



Internet Computing

Advanced Multimedia Development (AMMD)



2004



ActionScript & Program Design

- Review – past few weeks
- Flash ActionScript
 - Conditional Statements
 - Loops
 - Variable Type Conversion
 - Logical Operators
- Project 1 Marking Scheme
- Program Design
- Simple Game: Mouse Chaser



Review – past few weeks

- Flash Structure - Lecture
- Flash Animation Examples - Lecture
- Basic ActionScript - Lecture
- Storyboarding – Tutorial
- Program Design – Tutorial
- Lots of Flash Animation – Lab
- Basic ActionScript – Lab

- Project 1 – Apply => Flash Environment
- Start ActionScript Game Programming



Conditional Statements

The if.. else .. conditional
Real life (game) situation is full of if..else..
Situations (ask for example)

```
myNumber = 10;  
if (myNumber >20)  
{  
    trace ("myNumber is greater than 20");  
}  
else  
{  
    trace("myNumber is less than or equal to 20");  
}
```



Nested Conditional

Put if statement inside a code block associated with another if statement

```
myNumber = 10;
if (myNumber <20)
{
    trace("myNumber is less than 20");
    if (myNumber <10)
    {
        trace("myNumber is less than 10");
    }
}
```



Conditional - Switch

The switch statement

A elegant way to string together a series of if ..

```
MyNumber = 2;
switch (MyNumber) {
case 1 :
    trace("case 1 tested true");
    break;
case 2 :
    trace("case 2 tested true");
    break;
case 3 :
    trace("case 3 tested true");
    break;
default :
    trace("no case tested true");
}
```




Loops – while Loop

Real life (game) situation is full of while loops
(ask for example)

```
myNumber = 1;  
while (myNumber<10)  
{  
    trace(myNumber);  
    myNumber++;  
}
```



Loops – for Loop

for loop is a variation on the while loop

```
for (myNumber=0; myNumber<10;  
myNumber=myNumber+1)  
{  
    trace(myNumber);  
}
```




Variable Type Conversion

When a variable of one type is used where a variable of a different type is expected, Flash does an automatic type conversion.

Example: non-zero = true, 0 to false
Number to Boolean

```
if (-102.4) trace ("this will print");  
if (50326) trace ("this will print");  
if (0) trace ("this will NOT print");
```



Variable Type Conversion

Flash does an automatic type conversion.

Number to String

```
myResult1="Hello" + 532.8;  
myResult2=-4982 + "hello" + 32.6;  
trace(myResult1);  
trace(myResult2);
```



Logical Operators

AND Operator => &&

OR Operator => ||

NOT Operator => !

```
myNumber = 25;  
if (myNumber >= 20 && myNumber <=30)  
{  
    trace("in range");  
}
```

```
myNumber = 35;  
if (myNumber < 20 || myNumber >30)  
{  
    trace("out of range");  
}
```



Logical Operators Precedence

&& has higher precedence than ||, so all && will be evaluated first

```
trace (true && false || true && true);  
trace (true || false && true || true);  
trace (true && true && true || true);  
trace (true || false && false);
```



Project 1

Submission will be next week lab session

Marking Scheme (minor changes)

Show example again



Program Design

A program is a set of instructions written so the computer can follow them.

Program Development Cycle

It is about planning...

- ⇒ Poor planning is damaging
- ⇒ Planning saves time
- ⇒ Good program design makes coding simple
- ⇒ Cool...



Program Development Cycle

Review the specification

Informal Design

- List major tasks

- List subtasks, sub-subtasks, so on

Formal Design

- Create formal design from tasks list

- Desk check design

Code and compile program

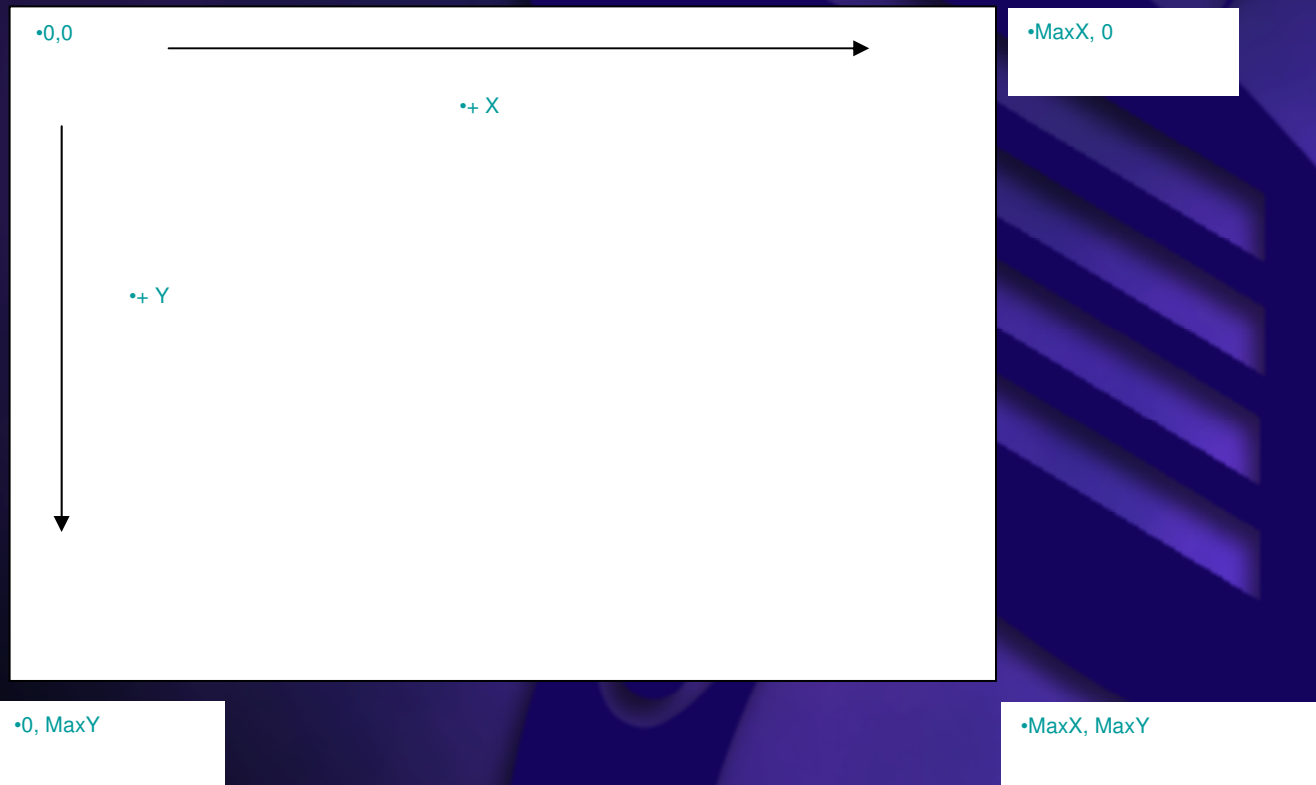
Test and Debug the program

Use and maintain the program



Mouse Chaser

Show game Mouse Chaser
The Coordinates System





Mouse Chaser

Review the specification

Informal Design

- List major tasks

- List subtasks, sub-subtasks, so on

Formal Design

- Create formal design from tasks list

- Desk check design

Code and compile program

Test and Debug the program

Use and maintain the program



Mouse Chaser

Review the specification

Idea

Write design document
etc...

Not to cover for this lecture

This lecture shows...

List major tasks

List subtasks, sub-subtasks, so on

...

Coding



Mouse Chaser

Major Tasks

- Obtain Art
- Script Organization
- Bat chases (follows) the user's mouse pointer, If Bat reaches pointer, ...
- Target when clicked, move randomly ...



Mouse Chaser

Major task: Obtain Art

Subtasks:

- The critter
- The critter's home
- The mouse pointer
- The target
- The score display

Show "mouse chaser unfinished.fla"



Mouse Chaser

Major task: Script Organization

Subtasks:

- Frame 1 Frame Script to control the game
- Instance Scripts attached to instances
- Develop line of communication between different pieces of scripts

Show “mouse chaser.fla” the finished file’s code structure



Mouse Chaser

Major tasks: Bat chases the user's mouse pointer

Subtasks

- Move the bat
- Test to see if the bat has caught the mouse
- If the mouse has been caught,
 - test for a high score
 - reset the score
 - reset the speed
 - move the bat home

Show "mouse chaser major 1 fla"



Mouse Chaser

Major tasks: Target when clicked, move randomly

Subtasks:

- Increase the score
- Increase the speed
- Move the bat home
- Move the target randomly

Show “mouse chaser major 2 fla”



Conclusion

That's how to start to code a game

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