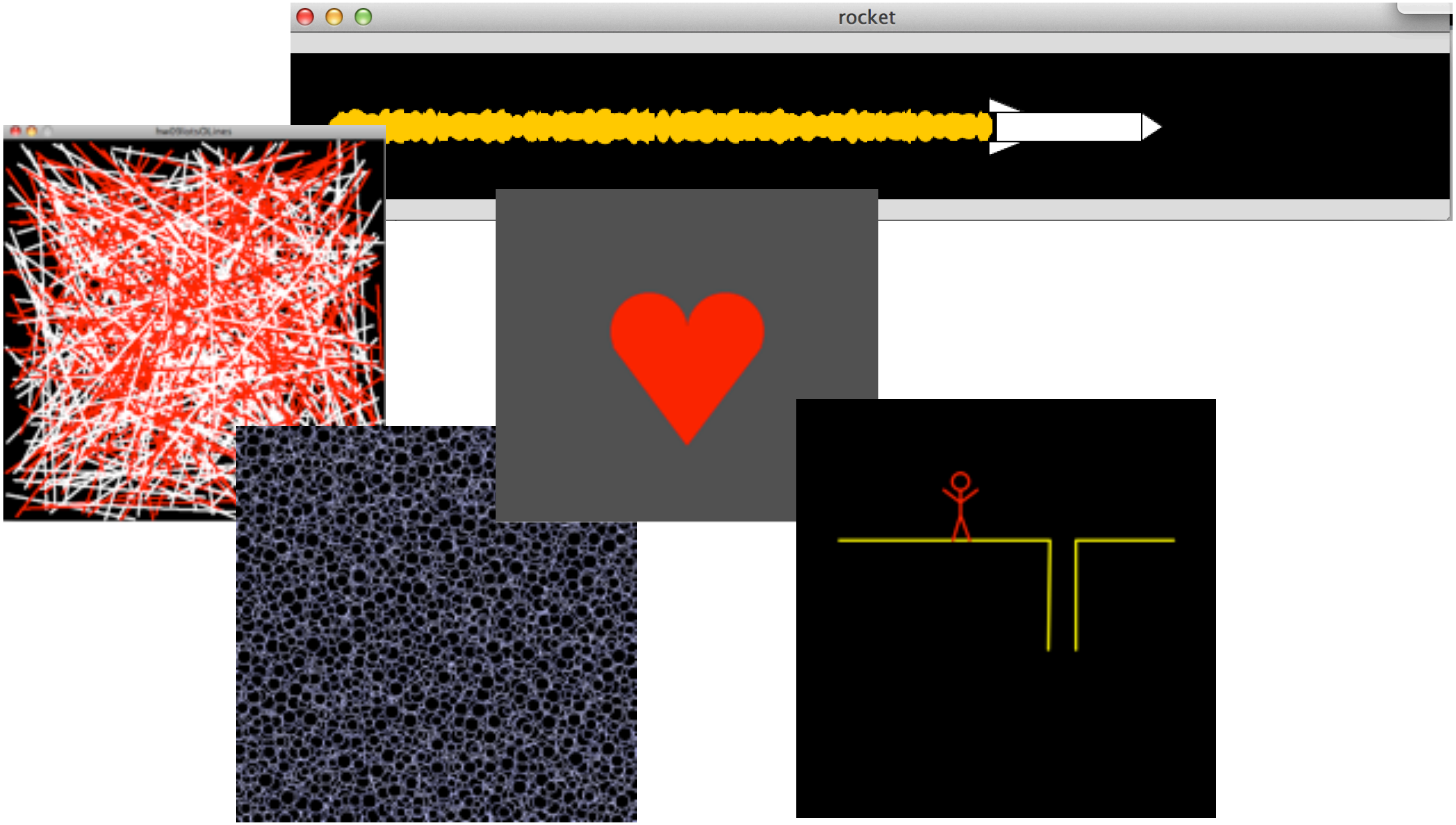
Announcements

- It’s creativity week … pull out all stops!

Creativity Week …



More details and explanation …

The Mouse, Keys & Text

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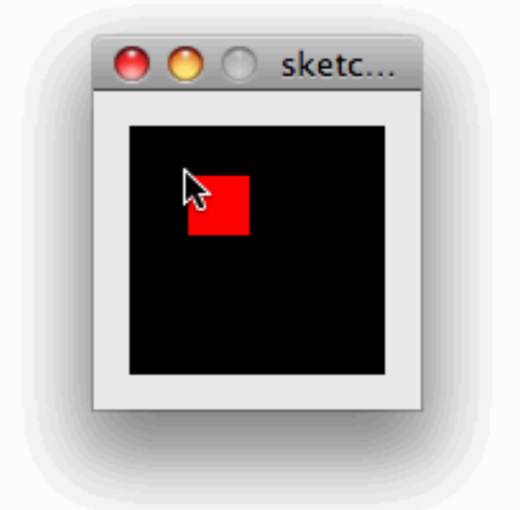
Plan for Today

- An important part of computing is the input to the program and the output it produces
- We consider three types of I/O
  - Mouse Input
  - Key Input
  - Text Input

The Story of a Mouse

- So that it is all out there, here's the situation on the mouse (you've seen most of this):
- mouseX and mouseY give the coordinates of the mouse on the canvas … recall:

```
rect(mouseX, mouseY, 20, 20);
```



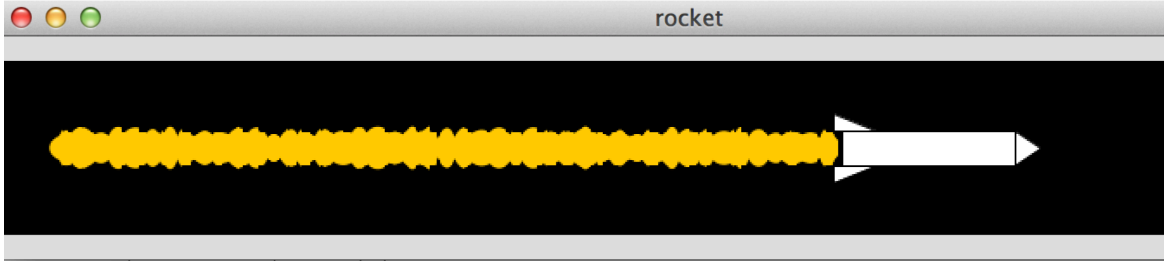
- void mousePressed ( ) {

```
      dir = 0 – dir;
}
```

- There's also mouseReleased that "fires" when the mouse is released after being pressed

Stop Animation Action

- Control "looping" with the mouse

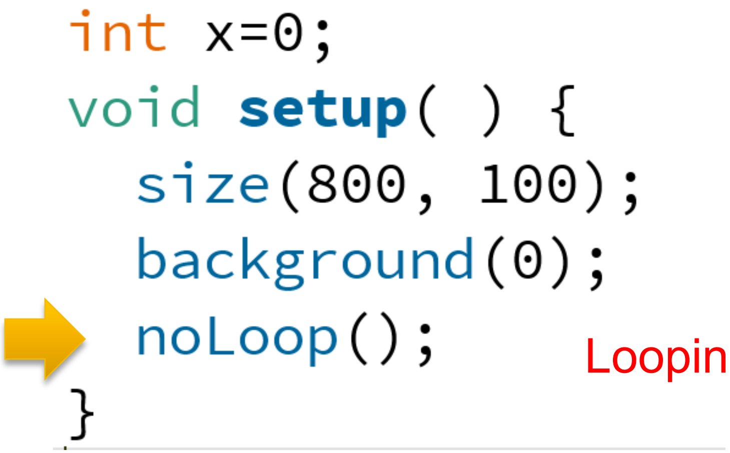


```
void draw( ) {
  smoke( );
  vehicle(color(0));
  x = x+1;
  vehicle(color(255));
}
void smoke( ) {
  noStroke( );
  float d;
  fill(255, 200, 0);
  ellipse((x+40)-(x%10), 50, max(10, random(20)), max(15, random(25)));
}
void vehicle(color c) {
  stroke(0);
  fill(c);
  rect(40+x, 40, 100, 20);
  triangle(140+x, 40, 155+x, 50, 140+x, 60);
  triangle(35+x, 40, 35+x, 30, 60+x, 40);
  triangle(35+x, 60, 35+x, 70, 60+x, 60);
}
```

Just Do It

Stop Animation Action

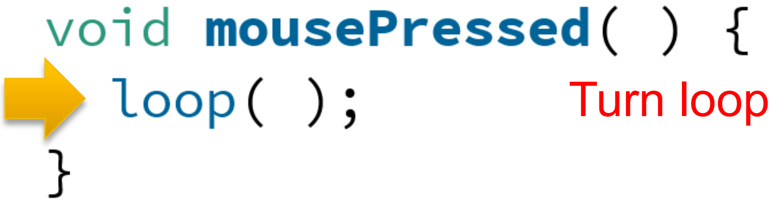
- Control “looping” with the mouse



```
int x=0;
void setup( ) {
   size(800, 100);
   background(0);
   noLoop();
}
```

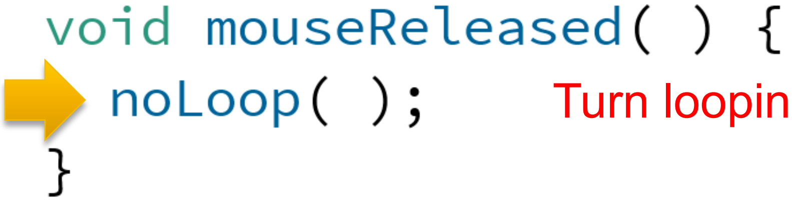
Looping off

…



```
void mousePressed( ) {
  loop( );
}
```

Turn looping on



```
void mouseReleased( ) {
  noLoop( );
}
```

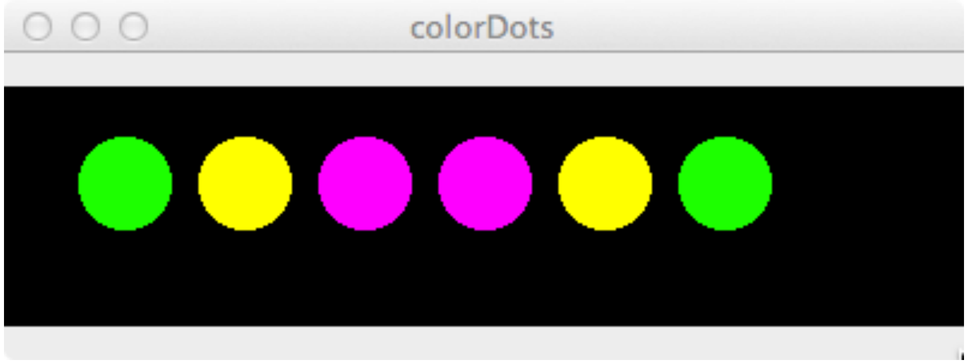
Turn looping off

Keyboard Keys … Similar to Mouse

- Pressing a key is like pressing mouse button …

```
void draw( ) {
    ellipse(pos, 40, 40, 40);
}

void keyPressed( ) {
  if (key == 'g') {
    fill(0, 255, 0);
  }
  if (key == 'y') {
    fill(255, 255, 0);
  }
  if (key == 'm') {
    fill(255, 0, 255);
  }
  pos = pos + 50;
}
```



Result of typing g y m m y g

Just Do It

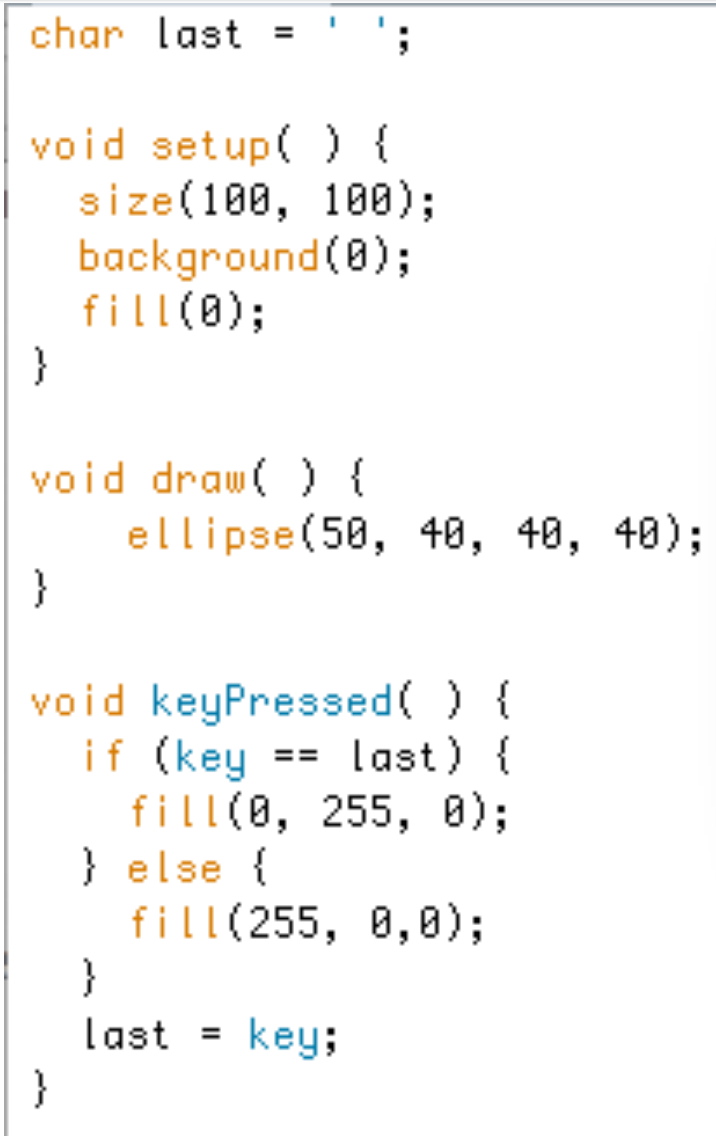
Datatype Information

- The key keyword has the value of the key just pressed; it has the datatype of a character, that is, char
- Notice that characters are enclosed in single quotes:

```
void draw( ) {
    ellipse(pos, 40, 40, 40);
}

void keyPressed( ) {
  if (key == 'g') {
    fill(0, 255, 0);
  }
  if (key == 'y') {
    fill(255, 255, 0);
  }
  if (key == 'm') {
    fill(255, 0, 255);
  }
  pos = pos + 50;
}
```

So, What Does This Code Do?

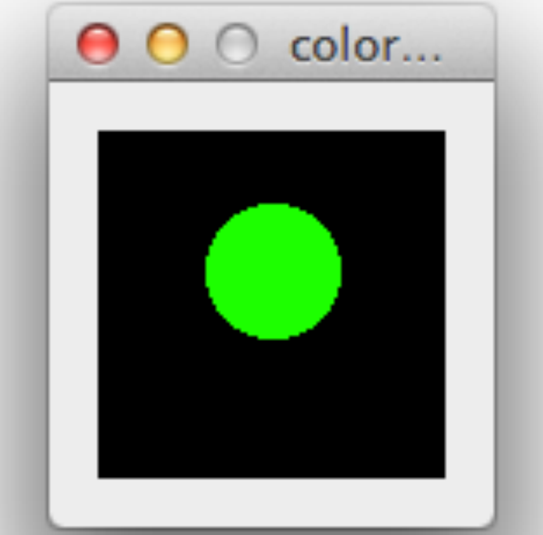


```
char last = ' ';

void setup( ) {
  size(100, 100);
  background(0);
  fill(0);
}

void draw( ) {
    ellipse(50, 40, 40, 40);
}

void keyPressed( ) {
  if (key == last) {
    fill(0, 255, 0);
  } else {
    fill(255, 0,0);
  }
  last = key;
}
```

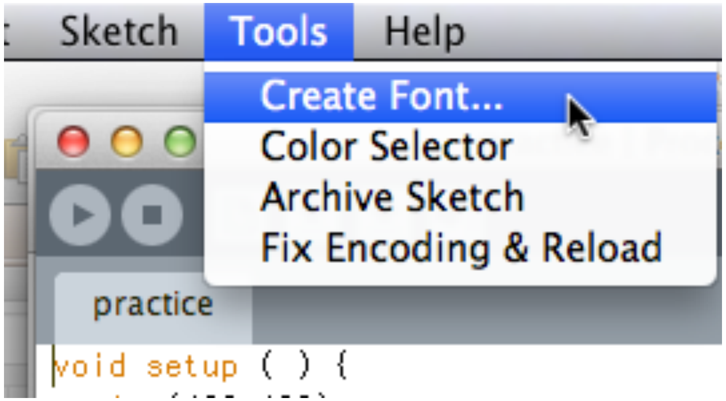


Writing Out Text

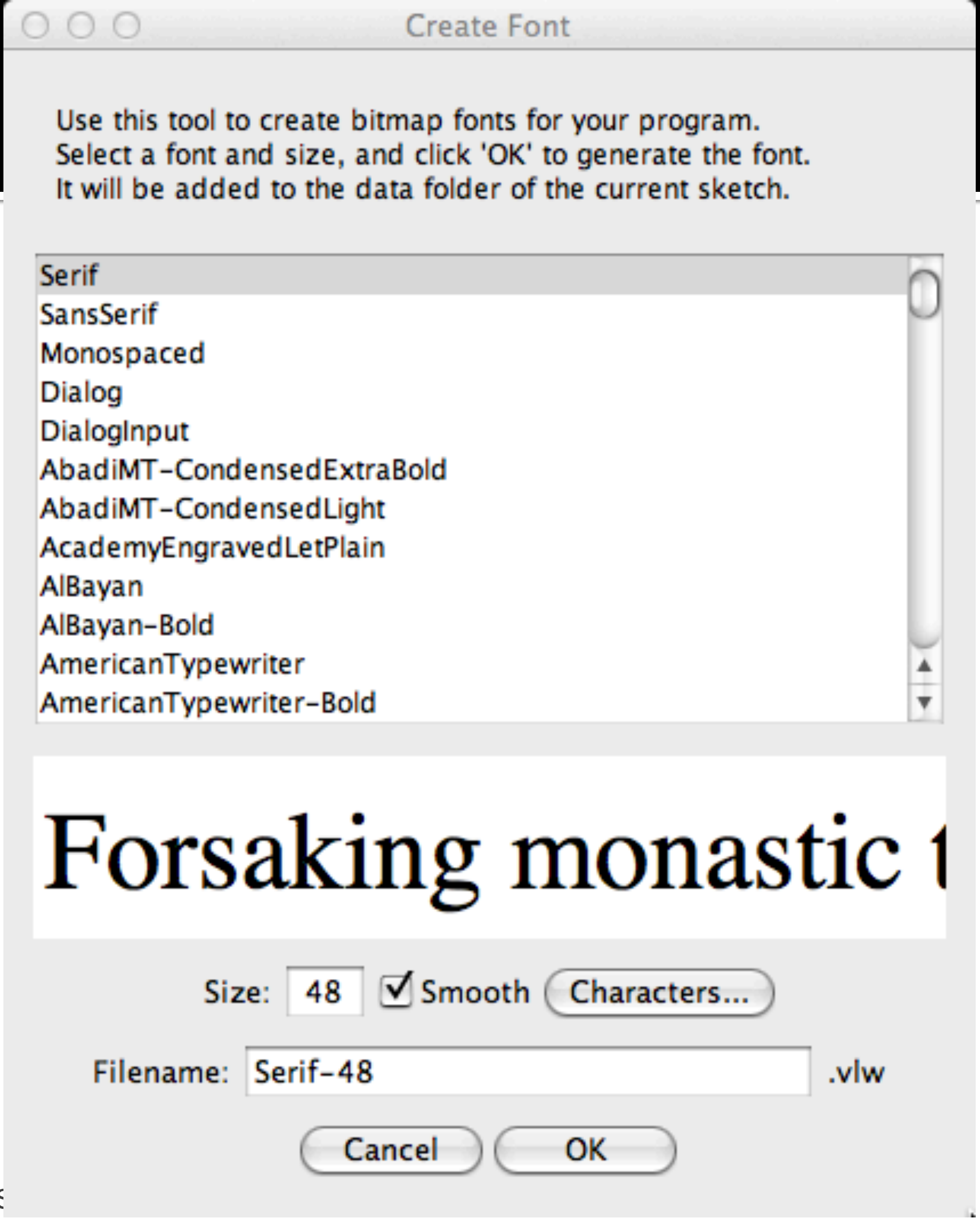
- Processing is great for graphics and images, but it is a little more cumbersome for text
- Follow these steps:
  - 1) Go to tools and locate the font you want
  - 2) Load font into the data directory of your program … this happens automatically when you load
  - 3) In the code, load the font into the computation (get name and size perfect); specify its use
  - 4) Use text( ) to print text; color using fill( )

