Processing To C

translator with library

Version 2020.11.15

Table of Contents

Structure

() (parentheses) – work like in C++
, (comma)– work like in C++ (probably)
. (dot) – in most cases translated into **->**
/* */ (multiline comment) – work like in C++
/** */ (doc comment)
// (comment) – work like in C++
; (semicolon) – work like in C++, but for the end of class declaration should be added manually. Such modification work both in Processing and in C++
= (assign) – work like in C++
[] (array access) – work like in C++, because of library object **array**, **sarray**, **matrix**, **smatrix (**and others)
{} (curly braces) – work like in C++
catch – same syntax in Processing/Java/C++ but different exception names!

class – syntax and semantics are different. Translator always try to make as many translation as possible, but often manual changes are needed.

draw() – function with special meaning translated into **processing_window::draw()**
exit() – function with special meaning translated into **processing_window::exit()**
extends – translated into "**: public**"
false – work like in C++
final - translated into "**const**"
implements - translated into "**: public**" (redundancy with extend are removed)
import – sometimes translated into #include
loop() - library **function**
new – work like similar C++ because of implementation of Processing::ptr<T>, and sarray etc...
noLoop() - library **function**
null - - translated into "**nullptr**"
pop() - NOT IMPLEMENTED

popStyle() - NOT IMPLEMENTED

private public - syntax and meaning is different. Translator always try to make as many translation as possible, but sametimes manual changes are needed (see → “class”)

push() - NOT IMPLEMENTED
pushStyle() - NOT IMPLEMENTED
redraw() - library function, still not used
return – work like in C++
setup() – function with special meaning translated into **processing_window::setup()**
static – remain in code, bat may not work properly!
super – must be manually translated!
this – All ***this.*** are replaced by **this->**
thread() - there is different philosophy in C++, so NOT IMPLEMENTED!
true – work like in C++
try - same syntax in Processing/Java/C++ but different exception names!
void – work like in C++

Control

Relational Operators

!= (inequality) – work like in C++

< (less than) – work like in C++

<= (less than or equal to) – work like in C++

== (equality) – work like in C++

> (greater than) – work like in C++

>= (greater than or equal to) – work like in C++

Iteration

for while – work like in C++

Conditionals

?: (conditional) – work like in C++

break – work like in C++

case – work like in C++

continue – work like in C++

default – work like in C++

else – work like in C++

if – work like in C++

switch – work like in C++

Logical Operators

! (logical NOT) – work like in C++
&& (logical AND) – work like in C++
|| (logical OR) – work like in C++

Environment

cursor() - library **function. Only makes a cursor visible if already hidden**
delay() - library **function**
displayDensity() - always return 1
focused - NOT IMPLEMENTED! Confirms if a Processing program is "focused," meaning that it is active and will accept mouse or keyboard input. This variable is "true" if it is focused and "false" if not.
frameCount - library variable with **const**
frameRate() - translated into **setFrameRate()** library function
frameRate - library variable with **const**
fullScreen() - library **function**
height - library variable with **const**
noCursor() - library **function**
noSmooth() - library **function**
pixelDensity() - IGNORED
pixelHeight – same value as height
pixelWidth -same value as width
settings() - The **settings()** function is new with Processing 3.0. It's not needed in most sketches. NOT IMPLEMENTED
size() - library **function**
smooth() - library **function**
width - library variable with **const**

Event handling

Mouse

MouseButton- NOT IMPLEMENTED YET

mouseClicked() - empty library **function for reiplementation by user**

mouseDragged() - NOT IMPLEMENTED

mouseMoved() - NOT IMPLEMENTED

mousePressed() - NOT IMPLEMENTED YET

mousePressed - NOT IMPLEMENTED YET

mouseReleased() - NOT IMPLEMENTED

mouseWheel() - NOT IMPLEMENTED

mouseX - NOT IMPLEMENTED YET

mouseY - NOT IMPLEMENTED YET

pmouseX - NOT IMPLEMENTED YET

pmouseY - NOT IMPLEMENTED YET

Keyboard

key- NOT IMPLEMENTED YET

keyCode - NOT IMPLEMENTED YET

keyPressed() - empty library **function for reiplementation by user**

keyPressed - NOT IMPLEMENTED YET

keyReleased() - NOT IMPLEMENTED

keyTyped()- NOT IMPLEMENTED YET

Data

Primitive

boolean - translated into **bool**

byte - NOT IMPLEMENTED YET

char – work like in C++

color – implemented as class

double – work like in C++

float – work like in C++

int – work like in C++

long – work like in C++

String - translated into **String, _param_string** library classes derived from **std::string**

Object – In Processing, like in JAVA, objects are instances of classes accessed by some kind of reference with counting (“.” operator, but managed heap with garbage collection is used). Similar meaning in C++ have **std::shared_ptr**s, but they have different interface. So we translate such references into **Processing::ptr<T>** templates opaquing **shared_ptr**s. It saves compatibility, but it is not very efficient. In many cases, especially as function parameters, such **ptr**s could be replaced with **Processing::ptr<T>&** or even **T&**. But this should be done manually and very carefully.

