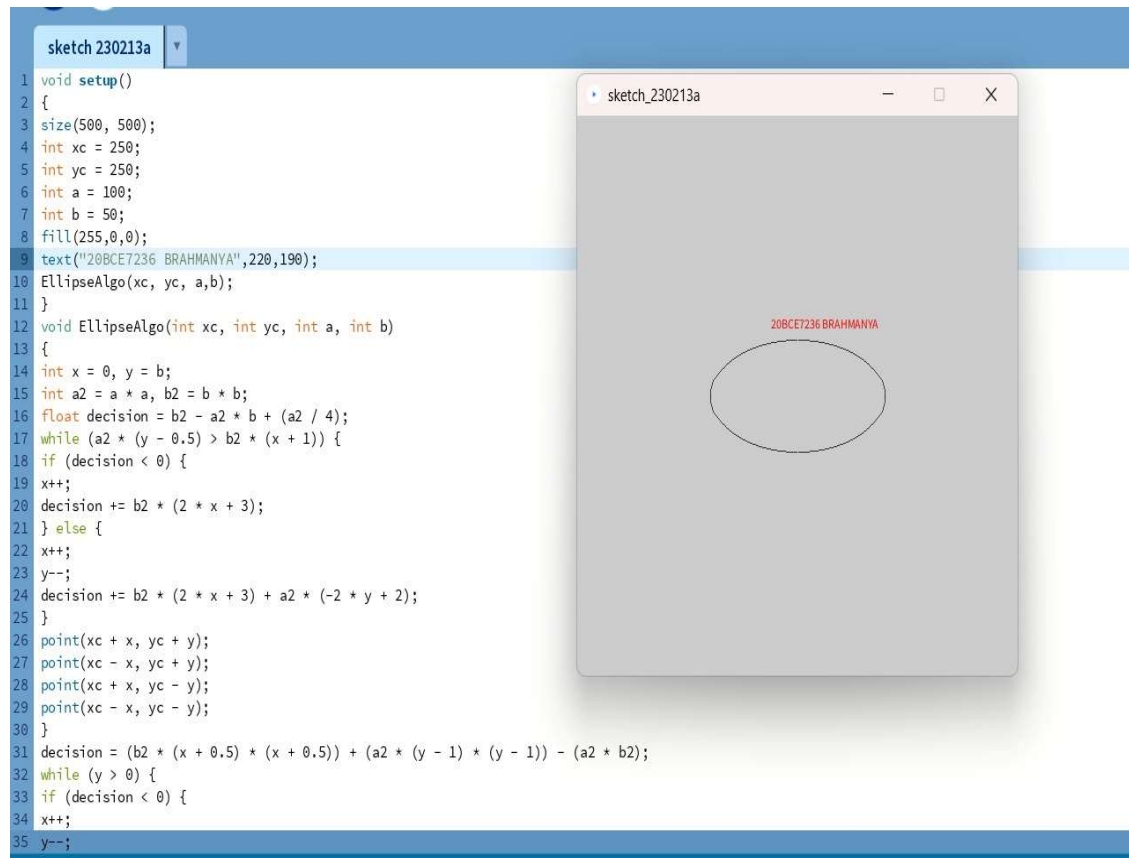


## Assignment 3.1

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1. Write a program to implement Mid-point/Bresenham's Ellipse Drawing Algorithm.



```
1 void setup()
2 {
3   size(500, 500);
4   int xc = 250;
5   int yc = 250;
6   int a = 100;
7   int b = 50;
8   fill(255,0,0);
9   text("20BCE7236 BRAHMANYA", 220, 190);
10  EllipseAlgo(xc, yc, a, b);
11 }
12 void EllipseAlgo(int xc, int yc, int a, int b)
13 {
14   int x = 0, y = b;
15   int a2 = a * a, b2 = b * b;
16   float decision = b2 - a2 * b + (a2 / 4);
17   while (a2 * (y - 0.5) > b2 * (x + 1)) {
18     if (decision < 0) {
19       x++;
20       decision += b2 * (2 * x + 3);
21     } else {
22       x++;
23       y--;
24       decision += b2 * (2 * x + 3) + a2 * (-2 * y + 2);
25     }
26     point(xc + x, yc + y);
27     point(xc - x, yc + y);
28     point(xc + x, yc - y);
29     point(xc - x, yc - y);
30   }
31   decision = (b2 * (x + 0.5) * (x + 0.5)) + (a2 * (y - 1) * (y - 1)) - (a2 * b2);
32   while (y > 0) {
33     if (decision < 0) {
34       x++;
35       y--;
```

```

decision += b2 * (2 * x + 3);
} else {
x++;
y--;
decision += b2 * (2 * x + 3) + a2 * (-2 * y + 2);
}
point(xc + x, yc + y);
point(xc - x, yc + y);
point(xc + x, yc - y);
point(xc - x, yc - y);
}
decision = (b2 * (x + 0.5) * (x + 0.5)) + (a2 * (y - 1) * (y - 1))
while (y > 0) {
if (decision < 0) {
x++;
y--;
decision = decision + b2 * (2 * x + 2) + a2 * (-2 * y + 3);
} else {
y--;
decision = decision + a2 * (-2 * y + 3);
}
point(xc + x, yc + y);
point(xc - x, yc + y);
point(xc + x, yc - y);
point(xc - x, yc - y);
}
}
y--;

```

Output:

