Computer Science Principles

Class 7

Class 7 Topics

- Everyday item, programming inside
- Introduce “Test Driven Development”
- Do TDD example
- Work on Class/Pair Projects
- Q & A

Test Driven Development

- Development philosophy where, before writing actual product code, you write the tests.
- Tests should fail at the beginning, because you haven't written any code yet.
- Code is complete when it passes the test code.
- Obviously your test code has to cover a wide range of inputs and outputs

Quick Example

- Project idea is to develop code that tells the user if a number is a factor of the number 7.
- Write a function that will return (pass or fail) if the input number is a factor of 7.

Test Example Function

- Include IsItAFactorOfSeven.txt

- Void TestFactorSeven(void)
- if (IsItAFactorOfSeven(0) == TRUE)
- print “0 Failed”
- else if (IsItAFactorOfSeven(1) == FALSE) #1 is a factor
- print “1 Failed”
- else if (IsItAFactorOfSeven(7) == FALSE) # 7 is a factor
- print “7 Failed”
- else if (IsItAFactorOfSeven(43) == TRUE)
- print “43 Failed”
- else
- print “passed!”
- end
- end

Real code

- Boolean IsItAFactorOfSeven(integer input)
- if(input == 1 || input == 7)
- return(TRUE)
- else
- return(FALSE)
- end

Unit Testing

- Code testing framework
- Write code to test code
- Uses calls to “real code” to determine if logic in real code works
- Run switch code on a PC, etc

Cucumber

- Test language “human readable” to test overall product.
- Can test websites, hardware, etc

Let's Do It

- Write out (paper or computer) quick test code, then real code to satisfy the test. That's two functions.
- Main goal is to write a sum(inputA, inputB) function.
- Integer sum(integer A, integer B)
- Group A: Graham, Kevin
- Group B: Ethan, James, Emily

Homework (addition to Pair Project)

- Take example inputs and outputs and write a test program, from the pair project assignment.
- It should call your pair program, and verify that the output matches. If the output fails, then it should report that.

NO CLASS NEXT WEEK!

- Nobody will be here!
- Pair Project due in TWO weeks!

Q & A / Project Time

- Creating Project Steps
- Define general program structure (outputs, inputs, etc)
- Create Test Program first, if using TDD
- Write main program to pass TDD program.

Q & A / Project Time

- Comment your code! #Explain why you did what you did
- “end”. At end of program, at end of If, at end of loops
- Indenting. Indent inside ifs and loops. Also nicer if whole program is done as well.