Composite

Array - translated into **array, matrix** library classes

ArrayList – implemented as class based on std::vector

DoubleDict - NOT IMPLEMENTED YET

DoubleList - NOT IMPLEMENTED YET

FloatDict - NOT IMPLEMENTED YET

FloatList implemented as class based on std::vector

HashMap - NOT IMPLEMENTED YET

IntDict - NOT IMPLEMENTED YET

IntList implemented as class based on std::vector

JSONArray - NOT IMPLEMENTED YET

JSONObject - NOT IMPLEMENTED YET

LongDict - NOT IMPLEMENTED YET

LongList - NOT IMPLEMENTED YET

StringDict - NOT IMPLEMENTED YET

StringList implemented as class based on std::vector

Table - NOT IMPLEMENTED YET

TableRow - NOT IMPLEMENTED YET

XML - NOT IMPLEMENTED YET

Conversion

binary() - NOT IMPLEMENTED YET

boolean() - NOT IMPLEMENTED YET

byte() - NOT IMPLEMENTED YET

char() - NOT IMPLEMENTED YET

float() implemented

hex() - NOT IMPLEMENTED YET

int() - implemented

str() - NOT IMPLEMENTED YET

unbinary() - NOT IMPLEMENTED YET

unhex() - NOT IMPLEMENTED YET

String Functions

join() - NOT IMPLEMENTED YET

match() - NOT IMPLEMENTED YET

matchAll() - NOT IMPLEMENTED YET

nf() nfc() nfp() nfs() - implemented as library **functions**

split() - dummy implementation

splitTokens() - NOT IMPLEMENTED YET

trim() - NOT IMPLEMENTED YET

Array Functions

append() - NOT IMPLEMENTED YET
arrayCopy() - NOT IMPLEMENTED YET
concat() - NOT IMPLEMENTED YET
expand() - NOT IMPLEMENTED YET
reverse() - NOT IMPLEMENTED YET
shorten() - NOT IMPLEMENTED YET
sort() - translated int std::sort
splice() - NOT IMPLEMENTED YET
subset() - NOT IMPLEMENTED YET

Math

PVector - NOT IMPLEMENTED YET

Operators

% (modulo) – work like in C++

* (multiply) – work like in C++

*= (multiply assign) – work like in C++

+ (addition) – work like in C++

++ (increment) – work like in C++

+= (add assign) – work like in C++

- (minus) – work like in C++

-- (decrement) – work like in C++

-= (subtract assign) – work like in C++

/ (divide) – work like in C++

/= (divide assign) – work like in C++

Bitwise Operators

& (bitwise AND) – work like in C++

<< (left shift) – work like in C++

>> (right shift) – work like in C++

| (bitwise OR) – work like in C++

Calculation

abs() – work like in C++

ceil() – work like in C++

constrain() - ???

dist() - ???

exp() – work like in C++

floor() – work like in C++

lerp() - IMPLEMENTED AS INLINE FUNCTION

log() – work like in C++

mag() - ???

map() - IMPLEMENTED AS INLINE FUNCTION

max() – implemented but mostly work like in C++

min() – implemented but mostly work like in C++

norm() - IMPLEMENTED AS INLINE FUNCTION

pow() – work like in C++

round() - ???

sq() - ???

sqrt() – work like in C++

Trigonometry

acos() – work like in C++

asin() – work like in C++

atan() – work like in C++

atan2() – work like in C++

cos() – work like in C++

degrees() - IMPLEMENTED AS INLINE FUNCTION

radians() - IMPLEMENTED AS INLINE FUNCTION

sin() – work like in C++

tan() – work like in C++

Random

noise() NOT IMPLEMENTED YET
noiseDetail() NOT IMPLEMENTED YET
noiseSeed() NOT IMPLEMENTED YET
random() - IMPLEMENTED AS LIBRARY FUNCTION
randomGaussian() NOT IMPLEMENTED YET
randomSeed() - IMPLEMENTED AS LIBRARY FUNCTION

