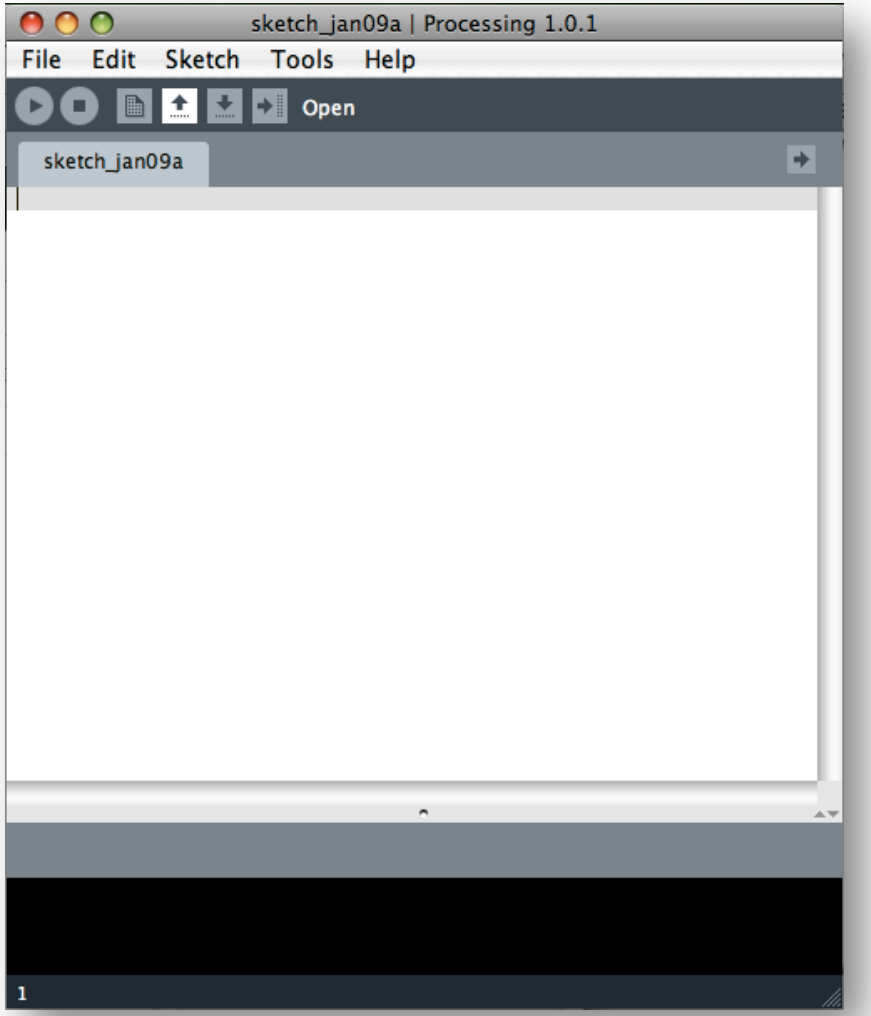
Processing

Processing 이란?

- 자바기반의 오픈 소스 프로그래밍 언어이자 환경이다
- 자바보다 더 단순한 코드사용으로 누구나 쉽게 이해하며 사용할 수 있다
- 자바 애플릿으로 실행되기 때문에 다양한 OS에서 작동된다
- 많은 예제와 소스, 라이브러리가 공개되어 있어 단순한 드로윙부터 웹캠, 센서 등을 활용한 인터랙티브한 작품들을 만들어 낼 수 있다.



Processing Book

- Fry, Ben.
  Visualizing Data: Exploring and Explaining Data with the Processing Environment. Sebastopol, CA: O'Reilly Media, 2008.

- Greenberg, Ira.
  Processing: A Programming Handbook for Visual Designers and Artists.
  Berkeley, CA: Friends of Ed, an Apress Co, 2007.

