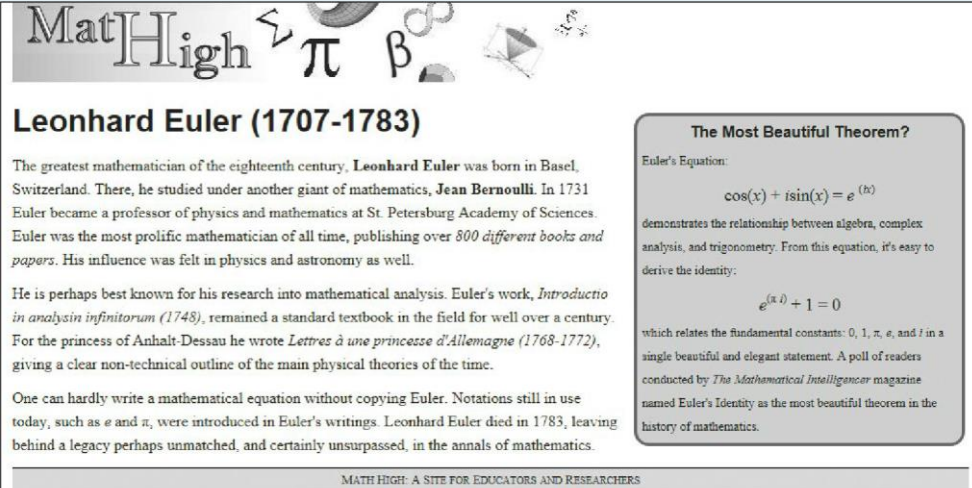


## Math High Web page



**Leonhard Euler (1707-1783)**

The greatest mathematician of the eighteenth century, **Leonhard Euler** was born in Basel, Switzerland. There, he studied under another giant of mathematics, **Jean Bernoulli**. In 1731 Euler became a professor of physics and mathematics at St. Petersburg Academy of Sciences. Euler was the most prolific mathematician of all time, publishing over *800 different books and papers*. His influence was felt in physics and astronomy as well.

He is perhaps best known for his research into mathematical analysis. Euler's work, *Introductio in analysin infinitorum* (1748), remained a standard textbook in the field for well over a century. For the princess of Anhalt-Dessau he wrote *Lettres à une princesse d'Allemagne* (1768-1772), giving a clear non-technical outline of the main physical theories of the time.

One can hardly write a mathematical equation without copying Euler. Notations still in use today, such as  $e$  and  $\pi$ , were introduced in Euler's writings. Leonhard Euler died in 1783, leaving behind a legacy perhaps unmatched, and certainly unsurpassed, in the annals of mathematics.

**The Most Beautiful Theorem?**

Euler's Equation:

$$\cos(x) + i\sin(x) = e^{ix}$$

demonstrates the relationship between algebra, complex analysis, and trigonometry. From this equation, it's easy to derive the identity:

$$e^{i\pi} + 1 = 0$$

which relates the fundamental constants: 0, 1,  $\pi$ ,  $e$ , and  $i$  in a single beautiful and elegant statement. A poll of readers conducted by *The Mathematical Intelligencer* magazine named Euler's Identity as the most beautiful theorem in the history of mathematics.

MATH HIGH: A SITE FOR EDUCATORS AND RESEARCHERS

Complete the following:

1. In your text editor, open the **mhtxt.htm** file from the tutorial.01\case1 folder included with your Data Files. Save the file as **mathhigh.htm** in the same folder.
2. Enclose the contents of the file within a set of opening and closing `<html>` tags. Set the doctype of the file to indicate that this is an HTML5 document.
3. Add **head** and **body** elements to the file, enclosing the page contents within the **body** element.
4. Within the document head, insert the comment  
**Math High: Leonhard Euler**  
**Author: your name**  
**Date: the date**  
 where *your name* is your name and *the date* is the current date.
5. Set the character set of the document to **UTF-8**.
6. Add the page title **Math High: Leonhard Euler** to the document head.
7. Link to the **modernizr-1.5.js** script file.
8. Link to the **mhstyles.css** style sheet.
9. Within the page body, create a **header** element. Within this element, insert an inline image using the **mhlogo.jpg** file as the source and **Math High** as the alternate text.
10. Mark the page text from the line *Leonhard Euler (1707 - 1783)* up to (but not including) the line *The Most Beautiful Theorem?* as an article.
11. Mark the first line in the article element, containing *Leonhard Euler (1707 - 1783)*, as an **h1** heading.
12. Mark the next three blocks of text describing Euler's life as paragraphs.

13. Within the first paragraph, mark the names *Leonhard Euler* and *Jean Bernoulli* using the `strong` element. Mark the phrase *800 different books and papers* as emphasized text using the `em` element.
14. In the second paragraph, mark the phrase *Introductio in analysin infinitorum (1748)* as a citation.
15. In the phrase *Lettres a une princesse d'Allemagne*, replace the one-letter word *a* with `&a` (the character entity name is *agrave*). Mark the entire publication name as a citation.
16. In the third paragraph, mark the notation for *e* as a `var` element and replace *pi* with the character `π` (the character reference name is `pi`).
17. Enclose the next section of text from the line *The Most Beautiful Theorem?* up to (but not including) the line *Math High: A Site for Educators and Researchers* as an aside.
18. Mark the text *The Most Beautiful Theorem?* as an `h1` heading.
19. Mark the next five blocks of text as individual paragraphs.
20. In the first equation, mark the letters *e*, *i*, and *x* using the `var` element (but do not italicize the *i* in *sin*). Mark the term *(ix)* as a superscript.
21. In the second equation, replace *pi* with the character `π`. Mark the letters *e* and *i* using the `var` element. Mark *(πi)* as a superscript.
22. In the last paragraph, mark the notations for *e* and *i* with the `var` element and replace *pi* with `π`.
23. Mark the journal name *The Mathematical Intelligencer* as a citation.
24. Mark the final line in the file as a footer.
25. Save your changes to the file, and then verify that the page appears correctly in your Web browser.
26. Submit your completed files to your instructor, in either printed or electronic form, as requested.

Apply your knowledge of HTML to create a page showing text from a scene of a Shakespeare play.

