



IMGD 1001 - The Game Development Process: Architecture

by

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(with lots of input from Mark Claypool!)



Outline

- What is architecture
- A few notes
- Let's try it!

Architecture

- "The design of the built environment"
- The part of the code that isn't code
- The shape of the design
 - High level: the overall arrangement of the pieces
 - Low level: the shape and style of the individual pieces

How to Do It

- Write down the user stories
- Identify the key elements
- Create component lists
- Define the class tree
- Iterate over the class tree
 - Work out the details of each element

Let's Work Through One

- We're going to design a game
- We're not doing the game design -- that's already done
- You might have heard of it.
 - It's called "Tetris"

Write Down the User Stories (1 of 5)

- We need a routine to sort a list
- A list of tasks the player is trying to accomplish
- Be as exhaustive as possible
- Ex:
 - Player is interrupted and needs to pause: the game must have a pause key and freeze instantly, with sound muted.
 - Player wants to understand current state at all times: game level, character's health, number of lives, and current score is always on screen

Identify Key Design Elements (2 of 5)



- Write down the key objects in your design
- What are the major pieces?
- Ex:
 - Score area
 - Player's spaceship
 - Missiles and buttons
 - Enemy objects
 - Particle systems
 - Game boundary areas

Create Component List (3 of 5)



- Identify commonalities among identified game objects
 - Sometimes NPCs and player characters are similar, etc
- Create and name a set of base object types (classes)
 - Spaceship
 - Enemy
 - Bullet
 - Missile
 - Wall

Define the Class Tree (4 of 5)

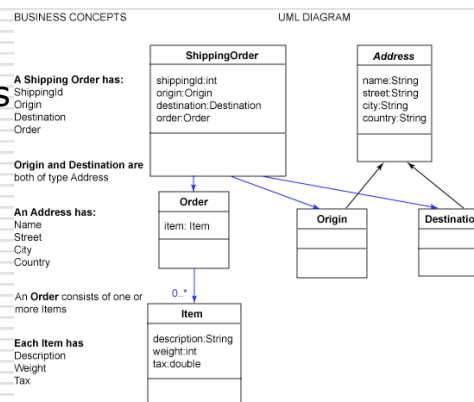


- ❑ It'll be close to the component list, but may not be identical
- ❑ Sometimes game objects don't map so neatly to classes
 - You might be better off implementing capabilities ("controllable", "explodable")

For Each Class in the Tree (5 of 5)



- ❑ Define its capabilities
 - Functions / methods
- ❑ And the data it has to store
 - Member variables
- ❑ If you're a visual thinker, UML might help
- ❑ More on this in CS!



You're Probably not Done!

- But you're a lot better prepared
- Keep this documentation up-to-date
 - It helps others who come on board later

Tetris Key Features

- Colored blocks fall from the sky
- They have different shapes
- Players arrange them as they fall to fill up rows
- Completed rows are destroyed
- Player loses when there's nowhere to put a new piece

