How to add free text annotation with custom appearance to PDF page

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Introduction

PDF specification defines many annotation types suitable for various purposes, just to name a few: Link annotation, Text annotation, Line, Square and Polygon annotations, Watermark annotation, Free Text annotation etc.

Annotations are divided to different subtypes to highlight their primary usage, e.g. Markup annotations are used for literally doc’s text markup, while Widget annotations are used to represent the appearance of fields and to manage user interactions in PDF forms. Some annotations are neither Markup, nor Widgets like Link annotation for example.

In previous article we had shown how to programmatically add annotations of many types to PDF document. In this article we’d like to concentrate on Free Text annotation and demonstrate how to create a custom appearance (“view”) for it. Annotations of this type are often being used for adding text notes to PDF pages, and while the default appearance is a good way to go in many cases, custom appearance can add some unique styling to your generated documents.

The code

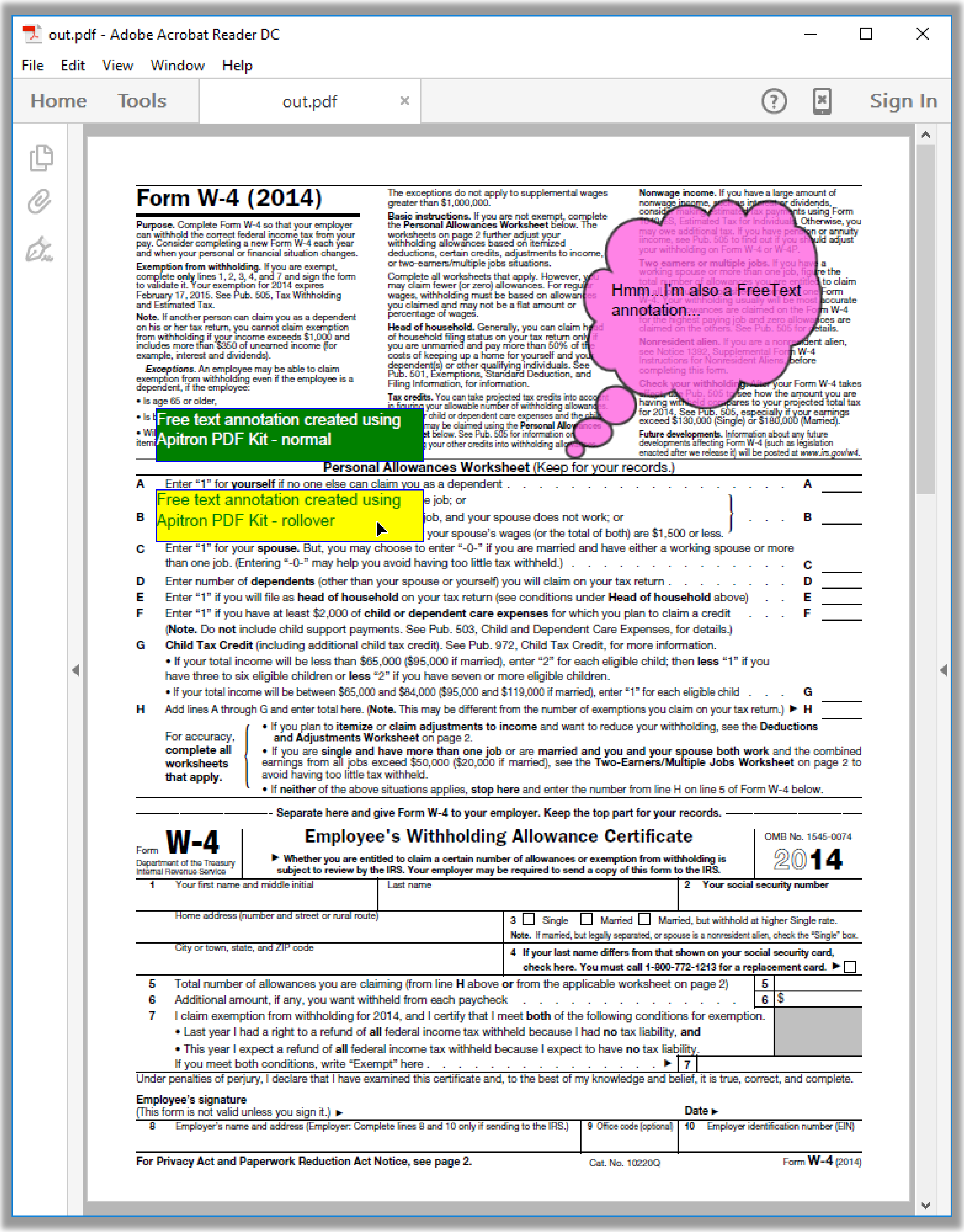
```
/// <summary>
/// This program demonstrates how to create custom appearance for FreeText annotation
/// using generated <see cref="FixedContent"/>.
/// </summary>
class Program
{
    static void Main(string[] args)
    {
        using (Stream inputStream = File.Open("../../docs/input.pdf",
            FileMode.Open, FileAccess.ReadWrite),
            outputStream = new FileStream("out.pdf", FileMode.Create, FileAccess.ReadWrite))
        {
            // create new document
            using (FixedDocument document = new FixedDocument(inputStream))
            {
                Page page = document.Pages[0];

                // register image resource to be used as background for custom cloud annotation
                document.ResourceManager.RegisterResource(
                    new Apitron.PDF.Kit.FixedLayout.Resources.XObjects.Image(
                    "cloud", "../../images/cloud.png", true));

                // add two identical annotations to demonstrate normal and rollover appearance
                page.Annotations.Add(
                    CreateRectangularFreeTextAnnotation(
                        "Free text annotation created using Apitron PDF Kit", 50, 550, 200, 40));

                page.Annotations.Add(
                    CreateRectangularFreeTextAnnotation(
                        "Free text annotation created using Apitron PDF Kit", 50, 490, 200, 40));

                // add image based annotation looking like a cloud
                page.Annotations.Add(
                    CreateCloudFreeTextAnnotation("Hmm...I'm also a FreeText annotation...",
                    350, 550, 200, 200));

                // save changed copy of the document
                document.Save(outputStream);
            }
        }

        Process.Start("out.pdf");
    }
```

