How would you explain this?

4. In the code editor, click in the blank line below the comment, and then type the following code:

```
public event EventHandler LogonSuccess;
```

5. In the **Task List** window, double-click the **TODO: Exercise 1: Task 2b: Implement the Logon_Click event handler for the Logon button** task.
6. In the code editor, click in the blank line below the comments, and then type the following code:

```
private void Logon_Click(object sender, RoutedEventArgs e)
{
    // Save the username and role (type of user) specified on the form in the   global context
    SessionContext.UserName = username.Text;
    SessionContext.UserRole = (bool)userrole.IsChecked ? Role.Teacher : Role.Student;

    // If the role is Student, set the CurrentStudent property in the global    context to a dummy student; Eric
    if (SessionContext.UserRole == Role.Student)
    {
        SessionContext.CurrentStudent = "Eric Gruber";
    }

    // Raise the LogonSuccess event
    if (LogonSuccess != null)
    {
        LogonSuccess(this, null);
    }
}
```

How would you explain this?

delegate|

4. In the code editor, click in the blank line below the comment, and then type the following code:

```
public event EventHandler LogonSuccess;
```

Declare an event of type EventHandler

5. In the **Task List** window, double-click the **TODO: Exercise 1: Task 2b: Implement the Logon_Click event handler for the Logon button** task.
6. In the code editor, click in the blank line below the comments, and then type the following code:

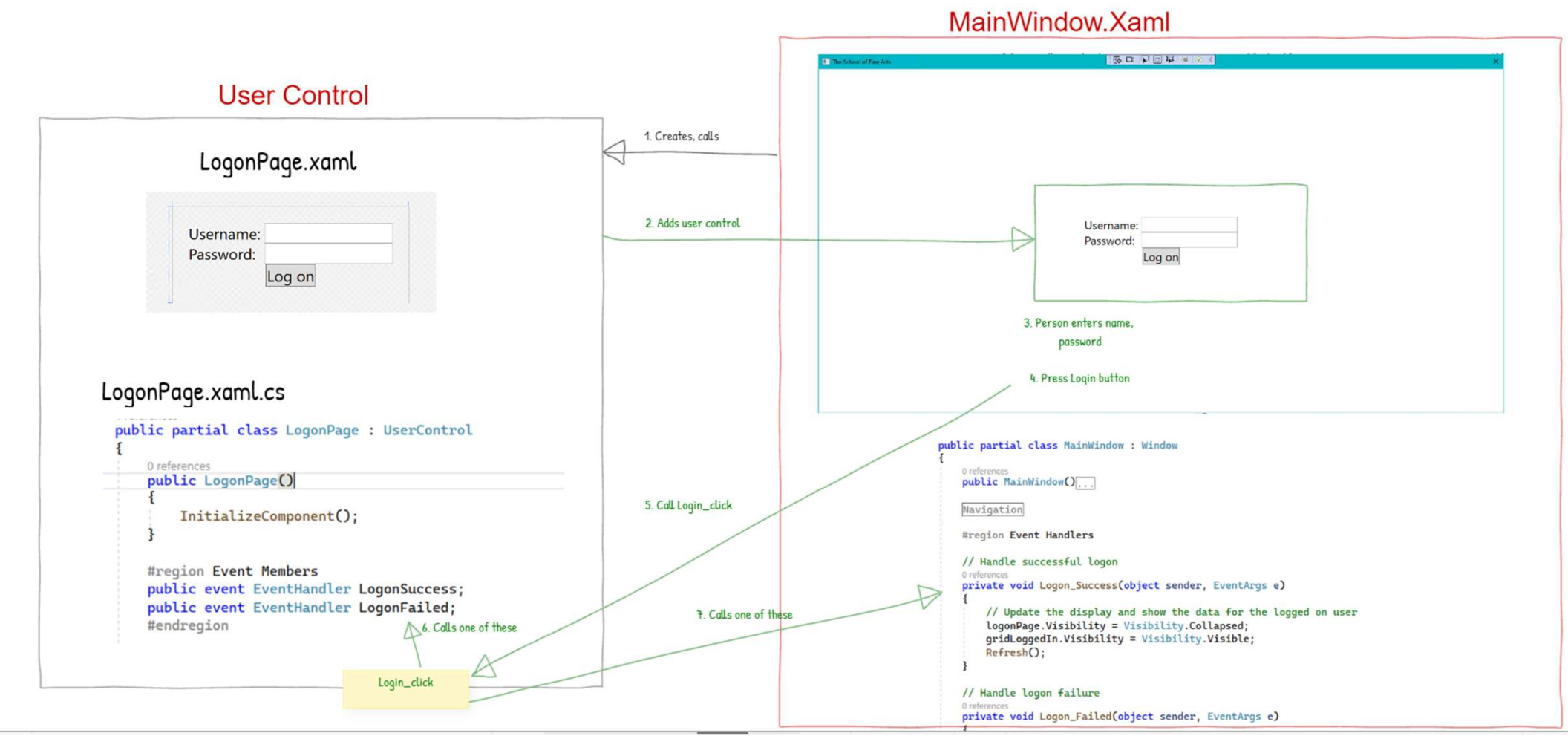
```
private void Logon_Click(object sender, RoutedEventArgs e)
{
    // Save the username and role (type of user) specified on the form in the   global context
    SessionContext.UserName = username.Text;
    SessionContext.UserRole = (bool)userrole.IsChecked ? Role.Teacher : Role.Student;

    // If the role is Student, set the CurrentStudent property in the global    context to a dummy student; Eric
    if (SessionContext.UserRole == Role.Student)
    {
        SessionContext.CurrentStudent = "Eric Gruber";
    }

    // Raise the LogonSuccess event
    if (LogonSuccess != null)
    {
        LogonSuccess(this, null);
    }
}
```

