

All about sprites and sprite animations

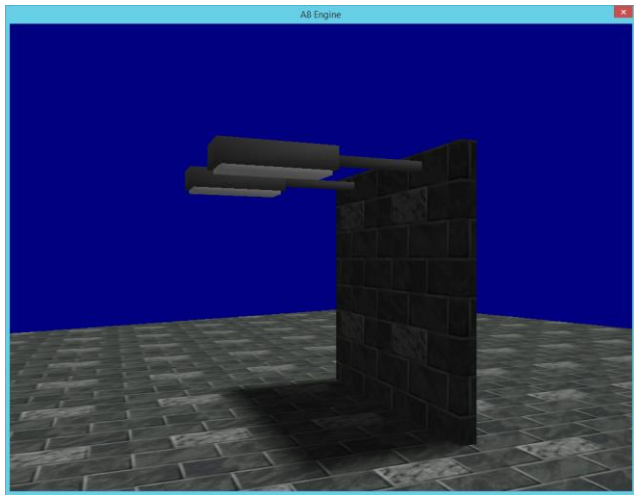
Welcome back fellow coders. This chapter will explain some stuff about the use of sprites.

Sprites ? yes 2d pictures we use in game to simulate beams of light, flames or even explosions.

I know your eager to create your first game and I'll promise you we will do that right after this chapter.

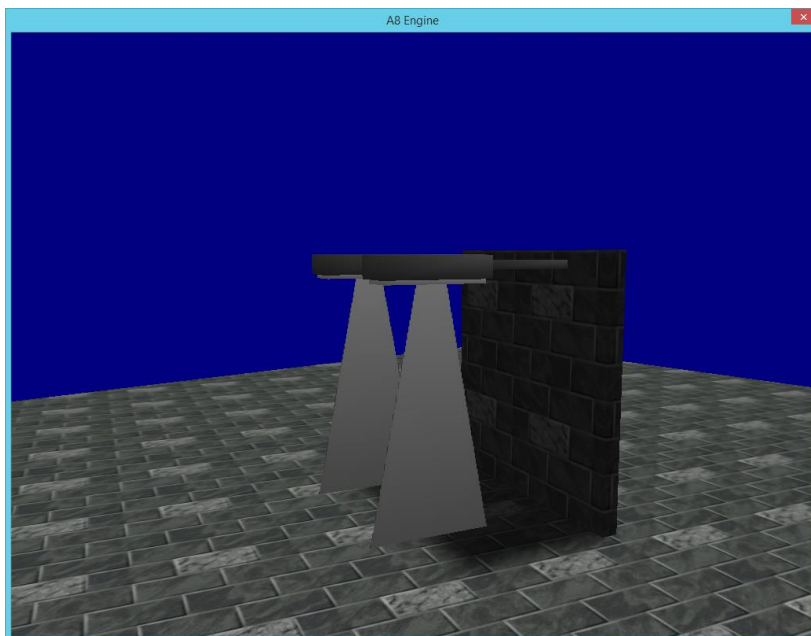
So shall we continue ? yes we will.

I created a simple level with 2 lamp models. Now we want to make it look like it actually shines light beams to the ground. Here is how to do it.



I created a simple light beam picture. You can do this in any paint program. The pure black parts will be removed ingame so only the lightbeam will be visible. This will only work if the picture is a 32 bit TGA.

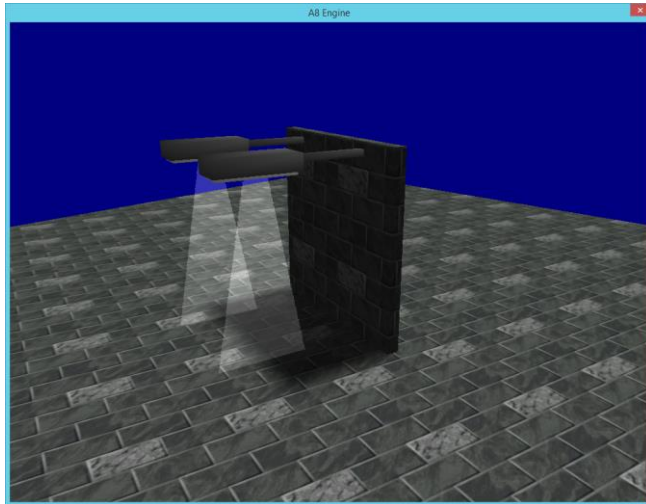
Now place our sprite in the level. You should know how. Place it right under the lamp and so it touches the ground. Like this :



You can see how the black is removed fully. Now to make it look better in wed we set the flags BRIGHT, TRANSPARENT, and PASSABLE.

