CSC 217 Lab 01

PackScheduler

Overview

- Introduction to Teaming & Pair Programming
- Environment Setup Reminders
- Team Introductions & Teaming Activity
- PackScheduler
  - Import an Eclipse project
  - Student POJO
  - I/O review with StudentRecordIO
  - GitHub
  - Jenkins
- Lab Deadline
- Lab Wrap-up

Deadlines and Reminders

- Deadlines
  - Lab 1 Due 10 minutes before Lab 2 meeting
    - Async sections due Tuesdays at 11:45pm ET

- Reminders
  - Start early on projects!
  - Attend office hours (must create ticket on MDH)
  - Piazza post quality (Include repo!)

Why Teams?

- Because as software engineers, you will (almost) NEVER work alone
  - Software is developed in teams
  - Have to work with rest of team to ensure product is built correctly, on time, and within budget

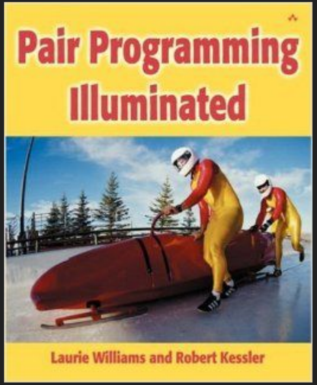
- Team projects allow for more interesting (i.e. larger) applications

- We do have some individual assignments to ensure common knowledge for working on teams!

What is Pair Programming?

“Pair programming is a simple, straightforward concept. Two programmers work side-by-side at one computer, continuously collaborating on the same design, algorithm, code, and test. It allows two people to produce a higher quality of code than that produced by the summation of their solitary efforts.”

Dr. Laurie Williams, *Pair Programming Illuminated.*


Pair Programming Illuminated
Laurie Williams and Robert Kessler

Pair Programming Roles

Driver

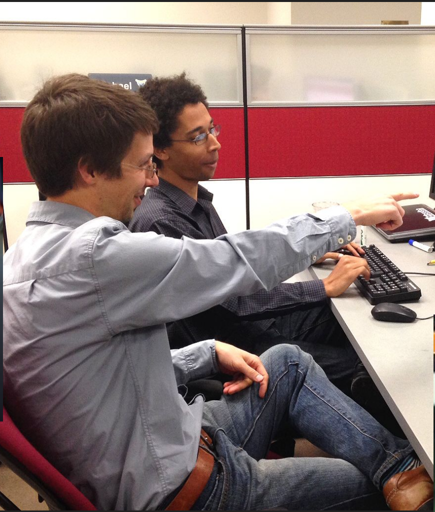
- Types or writes
    - Code, tests, documentation, etc.
- Leads the development
- Describes what they are thinking to the navigator
- Hands ON the keyboard/mouse

Navigator

- Engaged observer of driver’s activities
- Looks for tactical & strategic defects
- Notes problems in the code
- Make suggestions for a better implementation
- Hands OFF the keyboard/mouse

Roles are switched every 10-20 minutes!

Pair Programming in Action

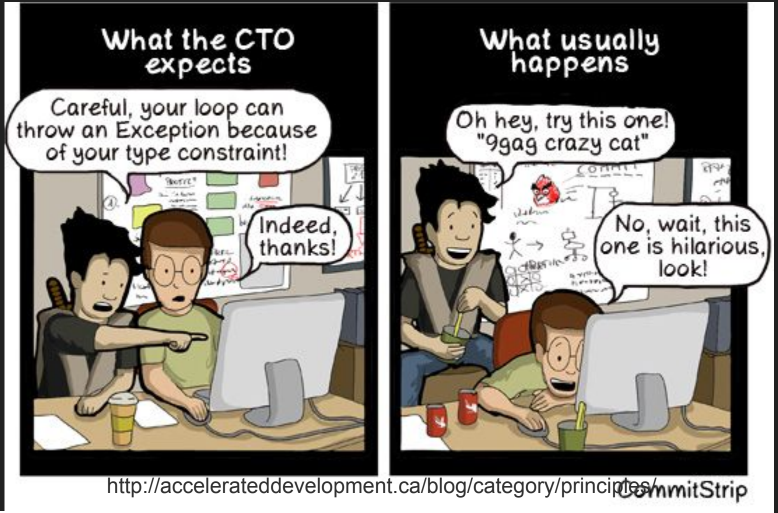


national center for
women & information technology
PAIR PROGRAMMING-IN-A-BOX
The Power of Collaborative Learning

