Comp-361 : Game Programming
Lecture 5

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Winter 2008

Time Slot

Monday	Wednesday
9h45	9h45
10h00	10h00
10h15	10h15
10h30	10h30
10h45	10h45
11h00	11h00
11h15	11h15

The Teams

Team Blown Away	2
Jmonkeys	7
The Admiralty	13
ZombiePirateNinjaMonkey	13
The Gamesters	15
BackShot	36
The Hacks	37
Team Magadath	41
Sons of Liberty	49
Vote*	63
The Broken Rubbers	50
Purple Dinosaurs!	77

Meetings

- McConnell 322
- Be on time!

What you should be doing?

- You should have a team
- You have nominated a team leader
- You should have an initial plan
  - What rules do you want to changes?
  - What extra features do you want to do?
  - How to split the work?
- You should be exploring technologies
- You do not need to have started coding

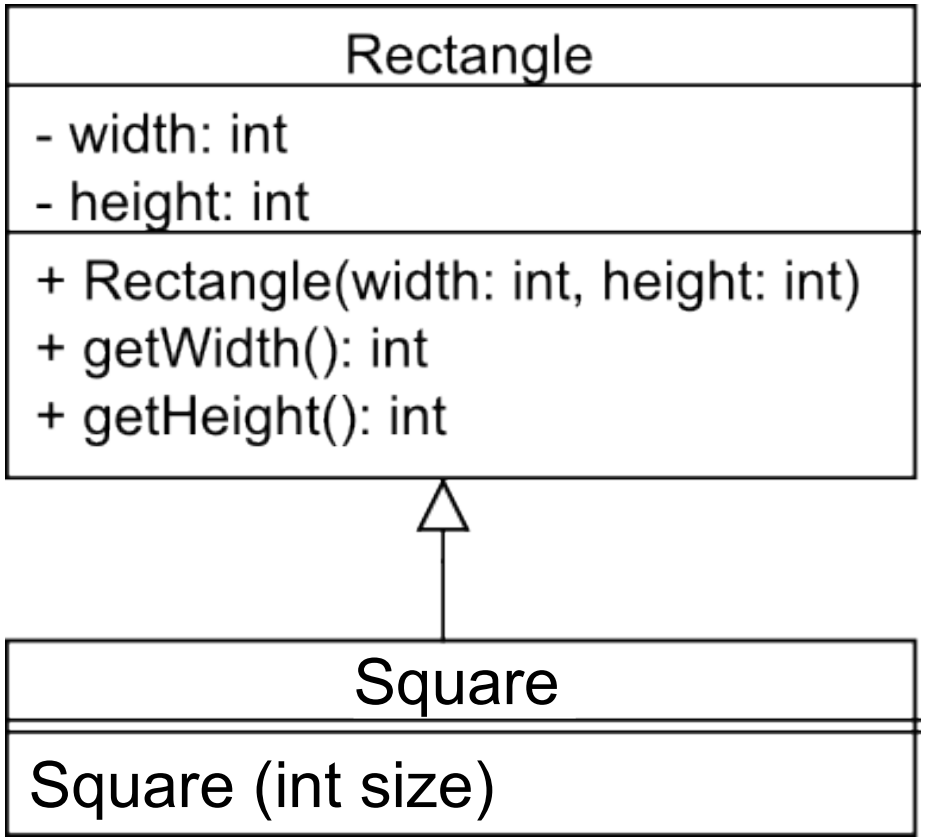
Comp 361 - First Deliverable

- Short (3 or 4 pages) document with the following
  - The name of the team members.
  - How work will be tentatively broken down (with initial timetable).
  - What technology do you plan to use.
  - Any changes you plan to make to the game or the rules.
  - A simple UML diagram describing the main data structures of the game.
  - Two drawings illustrating what Phase 1 and Phase 3 of the game might look like.
- The grading will be based on completeness. This includes
  - All the basic game components should be in the class diagram.
  - The illustration should allow me to understand how to execute the basic actions of the game.
- Due January the 30th, in class
- Late policy:
  - Max grade is reduced by 20% per day late.
  - Hand in only by WebCT only if late.