BRIGHT = Make it light up.
TRANSPARENT = So you can see through
PASSABLE = So you can walk straight through it.

Here is how it looks now :

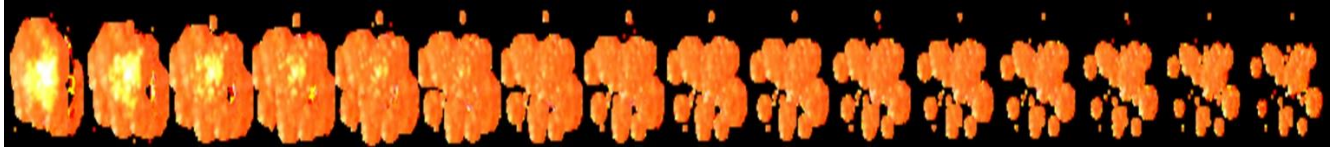


Cool isn't it ? 😊 try your own light beam pictures. You can use sprites for more things. Say you want a fence ? Create the fence links and make the rest pure black. This way when you place the sprites only the fence links will be shown 😊

So what about that explosion sprites story ?

Well you want to use a one-shot animation for every sprite that plays its animation frames only once and then stops: an explosion, a teleport effect, and so on. Of course that you can trigger the same one-shot animation several times (for example, to create several explosions) but a looped animation will simply repeat its frames over and over without stopping. Basically it plays several frames so it looks like it's an animation while the truth is that it's simply a few frames showing right after each other. (like making a cartoon)

Let's have a look at this example explosion sprite that comes with this workshop. (explo2+16.pcx.)



Here it is. An explosion sprite. Each frame should be a square. So you could create your own squares and add them in one long row for use in game. Each square is an animation frame ☺ The engine will display these bitmaps one by one, starting with the bitmap on the left side of the screen, and moving toward the right side of the screen. If the animation speed is big enough, the player won't notice that he is staring at a bitmapped slide show - he will think that he or she sees a "real" animation. Choose the proper size for a frame, and then create several frames and paste them into a single bitmap. If your frame has 128 x 32 pixels and you've got 4 animation frames, the resulting bitmap must have = 512 x 32 pixels, because $512 = 128 \times 4$, now that is clear right ?

You can use as many frames as you like for your animated sprites; please be aware that even though more frames will create better looking effects, they will use more memory. A pcx sprite that has 256 x 128 pixels will need $256 \times 128 \times 2$ bytes = 65,536 bytes = 64 Kb. This means that if your sprite has 16 animation frames, it will use about $64 \text{ Kb} \times 16 = 1\text{Mb}$ of video memory.

Don't forget that you can (and you should) use the same sprite or model over and over whenever it is possible. The memory that is used for it is allocated only once; therefore, it is better to use the same sprite 10 times in your level instead of using 2 different sprites. Want to create a huge explosion? Create 10 identical explosion sprites simultaneously in the level, placing them close to each other!

The last thing to remember for now is the naming convention for sprites. You see, lite-C isn't a mind reader device, so it doesn't know what you plan to do with a certain sprite! So it's nice from you to tell it something like this: "Dear lite-C, I'd like you to treat this sprite as an animated sprite. How do you do that? By choosing a proper name for the animated sprite. Here are a few examples:

fire+5.dds
lightning+32.tga
my_explosion+12.bmp

The + and number will tell the engine to use it as an animation sprite. Now it is time to test this sprite.

