Introduction

In this project, we'll create a fireworks display over a city.

STEP 1: Create a rocket that flies towards the mouse

Let's import the different pictures for the game

✓ Activity Checklist

- [ ] Start a new Scratch project. Delete the cat by right clicking it and clicking Delete
- [ ] Replace the background with outdoor/city-with-water
- [ ] Use the new sprite from file button to add a Rocket sprite to the project (use the Resources/Rocket.png costume).
- [ ] Make the rocket hide when the green flag is clicked.

Now we want to make the rocket move towards the mouse when the mouse is clicked.

- [ ] Add a when space key pressed control block, and under this make the rocket appear and glide towards the mouse

```
when [flag] clicked
hide


when [space key] pressed
show
glide (1) secs to x: (mouse x) y: (mouse y)
```
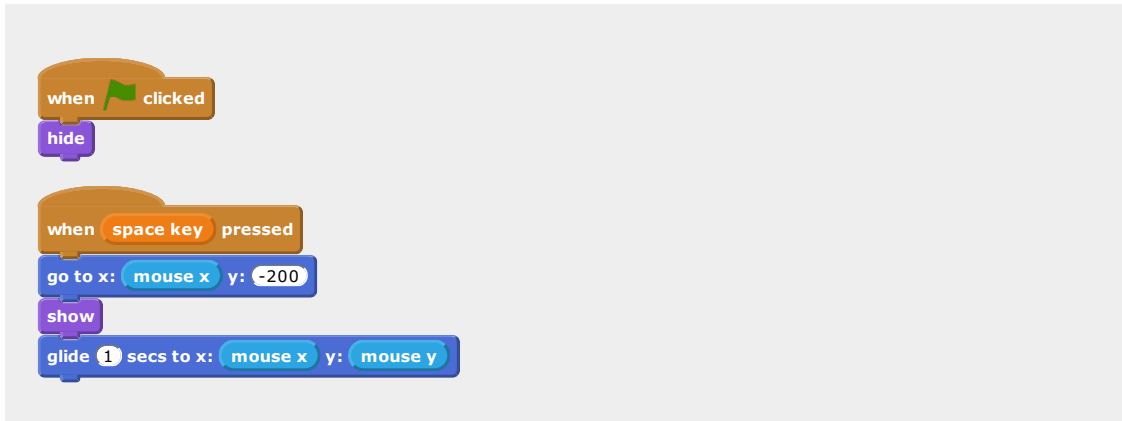
🚩 Test Your Project

Click the green flag, place your mouse over the stage and press the space bar.

Does the rocket appear and move to the mouse?
What happens if you move the mouse and press space again?

Activity Checklist

Fireworks don't tend to fly from side to side, so lets make sure it always glides towards the mouse from the bottom of the screen. Before we show the rocket, use the go to block tell it to move to below the bottom of the screen, but stay in the same place horizontally.

```
when [flag] clicked
hide

when [space key] pressed
go to x: (mouse x) y: (-200)
show
glide (1) secs to x: (mouse x) y: (mouse y)
```

Test Your Project

Click the green flag, place your mouse over the stage and press the space bar.
Does the rocket fly towards the mouse from the bottom of the screen? What happens if you move the mouse and press space again?

Activity Checklist

Finally, lets make this work by using the mouse button instead of the space bar. To do this, we can wrap our script in a forever if mouse down.
Then swap the when space key pressed control block for when flag clicked and last but not least make
sure the rocket is hidden when everything starts up.

```
when [flag] clicked
hide
forever
    if <mouse down?> then
        go to x: (mouse x) y: (-200)
        show
        glide (1) secs to x: (mouse x) y: (mouse y)
```

Test Your Project

Click the green flag, and then press the mouse button over the stage. Click again at another point.
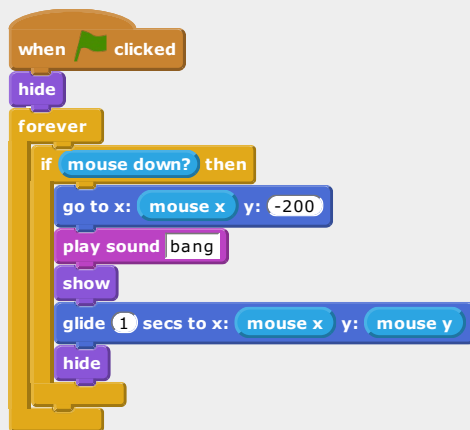
⏏ Save your project