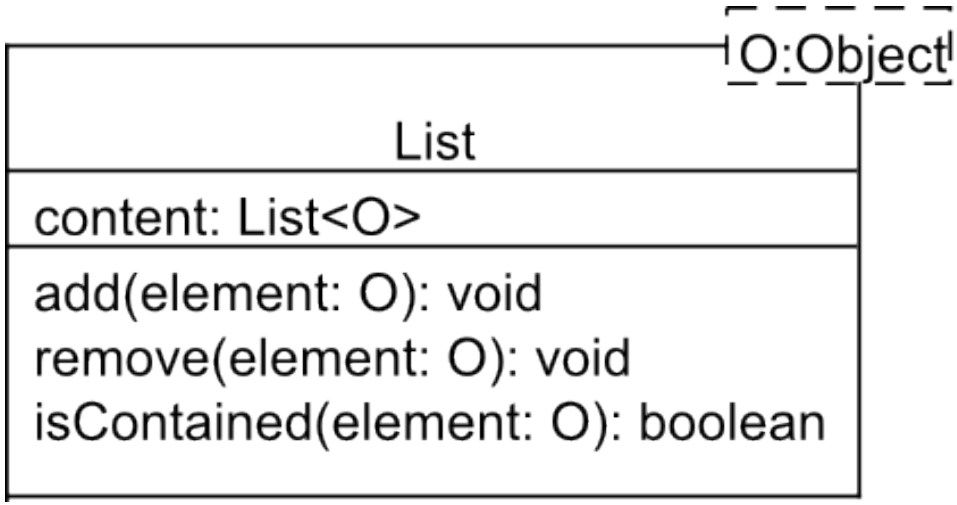
Visibility

- Prefixes for attributes and methods
  - \+ public – visible to any class
  - # protected – visible to any subclass *
  - – private – visible only to class itself
  - ~ package – visible to any class within enclosing package
- Visibility is a class feature. It is found only in class diagrams.

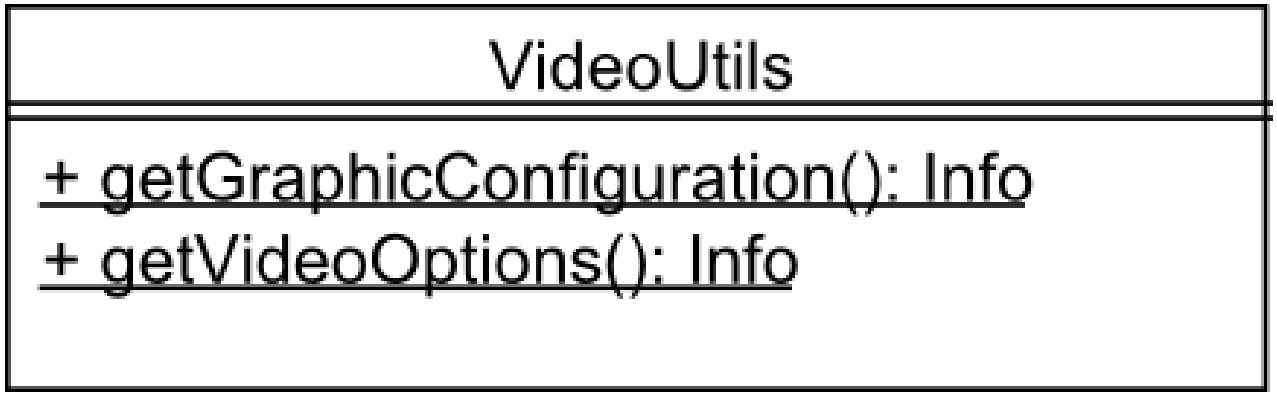
Inheritance



Templates


O:Object
List
content: List<O>
add(element: O): void
remove(element: O): void
isContained(element: O): boolean

Static Members



Minueto In a Nutshell

- Multi platform 2D Graphic Programming Framework for Game Development in Java
  - Windowed and Full-Screen Graphics
  - Loading and displaying images (jpg, png, …)
  - Drawing standard shapes (lines, squares, circles, …)
  - Displaying text
  - Scaling and rotating images
  - Game Input: Mouse and keyboard

Fire in the Sky

Minueto

- Very simple to learn and use
  - “Can be learn in less than an hour”
- Allow a programmer to create a window and draw an image in less than 10 lines of code
- Multi-platform
  - Provided by Java
- Yet provide good performance!

