

```
1: #include <imtui/imtui.h>
2: #include <imtui/imtui-impl-ncurses.h>
3: #include <ctime>
4:
5: using namespace ImGui;
6:
7: float ball_x = 0.0f, ball_y = 0.0f;
8: float ball_vel_x = 1.0f, ball_vel_y = 1.0f;
9:
10: constexpr float WIDTH = 60.0f;
11: constexpr float HEIGHT = 30.0f;
12: constexpr float RADIUS = 1.2;
13:
14: void init_ball() {
15:     ball_x = rand() % (int)WIDTH;
16:     ball_y = rand() % (int)HEIGHT;
17:     ball_vel_x = rand() % 3 + 1;
18:     ball_vel_y = rand() % 3 + 1;
19: }
20:
21: // Function to update ball position and handle bouncing
22: void update_ball() {
23:     // Update position
24:     ball_x += ball_vel_x;
25:     ball_y += ball_vel_y;
26:
27:     // Bounce off horizontal walls
28:     if (ball_x <= 0.0f || ball_x + RADIUS >= WIDTH) {
29:         ball_vel_x = -ball_vel_x;
30:         // ball_x = (ball_x - RADIUS <= 0.0f) ? RADIUS : WIDTH - RADIUS;
31:     }
32:
33:     // Bounce off vertical walls
34:     if (ball_y <= 0.0f || ball_y + RADIUS >= HEIGHT) {
35:         ball_vel_y = -ball_vel_y;
36:         // ball_y = (ball_y - RADIUS <= 0.0f) ? RADIUS : HEIGHT - RADIUS
37:     }
38: }
39:
40: void draw_ball(ImGuiDrawList* draw_list, ImVec2 canvas_pos) {
41:     ImVec2 ball_center = ImVec2(canvas_pos.x + ball_x,
42:                                 canvas_pos.y + ball_y);
43:     draw_list->AddRectFilled(ball_center,
44:                             ImVec2(ball_center.x + RADIUS, ball_center.y + RADIUS),
45:                             IM_COL32(0, 255, 0, 255));
46: }
47:
48: // Function to render the game area
49: // Returns true if we should exit
50: bool render_game() {
51:     SetNextWindowPos(ImVec2(2, 2), ImGuiCond_Once);
52:     SetNextWindowSize(ImVec2(WIDTH, HEIGHT + 10), ImGuiCond_Once);
53:
54:     Begin("Bouncing Ball (Procedural - Circle)");
55:
56:     // Get the draw list for custom drawing
57:     ImGuiDrawList* draw_list = GetWindowDrawList();
58:     ImVec2 canvas_pos = GetCursorScreenPos();
59:     ImVec2 canvas_size = ImVec2(WIDTH, HEIGHT);
60:
61:     // // Draw border rectangle
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62:     // draw_list->AddRect(canvas_pos,
63:     //     ImVec2(canvas_pos.x + canvas_size.x,
64:     //             canvas_pos.y + canvas_size.y),
65:     //     IM_COL32(255, 255, 255, 255), 0.0f, 0, 1.0f);
66:
67:     draw_ball(draw_list, canvas_pos);
68:
69:
70:     // Reserve space for the canvas
71:     Dummy(canvas_size);
72:
73:     // Display info
74:     Text("Position: (%.1f, %.1f)", ball_x, ball_y);
75:     Text("Velocity: (%.1f, %.1f)", ball_vel_x, ball_vel_y);
76:     Text("Radius: %.1f", RADIUS);
77:     Text("Canvas Pos: %.1f %.1f", canvas_pos.x, canvas_pos.y);
78:
79:
80:     bool should_exit = false;
81:     if (Button("Exit")) {
82:         should_exit = true;
83:     }
84:
85:     End();
86:
87:     return should_exit;
88: }
89:
90: int main() {
91:     srand(time(NULL));
92:     IMGUI_CHECKVERSION();
93:     CreateContext();
94:
95:     auto screen = ImTui_ImplNcurses_Init(true);
96:     ImTui_ImplText_Init();
97:
98:     // Initialize ball
99:     init_ball();
100:
101:    bool should_exit = false;
102:    while (!should_exit) {
103:        ImTui_ImplNcurses_NewFrame();
104:        ImTui_ImplText_NewFrame();
105:
106:        NewFrame();
107:
108:        // Update ball
109:        update_ball();
110:
111:        // Render game
112:        should_exit = render_game();
113:
114:        Render();
115:
116:        ImTui_ImplText_RenderDrawData(GetDrawData(), screen);
117:        ImTui_ImplNcurses_DrawScreen();
118:    }
119:
120:    ImTui_ImplText_Shutdown();
121:    ImTui_ImplNcurses_Shutdown();
122:
123:    return 0;
```

124: }