



Case Study as Educational Tool

Describes a real situation

NO?

- Provides an interesting example from which to draw certain lessons
- Provides a context for comparing theoretical ideas against real-world experience





Goals for Java MBS

- Similar to C++ MBCS
 - ◆ Teachers can pick it up faster.
 - ◆ Students can use it as they learn Java.
- Different from C++ MBCS
 - ◆ There are differences in language.
- ◆ There are differences in curriculum.

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(F)



Ì	P	С	all	ir	ıg c	construct	ors		
	Bou	nde	edEr	ıv		= new Bour	ndedE	nv(ENV_ROWS)	,
								ENV_CO	LS);
***	Fi	sh	f1			Fish(env,		Location(2,	2));
	Fi		f2			Fish(env,		Location(2,	3));
	Fi					Fish(env,		Location(5,	8));
									55























Constructors

- Initialize instance variables
- Add the fish to the environment
 A Fish constructor adds the fish to the Environment, so there is no reason to add it again.
 - It is critical that the fish and the environment agree on the fish's location at all times. This is why a fish adds itself in its constructor, thus ensuring that the fish and the environment agree on the location as soon as the fish is constructed.



NO	Fish constructor (ng 28) calls initialize							
1								
	private void initialize(Environment env,							
	Location loc, Direction dir, Color col)							
	theEnv = env;							
	<pre>myId = nextAvailableID;</pre>							
ŝ	<pre>nextAvailableID++;</pre>							
8	myLoc = loc;							
	myDir = dir;							
	myColor = col;							
	<pre>theEnv.add(this);</pre>							
	<pre>// object is at location myLoc in</pre>							
	// environment							
	5							



move()

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ocation nextLoc = nextLocation()

f (! nextLoc.equals(location())

Location oldLoc = location()

Direction newDir =

changeDirection(newDir).

Chapter 2 nextLocation method Get list of empty neighboring locations (call emptyNeighbors) Remove location behind fish from list If there are any empty neighbors left, randomly choose one; otherwise return current location

Chapter 2 Analysis Question: Why does the Fish class need an emptyNeighbors method? Wh

emptyNeighbors method? Why doesn't
nextLocation just call the
neighborsOf method from the
Environment class?

Chapter 2

Analysis Question-ANSWER:

- The neighborsOf method returns all valid neighboring locations, not just those that are empty.
- The emptyNeighbors code that obtains a fish's empty neighbors from the environment could have been included in nextLocation but we want each method to perform one wellend task.
- Including the code from emptyNeighbors in nextLocation would have over-complicated nextLocation and made it less readable.



Chapter 4

Specialized Fish

Inheritance

Dynamic Binding

Different patterns of movement

◆Darters (DarterFish)

Slow fish (SlowFish)



Levels

(FC)









What resource materials will the students be given for the AP CS Exams in Java?

For the Java AP CS Exam the students will have a Java Subset Quick Reference Guide for either AP CS A or AP CS AB. The reference guide will contain the Java Language classes presently printed at the end of the AP Java subsets. In addition to this, the students taking the APCS-A Exam will receive the MBS Case Study Appendix B, C, D, F, G.