- Reas, Casey, and Ben Fry.
  Processing: A Programming Handbook for Visual Designers and Artists
  Cambridge, Mass: MIT Press, 2007.

- Shiffman, Daniel.
  Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction

Download ans install

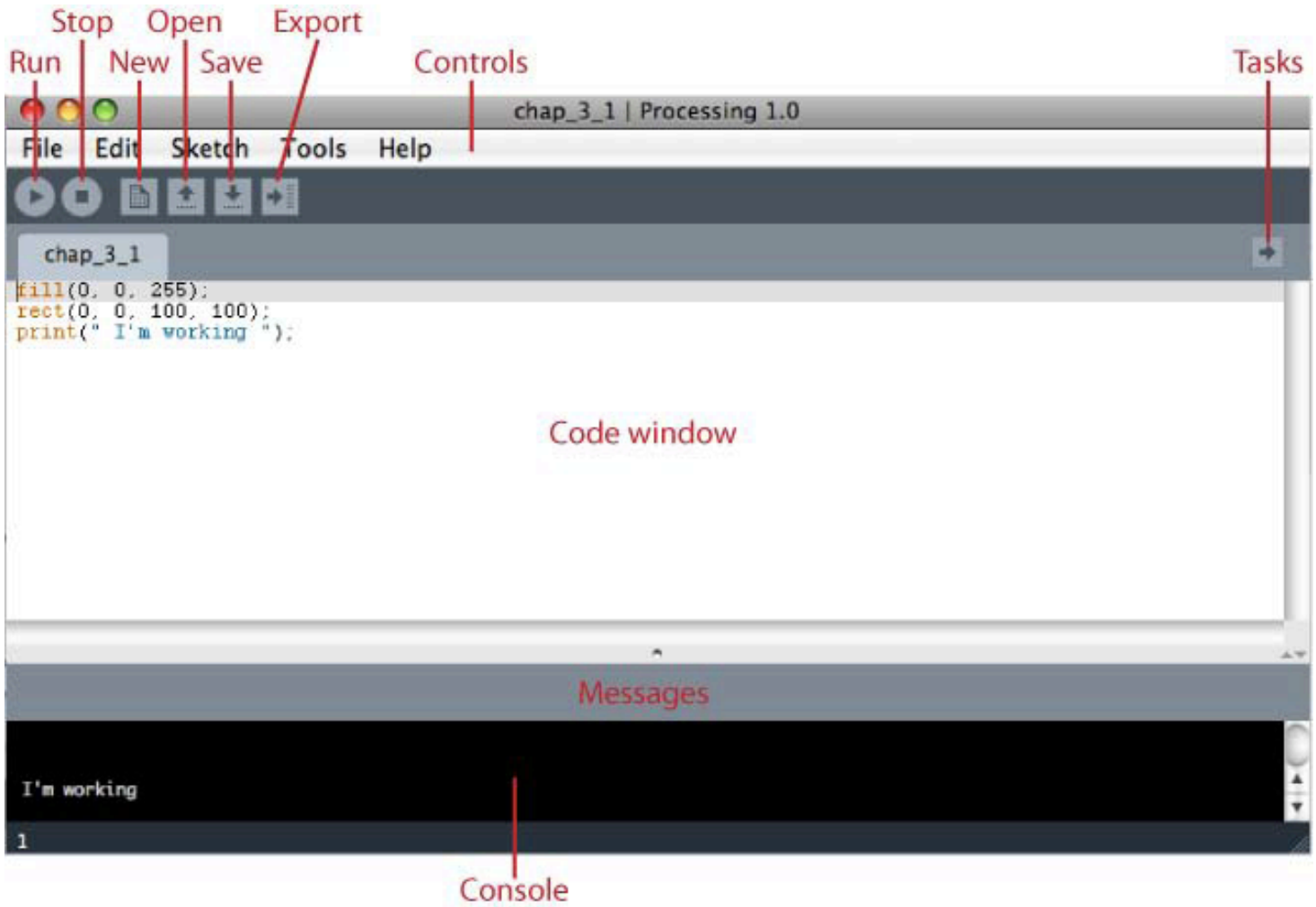
- http://processing.org/download/index.html