As long as something is subscribing to this event

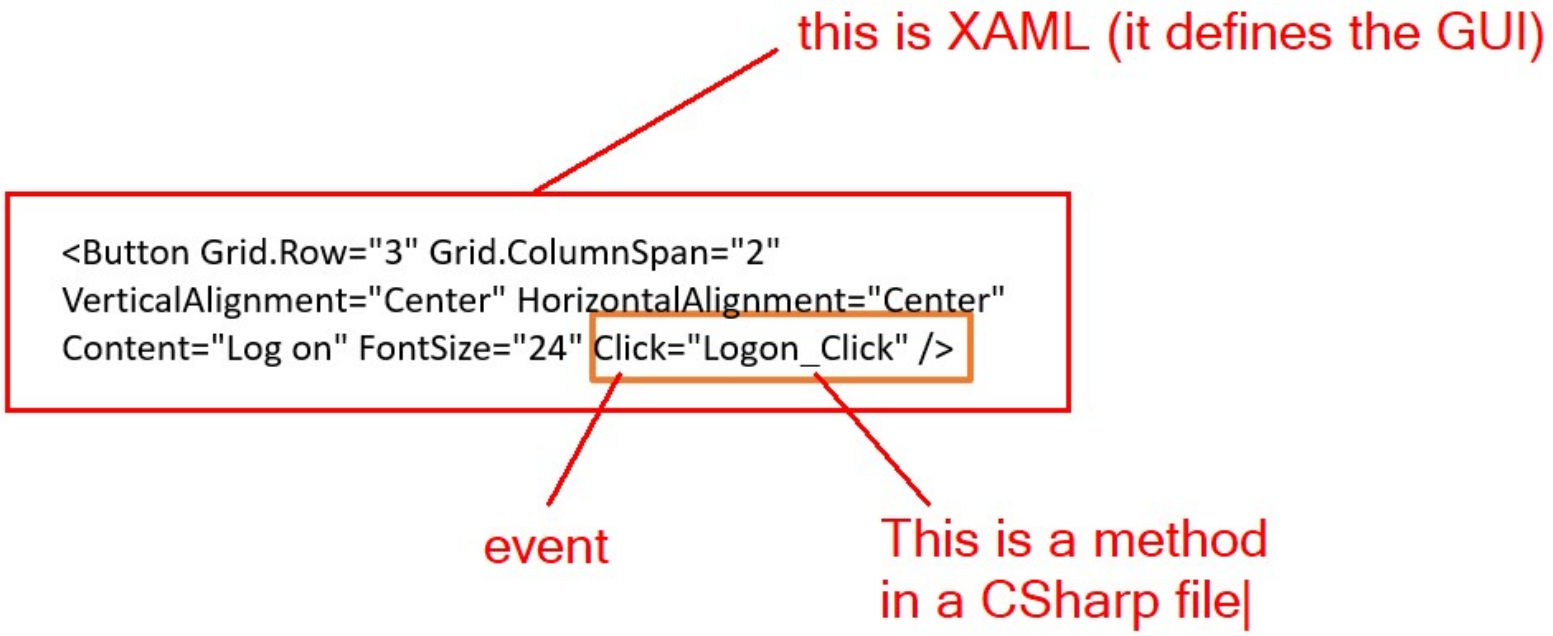
Call the Event

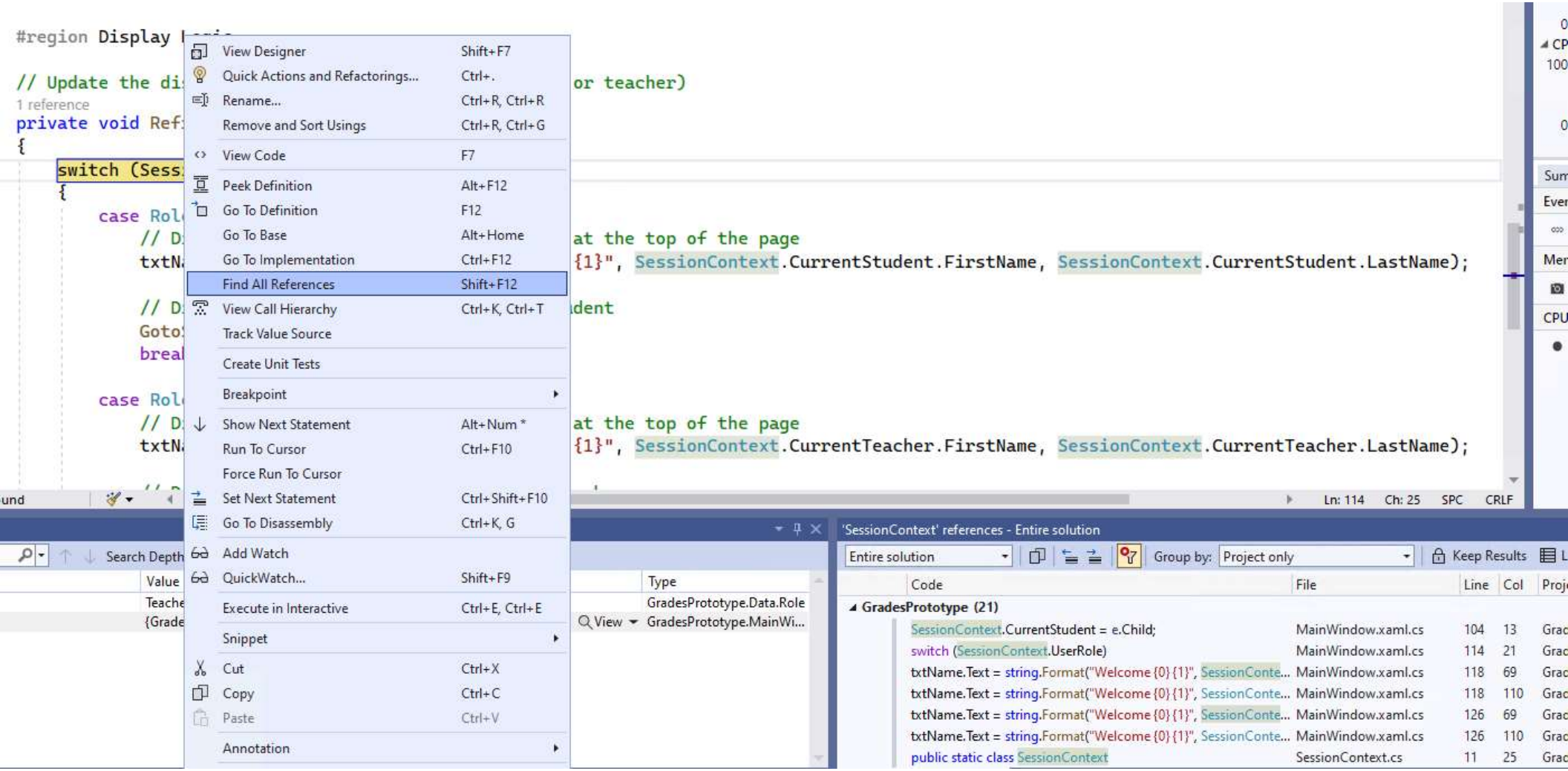

MainWindow.Xaml
User Control
LogonPage.xaml
Username:
Password:
Log on
1. Creates, calls
2. Adds user control
Username:
Password:
Log on
3. Person enters name, password
4. Press Login button
LogonPage.xaml.cs
public partial class LogonPage : UserControl
{
0 references
public LogonPage()
{
InitializeComponent();
}
#region Event Members
public event EventHandler LogonSuccess;
public event EventHandler LogonFailed;
#endregion
5. Call Login_click
6. Calls one of these
Login_click
7. Calls one of these
public partial class MainWindow : Window
{
0 references
public MainWindow()...
Navigation
#region Event Handlers
// Handle successful logon
0 references
private void Logon_Success(object sender, EventArgs e)
{
// Update the display and show the data for the logged on user
logonPage.Visibility = Visibility.Collapsed;
gridLoggedIn.Visibility = Visibility.Visible;
Refresh();
}
// Handle logon failure