Isn’t Java Too Slow for Games?

- Several games have been successfully ported to Java
  - Quake 2
- Some commercial games written in Java have been released
  - Law and Order, Dead on the Money
  - Bang Howdy
  - Rune Scape
  - Puzzle Pirates

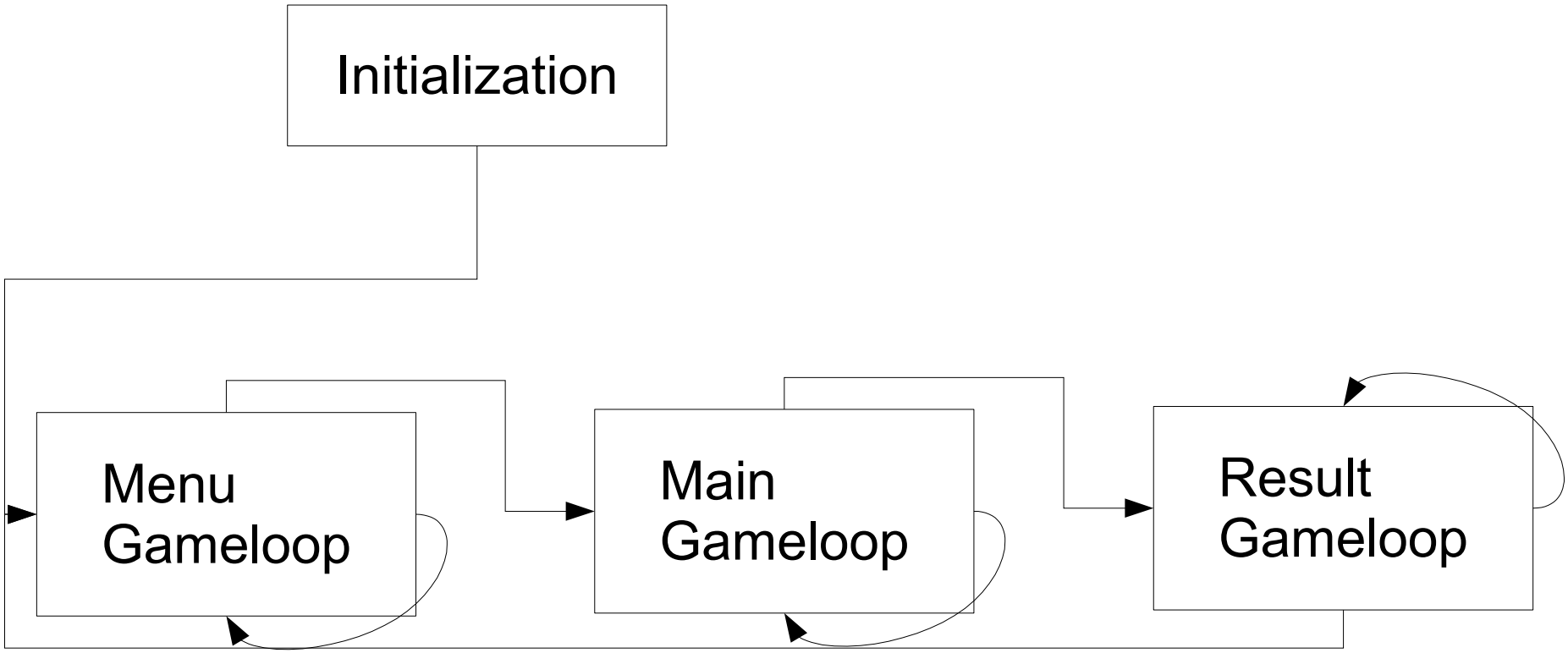
Pong 36-Hours Challenge

- Build a Pong game using Minueto.
  - http://en.wikipedia.org/wiki/Pong
- The game archive (zip) should not be more than 2 Mb.
- Game will be evaluated on look and playability.
- Best game gets a Veto coupon.
- If more than 10 people participate, a Veto coupon will also be drawn.
- Hand-in by WebCT.

