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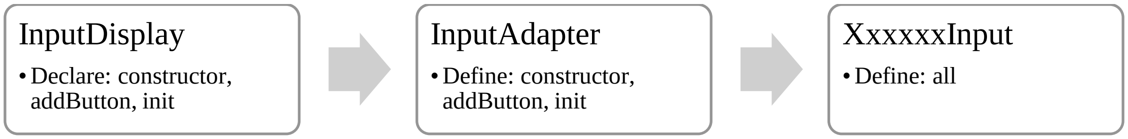
Project Proposal: Abdullah’s Toolbox, Accumulated Abstractions

Abstraction: View

Input Panel:

- Restricts user input to a set of input buttons.
- Describes what the input buttons do and allow.
- Includes a console line to display input via buttons.
- Shows which collections have been constructed via input.



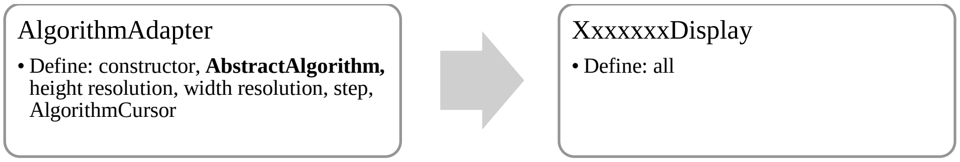
InputDisplay
- Declare: constructor, addButton, init

InputAdapter
- Define: constructor, addButton, init

XxxxxxInput
- Define: all

Algorithm Panel:

- Visual display of the algorithm and the steps the algorithm takes.
- Displays a connection between the core algorithm and real-world application via data-as object/value pair.
- Colors and visuals maximized for interface between beginner programmer and demo.
- Integrated cursor for interaction with the algorithm.
- Detail-oriented description of every algorithmic step accessible by the cursor.

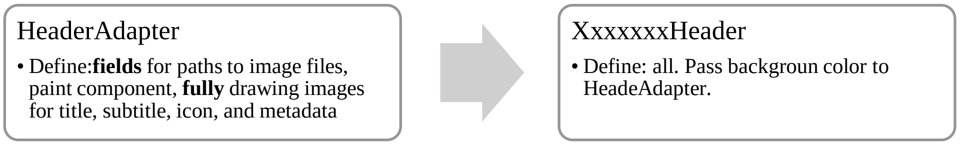


AlgorithmAdapter
- Define: constructor, **AbstractAlgorithm,** height resolution, width resolution, step, AlgorithmCursor

XxxxxxxDisplay
- Define: all

Header Panel

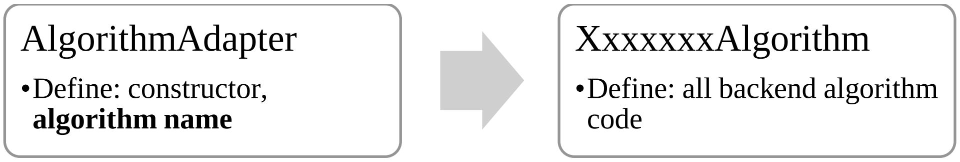
- Title and subtitle representing a stimulating algorithmic problem.
- Colorful and memorable picture highlighting algorithm’s invariant.
- Temporary: metadata showing author names, dates, university.



HeaderAdapter
- Define:**fields** for paths to image files, paint component, **fully** drawing images for title, subtitle, icon, and metadata

XxxxxxxHeader
- Define: all. Pass backgroun color to HeadeAdapter.