Find Fave Font

- “Create Font …” is under Tools



```
void setup ( ) {
```



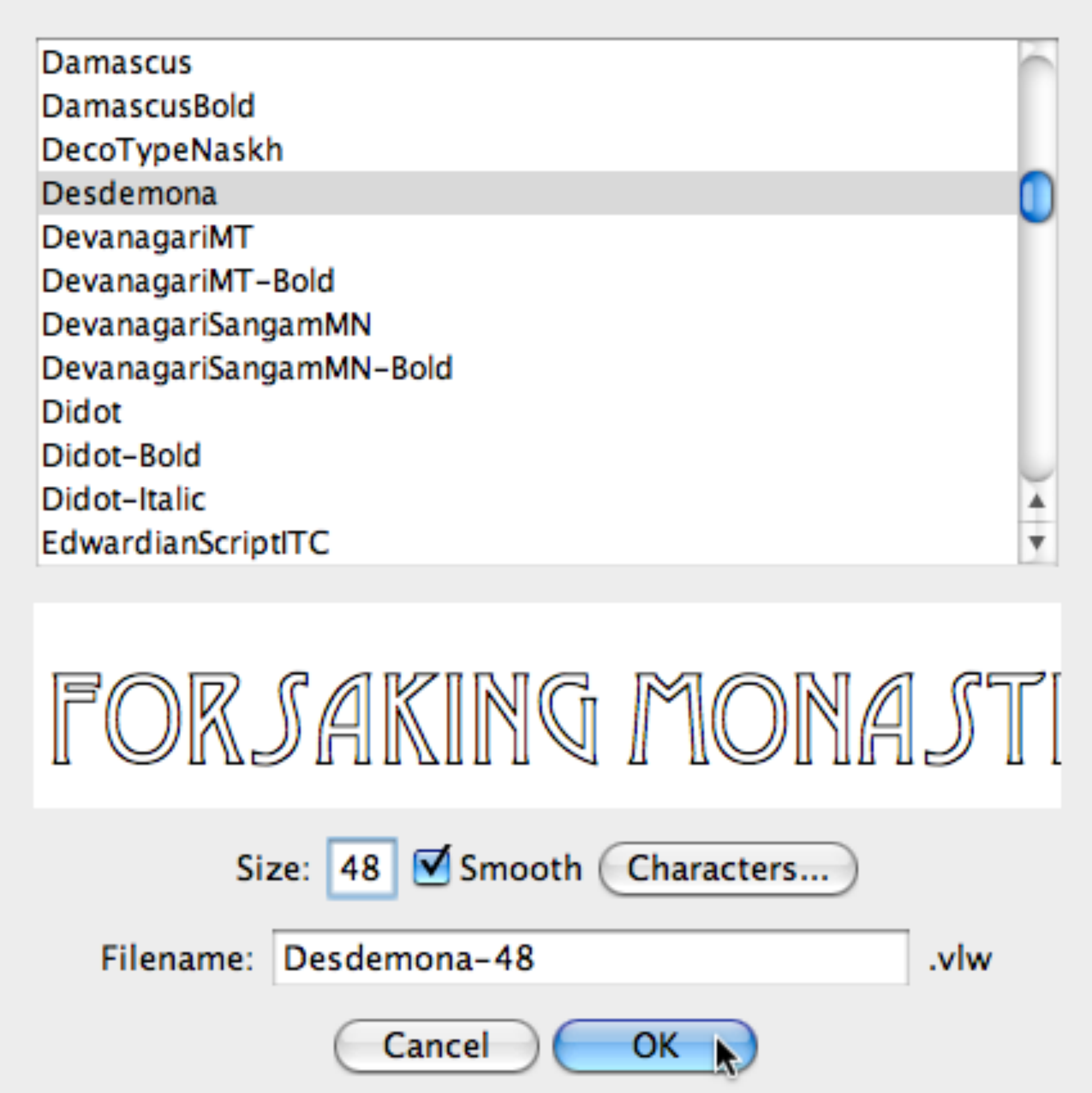
Use this tool to create bitmap fonts for your program.
Select a font and size, and click 'OK' to generate the font.
It will be added to the data folder of the current sketch.

