


Programming


- Why is programming fun?
 - Yet the program construct, unlike the poet's words, is real in the sense that it moves and works, producing visible outputs separate from the construct itself. It prints results, draws pictures, produces sounds, moves arms. The magic of myth and legend has come true in our time. One types the correct incantation on a keyboard, and a display screen comes to life, showing things that never were nor could be.

Source: Frederick P. Brooks, Jr. *The Mythical Man-Month: Essays on Software Engineering.*



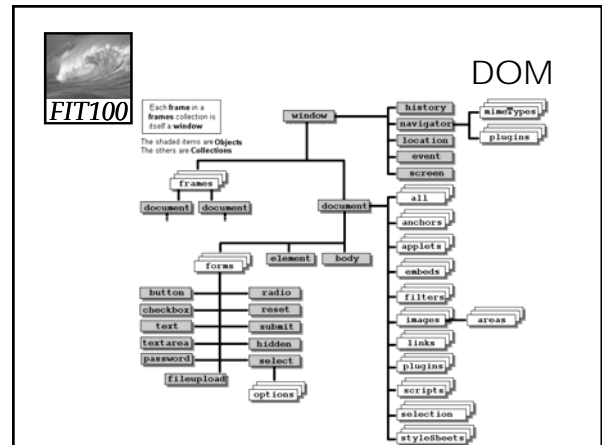

Announcements

- Monday is a school holiday!
- If you have Monday lab,
 - * Join any Tuesday lab
- Project 2A
 - * Due by Tuesday night at 10pm
 - * Requires no JavaScript in the GUI
 - * The GUI is HTML
 - * Planning document is thoroughly dissected in lecture today




Announcements

- Next week's quiz
 - * Deeper into JavaScript than this week
 - * Review document
 - linked in that greenish bar between this week and next on the course calendar
 - 24 questions and answers

Project 2A.2: Planning Document

*"Let our advance worrying become
advance thinking and planning."*
—Winston Churchill



Planning

Any big project is


- * Confusing
- * Overwhelming
- * Scary
- * Uncomfortable
- * Worrisome

Any new subject is

- * Confusing
- * Overwhelming
- * Scary
- * Uncomfortable
- * Worrisome

Notice a pattern here?


And when you combine a big project with a new subject, the effect is exponential!



Planning


- **Planning**
 - * *Reduces worry*
 - *As you learn more about the project*
 - * *Saves time when you*
 - *Think through the project carefully,*
 - *Flesh it out as you go, then make revisions.*
 - * *Jumpstarts the programming phase and prevents a lot of mistakes and trips down unfruitful paths or blind alleys.*

Knowledge is power!



Project 2A

- Write a planning document
 - * Plan your coding strategy
 - * Write in narrative form what your coding will do for the entire project



Decomposition

- Break into steps
 - * List inputs
 - * List outputs
 - * Plan how to transform inputs into outputs
- If a step is too complicated to describe
 - * Break that step into steps




Planning

- Where to start?





Planning

- Where to start?
 - * Start with what you know:
 - Project Overview
 - Project 2A
 - Project 2B


Project 2A

- What do we know? (What are the requirements?)
 - * Write eight fill-in-the-blank questions
 - * Write a multiple-choice question with only one answer
 - * Write a multiple-choice question with multiple answers
 - * Create a GUI with
 - Eight fill-in-the-blank questions
 - A submit button




Project 2A

- Organize and add to what we know
 - Write questions and answers**
 - Eight fill-in-the-blank questions and answers
 - One multiple-choice question with only one correct answer
 - One multiple-choice question with multiple correct answers
 - Using HTML**
 - Write a GUI with eight textboxes for the fill-in-the-blank questions
 - Add a submit button




Project 2A

- Organize and add to what we know
 - Write questions and answers
 - Eight fill-in-the-blank questions and answers
 - One multiple-choice question with only one correct answer
 - One multiple-choice question with multiple correct answers
 - Using HTML
 - Write a GUI with eight textboxes for the fill-in-the-blank questions
 - Add a submit button




Project 2B

- What do we know?
 - Add an image with a rollover effect
 - Add the multiple-choice questions
 - Display the quiz score
 - Depending on the score:
 - Display the Good Work! Or Study More! page with close button
 - Change the background color of the quiz page