Components of Game

- Initialization
  - Create Game Window
  - Load any resources needed by the game
- Gameloop
  - Check for input
  - Update logic of game
  - Render the screen
  - Loop back to start of game loop

Typical Game



Init – Create Window

```
MinuetoWindow mwiWindow = new
          MinuetoFullscreen(640, 480, 32);
```

or

```
MinuetoWindow mwiWindow = new
          MinuetoFrame(640, 480, true);
```

then

```
mwiWindow.setVisible(true);
```

FullScreen

- Standard resolutions
  - 640x480
  - 800x600
  - 1024x768
  - 1280x1024
- Color depth
  - Recommended: 32

Init – Load Resources

```
MinuetoImageFile mimDemoImage;

try {
   mimDemoImage = new
      MinuetoImageFile("strawberry.jpg");
} catch (MinuetoFileException e) {
   System.out.println("Could not load file");
   return;
}
```

Example GameLoop

```
while (true) {
    // handle all input from player
    // and update state
    while (meqQueue.hasNext()) {
          meqQueue.handle();
    }

    // draw the new frame
    mwiWindow.draw(…);
    mwiWindow.render();

    Thread.yield();
}
```

GameLoop – Input

- Input is external stimuli to your game.
- Input can come from:
  - Keyboard
  - Mouse
  - Disk I/O
  - Network

Keyboard Listener

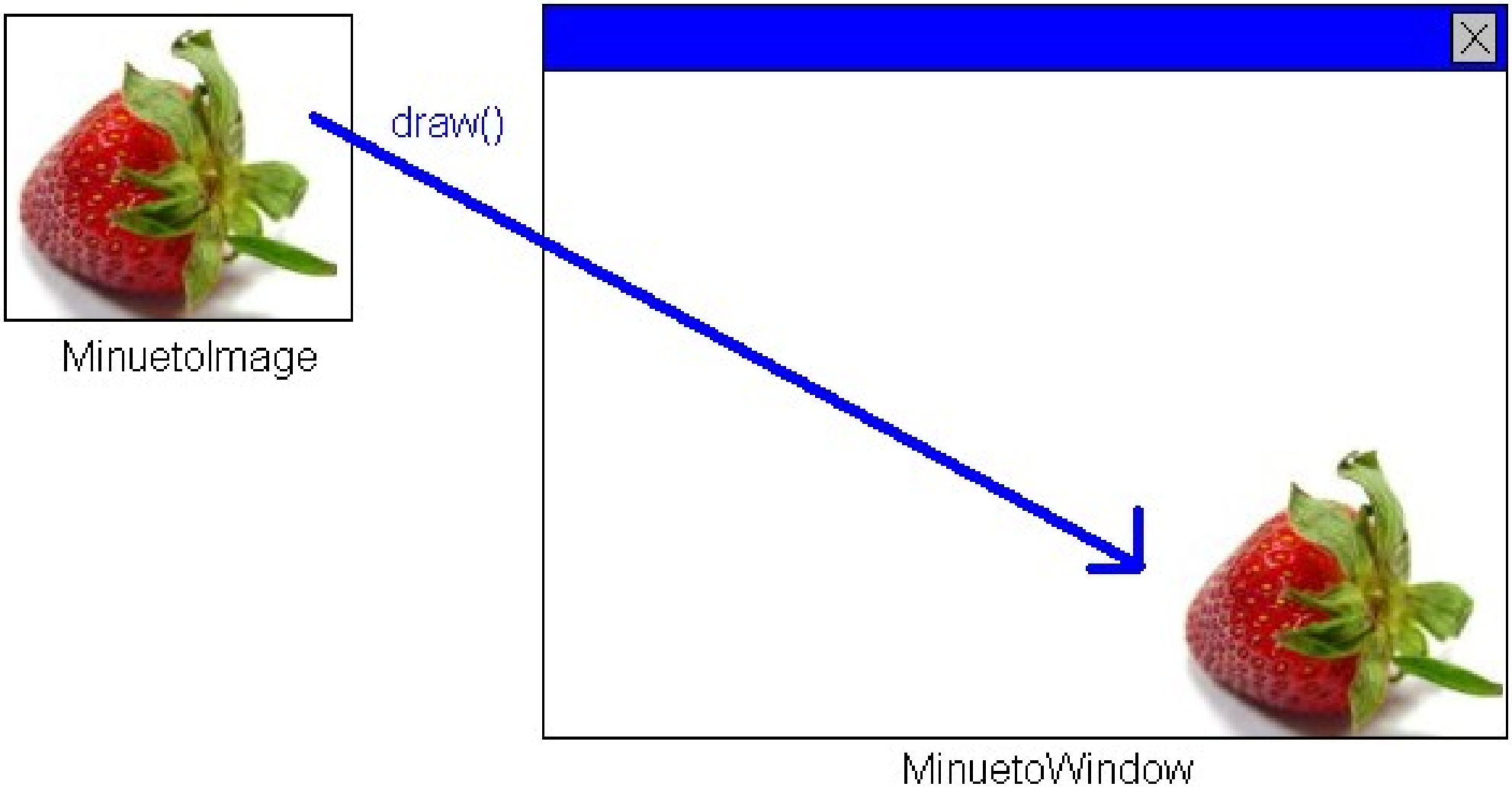
```
public class DemoKeyboardHandler implements
     MinuetoKeyboardHandler {

   public void handleKeyPress(int iValue) { }
   public void handleKeyRelease(int iValue) { }
   public void handleKeyType(
                  int iValue, char keyChar) { }
}

mwiWindow = new MinuetoFrame(640, 480, true);
meqQueue = new MinuetoEventQueue();

mwiWindow.registerKeyboardHandler
(new DemoKeyboardHandler(), meqQueue);
```