Abstraction: Model



AlgorithmAdapter

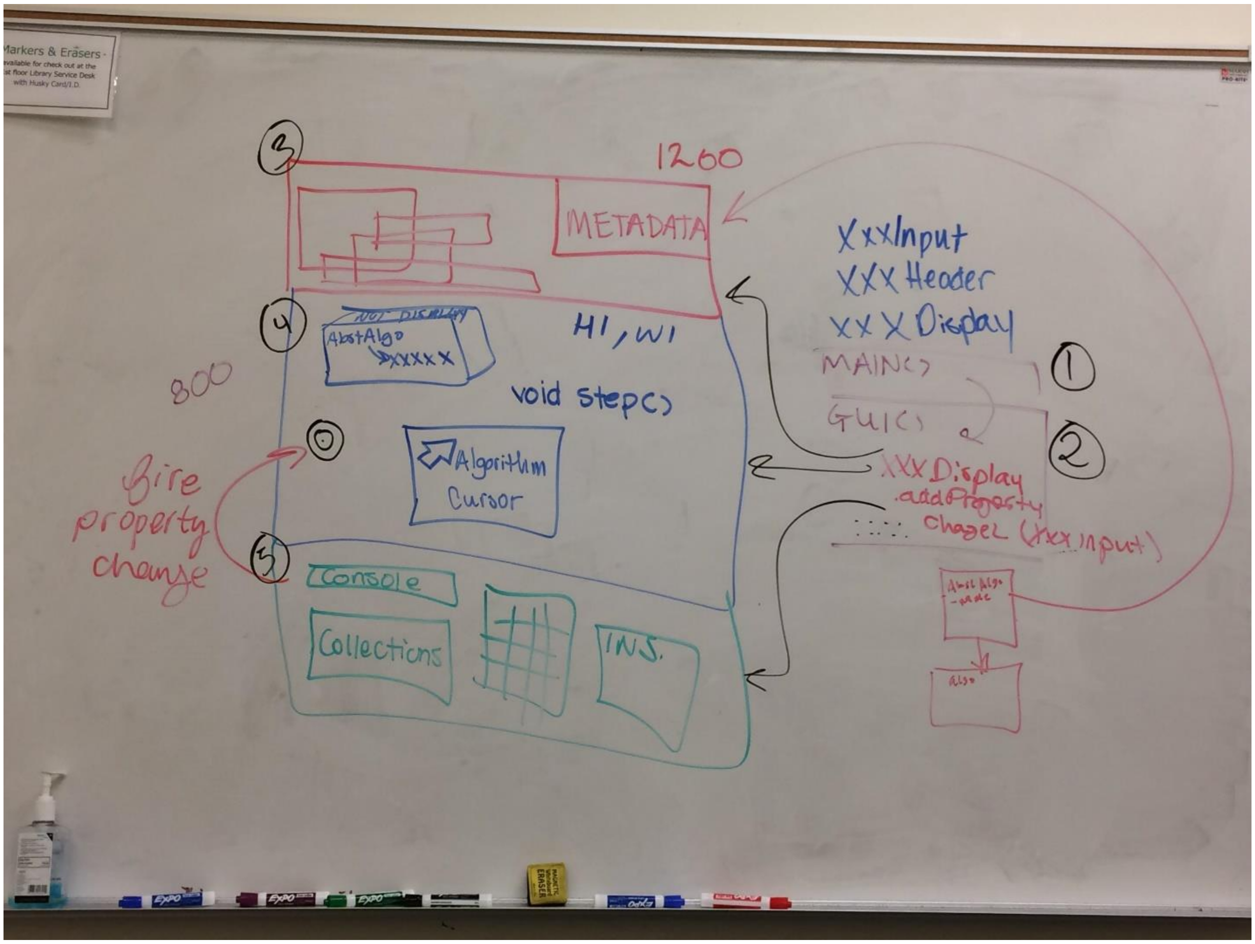
- Define: constructor, **algorithm name**

XxxxxxxAlgorithm

- Define: all backend algorithm code

Front-End Plan

Abstracting in Progress, 3 March 2017:



Multi-panel GUI layout, showcasing various backend integrations.

Libraries Required for Layered Classes

AlgorithmCursor

Use: encapsulate interaction from either the algorithm or the user.

Parameters: dimension (x, y)

* Overload steps function beyond two dimensions.

Methods: forward – moves cursor one position ahead.

FrontendLibrary

Use: separate fonts, colors, etc. from view and model classes.

AlgorithmGUICreator

Use: allow easy access to demo-level GUIs. Simple click, console, etc. input gives the user an automatic experience in the GUI demo listed in the master algorithm hierarchy.

GUIs

In Testing Environment:

Dynamic Programming

One-Dimensional Dynamic Programming

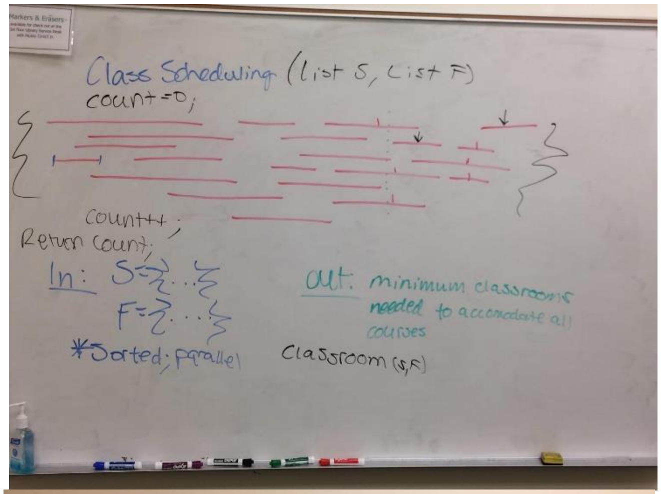
Coin Changing – Complete Dev Env. February 27

Multi-Dimensional Dynamic Programming

Dungeon Escape – Complete Dev Env. March 1

In Development Environment:

Class Scheduling


Class Scheduling (list S, List F)
count=0;
count++;
Return count;
In: S={...}
F={...}
*Sorted; parallel
out: minimum classrooms needed to accomodate all courses
Classroom (S,F)