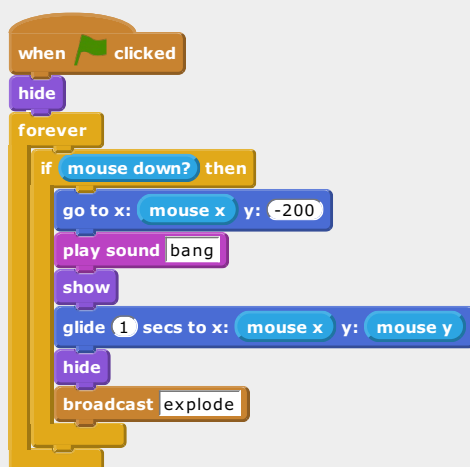## STEP 2: Make the rocket explode

✅ Activity Checklist

The first step to make the rocket explode is to make it play a bang sound Resources\bang before it starts moving, and then hide itself once it reaches the mouse. To import a sound go to the Sounds tab and click import

```
when [flag] clicked
hide
forever
  if < mouse down? > then
    go to x: (mouse x) y: (-200)
    play sound [bang]
    show
    glide (1) secs to x: (mouse x) y: (mouse y)
    hide
```

1. Next, make the rocket broadcast a new message when it explodes. We'll listen for this message later on.

```
when [flag] clicked
hide
forever
  if < mouse down? > then
    go to x: (mouse x) y: (-200)
    play sound [bang]
    show
    glide (1) secs to x: (mouse x) y: (mouse y)
    hide
    broadcast [explode]
```

🚩 Test Your Project

Click the green flag.
Make sure the rocket plays a noise and hides when it reaches the mouse.
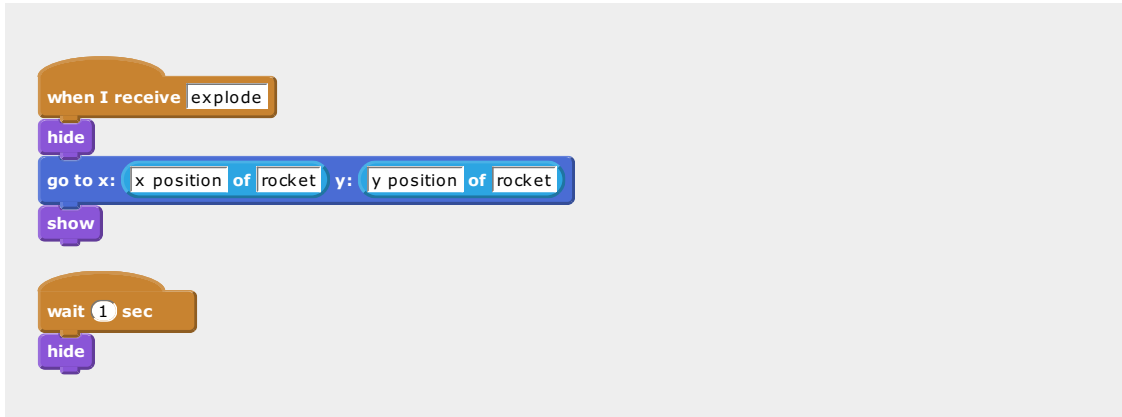
Activity Checklist

- [ ] Create new sprite from File, Resources/firework1.png
- [ ] When it receives the explode message, it should hide itself and then move to the position of the rocket using the go to block, show itself, and then vanish again a second later.

```
when I receive explode
hide
go to x: x position of rocket  y: y position of rocket
show

wait 1 sec
hide
```