## APPLY

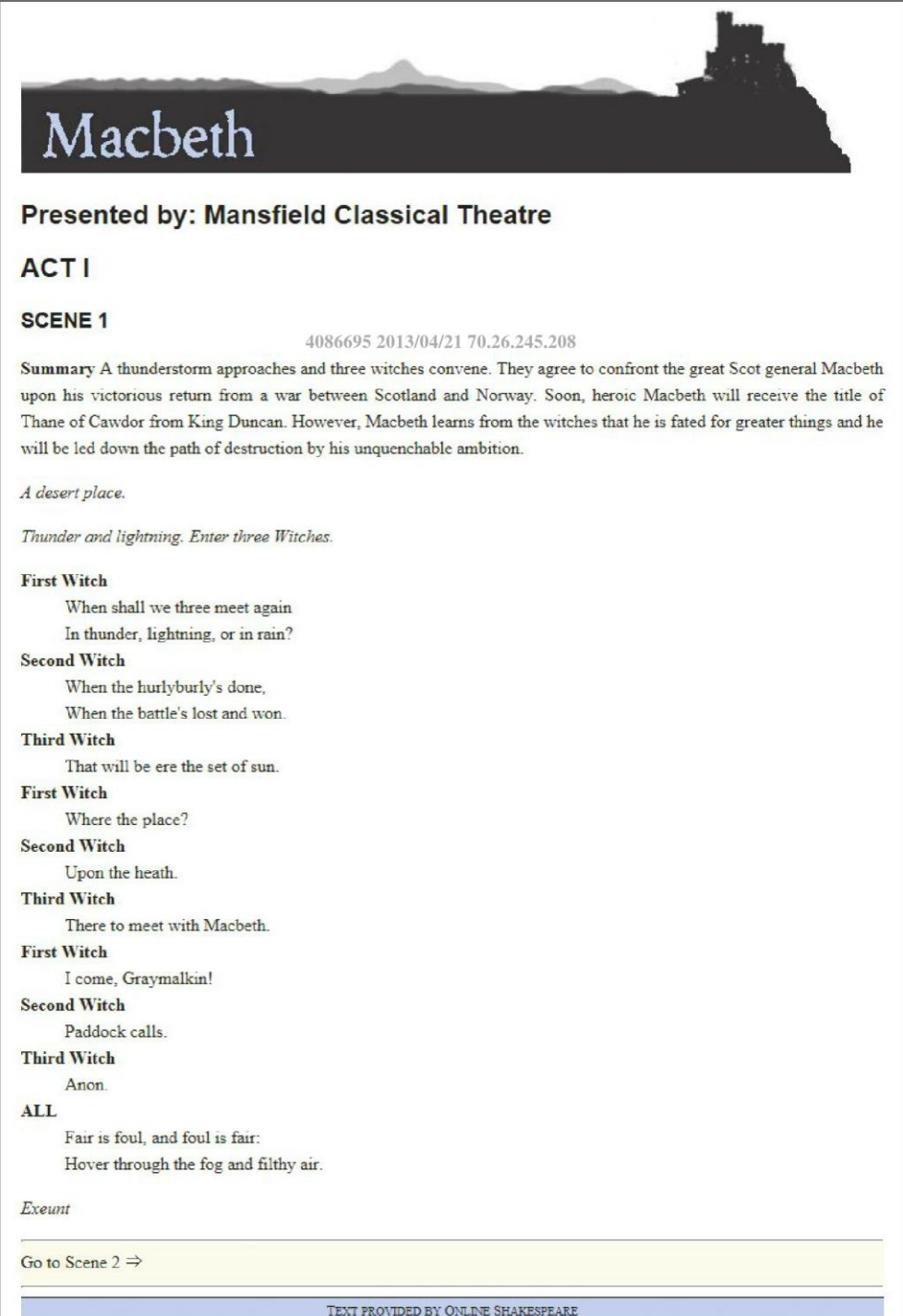
### Case Problem 2

**Data Files needed for the Case Problem:** `macbeth.jpg`, `macbethtxt.htm`, `macstyles.css`, `modernizr-1.5.js`

**Mansfield Classical Theatre** Steve Karls is the director of Mansfield Classical Theatre, a theatre company for young people located in Mansfield, Ohio. This summer the company is planning to perform the Shakespeare play *Macbeth*. Steve wants to put the text of the play on the company's Web site and has asked for your help in designing and completing the Web page. Steve wants a separate page for each scene from the play. A preview of the page you'll create for Act I, Scene 1 is shown in Figure 1-50. Steve has already typed the text of the scene. He needs you to supply the HTML code.

Figure 1-

## Macbeth Act I, Scene 1 Web page



The image shows a screenshot of a web page for Macbeth Act I, Scene 1. The page has a dark header with the word "Macbeth" in a large, white, serif font. Below the header, the text "Presented by: Mansfield Classical Theatre" is displayed. The main content area is white and contains the text of the play. The title "ACT I" is in a large, bold, serif font. Below it, "SCENE 1" is in a smaller, bold, serif font. A date and time stamp "4086695 2013/04/21 70.26.245.208" is visible. The text of the play is in a serif font, with character names in bold. The page ends with a yellow bar containing the text "Go to Scene 2 =>" and a blue bar at the bottom with the text "TEXT PROVIDED BY ONLINE SHAKESPEARE".

**Macbeth**

**Presented by: Mansfield Classical Theatre**

**ACT I**

**SCENE 1**

4086695 2013/04/21 70.26.245.208

**Summary** A thunderstorm approaches and three witches convene. They agree to confront the great Scot general Macbeth upon his victorious return from a war between Scotland and Norway. Soon, heroic Macbeth will receive the title of Thane of Cawdor from King Duncan. However, Macbeth learns from the witches that he is fated for greater things and he will be led down the path of destruction by his unquenchable ambition.

