COMP 1010- Summer 2015 (A01)

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Office hours

Monday

Wednesday

AFTER CLASS

10:30-11:30

Student Accessibility Services

Volunteer Note-takers Needed!

If you would like to volunteer, and receive a reference letter for your time, please login to JUMP and click on the Student Accessibility Services link.
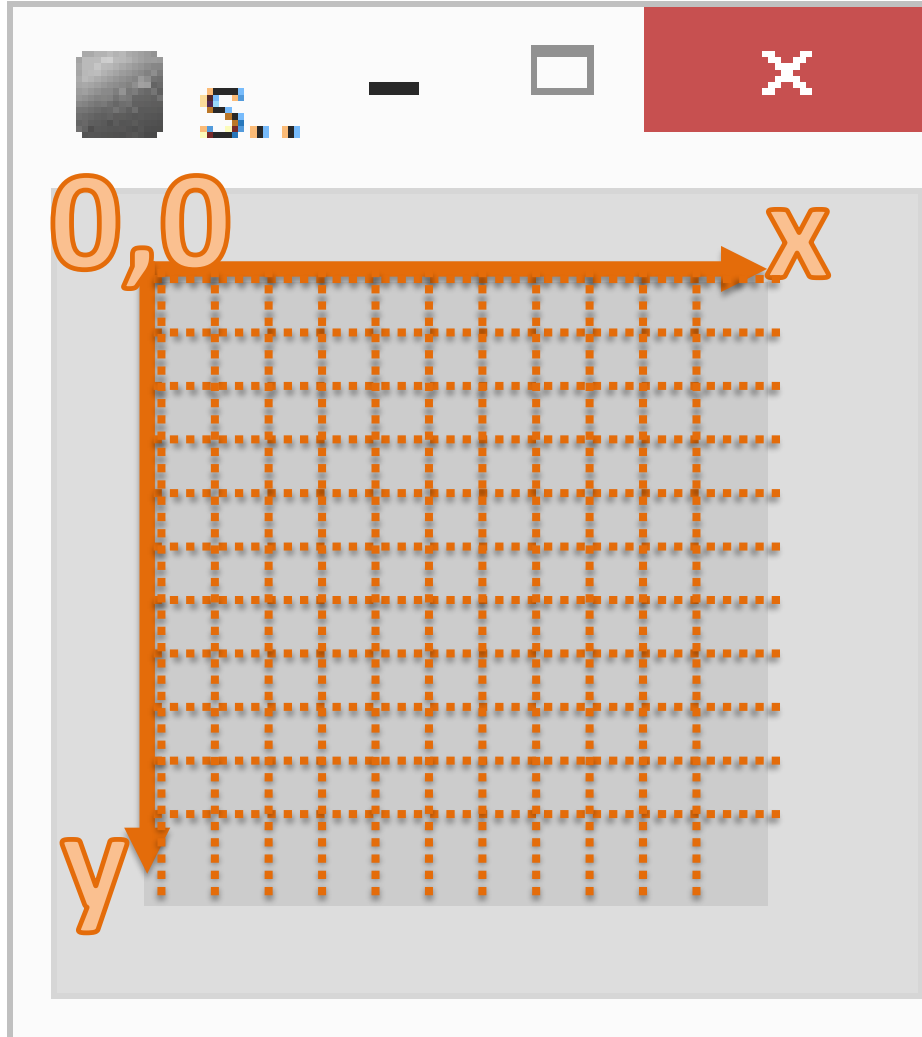
Volunteering is now easier than ever, you can upload notes directly to JUMP in the Student Accessibility Services scheduler. Thank you!

