

# Paint

In this lesson we will be making our own version of MS Paint.



## Task 1: Make a brush.

The first thing we will do is make a brush which draws on the canvas wherever the mouse is pointed. We want our canvas to be white and our brush to be black.

```
void draw() {
  fill(0);
  ellipse(mouseX,mouseY,20,20);
}
```

## Task 2: Only paint when the mouse is pressed.

We want to be able to decide where we paint on the screen so we only want to draw our ellipse when the left mouse button is pressed. Remember mousePressed from previous lessons.

```
if (mousePressed == true) {
  if (mouseButton == LEFT){
    //add brush code from above example
  }
}
```

## Task 3: Add an eraser.

We also want to “rub out” any mistakes, so we’ll make an eraser. When we **press the right mouse button we want to draw an ellipse** like our brush except this time we’ll make it the same colour as the background to make the paint disappear.

**Tip:** Place `noStroke();` at the start of draw to remove the outline around the ellipse.

**Task 4: Clear the screen when you press the 'c' key.**

If we want to clear the screen quickly and easily instead of having to rub everything out, we can start over by calling `background(255);` but we only want to do this when we press/release the 'c' key. We'll place this code in `void keyReleased()` section as we only want to clear the background once.

```
void keyReleased() {
  if (key == 'c'){
    background(255);
  }
}
```

**Task 5: Be able to change the brush size.**

Next step is to be able to change the diameter of the brush, so we can do more complex drawings. To do this we will need to change the width and height numbers in both ellipses with a **variable called diameter** ( `ellipse(mouseX,mouseY,diameter,diameter);` ). Don't forget to declare and initialise the variable at the top of the program and give it an initial value.

Now that we have our variable we want to be able to change it, so we will use a `keyPressed` function as we want the brush size to change as long as we have the up or down arrow keys pressed down. N.B. the diameter of the brush has to stay greater than 0 and have a maximum brush size, see sample code.

```
void keyPressed() {
  if (keyCode == UP){
    if (diameter < 50){
      diameter = diameter + 1;
    }
  }
  //write our own code for the down arrow key.
}
```

What we have so far:



### Task 6: Change the colour of our brush.

Notice how we have `fill(0)`; before we draw our brush ellipse. In order to change the colour on the fly we will change this to `fill(red, green, blue)`; where red, green and blue are variables like diameter(initialised at the top of the program and given initial values.) To change these values we'll use the number keys '1' through '6'.

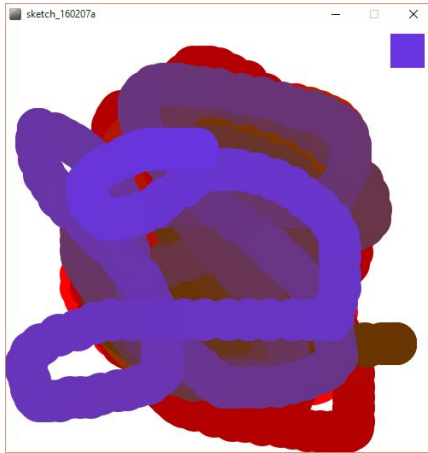
```
//inside keyPressed()
if (key == '1')
{
  if (red>0){
    red = red -1;
  }
}
if (key == '2')
{
  if (red<255){
    red = red +1;
  }
}
//add code for green '3' is down and '4' is up
//add code for blue '5' is down and '6' is up
//Almost exactly the same as the code up above.
```

### Task 7: Add a colour preview as seen in the first to pictures up above.

Before we start painting we want to be able to see what colour our brush, luckily we already have three variable that contain the colour of the brush. We will place a small rectangle in the top right hand corner of the screen that is the current colour of the brush.

```
fill(red,green,blue);
rect(450,10,40,40;
```

The finished product :)



**Bonus:** use `save("myPicture.png");` when we press the 'p' key to create a screenshot of our painting. Be careful - every time you save an image it overwrites the old one.

**Double Bonus:** feeling really adventurous? Use the code below to give each saved screenshot a unique name, and save away as much as you like!

```
void keyReleased() {  
  if (key == 's') {  
    String fileName = day() + "-" + month() + "-" + year() + "_" + hour() + "-" + minute() + "-" +  
second() + ".png";  
    save(fileName);  
  }  
}
```