Comments

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Typical interview:

How do you write code that's readable and maintainable by others?
Uh…I use comments?

Comments lie.
They're not kept up to date.
They're either redundant
or a crutch for bad code.
I can't understand your
lousy code without comments.
And...you smell like foot.

Why did I start another discussion on the merits of comments?

Are comments great, or a code smell? Yes.

Comments: A Necessity and a Crutch

General Rules:

1. Prefer expressive code over comments.
2. Use comments when code alone can't be sufficient.

Comments to Avoid

- Redundant
- Intent
- Apology
- Warning
- Zombie Code
- Divider
- Brace Tracker
- Bloated Header
- Defect Log

Redundant Comments

Dirty

```
int i = 1; // Set i = 1


var cory = new User(); //Instantiate a new user


/// <summary>
/// Default Constructor
/// </summary>
public User()
{
}


/// <summary>
/// Calcuates Total Charges
/// </summary>
private void CalculateTotalCharges()
{
    //Total charges calculated here
}
```

- Assume your reader can read.
- Don’t repeat yourself.

Intent Comments

Dirty

```
// Assure user's account is deactivated.
if (user.Status == 2)
```

Clean

```
if (user.Status == Status.Inactive)
{

}
```

Instead, clarify intent in code:

- Improved function naming
- Intermediate variable
- Constant or enum
- Extract conditional to function

Apology Comments

Dirty

```
// Sorry, this crashes a lot so I'm just swallowing the exception.
```

```
// I was too tired to refactor this pile
// of spaghetti code when I was done...
```

- Don't apologize.
  - Fix it before commit/merge.
  - Add a TODO marker comment if you must

Warning Comments

Dirty

```
// Here be dragons - See Bob

// Great sins against code
// begin here...
```

- To avoid warning, refactor.

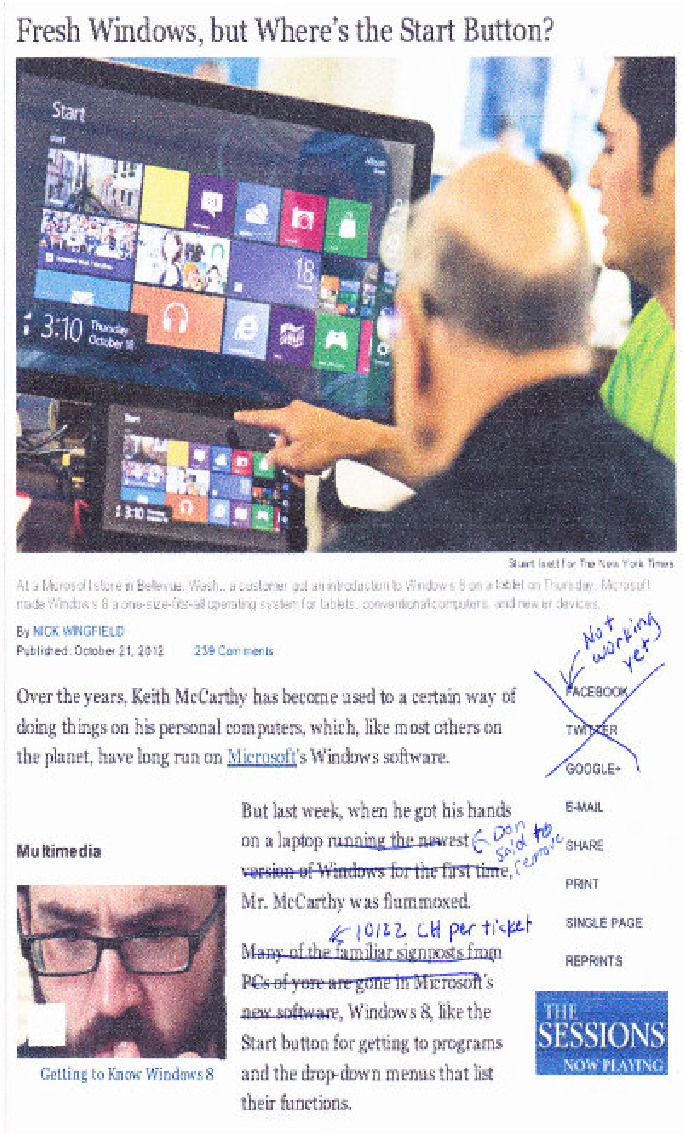
Kill Zombie Code

```
protected void Page_Load(object sender, EventArgs e)
{
    if (!IsPostBack)
    {
        Page.ClientScript.RegisterStartupScript(this.GetType(), "maps", "initialize();", true);
        address1.Value = Request.QueryString["z"];
        txtEstDistance.Visible = true;
    }
    if (!Page.IsPostBack)
    {
        imgbtnBinManagerGreen.Visible = false;
        imgbtnBinCheckGreen.Visible = false;
        imgbtnBinManagerBasicGreen.Visible = false;
        SetNewCustomerID();
    }


    //HttpWebRequest request = WebRequest.Create("http://api.hostip.info/get_json.php") as HttpWebRequest;
    //WebResponse response = request.GetResponse();
    //DataContractJsonSerializer serializer = new DataContractJsonSerializer(typeof(ZipCode));
    //ZipCode zip = serializer.ReadObject(response.GetResponseStream()) as ZipCode;

   // address1.Value = "64064";
    //address1.Value = zip.country_name;

    //Label1.Text = ipaddress;
}

/// <summary>
/// If an existing customer is selected on the previous step, then NewCustomerID = 0.
/// It needs to have a value since it's referenced when creating the quote. So set the NewCustomerID
/// to the UserID sent in the querystring
/// </summary>
private void SetNewCustomerID()
{
    SessionHelper.NewCustomerID = Convert.ToInt32(Request.QueryString["uid"]);
}

//protected void LinkButton1_Click(object sender, EventArgs e)
//{


//        Page.ClientScript.RegisterStartupScript(this.GetType(), "maps", "initialize();", true);
//        txtBoxEnterZip.Visible = false;
//        txtEstDistance.Visible = true;
//        lnkbtnGetZip.Visible = false;
//        address1.Value = txtBoxEnterZip.Text;

//}
```

Common Causes

1. Risk Aversion
2. Hoarding mentality

Optimize Signal to Noise Ratio



Fresh Windows, but Where's the Start Button?

Stuart Isett for The New York Times

At a Microsoft store in Bellevue, Wash., a customer got an introduction to Windows 8 on a tablet on Thursday. Microsoft made Windows 8 a one-size-fits-all operating system for tablets, conventional computers, and newer devices.

By NICK WINGFIELD
Published: October 21, 2012 239 Comments

Not working yet

~~FACEBOOK~~
~~TWITTER~~
~~GOOGLE+~~
E-MAIL
SHARE
PRINT
SINGLE PAGE
REPRINTS

Over the years, Keith McCarthy has become used to a certain way of doing things on his personal computers, which, like most others on the planet, have long run on Microsoft's Windows software.

But last week, when he got his hands on a laptop ~~running the newest version of Windows for the first time~~, Mr. McCarthy was flummoxed. ← Don said to remove

← 10122 CH per ticket

~~Many of the familiar signposts from PCs of yore are gone in Microsoft's new software~~, Windows 8, like the Start button for getting to programs and the drop-down menus that list their functions.

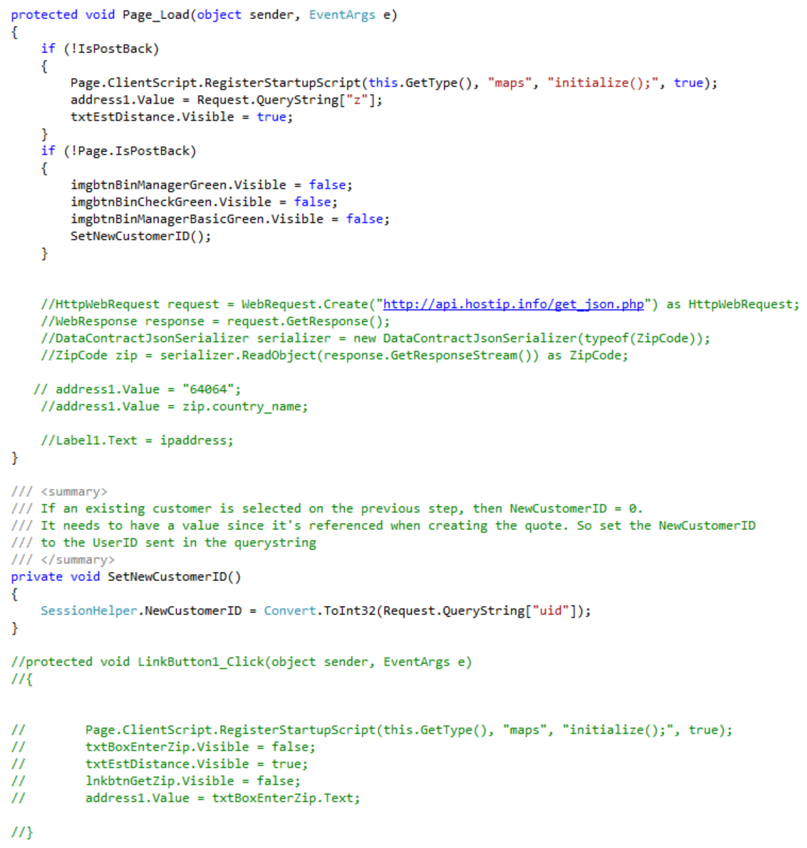
Multimedia

Getting to Know Windows 8

THE SESSIONS NOW PLAYING

We wouldn't stand for this.

Ambiguity Hinders Debugging



```
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        txtEstDistance.Visible = true;
    }
    if (!Page.IsPostBack)
    {
        imgbtnBinManagerGreen.Visible = false;
        imgbtnBinCheckGreen.Visible = false;
        imgbtnBinManagerBasicGreen.Visible = false;
        SetNewCustomerID();
    }


    //HttpWebRequest request = WebRequest.Create("http://api.hostip.info/get_json.php") as HttpWebRequest;
    //WebResponse response = request.GetResponse();
    //DataContractJsonSerializer serializer = new DataContractJsonSerializer(typeof(ZipCode));
    //ZipCode zip = serializer.ReadObject(response.GetResponseStream()) as ZipCode;

   // address1.Value = "64064";
    //address1.Value = zip.country_name;

    //Label1.Text = ipaddress;
}

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//        lnkbtnGetZip.Visible = false;
//        address1.Value = txtBoxEnterZip.Text;

//}
```
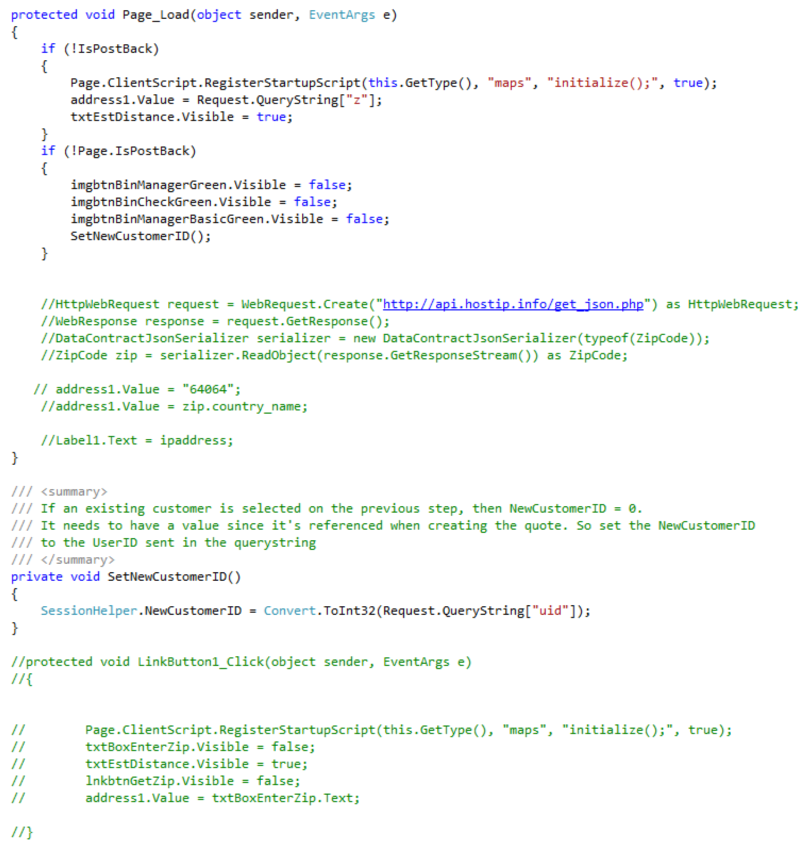

- What did this section do?
- Was this accidentally commented out?
- Who did this?

Ambiguity Hinders Refactoring



```
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        SetNewCustomerID();
    }


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//        lnkbtnGetZip.Visible = false;
//        address1.Value = txtBoxEnterZip.Text;

//}
```

- Do I need to refactor this too?
- How does my change impact this code?
- What if someone uncomments it later?

Kill Zombie Code

- Reduces readability
- Creates ambiguity
- Hinders refactoring
- Add noise to searches
- Code isn't "lost" anyway

Kill Zombie Code – A mental checklist

About to comment out code? Ask yourself:

- When, if ever, would this be uncommented?
- Can I just get it from source control later?
- Is this incomplete work that should be worked via a branch?
- Is this a feature that should be enabled/disabled via configuration?
- Did I refactor out the need for this code?

Divider Comments

Dirty

```
private void MyLongFunction()
{
    lots
    of
    code

    //Start search for available concert tickets

    lots
    of
    concert
    search
    code

    //End of concert ticket search

    lots
    more
    code
}
```

- **Need comments to divide function sections? Refactor.**

Brace Tracker Comments

Dirty

```
private void AuthenticateUsers()
{
    bool validLogin = false;
    //deeply
        //nested
            //code

        if (validLogin)
        {
            //Lots
            //of
            //code
            //to
            //log
            //user
            //in

        } //end user login

        //even
    //more code
}
```

Clean

```
private void AuthenticateUsers()
{
    bool validLogin = false;
    //deeply
        //nested
            //code

            if (validLogin)
            {
                LoginUser();
            }

        //even
    //more code
}
```

Bloated Header

Dirty

```
//***************************************************
// Filename: Monolith.cs                            *
//                                                  *
// Author: Cory House                               *
// Created: 12/20/2012                              *
// Weather that day: Patchy fog, then snow          *
//                                                  *
// Summary                                          *
// This class does a great many things. To make it  *
// extra useful I placed pretty much all the app    *
// logic here. You wish your class was this         *
// powerful. Bwahhahha!                             *
//***************************************************
```

- Avoid line endings
- Don’t repeat yourself
- Follow Conventions

Defect Log

Dirty

```
// DEFECT #5274 DA 12/10/2010
// We weren't checking for null here.
if (FirstName != null)
{
    //code continues...
```

- **Change metadata belongs in source control**
- **A well written book doesn’t need covered in author notes**

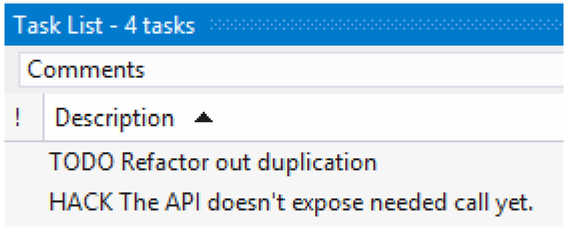
Clean Comments

- To Do
- Summary
- Documentation

To Do Comments

```
// TODO Refactor out duplication

// HACK The API doesn't expose needed call yet.
```



Task List - 4 tasks

Comments

!	Description ▲
	TODO Refactor out duplication
	HACK The API doesn't expose needed call yet.

- **Standardize**
- **Watch out:**
  - May be an apology or warning comment in disguise
  - Often ignored

Summary Comments

Clean

```
//Encapsulates logic for calculating retiree benefits
```

```
//Generates custom newsletter emails
```

- Describes intent at general level higher than the code
- Often useful to provide high level overview of classes
- Risk: Don't use to simply augment poor naming/code level intent

Documentation

Clean

```
// See www.facebook.com/api for documentation
```

- **Only when it can’t be expressed in code.**

About to write a comment?

For clean coders, comments are useful, but generally a last resort.

Ask yourself:

1. **Could I express what I'm about to type in *code*?**
   - Intermediate variable, eliminate magic number, utilize enum?
   - Refactor to a well-named method.
     - Separate scope
     - More likely to stay updated
     - Better testability

2. **Am I explaining bad code I've just written instead of refactoring?**
3. **Should this simply be a message in a source control commit?**

Summary

- Goal: Convey intent
- Strive for programming style as documentation
- Use comments as last resort
- Kill Zombie Code