Test Your Project

Send another rocket flying.
Does it get replaced with the explosion graphic when it explodes?
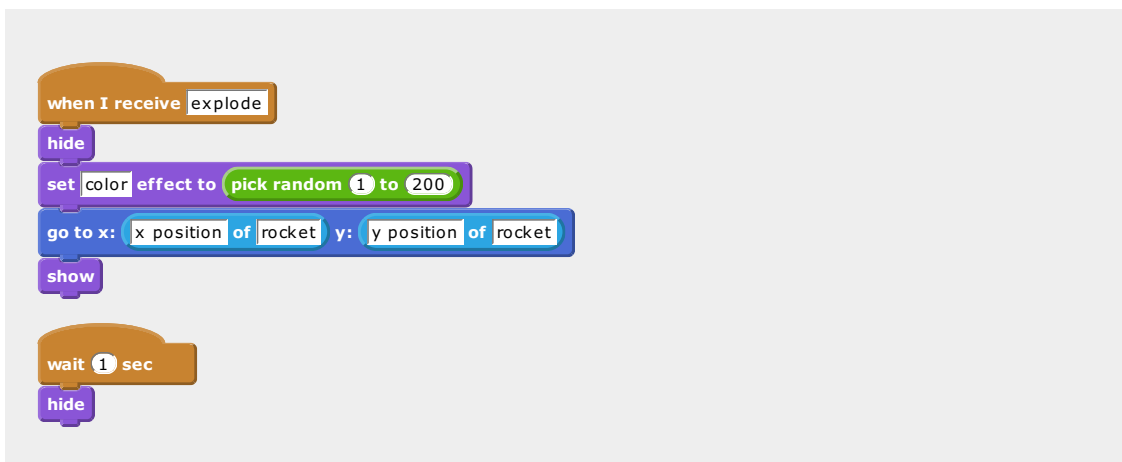What happens if you hold the mouse button down whilst moving the mouse? (Don't worry, we'll fix this later on).

Save your project

STEP 3: Make each explosion unique

- Now we can make each explosion even more unique by using the set color effect block, and have it pick a random colour between 1 and 200 before showing it.

```
when I receive explode
hide
set color effect to pick random 1 to 200
go to x: x position of rocket  y: y position of rocket
show

wait 1 sec
hide
```

Test Your Project

Click the green flag.

Does each explosion have a different colour?

Test Your Project

Click the green flag.

Does each rocket have a different explosion graphic?

```
when I receive explode
hide
set color effect to (pick random 1 to 200)
go to x: (x position of rocket) y: (y position of rocket)
show
set size to 5 %
repeat 50
    change size by 2

wait 1 sec
hide
```
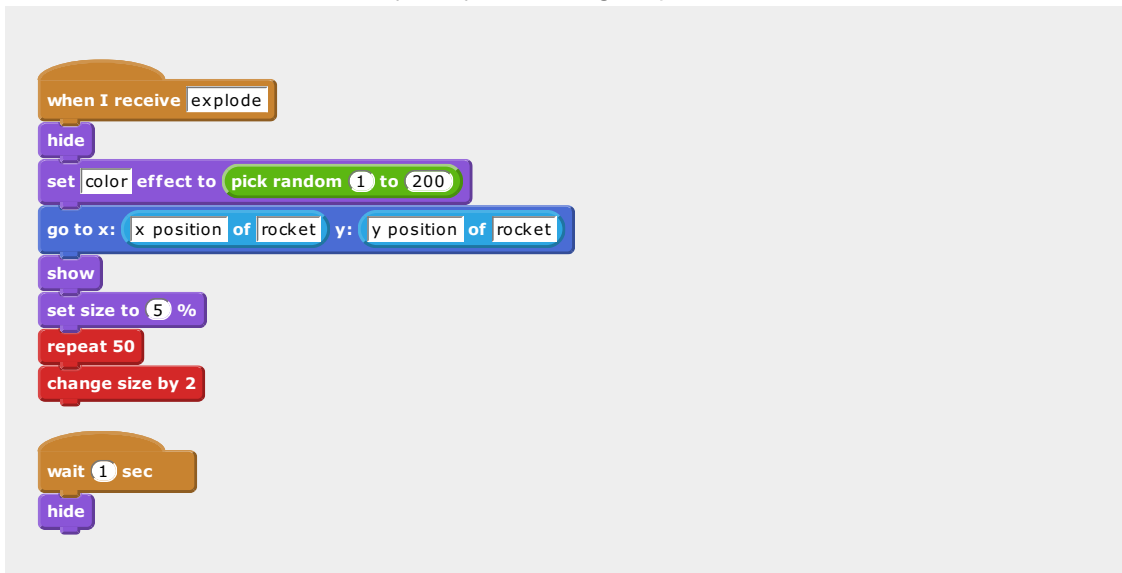
🚩 **Test Your Project**