Ad this code before your main :

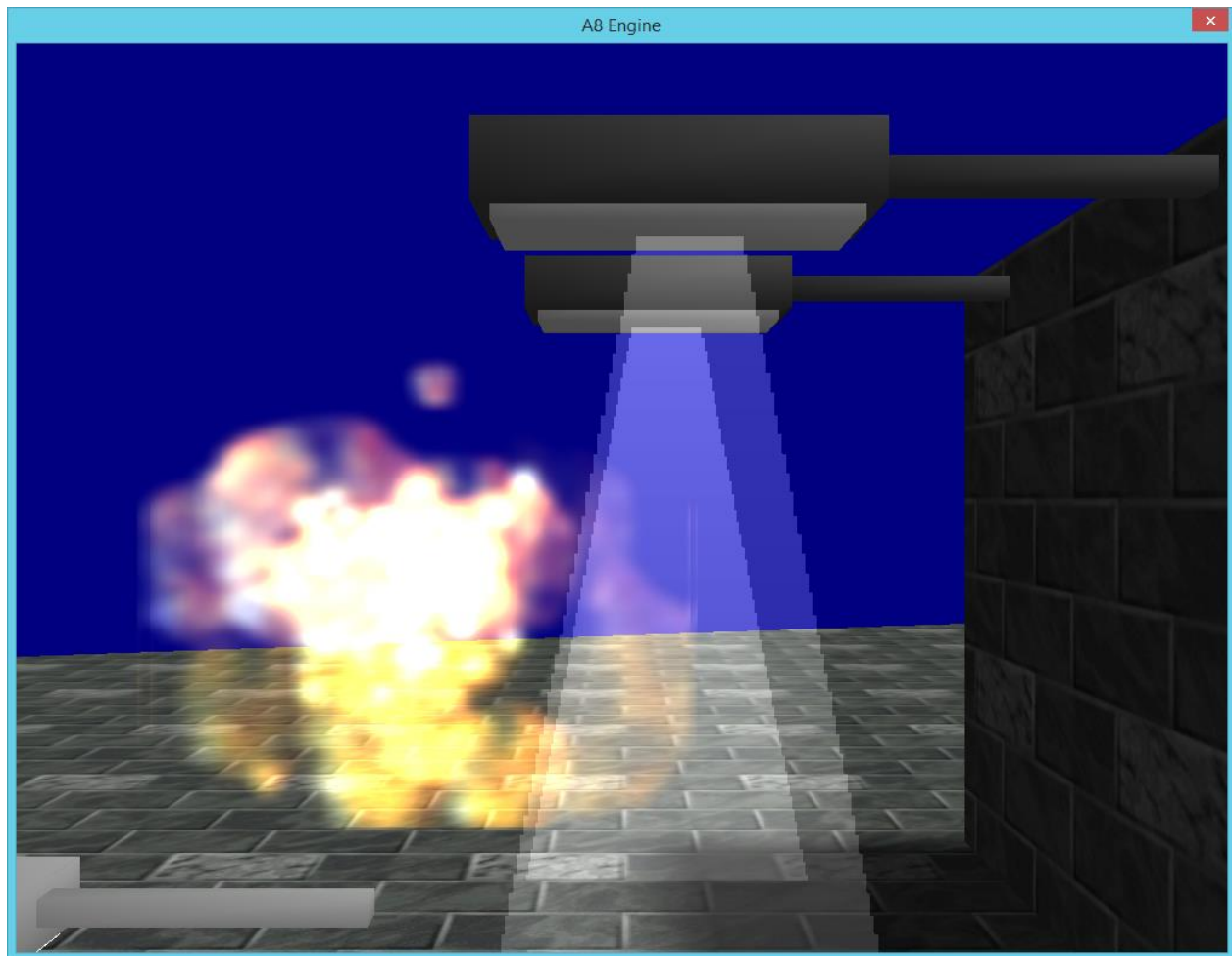
```
action explosion() //<< the action name
{
my.ambient = 100;///<< give ambient
my.flags |= BRIGHT; ///Make it lite up
while(1) ///<< remember the while ?
{
while(!key_e) wait (1);///<<< if E key is pressed
for (my.frame = 1; my.frame < 17; my.frame += 0.7 * time_step) wait (1);/// we play the sprite frames
}
}
```

Add this line in your main so the sprite will be created and starts the action on the E key.

```
ent_create("explo2+16.tga", vector(0,0,0), explosion);
```

Run the level and press E and yessss you will see the explosion play 😊 So you now understand how sprites work and how they can be played in game. Experiment with your own created sprites. Be as creative as you want to be. Create the same explosion nearby so it will look bigger. Have fun with this all.

So if your willing and still happy following these workshops I will see you in the next chapter where we will create a small simple but fun game. Make sure you study all workshops 1 to 7 because you will be needing them in the future. Till then and for now enjoy the sprites.



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