Constants

HALF_PI - IMPLEMENTED
PI - IMPLEMENTED
QUARTER_PI - IMPLEMENTED
TAU - IMPLEMENTED
TWO_PI - IMPLEMENTED

Color

Setting

background() - NOT IMPLEMENTED YET

clear() - NOT IMPLEMENTED YET

colorMode() - NOT IMPLEMENTED

fill() - library **function**

noFill() - library **function**

noStroke() - library **function**

stroke() - library **function**

Creating & Reading

alpha() - NOT IMPLEMENTED
blue() - library **function**
brightness() - NOT IMPLEMENTED
color() - library **function**
green() - library **function**
hue() - NOT IMPLEMENTED

lerpColor() - NOT IMPLEMENTED
red() - library **function**
saturation() - NOT IMPLEMENTED

Shape

createShape() - **NOT IMPLEMENTED (dummy only)**
loadShape() - **NOT IMPLEMENTED (dummy only)**

PShape - **NOT IMPLEMENTED (dummy only)**

Attributes

ellipseMode() - library **function**

rectMode() - library **function**

strokeCap() - library **function**

strokeJoin() - library **function**

strokeWeight() - library **function**

2D Primitives

arc() - library **function**

circle() - NOT IMPLEMENTED

ellipse() - library **function**

line() - library **function**

point() - library **function**

quad() - NOT IMPLEMENTED

rect() - library **function**

square() - NOT IMPLEMENTED

triangle() - NOT IMPLEMENTED

Curves

bezier() - NOT IMPLEMENTED

bezierDetail() - NOT IMPLEMENTED

bezierPoint() - NOT IMPLEMENTED

bezierTangent() - NOT IMPLEMENTED

curve() - NOT IMPLEMENTED

curveDetail() - NOT IMPLEMENTED

curvePoint() - NOT IMPLEMENTED

curveTangent() - NOT IMPLEMENTED

curveTightness() - NOT IMPLEMENTED

3D Primitives

box() - 3D GRAPHIX NOT IN MY PLAN

sphere() - 3D GRAPHIX NOT IN MY PLAN

sphereDetail() - 3D GRAPHIX NOT IN MY PLAN

Vertex

beginContour() - NOT IMPLEMENTED

beginShape() - NOT IMPLEMENTED (dummy present)

bezierVertex() - NOT IMPLEMENTED

curveVertex() - NOT IMPLEMENTED

endContour() - NOT IMPLEMENTED

endShape() - NOT IMPLEMENTED (dummy present)

quadraticVertex() - NOT IMPLEMENTED

vertex() - NOT IMPLEMENTED (dummy present)

Loading & Displaying

shape() - NOT IMPLEMENTED
shapeMode() - NOT IMPLEMENTED

Input - NOT IMPLEMENTED

Files

BufferedReader - NOT IMPLEMENTED

createInput() - NOT IMPLEMENTED

createReader() - NOT IMPLEMENTED

launch() - NOT IMPLEMENTED

loadBytes() - NOT IMPLEMENTED

loadJSONArray() - NOT IMPLEMENTED

loadJSONObject() - NOT IMPLEMENTED

loadStrings() - NOT IMPLEMENTED

loadTable() - NOT IMPLEMENTED

loadXML() - NOT IMPLEMENTED

parseJSONArray() - NOT IMPLEMENTED

parseJSONObject() - NOT IMPLEMENTED

parseXML() - NOT IMPLEMENTED

selectFolder() - NOT IMPLEMENTED

selectInput() - NOT IMPLEMENTED

Time & Date

day() - library function
hour() - library function
millis() - library function
minute() - library function
month() - library function
second() - library function
year() - library function

Output

Text Area

print() - library **functions**

printArray() - NOT IMPLEMENTED

println() - library **functions**

Image

save() - library **functions (not fully compatible)**

saveFrame() - library **functions (not fully compatible)**

Files

beginRaw() - NOT IMPLEMENTED
beginRecord() - NOT IMPLEMENTED
createOutput() - NOT IMPLEMENTED
createWriter() - library **function**

endRaw() - NOT IMPLEMENTED
endRecord() - NOT IMPLEMENTED
PrintWriter - library **class masking std::fstream**
saveBytes() - NOT IMPLEMENTED
saveJSONArray() - NOT IMPLEMENTED
saveJSONObject() - NOT IMPLEMENTED
saveStream() - NOT IMPLEMENTED
saveStrings() - NOT IMPLEMENTED
saveTable() - NOT IMPLEMENTED
saveXML() - NOT IMPLEMENTED
selectOutput() - NOT IMPLEMENTED