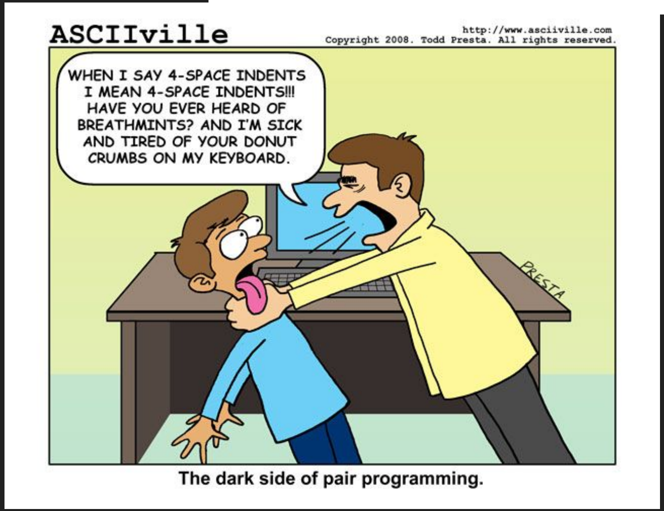
Sources:
http://collaboration.csc.ncsu.edu/laurie/pair.html
http://it.utah.edu/news/june_2014/node4_programming.php
https://www.ncwit.org/resources/pair-programming-box-power-collaborative-learning
https://www.thoughtworks.com/insights/blog/effective-navigation-in-pair-programming
https://www.youtube.com/watch?v=5ySLQ5_cQ34
https://studio.code.org/s/course1/stage/3/puzzle/1

Not Pair Programming

http://nelsonwells.net/2012/03/pair-programming/


What the CTO expects
Careful, your loop can throw an Exception because of your type constraint!
Indeed, thanks!
What usually happens
Oh hey, try this one! "9gag crazy cat"
No, wait, this one is hilarious, look!
CommitStrip

http://accelerateddevelopment.ca/blog/category/principles/

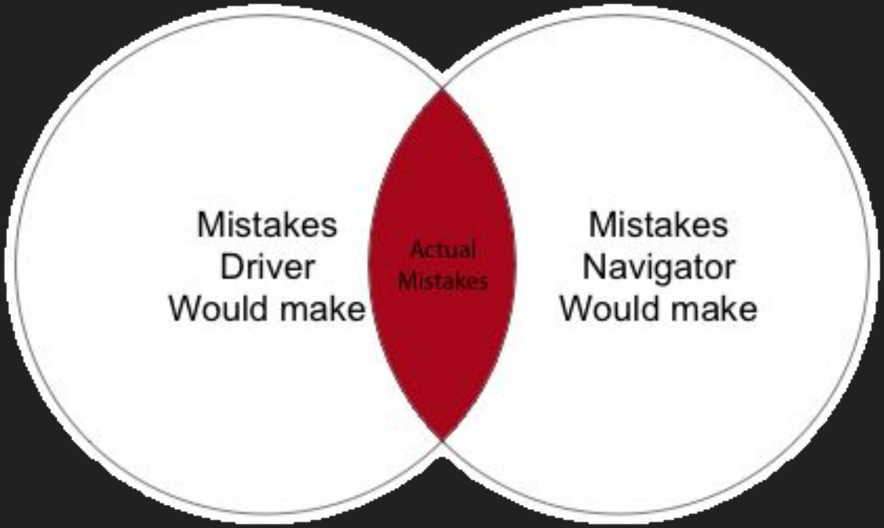

ASCIIville
http://www.asciiville.com
Copyright 2008. Todd Presta. All rights reserved.
WHEN I SAY 4-SPACE INDENTS I MEAN 4-SPACE INDENTS!!! HAVE YOU EVER HEARD OF BREATHMINTS? AND I'M SICK AND TIRED OF YOUR DONUT CRUMBS ON MY KEYBOARD.
PRESTA

The dark side of pair programming.

http://www.youtube.com/watch?v=kE0O-Q5D1fw

Pair Programming Benefits

- Higher quality code
- In about half the time
- With happier programmers
- Enhanced learning



http://llewellynfalco.blogspot.com/2011/04/value-of-pair-programming.html

Team Introductions

Team Introductions

Welcome to your team for CSC 217 Lab 1 through Lab 4!

Take a few minutes to get to know each other. Discuss the following:

- Exchange contact information and determine best methods for contact outside of lab
- Prior experience with Java
- What types tasks you do well with
- What types of tasks you want to improve upon or gain more experience in

Pair Activity

Your PTF will lead you through a pair activity!