Size: 48 ☑ Smooth

Filename: Serif-48 .vlw

Pick Font, Size

- Try to pick common fonts
- Click to load font into the data directory



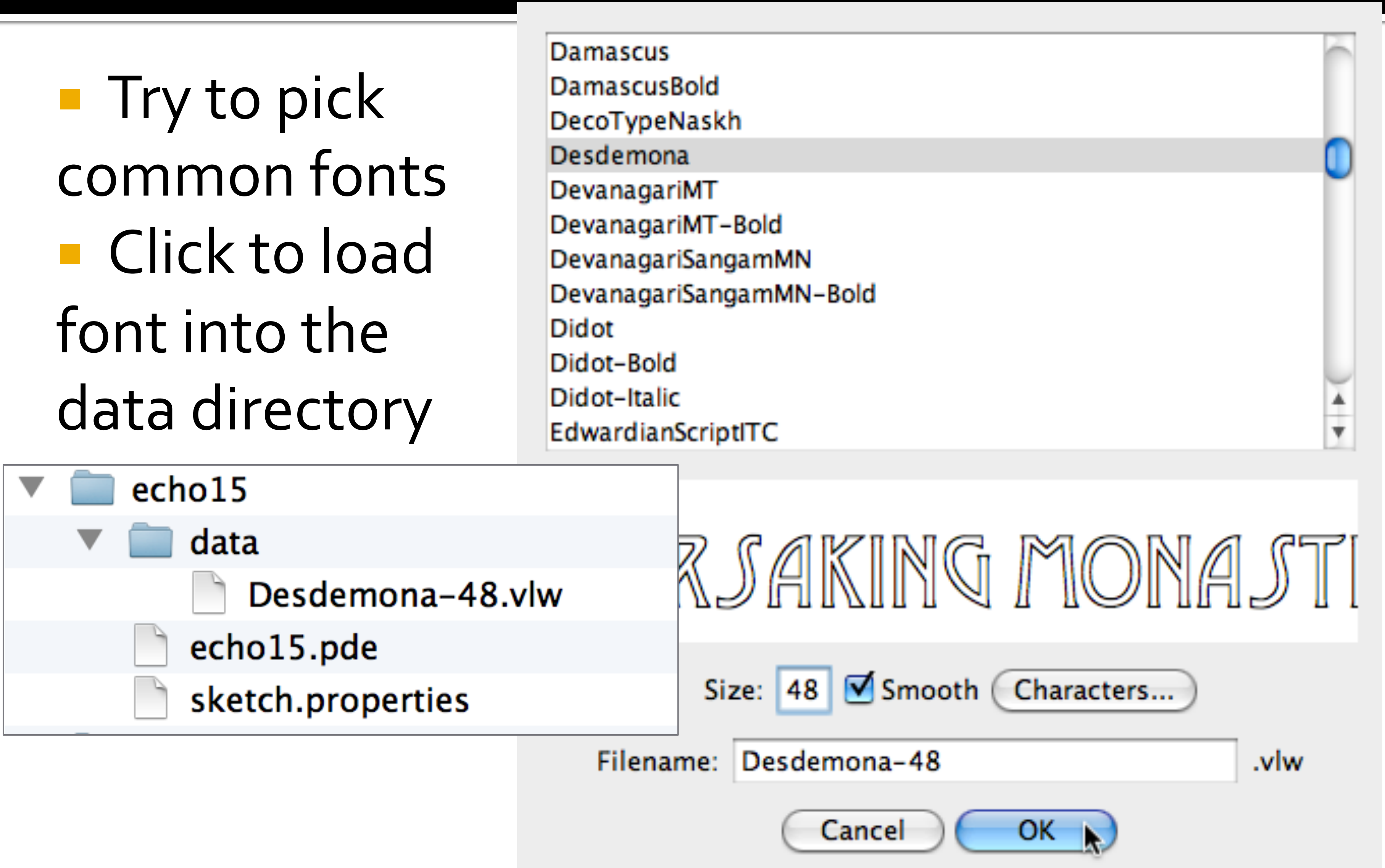
Damascus
DamascusBold
DecoTypeNaskh
Desdemona
DevanagariMT
DevanagariMT-Bold
DevanagariSangamMN
DevanagariSangamMN-Bold
Didot
Didot-Bold
Didot-Italic
EdwardianScriptITC

Size: 48 ☑ Smooth

Filename: Desdemona-48 .vlw

Pick Font, Size

- Try to pick common fonts
- Click to load font into the data directory



Damascus
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Didot
Didot-Bold
Didot-Italic
EdwardianScriptITC

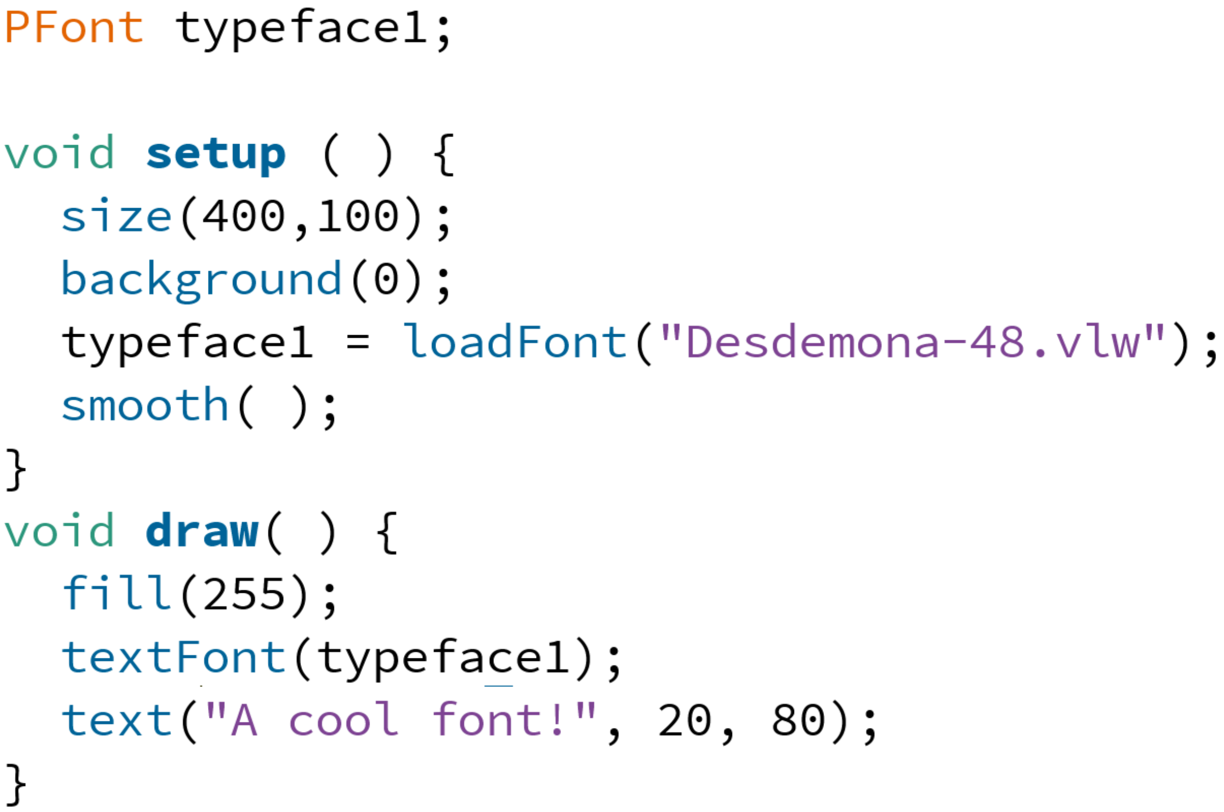
Size: 48 ☑ Smooth

Filename: Desdemona-48 .vlw

echo15
data
Desdemona-48.vlw
echo15.pde
sketch.properties

Declare Font Var, Load, Select

- Need to declare font name(s)