Transform - NOT IMPLEMENTED

applyMatrix() - 3D GRAPHIX NOT IN MY PLAN
popMatrix() - 3D GRAPHIX NOT IN MY PLAN
printMatrix() - 3D GRAPHIX NOT IN MY PLAN
pushMatrix() - 3D GRAPHIX NOT IN MY PLAN
resetMatrix() - 3D GRAPHIX NOT IN MY PLAN
rotate() - 3D GRAPHIX NOT IN MY PLAN
rotateX() - 3D GRAPHIX NOT IN MY PLAN
rotateY() - 3D GRAPHIX NOT IN MY PLAN
rotateZ() - 3D GRAPHIX NOT IN MY PLAN
scale() - 3D GRAPHIX NOT IN MY PLAN
shearX() - 3D GRAPHIX NOT IN MY PLAN
shearY() - 3D GRAPHIX NOT IN MY PLAN
translate() - 3D GRAPHIX NOT IN MY PLAN

Lights, Camera - NOT IMPLEMENTED

Lights

ambientLight() - 3D GRAPHIX NOT IN MY PLAN

directionalLight() - 3D GRAPHIX NOT IN MY PLAN

lightFalloff() - 3D GRAPHIX NOT IN MY PLAN

lights() - 3D GRAPHIX NOT IN MY PLAN

lightSpecular() - 3D GRAPHIX NOT IN MY PLAN

noLights() - 3D GRAPHIX NOT IN MY PLAN

normal() - 3D GRAPHIX NOT IN MY PLAN

pointLight() s- 3D GRAPHIX NOT IN MY PLAN

potLight() - 3D GRAPHIX NOT IN MY PLAN

Camera

beginCamera() - 3D GRAPHIX NOT IN MY PLAN

camera() - 3D GRAPHIX NOT IN MY PLAN

endCamera() - 3D GRAPHIX NOT IN MY PLAN

frustum() - 3D GRAPHIX NOT IN MY PLAN

ortho() - 3D GRAPHIX NOT IN MY PLAN

perspective() - 3D GRAPHIX NOT IN MY PLAN

printCamera() - 3D GRAPHIX NOT IN MY PLAN

printProjection() - 3D GRAPHIX NOT IN MY PLAN

Coordinates

modelX() - NOT IMPLEMENTED

modelY() - NOT IMPLEMENTED

modelZ() - 3D GRAPHIX NOT IN MY PLAN

screenX() - NOT IMPLEMENTED

screenY() - NOT IMPLEMENTED

screenZ() - 3D GRAPHIX NOT IN MY PLAN

Material Properties

ambient() - 3D GRAPHIX NOT IN MY PLAN
emissive() - 3D GRAPHIX NOT IN MY PLAN
shininess() - 3D GRAPHIX NOT IN MY PLAN
specular() - 3D GRAPHIX NOT IN MY PLAN

Image

createImage() - NOT IMPLEMENTED

PImage - NOT IMPLEMENTED

Loading & Displaying

image() - NOT IMPLEMENTED

imageMode() - NOT IMPLEMENTED

loadImage() - NOT IMPLEMENTED

noTint() - NOT IMPLEMENTED

requestImage() - NOT IMPLEMENTED

tint() - NOT IMPLEMENTED

Textures

texture() - 3D GRAPHIX NOT IN MY PLAN

textureMode() - 3D GRAPHIX NOT IN MY PLAN

textureWrap() - 3D GRAPHIX NOT IN MY PLAN

Pixels

Blend() - - NOT IMPLEMENTED
copy() - NOT IMPLEMENTED
filter() - NOT IMPLEMENTED
get() - NOT IMPLEMENTED
loadPixels() - NOT IMPLEMENTED
pixels[] - NOT IMPLEMENTED
set() - NOT IMPLEMENTED
updatePixels() - NOT IMPLEMENTED

Rendering - NOT IMPLEMENTED

blendMode() - 3D GRAPHIX NOT IN MY PLAN

clip() - 3D GRAPHIX NOT IN MY PLAN

createGraphics() - 3D GRAPHIX NOT IN MY PLAN

noClip() - 3D GRAPHIX NOT IN MY PLAN

PGraphics - 3D GRAPHIX NOT IN MY PLAN

Shaders- NOT IMPLEMENTED

loadShader() - 3D GRAPHIX NOT IN MY PLAN
PShader - 3D GRAPHIX NOT IN MY PLAN
resetShader() - 3D GRAPHIX NOT IN MY PLAN
shader() - 3D GRAPHIX NOT IN MY PLAN

Typography

PFont - NOT IMPLEMENTED

Loading & Displaying

createFont() - NOT IMPLEMENTED

loadFont() - NOT IMPLEMENTED

text() - implemented as library functions

textFont() - NOT IMPLEMENTED

Attributes

TextAlign() - **implemented**

textLeading() - NOT IMPLEMENTED

textMode() - dummy implementation

textSize() - dummy implementation

textWidth() - **implemented**

Metrics

textAscent() - NOT IMPLEMENTED
textDescent() - NOT IMPLEMENTED