- WINDOWS - *C:\Program Files\Processing*
- MAC - */Applications/Processing/.*
- LINUX - *~/Applications/.*

JAVA

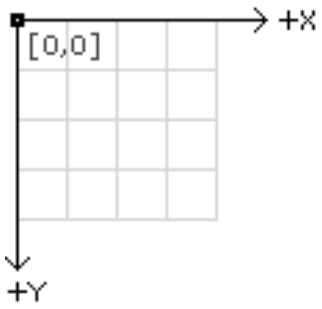
http://java.sun.com/javase/downloads/index.jsp

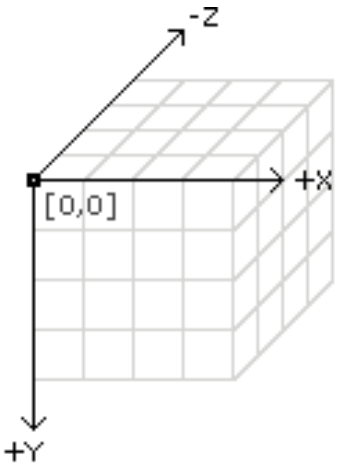
Processing IDE



Structure

- 좌표





자리표의 원점은 왼쪽 꼭대기에 놓여 있다.
Y가 증가하면 픽셀 위치는 아래로 내려 오고 X가 증가하면 픽셀의 자리는 오른 쪽으로 이동한다.
이것은 보드게임 Battleship 에서와 같다. 이 자리표계는 Director 나 Flash에서 쓰는 자리표계와 같다.

Structure

- void setup() and void draw() method

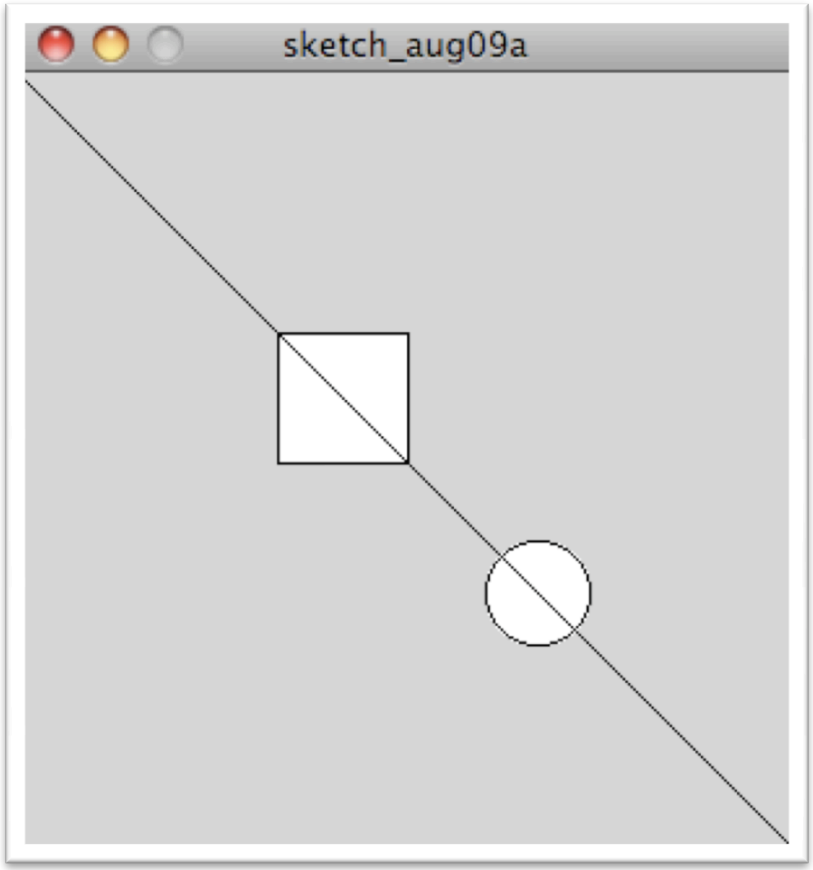
```
void setup(){
  size(200, 200);
  frameRate(30);
  print(" all done setting up");
}

void draw(){
  println("hello, everybody");
}
```