Project 2B

- Organize what we know
 - Using HTML
 - Write the Good Work! and Study More! pages
 - Add close buttons to these two pages
 - Pages can be identical except for text
 - Add the two multiple-choice questions to the quiz



Project 2B

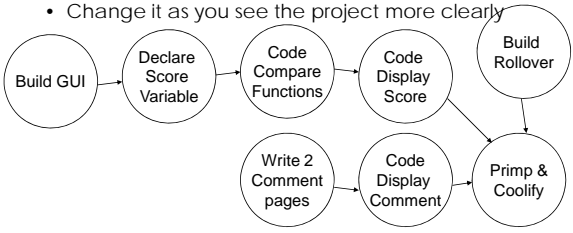
- Organize what we know
 - Using JavaScript
 - Add an image with a rollover effect
 - Grade the quiz
 - Display the quiz score
 - If the score is over 6,
 - Display the Good Work! page with close button
 - Change the background color of the quiz page
 - Else
 - Display the Study More! Page with close button
 - Change the background color of the quiz page



PERT

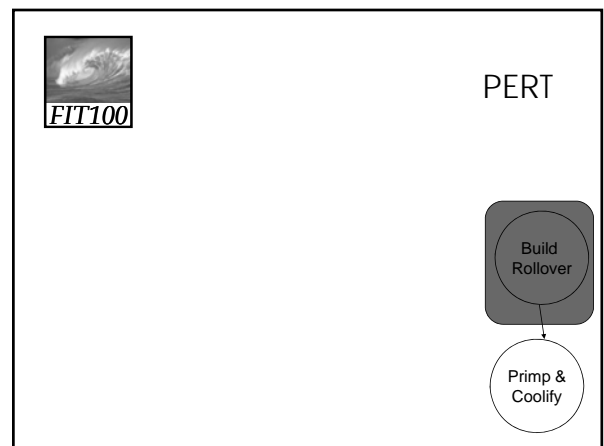
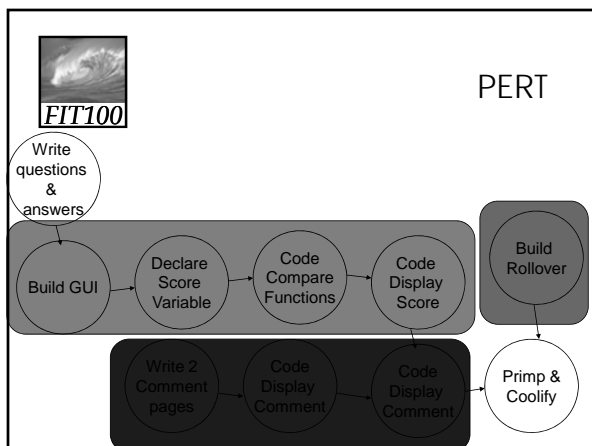
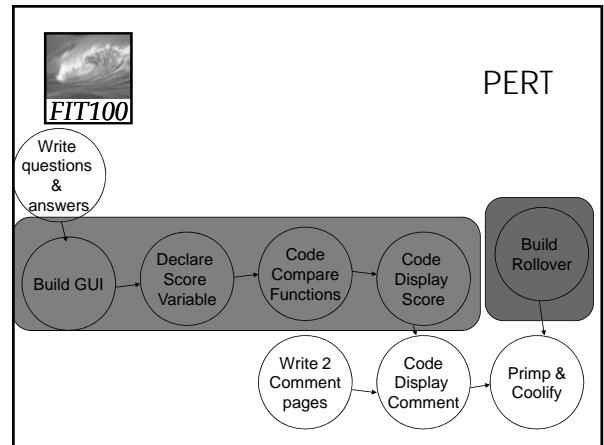
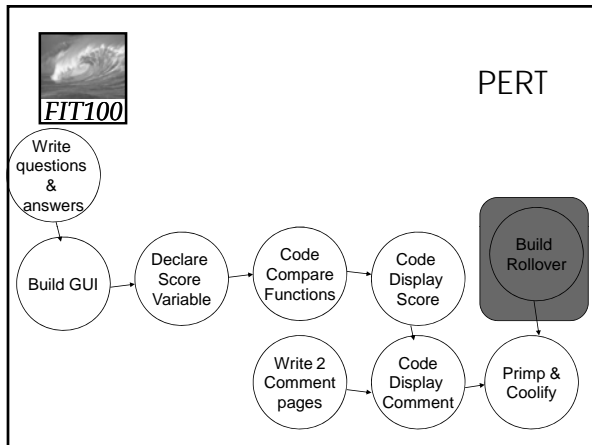
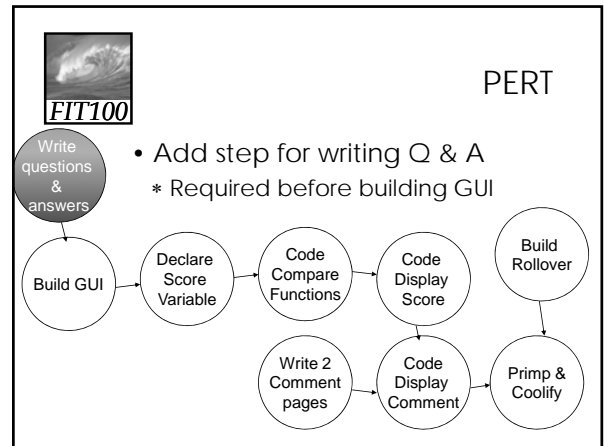
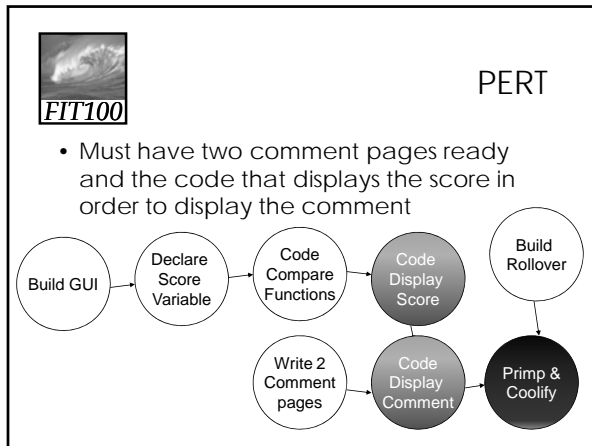
Recall the PERT chart from earlier