0 references
private void Logon_Failed(object sender, EventArgs e)

How would you explain this?

```
<Button Grid.Row="3" Grid.ColumnSpan="2"
VerticalAlignment="Center" HorizontalAlignment="Center"
Content="Log on" FontSize="24" Click="Logon_Click" />
```

How would you explain this?




#region Display
// Update the di
or teacher)
1 reference
private void Ref
{
switch (Sess
{
case Rol
// D
txtN
at the top of the page
{1}", SessionContext.CurrentStudent.FirstName, SessionContext.CurrentStudent.LastName);
// D
Goto
brea
dent
case Rol
// D
txtN
at the top of the page
{1}", SessionContext.CurrentTeacher.FirstName, SessionContext.CurrentTeacher.LastName);
View Designer Shift+F7
Quick Actions and Refactorings... Ctrl+.
Rename... Ctrl+R, Ctrl+R
Remove and Sort Usings Ctrl+R, Ctrl+G
View Code F7
Peek Definition Alt+F12
Go To Definition F12
Go To Base Alt+Home
Go To Implementation Ctrl+F12
Find All References Shift+F12
View Call Hierarchy Ctrl+K, Ctrl+T
Track Value Source
Create Unit Tests
Breakpoint
Show Next Statement Alt+Num *
Run To Cursor Ctrl+F10
Force Run To Cursor
Set Next Statement Ctrl+Shift+F10
Go To Disassembly Ctrl+K, G
Add Watch
QuickWatch... Shift+F9
Execute in Interactive Ctrl+E, Ctrl+E
Snippet
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Annotation
Ln: 114 Ch: 25 SPC CRLF
Search Depth
Value
Type
GradesPrototype.Data.Role
View GradesPrototype.MainWi...
'SessionContext' references - Entire solution
Entire solution
Group by: Project only
Keep Results
Code
File
Line
Col
GradesPrototype (21)
SessionContext.CurrentStudent = e.Child; MainWindow.xaml.cs 104 13
switch (SessionContext.UserRole) MainWindow.xaml.cs 114 21
txtName.Text = string.Format("Welcome {0}{1}", SessionConte... MainWindow.xaml.cs 118 69
txtName.Text = string.Format("Welcome {0}{1}", SessionConte... MainWindow.xaml.cs 118 110
txtName.Text = string.Format("Welcome {0}{1}", SessionConte... MainWindow.xaml.cs 126 69
txtName.Text = string.Format("Welcome {0}{1}", SessionConte... MainWindow.xaml.cs 126 110
public static class SessionContext SessionContext.cs 11 25

How would you explain this?

```
// Handle successful logon
private void Logon_Success(object sender, EventArgs e)
{
    // Update the display and show the data for the logged on user
    logonPage.Visibility = Visibility.Collapsed;
    gridLoggedIn.Visibility = Visibility.Visible;
    Refresh();
}
```

```
<y:LogonPage x:Name="logonPage" LogonSuccess="Logon_Success" Visibility="Collapsed" />
```

How would you explain this?

only accessible in this class (or struct)

```
// Handle successful logon
private void Logon_Success(object sender, EventArgs e)
{
    // Update the display and show the data for the logged on user
    logonPage.Visibility = Visibility.Collapsed;
    gridLoggedIn.Visibility = Visibility.Visible;
    Refresh();
}
```

Method

Event

```
<y:LogonPage x:Name="logonPage" LogonSuccess="Logon_Success" Visibility="Collapsed" />
```

+

What's this? Where did it come from?

```
switch (SessionContext.UserRole)
{
    case Role.Student:
        // Display the student name in the banner at the top of the page
        txtName.Text = string.Format("Welcome {0}", SessionContext.UserName);

        // Display the details for the current student
        GotoStudentProfile();
        break;

    case Role.Teacher:
        // Display the teacher name in the banner at the top of the page
        txtName.Text = string.Format("Welcome {0}", SessionContext.UserName);

        // Display the list of students for the teacher
        GotoStudentsPage();
        break;
}
```

How would you explain this?

```
// Parse the student name into the first name and last name by using a regular expression
// The firstname is the initial string up to the first space character.
// The lastname is the string after the space character
Match matchNames = Regex.Match(SessionContext.CurrentStudent, @"([^ ]+) ([^ ]+)");

if (matchNames.Success)
{
    string firstName = matchNames.Groups[1].Value; // Indexing in the Groups collection starts at 1, not 0
    string lastName = matchNames.Groups[2].Value;

    // Display the first name and last name in the TextBlock controls in the studentName StackPanel
    ((TextBlock)studentName.Children[0]).Text = firstName;
    ((TextBlock)studentName.Children[1]).Text = lastName;
}

// If the current user is a student, hide the Back button
// (only applicable to teachers who can use the Back button to return to the list of students)
if (SessionContext.UserRole == Role.Student)
{
    btnBack.Visibility = Visibility.Hidden;
}
else
{
    btnBack.Visibility = Visibility.Visible;
}
```

regex is a class that is useful for finding string and/or replacing strings

How would you explain this?

```
// Parse the student name into the first name and last name by using a regular expression
// The firstname is the initial string up to the first space character.
// The lastname is the string after the space character
Match matchNames = Regex.Match(SessionContext.CurrentStudent, @"([^ ]+) ([^ ]+)");

if (matchNames.Success)
{
    string firstName = matchNames.Groups[1].Value; // Indexing in the Groups collection starts at 1, not 0
    string lastName = matchNames.Groups[2].Value;

    // Display the first name and last name in the TextBlock controls in the studentName StackPanel
    ((TextBlock)studentName.Children[0]).Text = firstName;
    ((TextBlock)studentName.Children[1]).Text = lastName;
}

// If the current user is a student, hide the Back button
// (only applicable to teachers who can use the Back button to return to the list of students)
if (SessionContext.UserRole == Role.Student)
{
    btnBack.Visibility = Visibility.Hidden;
}
else
{
    btnBack.Visibility = Visibility.Visible;
}
```

changing the user interface

How would you explain this?

```
Button itemClicked = sender as Button;
if (itemClicked != null)
{
    // Find out which student was clicked - the Tag property of the button  contains the name
    string studentName = (string)itemClicked.Tag;
    if (StudentSelected != null)
    {
        // Raise the StudentSelected event (handled by MainWindow) to display the   details for this student
        StudentSelected(sender, new StudentEventArgs(studentName));
    }
}
```

How would you explain this?

this is a button

converting the variable 'sender' to a 'button'

