

Appendix E

Quick Reference for A Test

Quick Reference for Core Classes and Interfaces

Simulation Class

```
public Simulation(Environment env, EnvDisplay display)
public void step()
```

Environment Interface

```
public int numRows()
public int numCols()

public boolean isValid(Location loc)
public int numCellSides()
public int numAdjacentNeighbors()
public Direction randomDirection()
public Direction getDirection(Location fromLoc, Location toLoc)
public Location getNeighbor(Location fromLoc,
                             Direction compassDir)
public ArrayList neighborsOf(Location ofLoc)

public int numObjects()
public Locatable[] allObjects()
public boolean isEmpty(Location loc)
public Locatable objectAt(Location loc)

public void add(Locatable obj)
public void remove(Locatable obj)
public void recordMove(Locatable obj, Location oldLoc)
```

Quick Reference for Fish Class

Fish Class (implements Locatable)

```
public Fish(Environment env, Location loc)
public Fish(Environment env, Location loc, Direction dir)
public Fish(Environment env, Location loc, Direction dir, Color col)
private void initialize(Environment env, Location loc, Direction dir,
                        Color col)
protected Color randomColor()

public int id()
public Environment environment()
public Color color()
public Location location()
public Direction direction()
public boolean isInEnv()
public String toString()

public void act()

protected boolean breed()
protected void generateChild(Location loc)
protected void move()
protected Location nextLocation()
protected ArrayList emptyNeighbors()
protected void changeLocation(Location newLoc)
protected void changeDirection(Direction newDir)
protected void die()
```

Quick Reference for Specialized Fish Subclasses

DarterFish Class (extends Fish)

```
public DarterFish(Environment env, Location loc)
public DarterFish(Environment env, Location loc, Direction dir)
public DarterFish(Environment env, Location loc, Direction dir, Color col)

protected void generateChild(Location loc)
protected void move()
protected Location nextLocation()
```

SlowFish Class (extends Fish)

```
public SlowFish(Environment env, Location loc)
public SlowFish(Environment env, Location loc, Direction dir)
public SlowFish(Environment env, Location loc, Direction dir, Color col)

protected void generateChild(Location loc)
protected Location nextLocation()
```

Quick Reference for Utility Classes and Interfaces (public constants, constructors, and methods only)

Case Study Utility Classes and Interfaces

Debug Class

```
.  
static boolean isOn()  
static boolean isOff()  
static void turnOn()  
static void turnOff()  
static void restoreState()  
static void print(String message)  
static void println(String message)
```

Direction Class

```
.  
NORTH, EAST, SOUTH, WEST, NORTHEAST,  
NORTHWEST, SOUTHEAST, SOUTHWEST
```

```
Direction()  
Direction(int degrees)  
Direction(String str)  
int inDegrees()  
boolean equals(Object other)  
Direction toRight()  
Direction toRight(int degrees)  
Direction toLeft()  
Direction toLeft(int degrees)  
Direction reverse()  
String toString()  
static Direction randomDirection()
```

EnvDisplay Interface

```
.  
void showEnv()
```

Locatable Interface

```
.  
Location location()
```

Location Class

```
Location(int row, int col)  
int row()  
int col()  
boolean equals(Object other)  
int compareTo(Object other)  
String toString()
```

RandNumGenerator Class

```
.  
static Random getInstance()
```

Java Library Utility Classes

java.util.ArrayList Class (Partial)

```
.  
boolean add(Object o)  
void add(int index, Object o)  
Object get(int index)  
Object remove(int index)  
boolean remove(Object o)  
Object set(int index, Object o)  
int size()
```

java.awt.Color Class (Partial)

```
black, blue, cyan, gray, green,  
magenta, orange, pink, red,  
white, yellow  
  
Color(int r, int g, int b)
```

java.util.Random Class (Partial)

```
int nextInt(int n)  
double nextDouble()
```