```
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                                                     kreise.cc
  1 #include <iostream>
  3 #include <cppqt.h>
  5 using namespace std;
  7 void drawCirclePoints(Drawing& pic, int x, int y, IPoint2D center,
                           bool filled, int colour = 0)
  8
  9 {
 11
      // malt acht Punkte oder vier Linien
 12
      int xcenter = center.x;
 13
      int ycenter = center.y;
 14
      if (!filled)
 15
 16
 17
 18
      else
 19
 20
          int k:
 21
          for (k = -x; k \le x; k++)
 22
 23
               pic.drawPoint(k + xcenter, y + ycenter, colour);
 24
               pic.drawPoint(k + xcenter, -y + ycenter, colour);
 25
 26
          for (k = -y; k \le y; k++)
 27
 28
               pic.drawPoint(k + xcenter, x + ycenter, colour);
 29
               pic.drawPoint(k + xcenter, -x + ycenter, colour);
 30
 31
           IOThread::msleep(40);
 32
 33 //>>>>
 34 }
                                           file:///home/jimenez/Teaching/Bildgenerierung/WS2324/Uebungen/02/kreise.cc
```

```
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                                                     kreise.cc
 35
 36 void drawCircle(Drawing& pic, IPoint2D center, int radius, bool filled,
                     int colour = 0)
 37
 38 {
 40
      // zeichnet einen Kreis um center mit Radius radius
 41
      int x = 0:
 42
      int y = radius;
 43
      int d = 4 * radius - 5;
 44
 45
      while (y >= x)
 46
 47
           drawCirclePoints(pic, x, y, center, filled, colour);
 48
           ++x;
 49
          if (d >= 0)
 50
            d = 8 * x + 4:
 51
          else
 52
 53
               --y;
               d = 8 * (x - y) + 4;
 54
 55
 56
 58 }
 59
 60 int maindraw()
 61 {
 62
      Drawing pic1(200, 200);
 63
      Drawing pic2(200, 200);
 64
 65
      pic1.show();
 66
      pic1.setZoom(2);
 67
      pic2.show();
 68
      pic2.setZoom(2);
                                            file:///home/jimenez/Teaching/Bildgenerierung/WS2324/Uebungen/02/kreise.co
```

```
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                                                       kreise.cc
 69
 70
      IPoint2D center;
 71
       int radius;
 72
       int colour;
 73
 74
      while (true)
 75
 76
           cout << "Eingabe von center, radius, colour: ";</pre>
           cin >> center >> radius >> colour;
 77
 78
           if (center.x < 0 || center.y < 0)
 79
             break;
 80
           pic1.show();
 81
           drawCircle(pic1, center, radius, false, colour);
 82
           cin.get();
 83
           cout << "Weiter mit Return" << endl;</pre>
 84
           cin.get();
 85
           pic2.show();
 86
           drawCircle(pic2, center, radius, true, colour);
 87
           cout << "Weiter mit Return" << endl;</pre>
 88
           cin.get();
 89
 90
         }
 91
 92
      cout << endl;</pre>
 93
      IOThread::waitForWindow(60);
 94
 95
       return 0;
 96 }
 97
 98 /*
 99 (100,100) 25 100
100
101
102 (100,100) 15 200
                                             file:///home/jimenez/Teaching/Bildgenerierung/WS2324/Uebungen/02/kreise.co
```