UNIVERSITY of MANITOBA
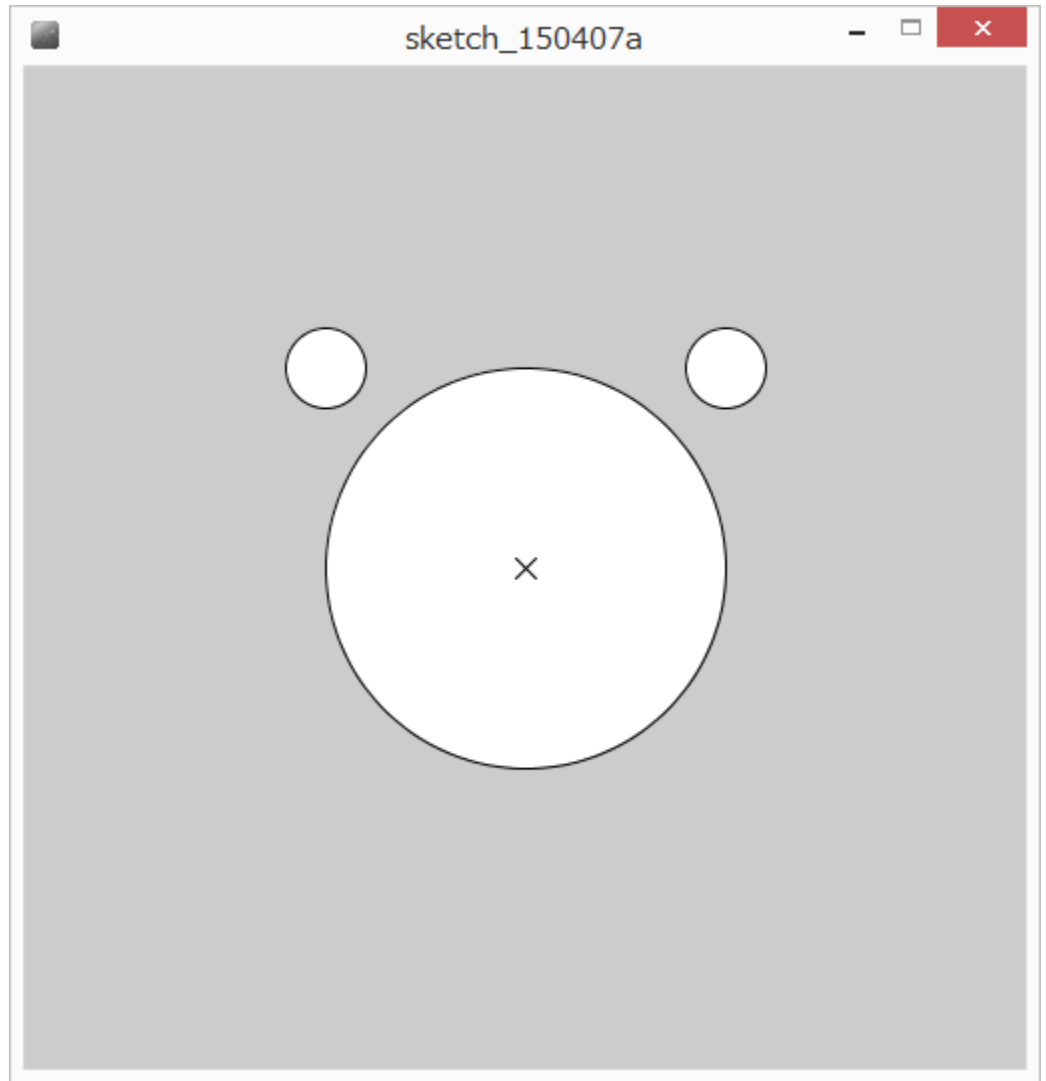
The Canvas co-ordinate system

Euclidean coordinates

0,0 at top left

Let's draw an image!

(500x500 canvas)

solution

```
size(500,500);
ellipse(250,250,200,200);
ellipse(150,150,40,40);
ellipse(350,150,40,40);
line(245,245,255,255);
line(255,245,245,255);
```

What is the coordinate of the bottom right corner?

size(500,500);

line(0,0,499,499);

statements are run sequentially top to bottom

The order of commands to processing changes the result

size(500,500);
line(225,225,275,275);
ellipse(250,250,200,200);

Where is the line???

comments

Quick! What does this program do?

```
size(500,500);
ellipse(250,250,300,300);
triangle(375,80,300,150,400,200);
triangle(125,80,200,150,100,200);
ellipse(175,225,60,30);
ellipse(325,225,60,30);
ellipse(175,225,15,30);
ellipse(325,225,15,30);
line(250,300,200,275);
line(250,300,300,275);
line(250,300,190,300);
line(250,300,310,300);
line(250,300,200,325);
line(250,300,300,325);
ellipse(250,300,30,30);
```

comments

English language additions to a program to help a programmer understand what is going on.

The computer ignores comments – for humans only.

comments for readability

computer code is not always obvious and you may want to document your reasons:

what does a **statement** do?

if it looks odd, why are you doing it that way?

what big function does some block of **statements** do?

who wrote this code – who should I ~~fire~~ ask for help from?

all reasons for comments

overall making your program easy to read and understandable!

helps you understand! (fewer bugs!)

helps others understand (real-world!)

you lose marks if you don't!

block comments

start with the characters /*

end with the characters */

EVERYTHING in between is ignored by processing

```
/*  eric the fish */
/*  eric the fruit bat, and,
    eric the cat, and,
    eric the kangaroo */
/*******************
 =^.^=  O_O  -_- o_O
*******************/
```

Header block – common (and required) block comment

Put a block comment at the beginning of your program explaining what it does…

```
/*******************
* Cat Face! Draw a cat face on the screen
* author: Teo the dog
* version: try #awesome
* purpose: to show how a cat can be drawn
*******************/

size(500,500);
ellipse(250,250,300,300);
triangle(375,80,300,150,400,200);
triangle(125,80,200,150,100,200);
ellipse(175,225,60,30);
ellipse(325,225,60,30);
...
```

in-line comments

For shorter bits

use the characters: //

not ╲╲

everything after // is a comment until the end of
        the line

line(0,0,500,500); // a diagonal line

Add comments to the program

```
/*******************
* Cat Face! Draw a cat face on the screen
* author: Teo the dog
* version: try #awesome
* purpose: to show how a cat can be drawn
*******************/

size(500,500); // make a 500x500 canvas

//draw the head
ellipse(250,250,300,300);

//draw the ears
triangle(375,80,300,150,400,200);
triangle(125,80,200,150,100,200);

//draw the eyes
ellipse(175,225,60,30); // left eye
ellipse(175,225,15,30);

ellipse(325,225,60,30); // right eye
ellipse(325,225,15,30);

//whiskers!
line(250,300,200,275);
line(250,300,300,275);
line(250,300,190,300);
line(250,300,310,300);
line(250,300,200,325);
line(250,300,300,325);

// draw the nose. draw after whiskers for nice
overlap effect
ellipse(250,300,30,30);
```
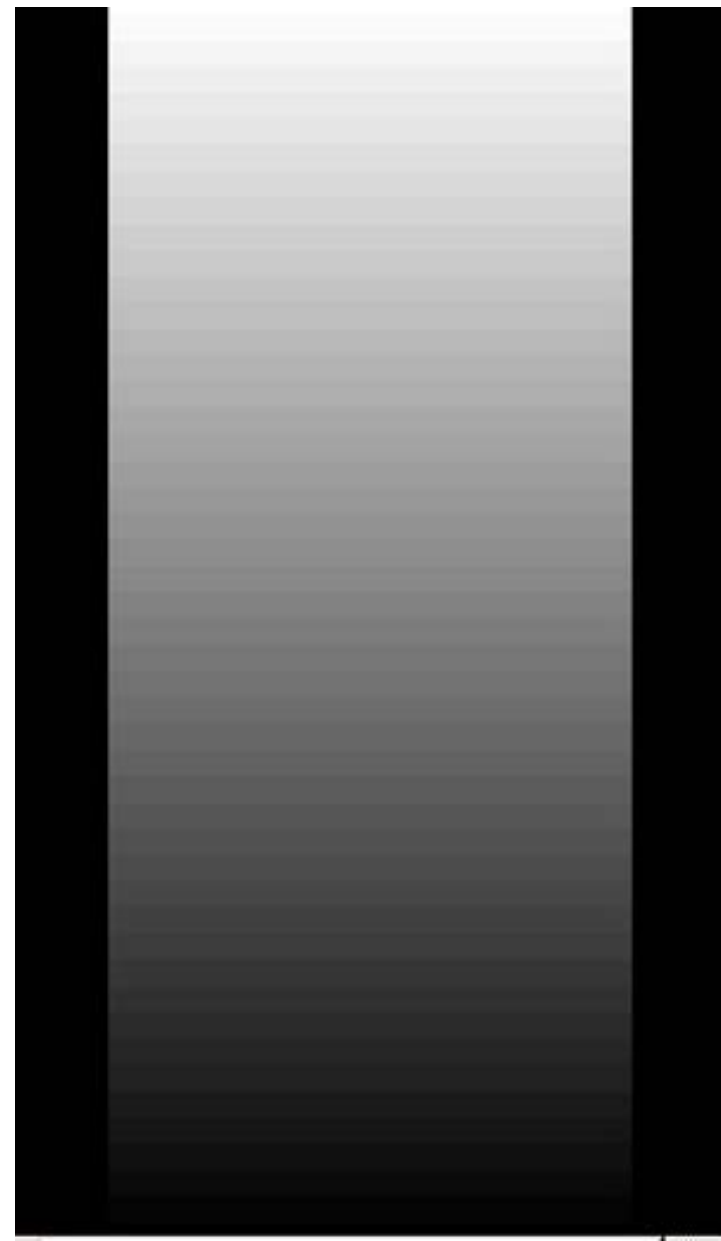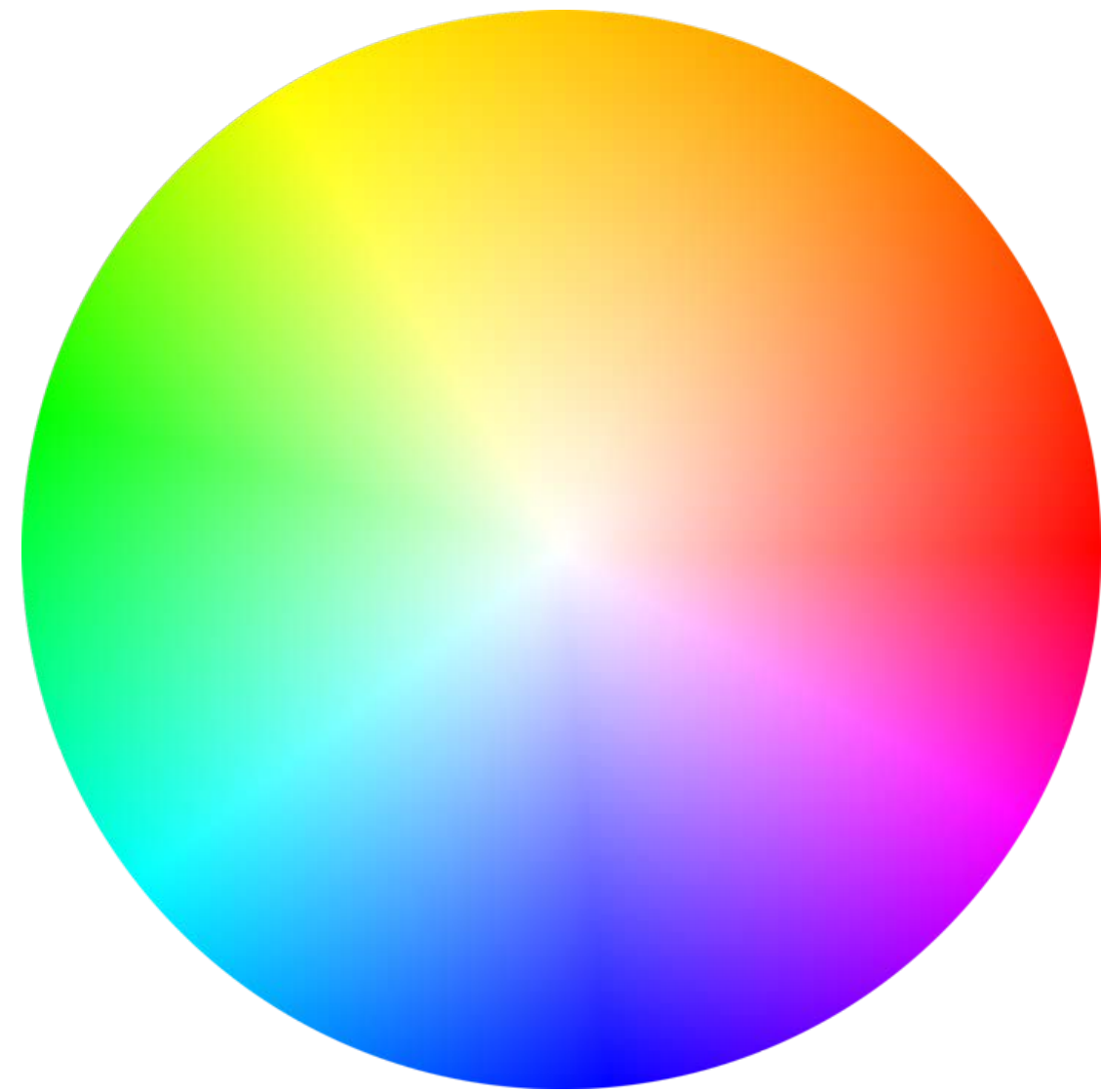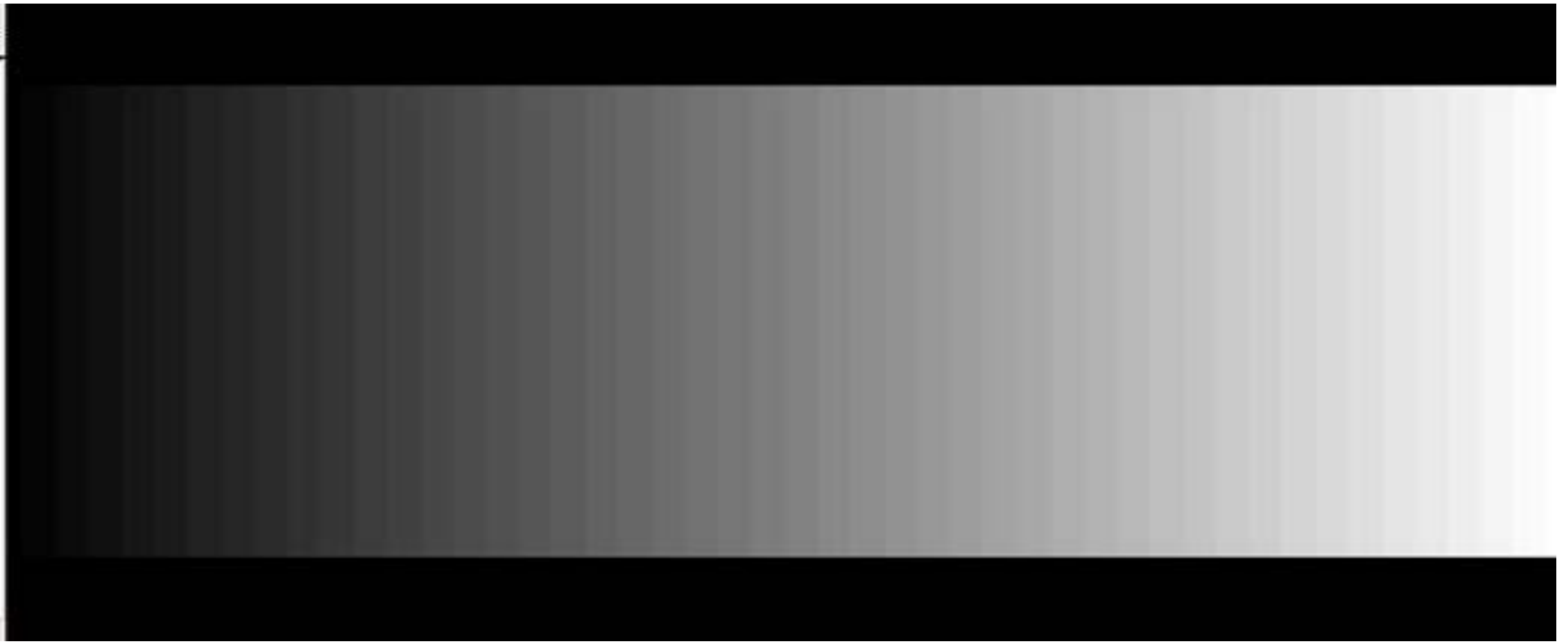
Choosing your paint!

Color!

Grey: 0..255

0.............................128.............................255

Advanced!

Why 0..255?

Computer uses 8 bits (switches) to store this color

1 switch – two possible combinations

2 switches – four possible combinations

n switches – 2^n possible combinations

8 switches – 2^8 = 256 possible combinations

stroke – brush color

stroke(gray level) // sets the brush color

stroke(0) vs stroke(255)

Try with line

stroke – try with ellipse

stroke(0)

ellipse(250,250,50,50)

Why is the ellipse still filled with white?

fill color

Processing has two paint colors: stroke and fill

fill(gray) // 0..255 gray fill level

stroke(255);
fill(0);
ellipse(250,250,50,50);

how to change the color of the background?

Draw a rectangle over the whole screen!

   Annoying...

Use the built in background command

background(grey)

Paints the entire canvas with the color (erases everything else)