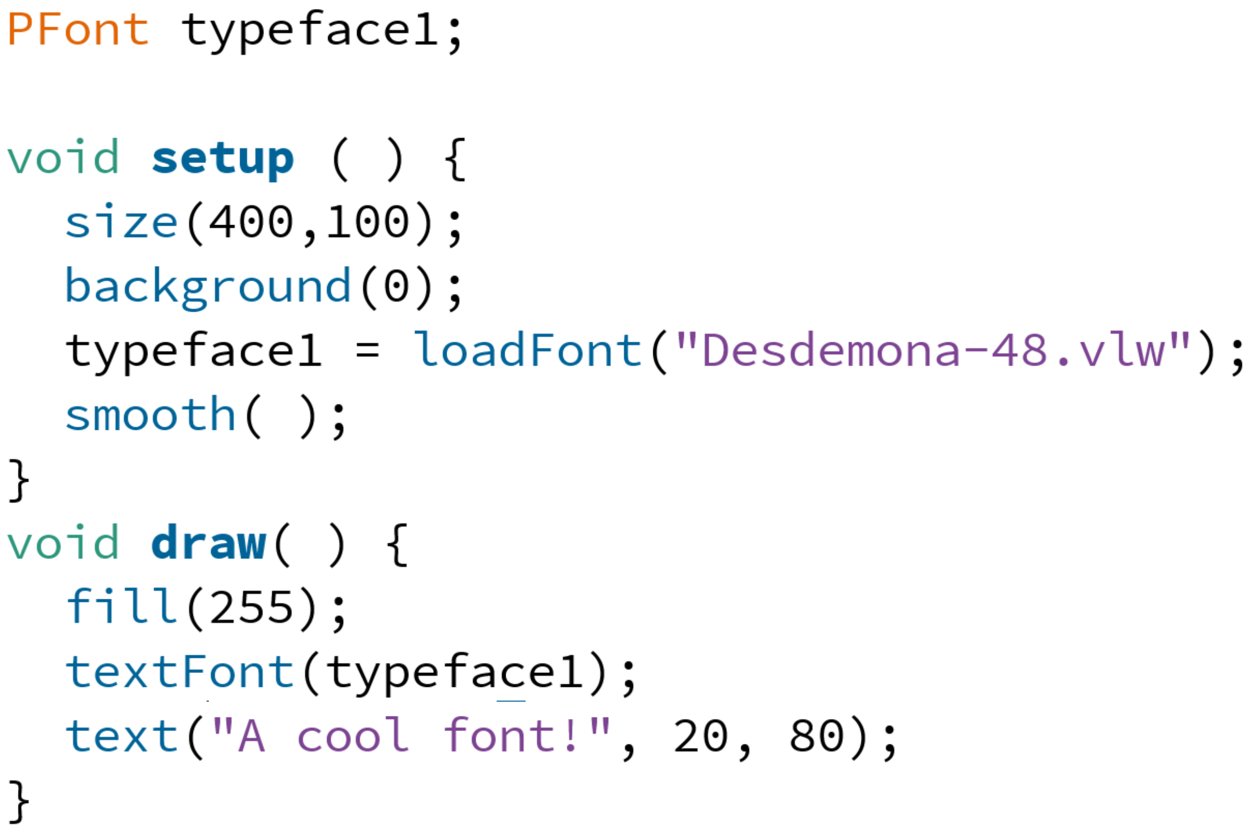


```
PFont typeface1;

void setup ( ) {
   size(400,100);
   background(0);
   typeface1 = loadFont("Desdemona-48.vlw");
   smooth( );
}
void draw( ) {
   fill(255);
   textFont(typeface1);
   text("A cool font!", 20, 80);
}
```

Declare Font Var, Load, Select

- Need to declare font name(s)
- Need to load named font

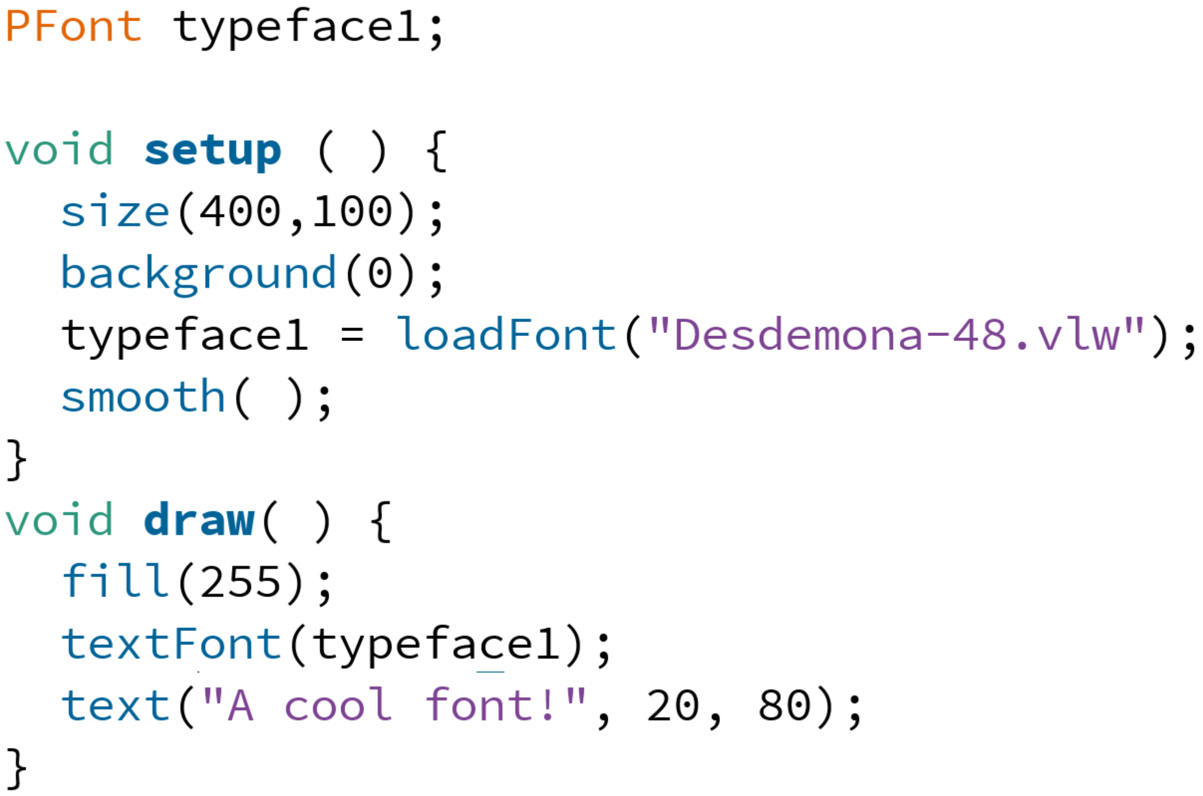


```
PFont typeface1;

void setup ( ) {
   size(400,100);
   background(0);
   typeface1 = loadFont("Desdemona-48.vlw");
   smooth( );
}
void draw( ) {
   fill(255);
   textFont(typeface1);
   text("A cool font!", 20, 80);
}
```

