Pascal: Turtlegraphics -- Circles

The program below is supposed to draw a circle, but it doesn't--it draws an octogon. The drawing routines can calculate exactly where the end of the line will be, but with a move of only one dot, the result is limited to one of the eight adjacent dots. For example, if we move a distance of one dot at an angle of five degrees, then the co-ordinates of the destination are X + 0.09, Y + 0.99, which are rounded to X + 0, Y + 1.

Calculated Angle	Actual Angle
0 - 22.5	0
22.5 - 67.5	45
67.5 - 112.5	90
112.5 - 157.5	135
157.5 - 202.5	180
202.5 - 247.5	225
247.5 - 292.5	270
292.5 - 337.5	315
337.5 - 382.5	0

The next table gives the calculated and actual X and Y coordinates for an angle of 5 degrees and varying move distances.

	X-Coordinate		Y-Coordinate	
Move	Calc	Act	Calc	Act
1	0.09	0	0.99	1
2	0.17	0	1.99	2
3	0.26	0	2.98	3
4	0.35	0	3.98	4
5	0.43	0	4.98	5
6	0.52	1	5.97	6

The next diagram simulates the High-Res graphics display. Clearly, you must move at least 6 units for 5 degrees to show any effect.

```
                  M o v e
      1       2       3       4       5       6

                                                *
                                        *       *
                                *       *       *
                        *       *       *       *
                *       *       *       *       *
        *       *       *       *       *       *
```

```
        *       *       *       *       *       *
```

As you can see, the computer can't display a 5 degree change unless the move is at least 6 units.

```
PROGRAM CIRCLE;

USES Turtlegraphics;

VAR I : INTEGER;

BEGIN
  INITTURTLE;
  PENCOLOR (WHITE);
  FOR I := 1 TO 8 DO BEGIN
    MOVE (1);
    TURN (1);
  END;
  READLN;
END.
```

Apple Tech Notes

Keywords: <None>

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