Drawing

```
void setup() {
    size(300, 300);
}
void draw() {
    rect(100, 100, 50, 50);
    ellipse(200, 200, 40, 40);
    line(0, 0, 300, 300);
}
```

size (width, height); //applet size

rect (x, y, width, height);
ellipse (x, y, width, height);
line (x, y, x, y);



Valiable

- char = 16비트(2바이트) 문자데이터
- byte = 8비트(1바이트) 정수
- **int =** 32비트(4바이트) 정수
- **float =** 32비트(4바이트) 부동소수점
- double =64비트(8바이트) 부동소수점
- **boolean =** True/False 값만가진변수
- long = 64비트(8바이트) 정수
- short = 16비트(2바이트) 정수

Valiable

- int a = 7;
- float b = 0.3f;
- boolean c = true;

형
어떤 종류의 변수를 만들 것인지 지정

변수명

값

Favorite method

- fill()
- color()
- line()
- stroke()
- strokeWeight()

- background()
- colorMode()
- ellipseMode()
- rectMode()
- frameRate()

- random()

http://processing.org/reference/

Simple interaction

```
PFont arial;

void setup() {
    size(300, 300); // make the size of our window
    arial = createFont("Arial", 32); // load the font from the system
    // set up font so our application is using the font whenever
    // we call the text method to write things into the window
    textFont(arial, 15);
}

void draw() {
    // this makes the background black, overwriting anything there
    // we're doing this because we want to make sure we don't end up
    // with every set of numbers on the screen at the same time.
    background(0);
    // here's where we really do the work, putting the mouse position
    // in the window at the location where the mouse is currently
    text(" position is "+mouseX+" "+mouseY, mouseX, mouseY);
}
```

Simple interaction

```
int alphaValue = 0;

void setup() {
    size(350, 300);
    background(0xFFFFFFFF);
}

void draw() {
    background(0xFFFFFFFF);
    fill(255, 0, 0, alphaValue);
    rect(100, 100, 100, 100);
}

void mousePressed() {
    print(mouseX + "Än");
    alphaValue = mouseX;
}
```