Declare Font Var, Load, Select

- Need to declare font name(s)
- Need to load named font
- Need to put named font "in use"

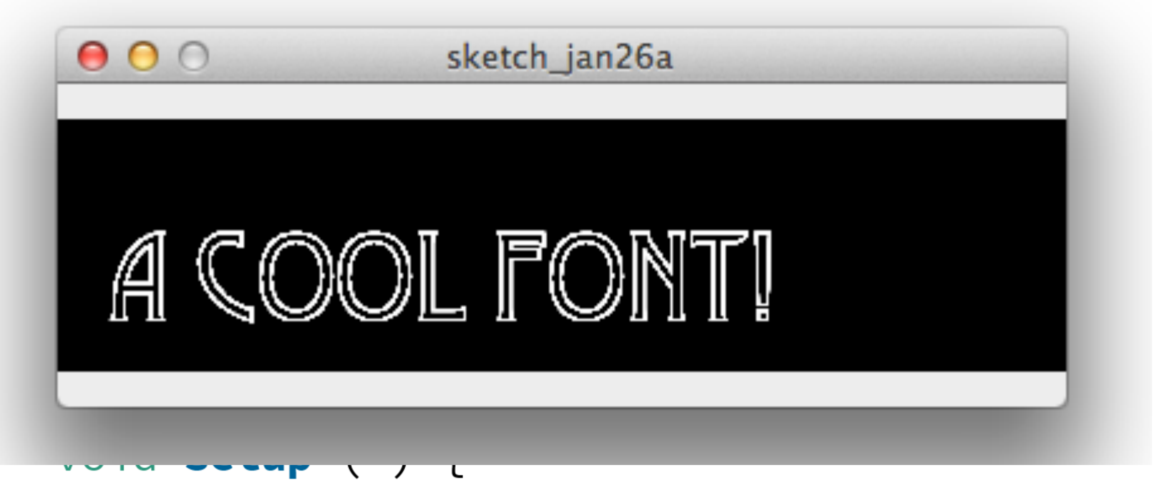


```
PFont typeface1;

void setup ( ) {
  size(400,100);
  background(0);
  typeface1 = loadFont("Desdemona-48.vlw");
  smooth( );
}
void draw( ) {
  fill(255);
  textFont(typeface1);
  text("A cool font!", 20, 80);
}
```

Declare Font Var, Load, Select

- Need to declare font name(s)
- Need to load named font
- Need to select named font as "in use"
- Then, fill( ) and write text(…);

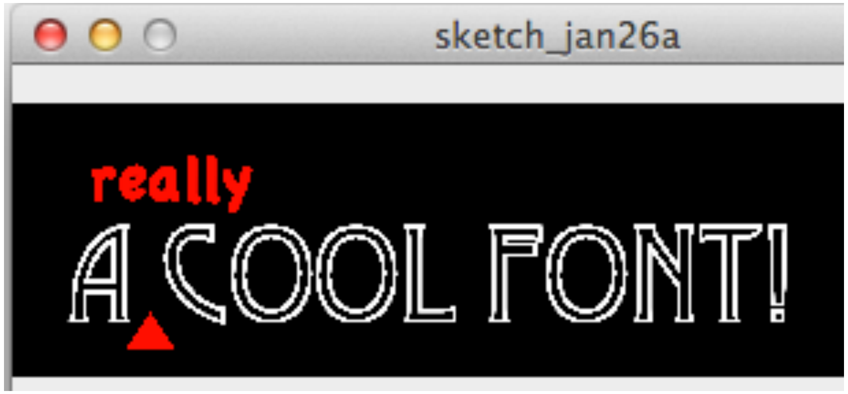


A COOL FONT!

```
void setup ( ) {
  size(400,100);
  background(0);
  typeface1 = loadFont("Desdemona-48.vlw");
  smooth( );
}
void draw( ) {
  fill(255);
  textFont(typeface1);
  text("A cool font!", 20, 80);
}
```