Click the green flag.

Does the explosion graphic spread out from the centre of the rocket and slowly grow?

> **Things to try**
>
> Why not try making each explosion more unique by altering the size and speed of growth for the explosion.
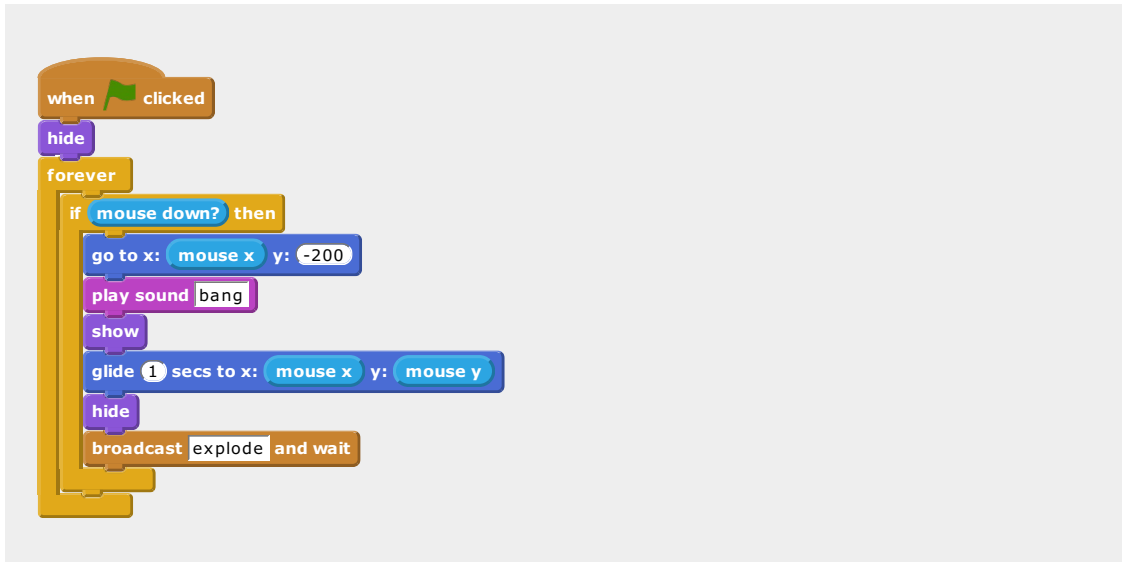
🔺 **Save your project**

Step 4: Fixing the Broadcast Bug

Remember earlier we had a problem involving holding down the mouse button?
This occurs because when the rocket broadcasts its explosion, it will immediately repeat the if loop and send out another explosion message, before the last one has finished displaying. In computing we often call such problems "bugs".

✅ Activity Checklist

☐ To fix this, we can replace the broadcast block with a broadcast and wait block. This way, the loop will not repeat until the explosion finishes exploding.

```
when 🚩 clicked
hide
forever
    if  mouse down?  then
        go to x:  mouse x   y:  -200
        play sound bang
        show
        glide 1 secs to x:  mouse x   y:  mouse y
        hide
        broadcast explode and wait
```

🚩 Test Your Project

Click the green flag, hold down the mouse button and move the mouse around the stage.

Does the explosion graphic appear in the right place and at the right time?

🔺 Save your project

Well done you've finished, now you can enjoy the game!

Don't forget you can share your game with all your friends and family by clicking on Share on the menu bar!