Simple interaction

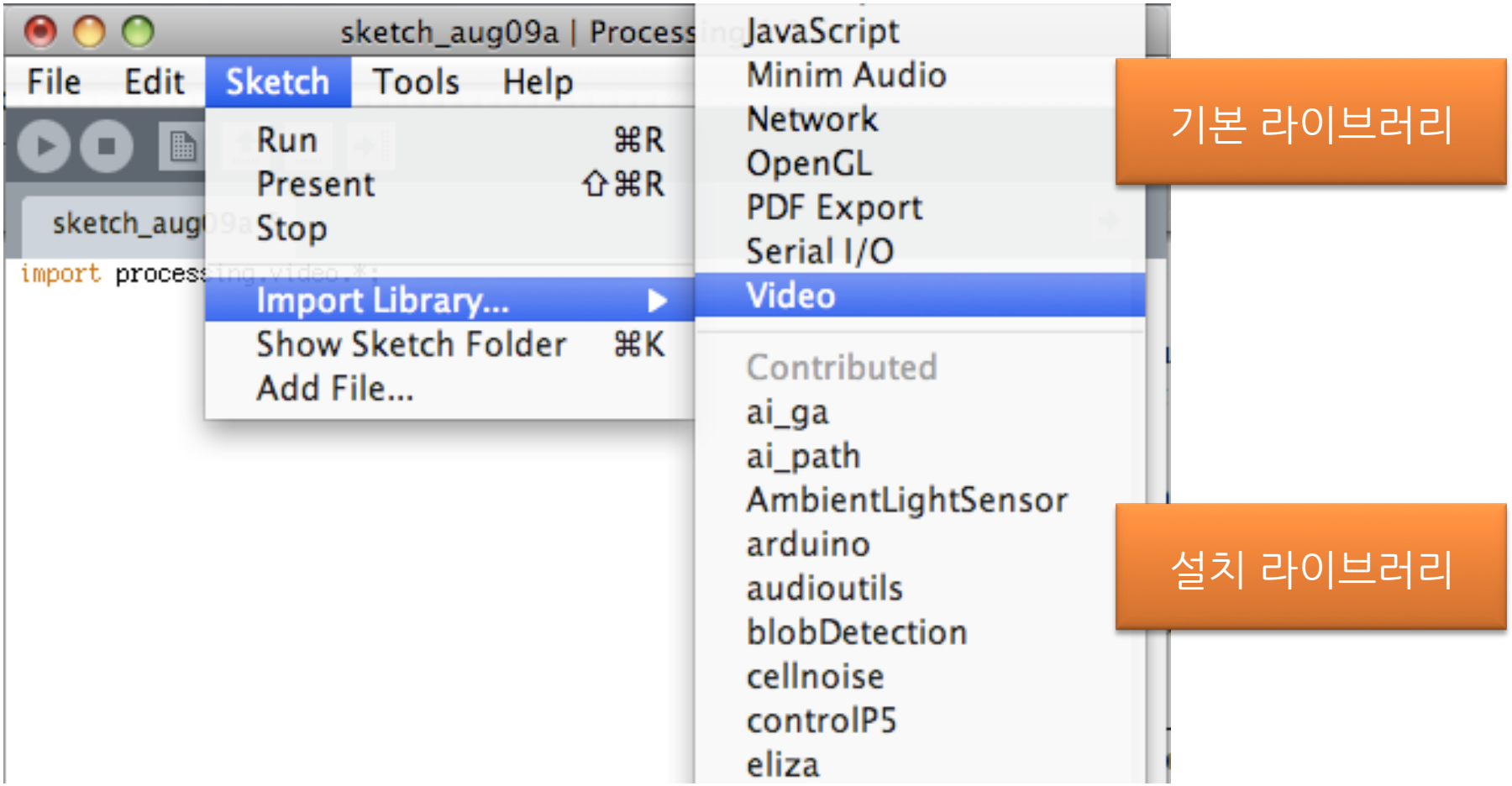
```
int lastX = 0;
int lastY = 0;

void setup() {
  size(400, 400);
}

void draw() {
  lastX = mouseX;
  lastY = mouseY;
}

void mouseDragged() {
  line(lastX, lastY, mouseX, mouseY);
}
```

```
void mouseDragged() {
        line(pmouseX, pmouseY, mouseX,
mouseY);
}
```

Library

- Download library
  - www.processing.org/reference/libraries/index.html
- Install library
  - /Documents /Processing 폴더에 libraries 폴더를 만들고, 다운받은 library를 복사한다.
- Import library
  - Menu sketch->import library -> library 선택

Library


sketch_aug09a | Process
File
Edit
Sketch
Tools
Help
Run ⌘R
Present ⇧⌘R
Stop
Import Library...
Show Sketch Folder ⌘K
Add File...
JavaScript
Minim Audio
Network
OpenGL
PDF Export
Serial I/O
Video
Contributed
ai_ga
ai_path
AmbientLightSensor
arduino
audioutils
blobDetection
cellnoise
controlP5
eliza
기본 라이브러리
설치 라이브러리

Library

- Sound
  - Minim
  - Sonia
- CV (computer vision)
  - Blob detection
  - JMyron
  - open CV
- GUI
  - control P5
- Multitouch
  - Tuio client