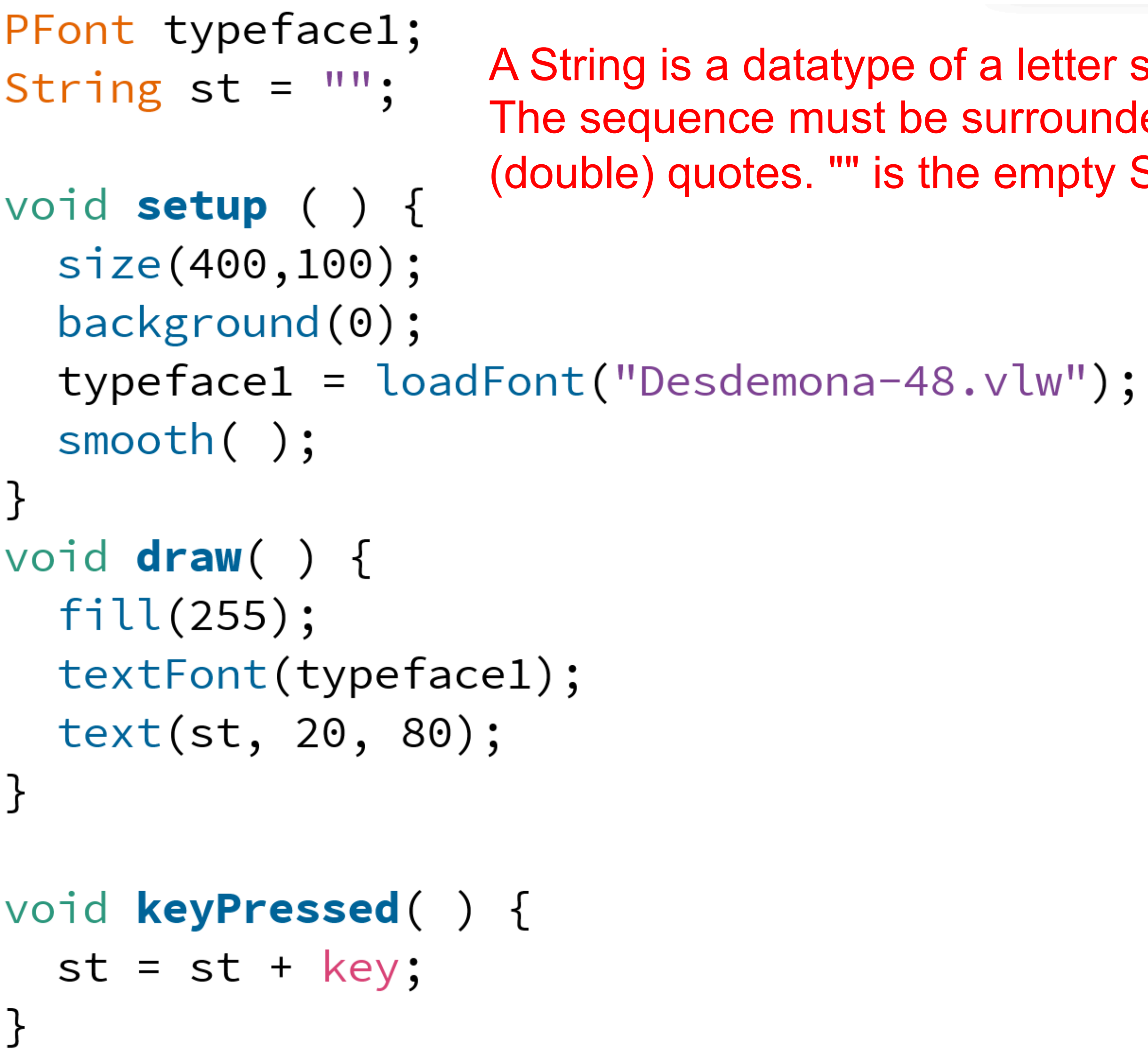
Switching Fonts …

```
PFont typeface1, typeface2;
void setup ( ) {
  size(400,100);
  background(0);
  typeface1 = loadFont("Desdemona-48.vlw");
  typeface2 = loadFont("AppleCasual-24.vlw");
}
void draw( ) {
  fill(255);
  textFont(typeface1);
  text("A cool font!", 20, 80);
  fill(255,0,0);
  textFont(typeface2);
  text("really", 28, 35);
  triangle(50, 75, 40, 90, 60, 90);
}
```



really
A COOL FONT!

Echoing Text



```
PFont typeface1;
String st = "";

void setup ( ) {
   size(400,100);
   background(0);
   typeface1 = loadFont("Desdemona-48.vlw");
   smooth( );
}
void draw( ) {
   fill(255);
   textFont(typeface1);
   text(st, 20, 80);
}

void keyPressed( ) {
   st = st + key;
}
```

A String is a datatype of a letter sequence. The sequence must be surrounded by (double) quotes. "" is the empty String.

Echoing Text

```
PFont typeface1;
String st = "";

void setup ( ) {
  size(400,100);
  background(0);
  typeface1 = loadFont("Desdemona-48.vlw");
  smooth( );
}
void draw( ) {
  fill(255);
  textFont(typeface1);
  text(st, 20, 80);
}

void keyPressed( ) {
  st = st + key;
}
```

A String is a datatype of a letter sequence. The sequence must be surrounded by (double) quotes. "" is the empty String.

A character can be added to a String (it's called *concatenation*) using a + sign.

Echoing Text

```
PFont typeface1;
String st = "";
```

A String is a datatype of a letter sequence. The sequence must be surrounded by (double) quotes. "" is the empty String.

```
void setup ( ) {
  size(400,100);
  background(0);
  typeface1 = loadFont("Desdemona-48.vlw");
  smooth( );
}
void draw( ) {
  fill(255);
  textFont(typeface1);
  text(st, 20, 80);
}
```

Use the String like any quoted letter sequence.

```
void keyPressed( ) {
  st = st + key;
}
```

A character can be added to a String (it’s called *concatenation*) using a + sign.

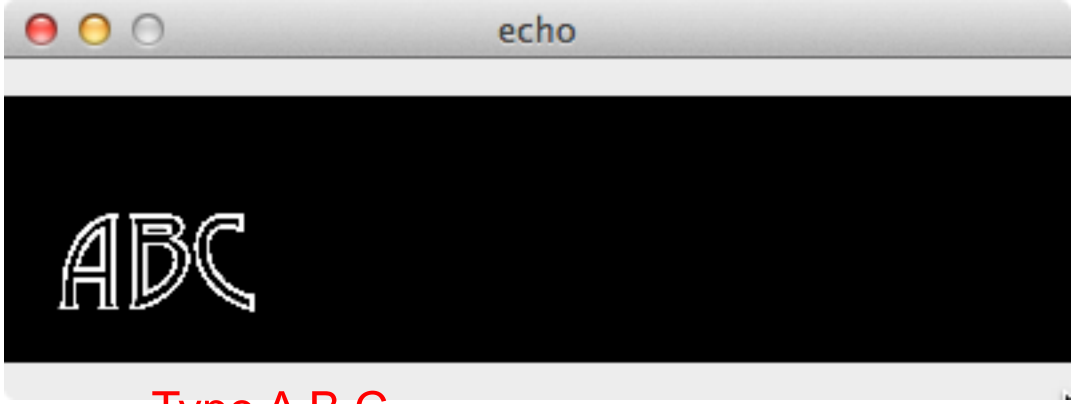
Echoing Text

```
PFont typeface1;
String st = "";

void setup ( ) {
   size(400,100);
   background(0);
   typeface1 = loadFont("Desdemona-48.vlw");
   smooth( );
}
void draw( ) {
   fill(255);
   textFont(typeface1);
   text(st, 20, 80);
}

void keyPressed( ) {
   st = st + key;
}
```

A String is a datatype of a letter sequence. The sequence must be surrounded by (double) quotes. “” is the empty String.



Type A B C

A character can be added to a String (it’s called *concatenation*) using a + sign.

Just Do It