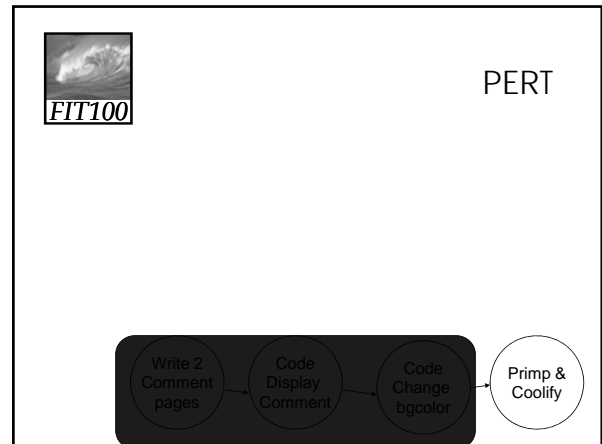
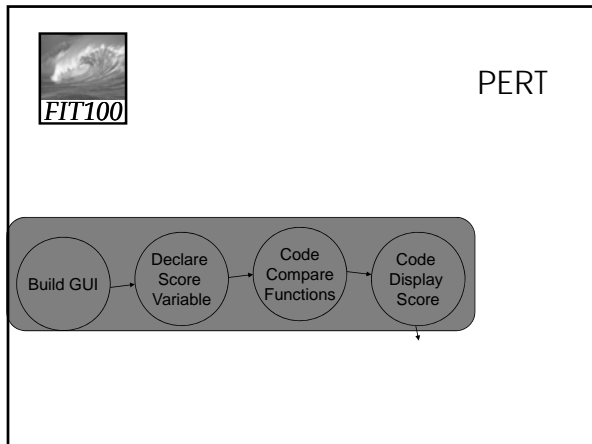
- Visual diagrams show the dependencies clearly
- Change it as you see the project more clearly



```

    graph LR
      A((Build GUI)) --> B((Declare Score Variable))
      B --> C((Code Compare Functions))
      C --> D((Code Display Score))
      D --> E((Build Rollover))
      D --> F((Write 2 Comment pages))
      F --> G((Code Display Comment))
      G --> H((Prim & Coolify))
      E --> H
  
```





FIT100

Planning

- Back to the narrative...

