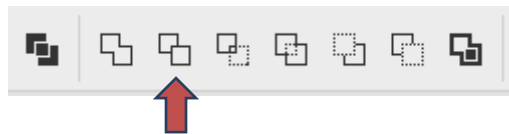
**1-Figure. The position of the shapes**

2. We choose the line of **Instrument choice (Инструментов выбора)** and underline all shapes. (2-picture)



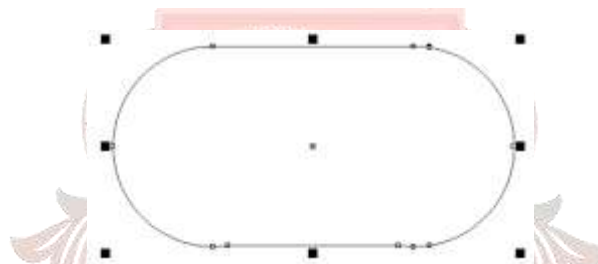
**Figure 2. Defined position of forms.**

From tools bar we choose **Unifying part (Объединение)**. (3-picture)



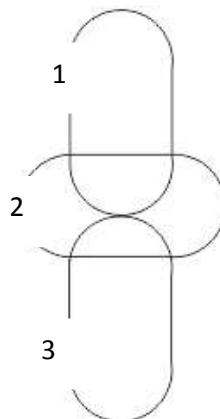
**3-Figure. Joining the shapes.**

The following view appears.(4-picture)



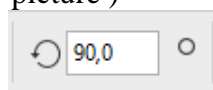
**4-Figure. The condition of shapes after joining.**

3. We will make two more copies of the form. To do this, we can copy the key with the "+" key on the keyboard at the time the form is displayed, or copy it with **Ctrl+C** and **Ctrl+V**. (5-picture)



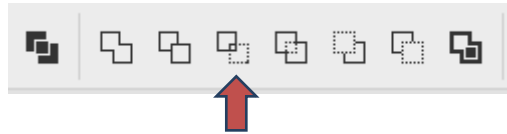
**5-Figure. Copying the shapes.**

4. To rotate the shape by 90° degrees, enter the number of degrees in the **(Угол поворота)** Corner range section in the toolbar. (6-picture)



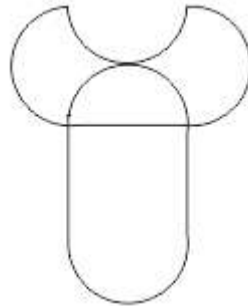
**6-Figure. To rotate the shape to the needed degree.**

5. Selecting the 1 and 2 figures we select **(Исключение) Exception** from the toolbar (Figure 7).



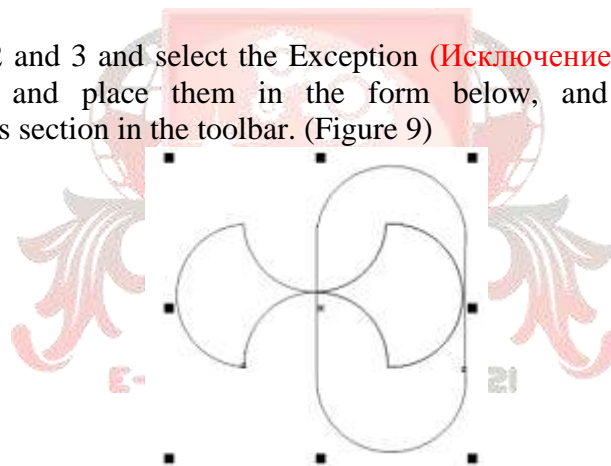
**7-Figure. Extraction of the total of the shapes.**

6. Select 1 form and select **Delete** on the keyboard. (Figure 8)



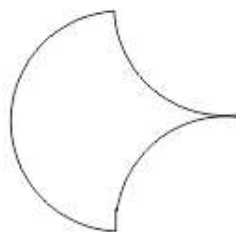
**Figure 8. Removing the non-generic portion of the form.**

7. Select the figures 2 and 3 and select the Exception **(Исключение)** section in the toolbar. Select the 2 forms and place them in the form below, and select the Exception **(Исключение)** shapes section in the toolbar. (Figure 9)