You can see that we add three annotations here – two identical rectangular annotations to demonstrate the difference between normal and rollover states, and one “cloud”-shaped annotation based on an image. The rest of the code can be seen below and the complete code sample can be found in our github repository.

```
private static Annotation CreateRectangularFreeTextAnnotation(string text, double x, double y,
    double width, double height)
{
    // create PDF annotation object
    FreeTextAnnotation annotation =
        new FreeTextAnnotation(
            new Boundary(x, y, x + width, y + height),
            AnnotationFlags.ReadOnly);

    annotation.Title = "Apitron";
    annotation.Intent = IntentStyle.FreeText;

    // set custom appearance for normal and rollover states.
    // if you remove the read-only flag from the annotation,
    // Adobe reader will change this appearance to new when clicked.
    // If custom appearance is set, it's used instead of default.
    annotation.Appearance.Normal = CreateNormalAppearance(text, width, height);
    annotation.Appearance.Rollover = CreateRolloverAppearance(text, width, height);


    // set properties affecting default appearance to be used as fallback
    annotation.FontSize = 12;
    annotation.BorderEffect = new AnnotationBorderEffect(
          AnnotationBorderEffectStyle.NoEffect, 0);
    annotation.Contents = string.Format("{0} - default",text);
    // text and border color
    annotation.TextColor = RgbColors.Red.Components;
    // set  background here if needed
    annotation.Color = RgbColors.Green.Components;

    return annotation;
}

/// <summary>
/// Creates a fixed content object that contains
/// drawing instructions for normal annotation state.
/// </summary>
private static FixedContent CreateNormalAppearance(string text, double width, double height)
{
    // create fixed content object, set its unique ID using guid.
    // this object will be implicitly added to page resources using this ID.
    FixedContent fixedContent = new FixedContent(Guid.NewGuid().ToString("N"),
          new Boundary(0, 0, width, height));

    // use text block from flow layout API subset,
    // to quickly draw text in a fixed content container.
    TextBlock textBlock = new TextBlock(string.Format("{0} - normal", text));
    textBlock.Border = Border.Solid;
    textBlock.BorderColor = RgbColors.Blue;
    textBlock.Display = Display.Block;
    textBlock.Color = RgbColors.White;
    textBlock.Width = width;
    textBlock.Height = height;
    textBlock.Background = RgbColors.Green;

    fixedContent.Content.AppendContentElement(textBlock, width, height);
    return fixedContent;
}
```

```
    /// <summary>
    /// Creates a fixed content object that contains
    /// drawing instructions for rollover annotation state.
    /// </summary>
    private static FixedContent CreateRolloverAppearance(string text, double width, double height)
    {
        // create fixed content object, set its unique ID using guid.
        // this object will be implicitly added to page resources using this ID.
        FixedContent fixedContent = new FixedContent(Guid.NewGuid().ToString("N"),
              new Boundary(0, 0, width, height));

        // use text block from flow layout API subset,
        // to quickly draw text in a fixed content container.
        TextBlock textBlock = new TextBlock(string.Format("{0} - rollover", text));
        textBlock.Border = Border.Solid;
        textBlock.BorderColor = RgbColors.Blue;
        textBlock.Display = Display.Block;
        textBlock.Color = RgbColors.Green;
        textBlock.Width = width;
        textBlock.Height = height;
        textBlock.Background = RgbColors.Yellow;

        fixedContent.Content.AppendContentElement(textBlock, width, height);
        return fixedContent;
    }

    /// <summary>
    /// Creates a fixed content object that contains
    /// drawing instructions cloud-shaped annotation based on image.
    /// </summary>
    private static Annotation CreateCloudFreeTextAnnotation(string text, double x, double y,
       double width, double height)
    {
        FreeTextAnnotation annotation = new FreeTextAnnotation(
              new Boundary(x, y, x + width, y + height),
                AnnotationFlags.ReadOnly);

        annotation.Title = "Apitron";
        annotation.Intent = IntentStyle.FreeText;

        // set custom normal appearance,
        // if you change the annotation to be editable,
        // then Adobe reader will change this appearance to new when clicked
        annotation.Appearance.Normal = CreateNormalCloudAppearance(text, width, height);

        return annotation;
    }

    /// <summary>
    /// Creates a fixed content object that contains
    /// drawing instructions for normal annotation state.
    /// </summary>
    private static FixedContent CreateNormalCloudAppearance(string text,double width,double height)
    {
        // create fixed content object, set its unique ID using guid.
        // this object will be implicitly added to page resources using this ID.
        FixedContent fixedContent = new FixedContent(Guid.NewGuid().ToString("N"),
              new Boundary(0, 0, width, height));

        // append image using its resource id defined in program entry fn.
        fixedContent.Content.AppendImage("cloud", 0, 0, width, height);
        TextBlock textBlock = new TextBlock(text);
        textBlock.Color = RgbColors.Black;

        fixedContent.Content.Translate(40, -65);
        fixedContent.Content.AppendContentElement(textBlock, width, height);
        return fixedContent;
    }
}
```

Resulting document looks as follows:



Form W-4 (2014)

Purpose. Complete Form W-4 so that your employer can withhold the correct federal income tax from your pay. Consider completing a new Form W-4 each year and when your personal or financial situation changes.

Exemption from withholding. If you are exempt, complete **only** lines 1, 2, 3, 4, and 7 and sign the form to validate it. Your exemption for 2014 expires February 17, 2015. See Pub. 505, Tax Withholding and Estimated Tax.

Note. If another person can claim you as a dependent on his or her tax return, you cannot claim exemption from withholding if your income exceeds $1,000 and includes more than $350 of unearned income (for example, interest and dividends).

Exceptions. An employee may be able to claim exemption from withholding even if the employee is a dependent, if the employee:

- Is age 65 or older,
- Is b
- Wi item

Free text annotation created using Apitron PDF Kit - normal

The exceptions do not apply to supplemental wages greater than $1,000,000.

Basic instructions. If you are not exempt, complete the **Personal Allowances Worksheet** below. The worksheets on page 2 further adjust your withholding allowances based on itemized deductions, certain credits, adjustments to income, or two-earners/multiple jobs situations.

Complete all worksheets that apply. However, you may claim fewer (or zero) allowances. For regular wages, withholding must be based on allowances you claimed and may not be a flat amount or percentage of wages.

Head of household. Generally, you can claim head of household filing status on your tax return only if you are unmarried and pay more than 50% of the costs of keeping up a home for yourself and your dependent(s) or other qualifying individuals. See Pub. 501, Exemptions, Standard Deduction, and Filing Information, for information.

Tax credits. You can take projected tax credits into account in figuring your allowable number of withholding allowances. r child or dependent care expenses and the chi may be claimed using the **Personal Allowances** **et** below. See Pub. 505 for information on g your other credits into withholding allowances.

Nonwage income. If you have a large amount of nonwage income, such as interest or dividends, consider making estimated tax payments using Form 1040-ES, Estimated Tax for Individuals. Otherwise, you may owe additional tax. If you have pension or annuity income, see Pub. 505 to find out if you should adjust your withholding on Form W-4 or W-4P.

Two earners or multiple jobs. If you have a working spouse or more than one job, figure the total number of allowances you are entitled to claim on all jobs using worksheets from only one Form W-4. Your withholding usually will be most accurate when all allowances are claimed on the Form W-4 for the highest paying job and zero allowances are claimed on the others. See Pub. 505 for details.

Nonresident alien. If you are a nonresident alien, see Notice 1392, Supplemental Form W-4 Instructions for Nonresident Aliens, before completing this form.

Check your withholding. After your Form W-4 takes effect, use Pub. 505 to see how the amount you are having withheld compares to your projected total tax for 2014. See Pub. 505, especially if your earnings exceed $130,000 (Single) or $180,000 (Married).