*A desert place.*

*Thunder and lightning. Enter three Witches.*

**First Witch**

When shall we three meet again  
In thunder, lightning, or in rain?

**Second Witch**

When the hurlyburly's done,  
When the battle's lost and won.

**Third Witch**

That will be ere the set of sun.

**First Witch**

Where the place?

**Second Witch**

Upon the heath.

**Third Witch**

There to meet with Macbeth.

**First Witch**

I come, Graymalkin!

**Second Witch**

Paddock calls.

**Third Witch**

Anon.

**ALL**

Fair is foul, and foul is fair:  
Hover through the fog and filthy air.

*Exeunt*

Go to Scene 2 =>

TEXT PROVIDED BY ONLINE SHAKESPEARE

Complete the following:

1. Open the **macbethtxt.htm** file from the tutorial.01\case2 folder included with your Data Files. Save the file as **macbeth.htm** in the same folder.

Figure 1-

2. Enclose the entire *Macbeth* text within the structure of an HTML document including the `html`, `head`, and `body` elements. Add a doctype to the document head to indicate that the page is written in HTML5.
3. Within the head section, insert a comment containing the following text:  
**Macbeth: Act I, Scene 1**  
**Author: your name**  
**Date: the date**
4. Add the page title **Macbeth: Act I, Scene 1**.
5. Link the file to the **modernizr-1.5.js** script file and to the **macstyles.css** style sheet. Set the character set to **UTF-8**.
6. Within the `body` element, insert a heading group consisting of an `h1` heading and an `h2` heading. Within the `h1` heading, insert an inline image containing the *macbeth.jpg* image file. Specify **Macbeth** as the alternate text. Within the `h2` heading, enter the text **Presented by: Mansfield Classical Theatre**.
7. Enclose the text of the play within a `section` element.
8. Mark the text *ACT I* as an `h2` heading. Mark *SCENE 1* as an `h3` heading. Group the two headings within an `hgroup` element.
9. Mark the summary of the scene as a paragraph. Mark the word *Summary* using the `strong` element.
10. In the text of the play, mark the descriptions of setting, scene, and exits as separate paragraphs and italicize the text using the `i` element, as shown in Figure 1-50.
11. Mark the dialog as a description list, with each character's name marked as a description term and each speech marked as a description. When a speech includes two lines, add a line break at the end of the first line to keep the speech on separate lines, as shown in the figure.
12. Directly below the paragraph containing the text *Exeunt*, insert the line **Go to Scene 2**. Mark this line as a `div` element with the `id` value *direction*. At the end of this line, insert a **right arrow character** using the 8658 character number. Add horizontal rules directly above and below this statement.
13. Mark the line *Text provided by Online Shakespeare* as a footer. Make sure the `footer` element is below the `section` element.
14. Save your changes to the file, and then confirm the layout and content of the page in your Web browser.
15. Submit the completed files to your instructor, in either printed or electronic form, as requested.

#### EXPLORE

#### EXPLORE

Explore how to use HTML to create a recipe page.

### CHALLENGE

#### Case Problem 3

**Data Files needed for the Case Problem:** *dessertstyles.css*, *dessertweb.jpg*, *modernizr-1.5.js*, *torte.jpg*, *tortetxt.htm*

**dessertWEB** Amy Wu wants to take her enjoyment of cooking and her love of sharing recipes to the World Wide Web. She's interested in creating a new Web site called *dessertWEB* where other cooks can submit and review dessert recipes. Each page within her site will contain a photo and description of a dessert, along with a list of ingredients, cooking directions, and a list of reviews. Each recipe will be rated on a five-star scale. She already has information on one recipe: Apple Bavarian Torte. She's asked for your help in creating a Web page from the data she's collected. A preview of the completed page is shown in Figure 1-51.