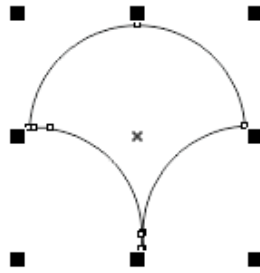
**9-Figure. Defining the shape.**

8. We choose **Delete** button in keyboard and we get the following figure. (10-figure)



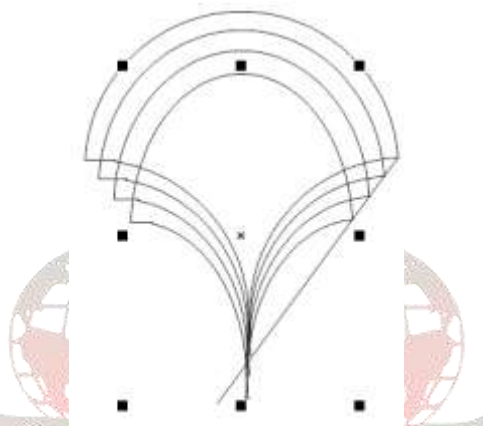
**10-Figure. Deleting the figure.**

9. Turn the shape to  $90^{\circ}$  degrees and get the following. To do this, enter the number  $-90$  in the Corner alert **(Угол поворота)** section on the toolbar. (Figure 11)



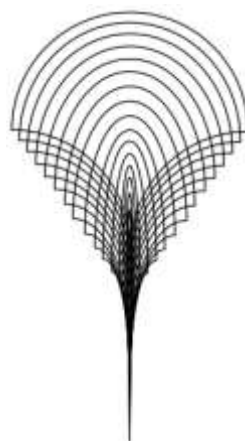
**11-Figure. Rotate the shape to the desired degree.**

10. Then we can make a copy of this form several times ("+" or **Ctrl+C**) on the keyboard) as follows. In order to get the shape evenly, we draw a straight line by pressing the (**Двухточечная линия**) Double pointed line or the **F5** button on the toolbar. (Figure 12)



**Figure 12. Copy shapes along a straight line.**

In this way, we continue to work until the form is filled. To align the shape along a straight line, hold down the **SHIFT** key, and then resize it by holding the shape at its center point. We will create it as shown in the picture. (Figure 13)



**Figure 13. Two-way alignment of shapes.**

11. In the toolbar, select the (**Инструментов выбора**) Instrument choice and select the figure. From the menu, select (**Объект>Группа > Сгруппировать**) Object> Group>Groping or **Ctrl+G**.

12. Now we rotate the figure. For this we choose from the menu Window> Window settings>Conversion (Окно>Окно настройки>Преобразования) or Alt+F8 buttons. (14-figure)

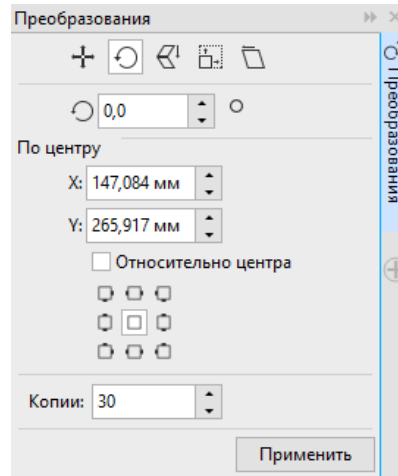
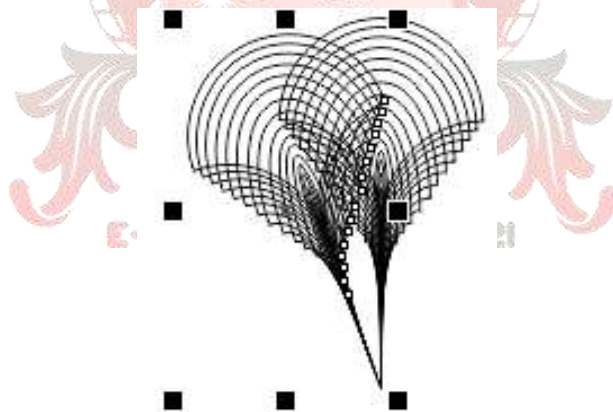


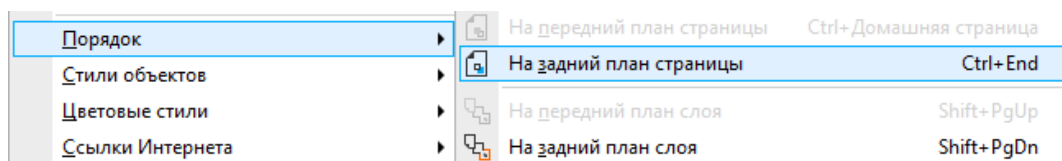
Figure 14. The window of form configuration.

