



### Explosion debris with some physics.

Welcome to this very short tutorial about creating explosions with debris flying around using physics.

What we need is if an object is hit or touched, it should explode in several parts that fly and bounce away. I'll use the physics that come with the 3dgs engine. Let's start this shall we ?

Important is we include the physics script into our script so add this line :

#### Line 5

```
#include <ackphysx.h>
```

This will make sure the physic scripts comes with our game.

Then the main function will need these lines :

#### Line 39-47

```
function main()<<<<<< main function

    physX_open();<<<<<<open the physics script that is use (remember you included it)
    pX_setccd(1);<<<<<<this is set so the level blocks have collision with physic objects

    video_set(1024,768,0,0); <<<<<<screen resolution settings.
    level_load("explo.WMB");<<<<<< level to load
    random_seed( 0 );<<<<<< this is needed for our physic function. Don't worry we get there
```

Now we will create a function so any object with that function will become a physic object.

#### Line 50-64

```
ENTITY* shard; <<<<< pointer to the shard model
```

```
function create_shard()<<<<<< name of the function
set(my,BRIGHT | TRANSLUCENT);<<<<<< make the model bright and transparant
pXent_settype(my, PH_RIGID, PH_SPHERE); <<<<<<this entity behaves like a sphere
pXent_addforcecentral ( my, vector(sign(random(2)-1)*random(100),sign(random(2)-1)*random(100),0));<<<<<<we add force and random direction for the physics object
pXent_setfriction (shard,50); <<<<<<set the friction on the ground
pXent_setdamping (shard,200,200); <<<<<<set the damping
pXent_setelasticity (shard,3); <<<<<<set the elasticity
wait(-3);<<<<<<wait 3 seconds
ent_remove(me);<<<<<< remove the physic object
```



I created an action for the pyramid model. It will make the pyramid invisible then create all shard parts that will have the create\_shard function. Yes that's right they will become physic objects

**Line 67-101**

```
action pyra_explode()<<<<<name of the action
set(my,TRANSLUCENT);<<<<<make it transparant
my.alpha = 50;<<<<<set alpha to 50
while(1)

wait(-10); <<<<< wait 10 seconds.
snd_play (glass_snd, 100, 0);<<<<<play breaking glass sound (or any sound you want)
set(my,INVISIBLE);<<<<<make the model invisible
ent_create("explo2+16.tga", vector(my.x,my.y,my.z+50), sprite_played);<<<create explosion sprite
```

Then we create all shard part models and give it the create\_shard function

```
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard2.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard4.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard2.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard4.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard2.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard4.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard2.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard4.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard3.mdl",vector(my.x,my.y,my.z+100),create_shard);
ent_create("shard1.mdl",vector(my.x,my.y,my.z+100),create_shard);
wait(-3); <<<<< wait 3 seconds
reset(my,INVISIBLE);<<<<<make model visible again
wait(1);
```



Now this pyra explode runs in a loop (Code is after the while) if you did all my previous workshops you should understand how to make it explode on a hit or impact bullets and so on.

Remember this line in the main : `random_seed( 0 );`

It will make sure that the parts never bounce of the same direction but always are scattered random. Even these parts should be able to impact other models.

So there you have it. Some cool explosions and you learned a little how to use physics. You can change and use it how you like. Make the shards fade out, bounce more or let them make sounds on collision. You can use this way of doing it on for example exploding walls, vehicles and so on 😊

Happy debris time 😊

Rene Pol.