Future developments. Information about any future developments affecting Form W-4 (such as legislation enacted after we release it) will be posted at www.irs.gov/w4.

Hmm...I'm also a FreeText annotation...

Personal Allowances Worksheet (Keep for your records.)

A Enter "1" for **yourself** if no one else can claim you as a dependent . . . . A ____

B Free text annotation created using Apitron PDF Kit - rollover e job; or job, and your spouse does not work; or your spouse's wages (or the total of both) are $1,500 or less. } . . . . B ____

C Enter "1" for your **spouse**. But, you may choose to enter "-0-" if you are married and have either a working spouse or more than one job. (Entering "-0-" may help you avoid having too little tax withheld.) . . . . C ____

D Enter number of **dependents** (other than your spouse or yourself) you will claim on your tax return . . . . D ____

E Enter "1" if you will file as **head of household** on your tax return (see conditions under **Head of household** above) . . . E ____

F Enter "1" if you have at least $2,000 of **child or dependent care expenses** for which you plan to claim a credit . . . . F ____
(**Note.** Do **not** include child support payments. See Pub. 503, Child and Dependent Care Expenses, for details.)

G **Child Tax Credit** (including additional child tax credit). See Pub. 972, Child Tax Credit, for more information.
• If your total income will be less than $65,000 ($95,000 if married), enter "2" for each eligible child; then **less** "1" if you have three to six eligible children or **less** "2" if you have seven or more eligible children.
• If your total income will be between $65,000 and $84,000 ($95,000 and $119,000 if married), enter "1" for each eligible child . . . . G ____

H Add lines A through G and enter total here. (**Note.** This may be different from the number of exemptions you claim on your tax return.) ▶ H ____

For accuracy, **complete all worksheets that apply.**
- If you plan to **itemize** or **claim adjustments to income** and want to reduce your withholding, see the **Deductions and Adjustments Worksheet** on page 2.
- If you are **single and have more than one job** or are **married and you and your spouse both work** and the combined earnings from all jobs exceed $50,000 ($20,000 if married), see the **Two-Earners/Multiple Jobs Worksheet** on page 2 to avoid having too little tax withheld.
- If **neither** of the above situations applies, **stop here** and enter the number from line H on line 5 of Form W-4 below.

Separate here and give Form W-4 to your employer. Keep the top part for your records.

Form **W-4**
Department of the Treasury
Internal Revenue Service

Employee's Withholding Allowance Certificate

▶ **Whether you are entitled to claim a certain number of allowances or exemption from withholding is subject to review by the IRS. Your employer may be required to send a copy of this form to the IRS.**

OMB No. 1545-0074
2014

1 Your first name and middle initial	Last name	2 **Your social security number**
Home address (number and street or rural route)	3 ☐ Single ☐ Married ☐ Married, but withhold at higher Single rate. **Note.** If married, but legally separated, or spouse is a nonresident alien, check the "Single" box.	
City or town, state, and ZIP code	4 **If your last name differs from that shown on your social security card, check here. You must call 1-800-772-1213 for a replacement card.** ▶ ☐	

5 Total number of allowances you are claiming (from line **H** above **or** from the applicable worksheet on page 2) 5 ____
6 Additional amount, if any, you want withheld from each paycheck . . . . 6 $ ____
7 I claim exemption from withholding for 2014, and I certify that I meet **both** of the following conditions for exemption.
• Last year I had a right to a refund of **all** federal income tax withheld because I had **no** tax liability, **and**
• This year I expect a refund of **all** federal income tax withheld because I expect to have **no** tax liability.
If you meet both conditions, write "Exempt" here . . . . ▶ 7 ____

Under penalties of perjury, I declare that I have examined this certificate and, to the best of my knowledge and belief, it is true, correct, and complete.

Employee's signature
(This form is not valid unless you sign it.) ▶ **Date** ▶

8 Employer's name and address (Employer: Complete lines 8 and 10 only if sending to the IRS.)	9 Office code (optional)	10 Employer identification number (EIN)

For Privacy Act and Paperwork Reduction Act Notice, see page 2. Cat. No. 10220Q Form **W-4** (2014)

Pic. 1 PDF document with Free Text annotations added using Apitron PDF Kit

Summary

If you need a powerful tool for working with PDF documents – Apitron PDF Kit for .NET library is a perfect choice. It contains only managed code, so it works with any CLR implementation including MONO and can be used to create XAMARIN apps as well (e.g. you can target iOS and Android easily).

The cross-platform nature of the product allows you to create apps for Windows, Windows Store and Windows Phone (including Windows 10), Silverlight, ASP.NET, Azure-hosted web and worker roles, and also any system where .NET apps can run.