In this window we enter the number of 20 in the section (Угол поворота) Corner turning and we enter to the Copy (Копии) section and choose the number 1, we select the Down to the right (Внизу справа) command and press the Priming (Применить) button for leveling. (15-figure)



15-figure. Copying the figure.

13. Now we push the mouse's right button on the shape and select from Context menu Order>Back front page (Порядок>На задний план страницы) or we choose Ctrl+G (16-Figure)



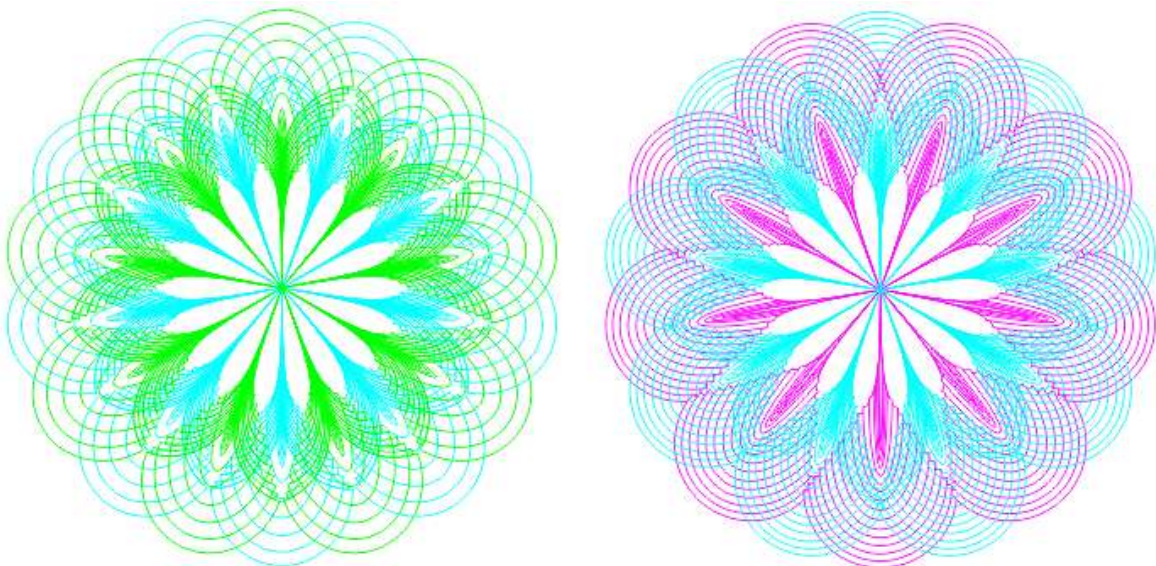
16-Figure. Location of the selected image.

14. We choose the figure or image and from Palette (Палитра) section and push the right button of the mouse and select the color, if we push the left button of the mouse, it paints inside of the figure. (17-figure)



**17-Figure. Color the selected shape.**

15. We reset the section of Conversion (Преобразования) marking each figure. We enter the number 40 to the section Corner turning (Угол поворота) and the number 1 to the section Copy (Копии), for flattening we choose Down on the right (Внизу справа), we choose Apply (Применить) until the round shape appears. Then we get the following shape. (18-Figure)



**18-Figure. Overview of the pattern.**

Today Java Web Script, Software tools like Macromedia Dreamweaver, Macromedia Flash will be used. These software tools allow you to create web pages, place images and graphic information on them in various ways, and create animations, as well as how to install them, place sound information, and link web pages together.

Macromedia Dreamweaver 8 is a software product of Macromedia and is a convenient software tool for creating web pages and web sites. The program offers various images, tables, audio and video files, and text input. Macromedia Flash 8 is a technology based on vector graphics.

Macromedia Dreamweaver 8 is used for:

- For making hyperlinks - Hyperlink;
- For uploading images - Images;
- For creating tables - Table;

➤ Animation effects and keypad placement - Media: Flash.

Although Macromedia Flash 8 is not one of the most efficient graphics formats, the SWF format allows users to work with unlimited graphics and is one of the most convenient software for creating web pages and websites. The convenience of this software is that it has the ability to create all the decorative effects of web-page creation and programming for calculations. It also differs from other software by opening in all browsers, download speed, and displaying data without errors. Macromedia Flash 8 is also effective in creating animations for web pages. Creating the simplest animations in Macromedia Flash 8 can be done in several steps. It takes some time to create complex animations.

In summary we can say that, it is easier to teach modern programming languages by engaging high school students, academic lyceums, vocational colleges and high school students in computer graphics. In this way, students will be able to work in a programming environment and develop independent programs, develop applications for various areas of the country and develop new skills in their use of modern information technology.

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