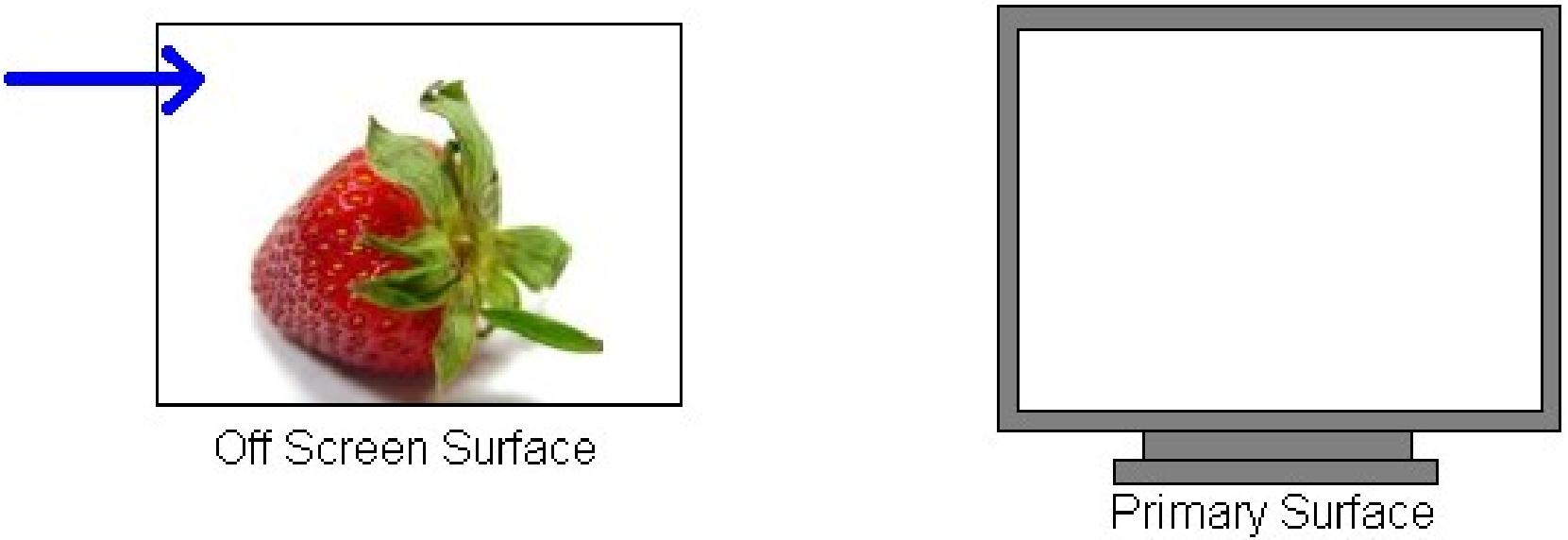
Drawing



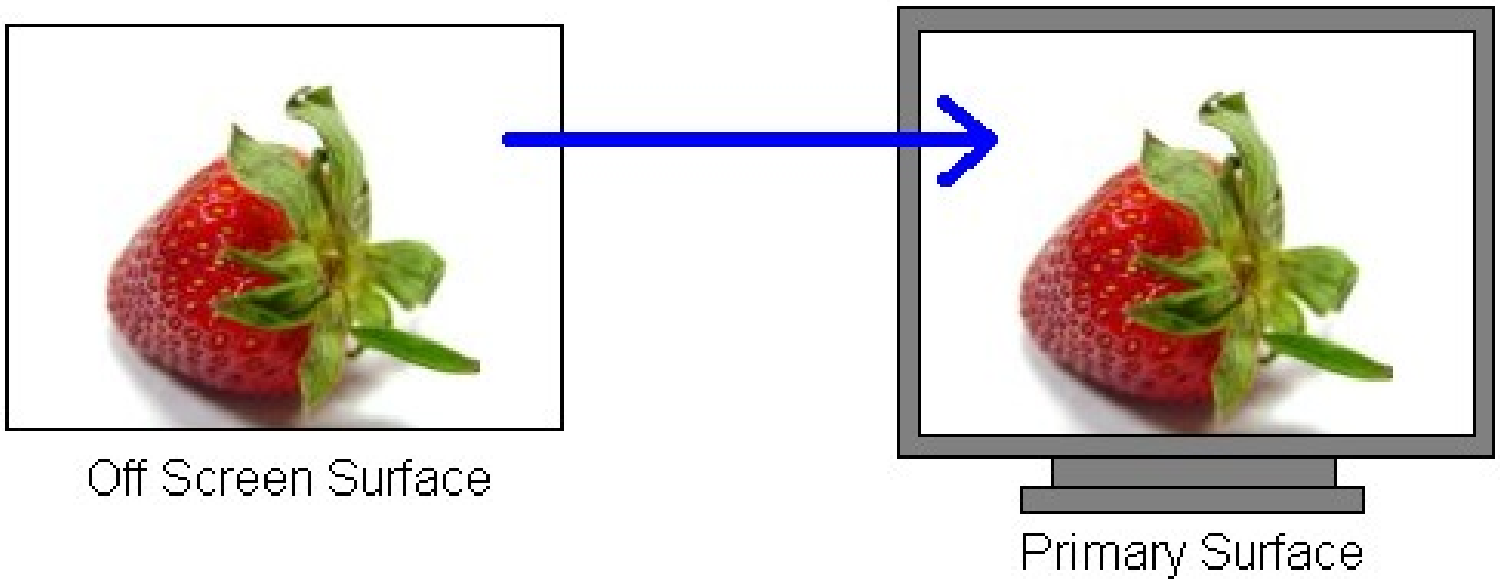

```
mwiWindow.draw(mimDemoImage, 100, 500);
```

Double Buffer

1. Draw on the off screen surface.



2. Copy the content of the off screen surface on the primary surface (screen).



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    mwiWindow.render();

    Thread.yield();
}
```

More Minueto

- Visit http://minueto.cs.mcgill.ca/
  - For step by step instructions, check out the howtos
  - When working with Minueto, the APIs are your best friend
- Download Minueto
  - You'll find 25 samples showing how to use Minueto
  - You also get your own local copy of the API
- Ask the T.A.s
  - It's their job is to help you