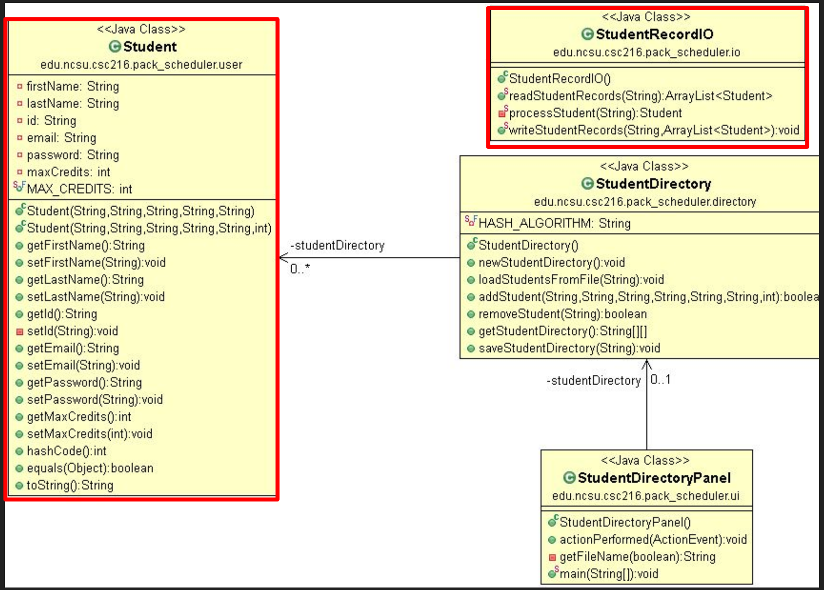
PackScheduler

PackScheduler - Students and the StudentDirectory

- PackScheduler is our lab project - we're writing a course registration system!
- We'll start with Student and a Student Directory
- Students (and their attributes) are stored in text files

Today's Focus

- Student (POJO)
- StudentRecordIO (I/O Review)



<<Java Class>>
Student
edu.ncsu.csc216.pack_scheduler.user

firstName: String
lastName: String
id: String
email: String
password: String
maxCredits: int
MAX_CREDITS: int

Student(String,String,String,String,String)
Student(String,String,String,String,String,int)
getFirstName():String
setFirstName(String):void
getLastName():String
setLastName(String):void
getId():String
setId(String):void
getEmail():String
setEmail(String):void
getPassword():String
setPassword(String):void
getMaxCredits():int
setMaxCredits(int):void
hashCode():int
equals(Object):boolean
toString():String

<<Java Class>>
StudentRecordIO
edu.ncsu.csc216.pack_scheduler.io

StudentRecordIO()
readStudentRecords(String):ArrayList<Student>
processStudent(String):Student
writeStudentRecords(String,ArrayList<Student>):void

<<Java Class>>
StudentDirectory
edu.ncsu.csc216.pack_scheduler.directory

HASH_ALGORITHM: String

StudentDirectory()
newStudentDirectory():void
loadStudentsFromFile(String):void
addStudent(String,String,String,String,String,String,int):boolea
removeStudent(String):boolean
getStudentDirectory():String[][]
saveStudentDirectory(String):void

<<Java Class>>
StudentDirectoryPanel
edu.ncsu.csc216.pack_scheduler.ui

StudentDirectoryPanel()
actionPerformed(ActionEvent):void
getFileName(boolean):String
main(String[]):void

Lab Overview

Lab activities are in Moodle

- Person 1: Download and import PackScheduler project into Eclipse workspace
- Person 1: Clone/Share/Stage/Commit/Push to Lab GitHub repository (provided)
- Person 2 & Person 3: Clone/Import Project into Eclipse workspace from cloned repo
- Write code…
- … while pair programming! (1 driver and 2 navigators - every 2nd or 3rd person is driver)
- If you have any technology questions, now is the time to troubleshoot!

Wrap-Up

General Wrap-Up

- Deadline Reminder (see board and lab assignment - make sure the deadline is for your section!)
- Exchange contact information with your partner
- Make a plan for finishing up the lab & record in README.md

Participation Outside of Lab (Guess which the teaching staff prefer?)

- If you pair program, note that in the commit comments so everyone gets credit!
- If you split the work, at least one contribution by each partner

REMINDER: We are expecting a significant contribution from all team members outside of lab!

Record Tasks & Owners

Tasks only get done when someone owns them!

Identify the tasks required to complete Lab 1

- Edit README.md to list the tasks required to complete Lab 1
- Add an owner to each task
- Add a deadline to each task

Deadlines should be at least 48 hours before the lab deadline so team members can help out and finish the lab if a team member runs into issues.

Notify team early if you run into problems with your tasks!