FIT100

Project 2A

- Write questions and answers
 - * Eight fill-in-the-blank questions and answers
 - * One multiple-choice question with only one correct answer
 - * One multiple-choice question with multiple correct answers
- Using HTML
 - * Write a GUI with eight textboxes for the fill-in-the-blank questions
 - * Add a submit button

FIT100

GUI

- What do I need to accomplish each step?
 - * Basic HTML structure
 - Download from the link on the course calendar
 - * Coding for form and form inputs
 - Look it up at W3 Schools: http://www.w3schools.com/html/html_forms.asp

FIT100

GUI

- What do I need to accomplish each step?
 - * HTML Coding for form
<form action="" ></form>
 - * HTML Coding for text boxes:
<input type="text" name="question1">
 - * HTML Coding for submit button
<input type="submit" value="Submit">



Project 2B

- Back to the narrative...



Project 2B

- Using HTML
 - * Write the Good Work! and Study More! pages
 - Add close buttons to these two pages
 - Pages can be identical except for text
 - * Add the two multiple-choice questions to the quiz



Planning

- Organize the steps a little better
 - * Write comment page
 - Add close buttons
 - Copy comment page
 - Add appropriate text to each
 - “Study More!” & “Good job!”
 - * Add multiple-choice questions
 - Multiple correct answers
 - Single correct answer



Planning

- What do I need in order to accomplish each step?
 - * Need basic HTML for comment page
 - * Need code for close button
 - * Need code for multiple-choice questions
 - Multiple correct answers
 - Checkboxes
 - Single correct answer
 - Radio buttons



Planning

- What do I need in order to accomplish each step?
 - * Need basic HTML for comment page
 - * Need code for close button
 - * Need code for multiple-choice questions
 - Multiple correct answers
 - Checkboxes
 - Single correct answer
 - Radio buttons



Project 2B

- What do I need in order to accomplish each step?
 - * Add an image with a rollover effect
 - Find two images
 - Find code for image rollovers



Project 2B

- What do I need in order to accomplish each step?
 - * Grade the quiz
 - Grade textbox answers
 - Grade checkboxes
 - Grade radio buttons
 - * Display the quiz score
 - Variable score
 - Add to score when answer is correct



Project 2B

- What do I need in order to accomplish each step?
 - * Grade the quiz
 - Compare student answers with correct answers
 - Grade textbox answers
 - Grade checkboxes
 - Grade radio buttons
 - * Display the quiz score
 - Variable score
 - Add to score when answer is correct



Project 2B

- What do I need in order to accomplish each step?
 - * Grade the quiz
 - Compare student answers with correct answers—conditional statements: if-else
 - Grade textbox answers—learn how to move through form elements
 - Grade checkboxes—learn how
 - Grade radio buttons—learn how
 - * Display the quiz score
 - Declare variable score
 - Add to score when answer is correct



Project 2B

- Inputs
 - * Array of quiz answers
 - * User input from form
 - * Click event on submit button
 - * Mouseover on rollover image
- Outputs
 - * Final score
 - * Comment pages
 - Good job!
 - Study More!
 - * Change bgcolor based on score



Project 2B

- What do I need in order to accomplish each step?
 - * If the score is over 6,
 - Display the Good Work! page with close button
 - Change the background color of the quiz page
 - * Else
 - Display the Study More! Page with close button
 - Change the background color of the quiz page



JavaScript

- This is enough detail for the planning document
- Each lecture, we'll look at another piece of the JavaScript code to accomplish these steps



PERT

- Final step
 - * Primp and "coolify"
 - * Think about what you would like to do
 - Add cool features
 - Add a cool "skin"
 - Improve the user experience

Primp &
Coolify



Reflection

- Write for five minutes on this topic:
 - * Explain why event-based programming is important. Give an example of an event and describe how JavaScript would handle it.