

**BitWith Bite**

PYGAME MASTERY WORKSHEET

**Animation**

Module 7 of 20 • Level ★★★ • Time: 35 min

SCORE

___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Cycle animation frames on a timer
- ✓ Distinguish looping vs one-shot animations
- ✓ Time animation by elapsed dt, not frame count
- ✓ Design a reusable Animation Manager

QUICK RECAP

Animation is a list of frames advanced on a millisecond timer, not once per loop iteration — looping states like idle/walk repeat forever, while one-shot states like attack/death play once and hold or trigger an event.

**Section A • Concept Check**

• INTERMEDIATE

4 × 1 = 4

1 Why advance animation frames based on elapsed time (dt)?

- ☐ A. It uses less memory
- ☐ B. FPS varies by machine, so time-based timing stays consistent
- ☐ C. Pygame requires it
- ☐ D. It loads images faster

3 In a reusable AnimationManager, when should frame_index reset to 0?

- ☐ A. Every frame
- ☐ B. Only when the animation name changes
- ☐ C. Never
- ☐ D. Randomly

2 Which animations are typically one-shot?

- ☐ A. Idle and walk
- ☐ B. Attack and death
- ☐ C. Running only
- ☐ D. All animations loop

4 What should happen after a death animation's last frame plays?

- ☐ A. Loop back to frame 0
- ☐ B. Hold the last frame or trigger a game-over event
- ☐ C. Switch to idle instantly
- ☐ D. Delete the sprite with no animation

**Section B • Problem Solving**

• INTERMEDIATE

2 + 3×3 = 11

5 A running animation is often the walk cycle played _____.**6**

The variable that accumulates milliseconds since the last frame change is usually called the _____.

7 Write the condition that advances to the next frame once anim_timer reaches ANIM_SPEED, wrapping back to 0 if at the last frame.**8** Why should jump animation typically not loop?**9** What two pieces of data does an AnimationManager need per animation name?



Section C · Challenge

• CHALLENGE

5

10 If your AnimationManager resets frame_index to 0 every single frame instead of only on a name change, describe exactly what the player would see on screen.

Reflection — the most useful thing I learned: _____

A ___/4

B ___/11

C ___/5

Total ___/20

Teacher's Signature

Parent's Signature

⌘ ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-B 2-B 3-B 4-B | 5 faster 6 anim_timer (or animation timer) 7 = if anim_timer ≥ ANIM_SPEED: anim_timer = 0; frame_index = (frame_index + 1) % len(frames) 8 = it represents a single rise-apex-fall arc; looping it would make the character appear to jump repeatedly mid-air instead of holding at the peak/landing 9 = the list of frame images for that animation, and its playback speed/whether it loops | 10 = the animation would appear frozen or stuck flickering on frame 0 every frame, since it never gets the chance to advance to frame 1 before being reset back to 0 again

bitwithbite.com

Free STEM Learning Resources · Pygame Mastery · Animation