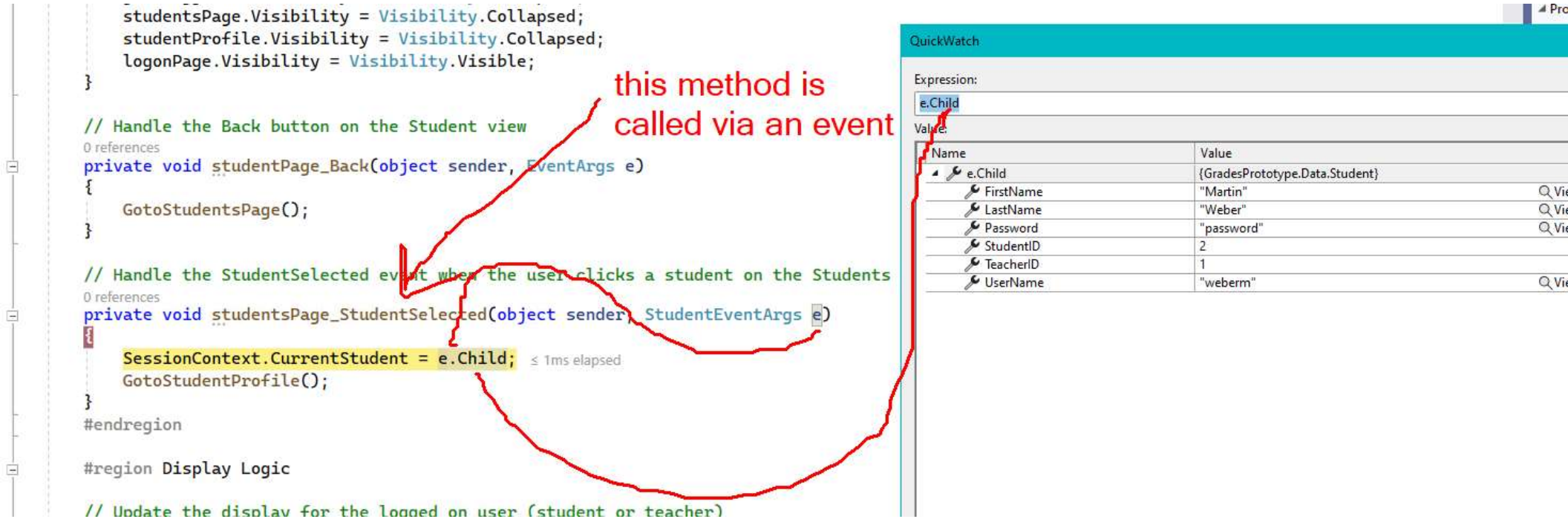
```
Button itemClicked = sender as Button;
if (itemClicked != null)
{
    // Find out which student was clicked - the Tag property of the button  contains the name
    string studentName = (string)itemClicked.Tag;
    if (StudentSelected != null)
    {
        // Raise the StudentSelected event (handled by MainWindow) to display the   details for this student
        StudentSelected(sender, new StudentEventArgs(studentName));
    }
}
```

you can use tag for anything. in this case it hold a student's name.

How would you explain this?

4. In the code editor, click in the blank line in the **studentsPage_StudentSelected** method, and then type the following code:

```
SessionContext.CurrentStudent = e.Child;
GotoStudentProfile();
```


studentsPage.Visibility = Visibility.Collapsed;
studentProfile.Visibility = Visibility.Collapsed;
logonPage.Visibility = Visibility.Visible;
}
this method is called via an event
// Handle the Back button on the Student view
0 references
private void studentPage_Back(object sender, EventArgs e)
{
GotoStudentsPage();
}
// Handle the StudentSelected event when the user clicks a student on the Students
0 references
private void studentsPage_StudentSelected(object sender, StudentEventArgs e)
{
SessionContext.CurrentStudent = e.Child;
≤ 1ms elapsed
GotoStudentProfile();
}
#endregion
#region Display Logic
// Update the display for the logged on user (student or teacher)
QuickWatch
Expression:
e.Child
Value:
Name
Value
e.Child
{GradesPrototype.Data.Student}
FirstName
"Martin"
LastName
"Weber"
Password
"password"
StudentID
2
TeacherID
1
UserName
"weberm"

How would you explain this?

```
public struct Grade
{
    public int StudentID { get; set; }
    public string AssessmentDate { get; set; }
    public string SubjectName { get; set; }
    public string Assessment { get; set; }
    public string Comments { get; set; }
}
```

6. In the **Task List** window, double-click the **TODO: Exercise 2: Task 1b: Create the Student struct** task.
7. In the code editor, click in the blank line below the comment, and then type the following code:

```
public struct Student
{
    public int StudentID { get; set; }
    public string UserName { get; set; }
    public string Password { get; set; }
    public int TeacherID { get; set; }
    public string FirstName { get; set; }
    public string LastName { get; set; }
}
```

8. In the **Task List** window, double-click the **TODO: Exercise 2: Task 1c: Create the Teacher struct** task.
9. In the code editor, click at the end of the comment line, press Enter, and then type the following code:

```
public struct Teacher
{
    public int TeacherID { get; set; }
    public string UserName { get; set; }
    public string Password { get; set; }
    public string FirstName { get; set; }
    public string LastName { get; set; }
    public string Class { get; set; }
}
```

```
class Program
{
    static void Main(string[] args)
    {
        Person p1 = new Person();
        p1.Name = "Alek";
        p1.Age = -9;
    }
}

struct Person
{

    public string Name { get; set; }

    private int _age;

    public int Age
    {
        get { return _age; }
        set {
            if (value < 0)
                throw new InvalidProgramException();
            _age = value;

        }
    }

}
```

shorthand way of writing a property

field

Property

How would you explain this?

```
// Find the user in the list of possible users - first check whether the user is a  teacher
var teacher = (from Teacher t in DataSource.Teachers
               where String.Compare(t.UserName, username.Text) == 0 &&
                     String.Compare(t.Password, password.Password) == 0
               select t).FirstOrDefault();

// If the UserName of the user retrieved by using LINQ is non-empty then the user is a teacher
if (!String.IsNullOrEmpty(teacher.UserName))
{
    // Save the UserID and Role (teacher or student) and UserName in the global context
    SessionContext.UserID = teacher.TeacherID;
    SessionContext.UserRole = Role.Teacher;
    SessionContext.UserName = teacher.UserName;
    SessionContext.CurrentTeacher = teacher;

    // Raise the LogonSuccess event and finish
    LogonSuccess(this, null);
    return;
}
```

How would you explain this?

C# Linq expression.
A bit like SQL|

```
// Find the user in the list of possible users - first check whether the user is a  teacher
var teacher = (from Teacher t in DataSource.Teachers
               where String.Compare(t.UserName, username.Text) == 0 &&
                     String.Compare(t.Password, password.Password) == 0
               select t).FirstOrDefault();

// If the UserName of the user retrieved by using LINQ is non-empty then the user is a teacher
if (!String.IsNullOrEmpty(teacher.UserName))
{
    // Save the UserID and Role (teacher or student) and UserName in the global context
    SessionContext.UserID = teacher.TeacherID;
    SessionContext.UserRole = Role.Teacher;
    SessionContext.UserName = teacher.UserName;
    SessionContext.CurrentTeacher = teacher;

    // Raise the LogonSuccess event and finish
    LogonSuccess(this, null);
    return;
}
```

How would you explain this?

```
// Find all the grades for the student
ArrayList grades = new ArrayList();

foreach (Grade grade in DataSource.Grades)
{
    if (grade.StudentID == SessionContext.CurrentStudent.StudentID)
    {
        grades.Add(grade);
    }
}

// Display the grades in the studentGrades ItemsControl by using databinding
studentGrades.ItemsSource = grades;
```

How would you explain this?

A collection that can hold a set of data. It can grow and shrink in size.

```
// Find all the grades for the student
ArrayList grades = new ArrayList();

foreach (Grade grade in DataSource.Grades)
{
    if (grade.StudentID == SessionContext.CurrentStudent.StudentID)
    {
        grades.Add(grade);
    }
}

// Display the grades in the studentGrades ItemsControl by using databinding
studentGrades.ItemsSource = grades;
```

Show it in the user interface