

Lab Report. 02

Course title: Computer Graphics Lab

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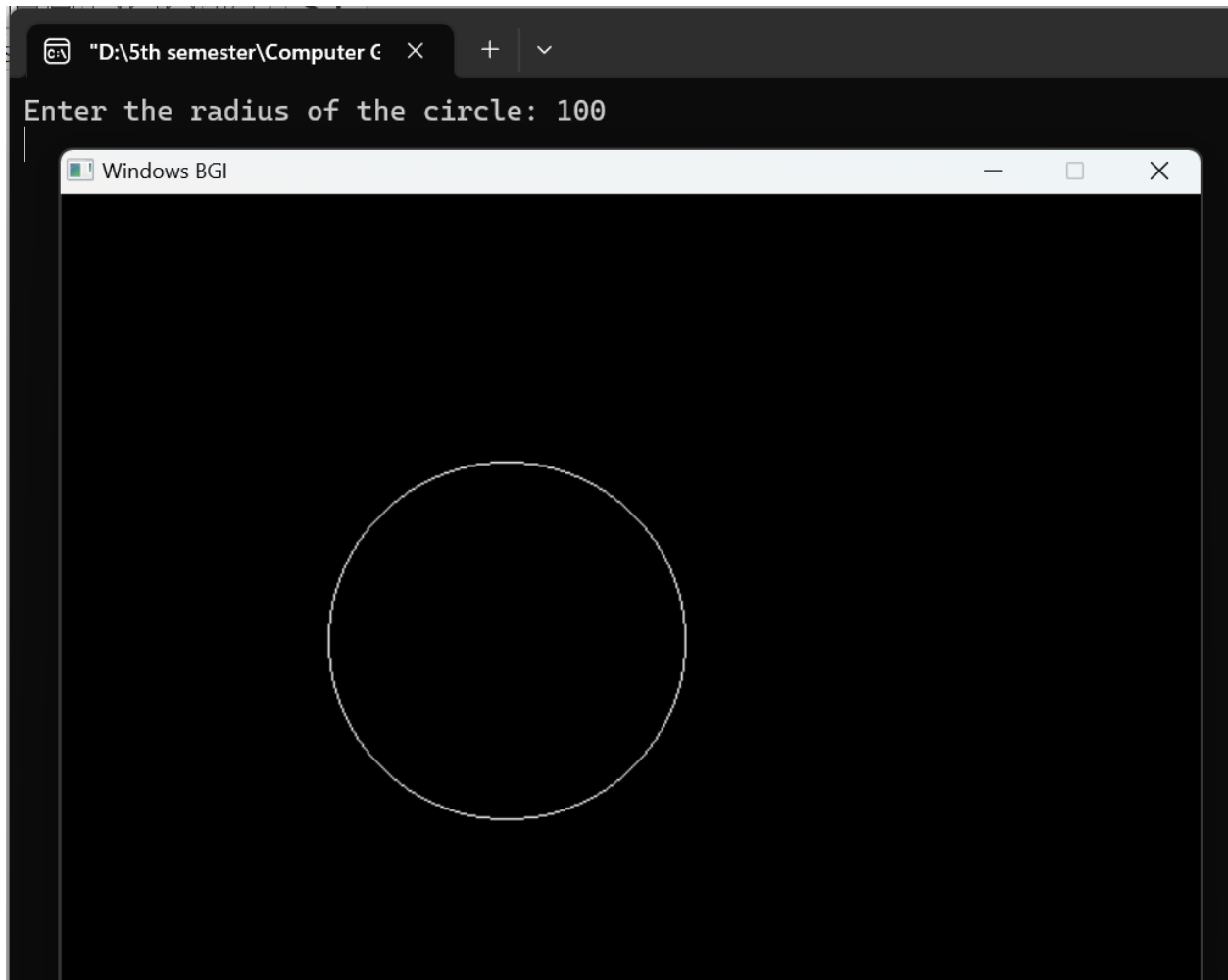
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Sl	Class Roll	Exam Roll	Name
01	360		Snigdha Rahman

Scan conversion of a circle using midpoint algorithm

<pre>#include <iostream> #include <graphics.h> void drawCircle(int radius, int xc, int yc) { int x = 0; int y = radius; int d = 1 - radius; int gd = DETECT, gm; initgraph(&gd, &gm, ""); while (x <= y) { putpixel(xc + x, yc + y, WHITE); putpixel(xc - x, yc + y, WHITE); putpixel(xc + x, yc - y, WHITE); putpixel(xc - x, yc - y, WHITE); putpixel(xc + y, yc + x, WHITE); putpixel(xc - y, yc + x, WHITE); putpixel(xc + y, yc - x, WHITE); putpixel(xc - y, yc - x, WHITE); if (d < 0) { d += 2 * x + 3; } } }</pre>	<pre> else { d += 2 * (x - y) + 5; y--; } x++; } getch(); closegraph(); } int main() { int radius; std::cout << "Enter the radius of the circle: "; std::cin >> radius; int xc = 250; int yc = 250; drawCircle(radius, xc, yc); return 0; }</pre>
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Output:



Scan conversion of a ellipse:

<pre> #include <iostream> #include <graphics.h> #include<math.h> void drawEllipse(int a, int b, int xc, int yc) { int x = 0; int y = b; int a_squared = a * a; int b_squared = b * b; int two_a_squared = 2 * a_squared; int two_b_squared = 2 * b_squared; int four_a_squared = 4 * a_squared; int four_b_squared = 4 * b_squared; int x_end = b_squared / sqrt(a_squared + b_squared); int dx = 0; int dy = two_a_squared * y; int gd = DETECT, gm; initgraph(&gd, &gm, ""); putpixel(xc + x, yc - y, WHITE); putpixel(xc + x, yc + y, WHITE); int p1 = round(b_squared - (a_squared * b) + (0.25 * a_squared)); while (dx < dy) { x++; if (p1 < 0) { dx += two_b_squared; p1 += dx + b_squared; } else { y--; dx += two_b_squared; dy -= two_a_squared; p1 += dx - dy + b_squared; } putpixel(xc + x, yc - y, WHITE); </pre>	<pre> putpixel(xc + x, yc + y, WHITE); putpixel(xc - x, yc + y, WHITE); putpixel(xc - x, yc - y, WHITE); } int p2 = round(b_squared * (x + 0.5) * (x + 0.5) + a_squared * (y - 1) * (y - 1) - a_squared * b_squared); while (y > 0) { y--; if (p2 > 0) { dy -= two_a_squared; p2 += a_squared - dy; } else { x++; dx += two_b_squared; dy -= two_a_squared; p2 += dx - dy + a_squared; } putpixel(xc + x, yc - y, WHITE); putpixel(xc + x, yc + y, WHITE); putpixel(xc - x, yc + y, WHITE); putpixel(xc - x, yc - y, WHITE); } delay(5000); closegraph(); } int main() { int a = 200; int b = 100; int xc = 250; int yc = 250; drawEllipse(a, b, xc, yc); return 0; } </pre>
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Output:

