#include <graphics.h>

#include <cmath>

#include <iostream>

using namespace std;

class SineWave {

public:

// Function to plot the sine wave

void drawSineWave(int x\_centre, int y\_centre, int amplitude, int frequency, int num\_points) {

setcolor(WHITE); // Set drawing color to white

for (int i = 0; i < num\_points; i++) {

// Calculate the sine of the angle (frequency controls the number of waves)

float x = i; // X values, ranging from 0 to num\_points

float y = amplitude \* sin(frequency \* x \* M\_PI / 180); // Sine function

// Scale and translate the sine wave to fit the screen

int screen\_x = x\_centre + x;

int screen\_y = y\_centre - y; // We subtract y to flip the y-axis

// Plot the point

putpixel(screen\_x, screen\_y, WHITE);

delay(1); // Slow down the drawing (adjust delay as needed)

}

}

};

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, NULL); // Initialize the graphics mode

int x, y, amplitude, frequency, num\_points;

cout << "Enter the center coordinates (x, y): ";

cin >> x >> y;

cout << "Enter the amplitude of the sine wave: ";

cin >> amplitude;

cout << "Enter the frequency of the sine wave: ";

cin >> frequency;

cout << "Enter the number of points (length of the sine wave): ";

cin >> num\_points;

SineWave ob;

ob.drawSineWave(x, y, amplitude, frequency, num\_points); // Draw the sine wave

getch(); // Wait for user input to close the graphics window

closegraph(); // Close the graphics window

return 0;

}