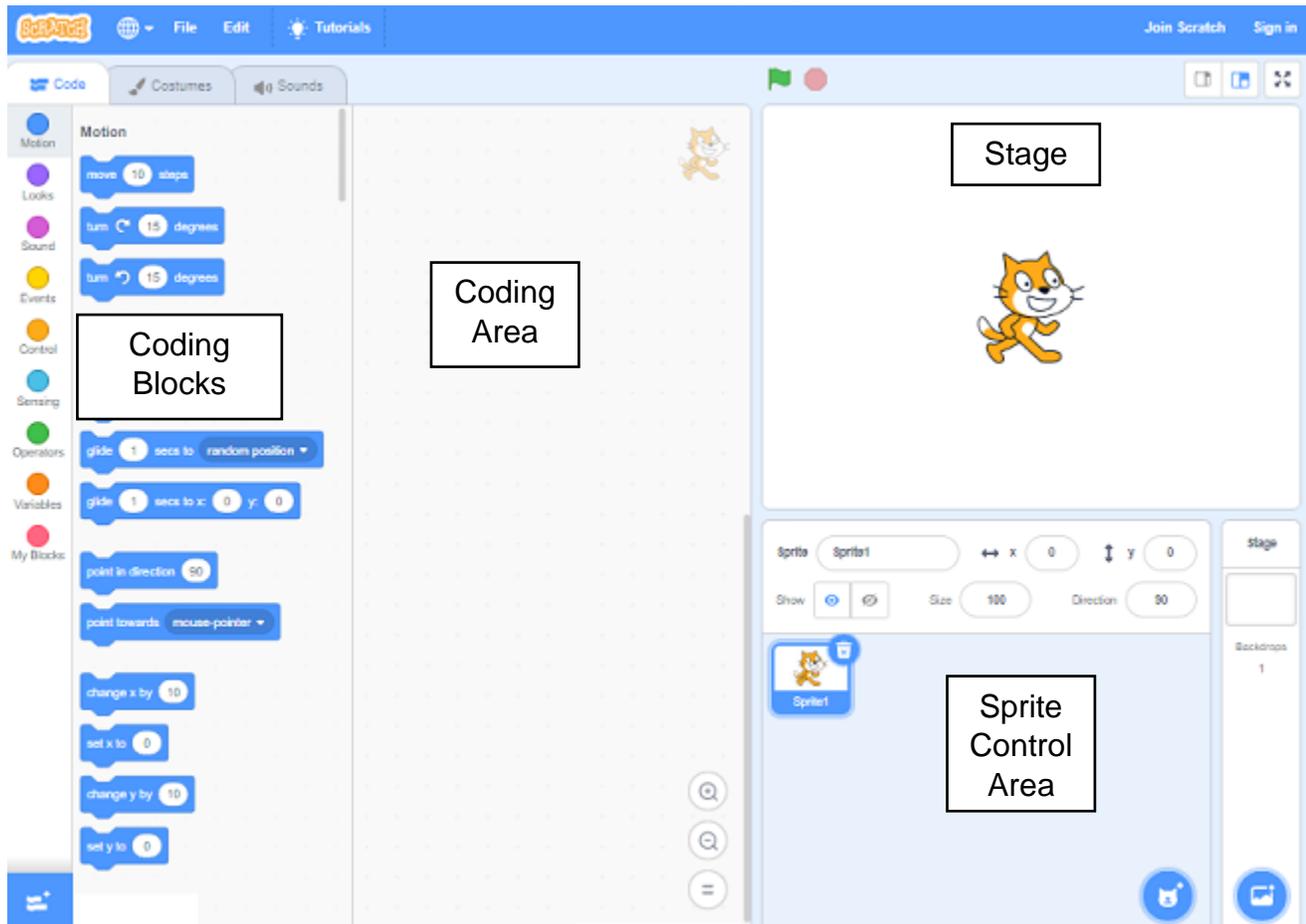


Coding Using Scratch - Introductory Lessons – Grade 4

- 1) This lesson is an introduction to Scratch. In this lesson you will learn about the basic setup of the Scratch programming environment and you will create a simple program to make a character move.

Open your internet application and go to Scratch.

Open the Scratch project editor to create a new program.



A) Click on the cat and drag it around the **stage** area.

This cat character is called a **sprite**. All characters and objects that you will program are called a **sprites**.

Notice the name of the sprite on the sprite icon.

Notice the X position and Y position of the sprite.

B) Resize the cat to about the size of a nickel.

This size sprite will better suit the small stage area.

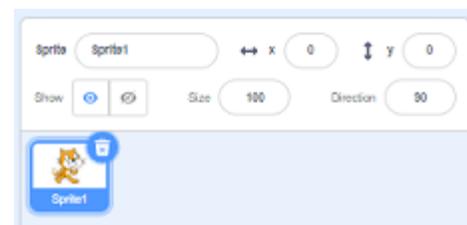
Use your mouse to position the cat in the middle of the stage.

C) **Coding blocks** are dragged from the coding block menu area to the coding area.

Click and drag out the **Motion** block *move 10 steps* from the coding block menu area to the coding area.

To delete (get rid of) blocks drag them back to the coding block menu area.

Delete the move block.



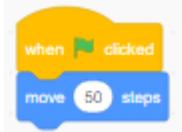
D) The **coding block menu** has many different types of blocks. Each type of coding block has a different colour. Click the **Events** block menu (it is yellow [golden]). Add Event block *when green flag clicked*.



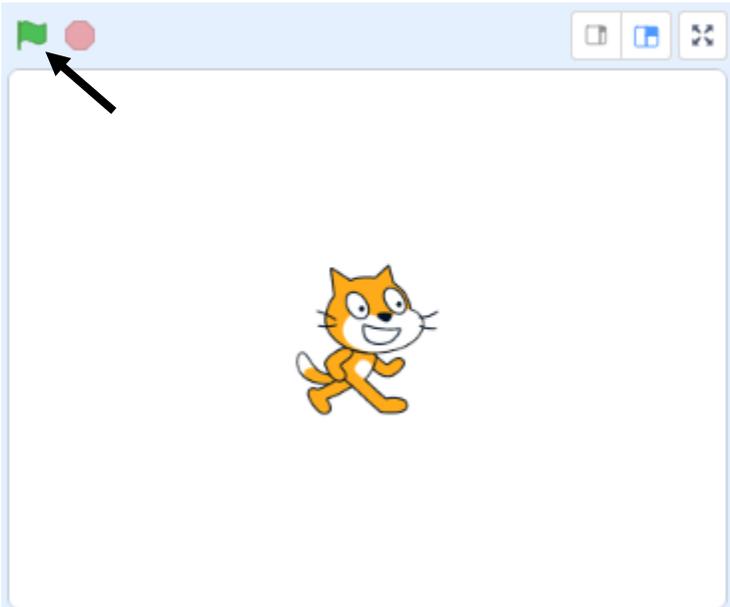
E) Click the **Motion** block menu. Add Motion block *move 10 steps*. Change 10 steps to 50 steps.



The coding blocks click together like puzzle pieces. Connect the coding blocks.



F) At the top of the stage click the **green flag** beside the red stop icon.

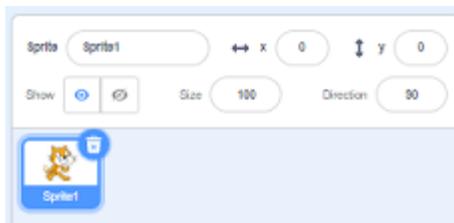


What happened to the cat?

Click the green flag again. Click the green flag 5 times.

Click the green flag many times so that the cat runs right off the stage and disappears.

[Usually we would not want to do this.]



Click the X control and set it to 0 (zero).

Click the Y control and set it to 0 (zero).

Where did the cat move to?

Click the X control and set it to 100. Click the Y control and set it to 100.

Where did the cat move to?

2) In this lesson you will learn about some of the basic Motion blocks and create a program to make a sprite move back and forth across the screen.

A) Resize the cat to 50. (The default is 100% so this would make it half the size.)

B) Click the Events blocks menu.  Add Event block *when green flag clicked*.



C) Click the Motion blocks menu. 

Add Motion block *go to x: 0 y: 0*.



[This will position the cat in the centre of the stage.]

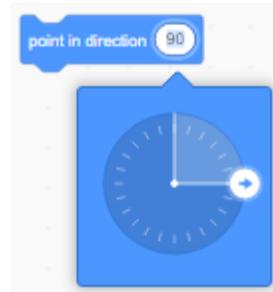
D) Click the Motion blocks menu.

Add Motion block *point in direction 90*.



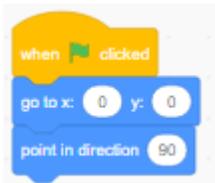
Click the 90 and use the dial to point to the right.

* Do not use the turn 90 degrees block!



This will have the cat point toward the right so that it is ready to move to the right.

E) This is what you should have so far. These are start-up blocks.



Start-up blocks are used to get things ready for your program.

[When you play a game there are often things you need to set up before you can. That is what start up blocks are - things you need to set up before the action part of your program.]

F) Click the Motion blocks menu.

Add Motion block *move 10 steps*. Change 10 steps to 100 steps.



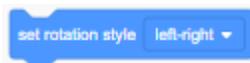
G) Click the Control blocks menu. 

Add Control block *wait 1 seconds*. Change 1 second to 2 seconds.



H) Click the Motion blocks menu.

Add Motion block *set rotational style left-right*.

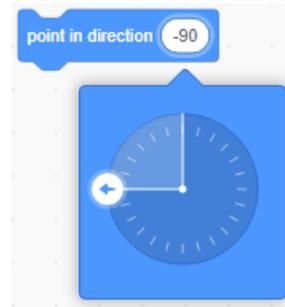


[This block is used to flip the sprite (the cat) from left to right or from right to left.]

I) Add Motion block *point in direction 90*.



Change the direction to -90 (left).
Click the 90 and use the dial to point to the left.
* Do not use the turn 90 degrees block!

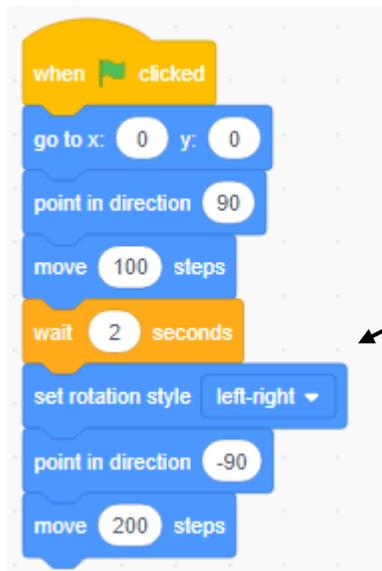


This will have the cat point toward the left so that it is ready to move to the left.

J) Add Motion block *move 10 steps*. Change 10 steps to 200 steps.



K) This is what your program should look like.



This block stops the sprite from flipping upside-down when it points left.

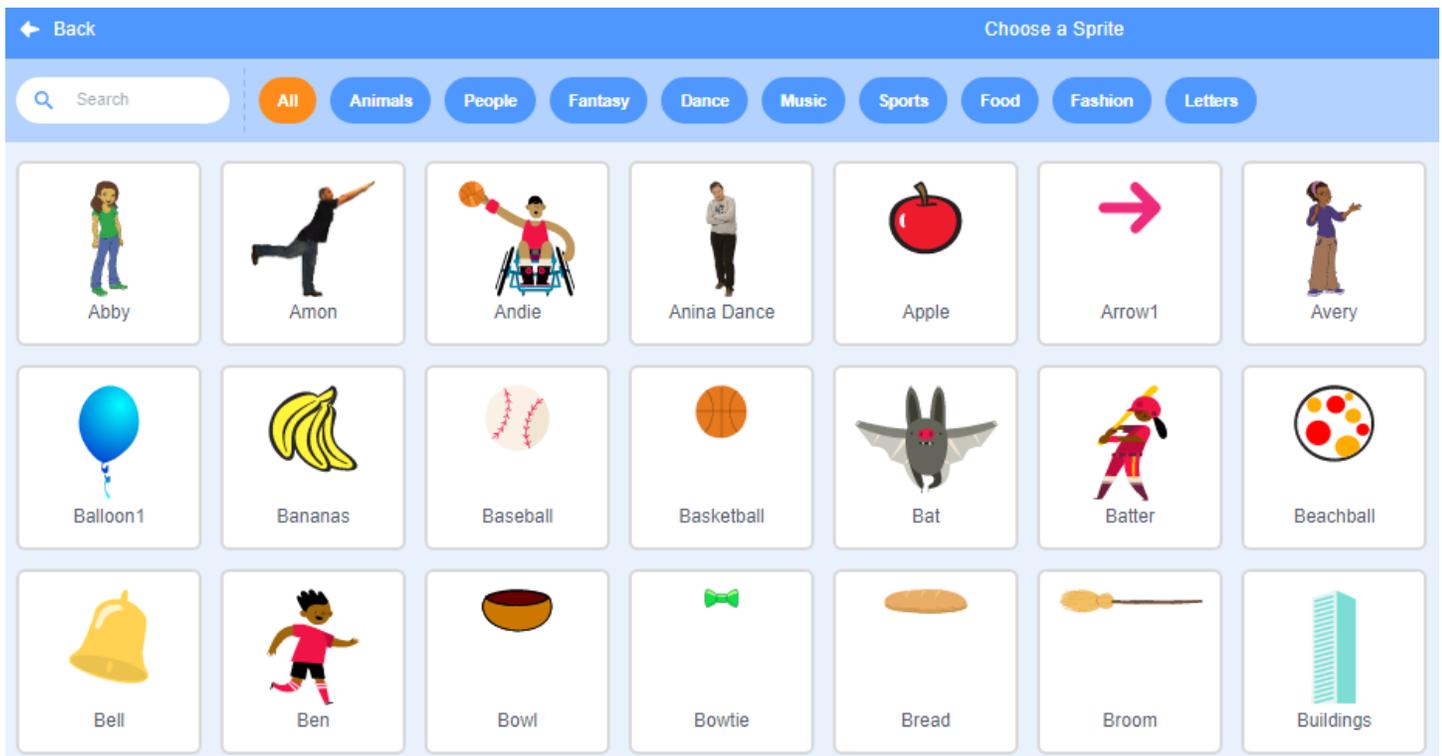
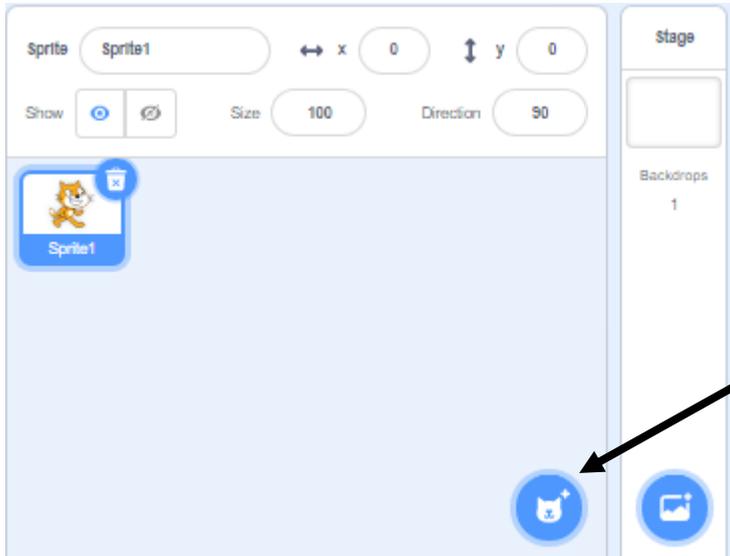
Try your code without this block to see what happens.

Click the **green flag** above the stage to test the program.
What happened to the cat? Describe the walk it took.
Where did the cat end up? Did it end where it started?

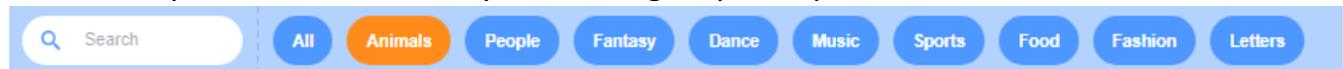
L) **Show Mr. Desmond what you have done.**

3) In this lesson you will learn how to select your own sprites.

A) Click on the add a sprite icon.



Choose a sprite. There are many different groups of sprites to choose from.



For this lesson choose a sprite from the Animals group.

You choose which sprite, but don't take too long to choose.

B) Your challenge is to create a program so that your sprite moves 150 steps right of centre and then ends up 150 steps left of centre.

C) Show Mr. Desmond what you have done.

4) In this lesson you will create a program to make a sprite move repeatedly on the stage.

A) Choose a new sprite.

B) Your challenge is to create a program so that your sprite starts at [0 , 0], moves 100 steps **up** from centre, and then moves **down** 100 steps below centre.

[Think about the coding blocks you used in lesson 3 and lesson 4. What can you use again? What would you change for this programming challenge?]

C) Show Mr. Desmond.

D) Go to the Control Blocks.

Add a repeat 10 block.



Change repeat 10 to repeat 6.

Make your sprite go up and down six times.

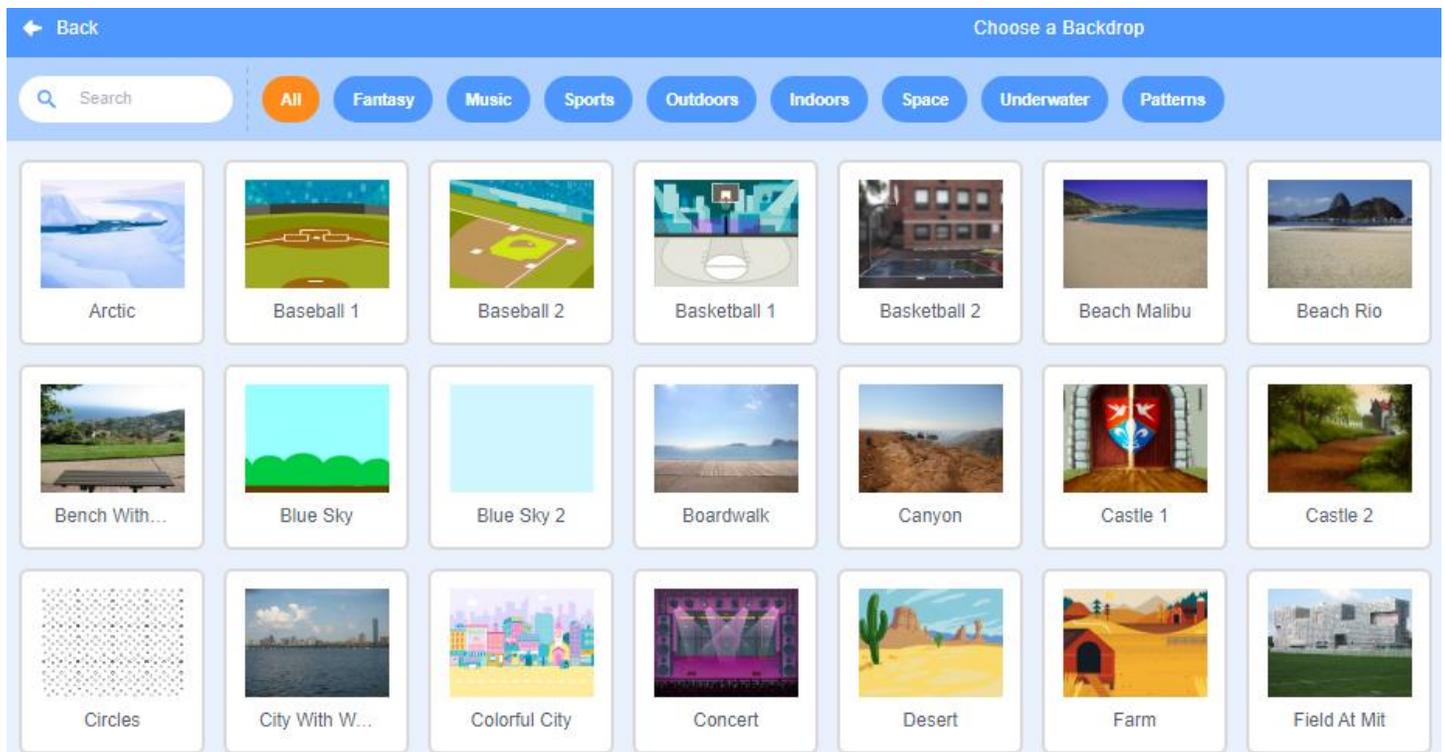
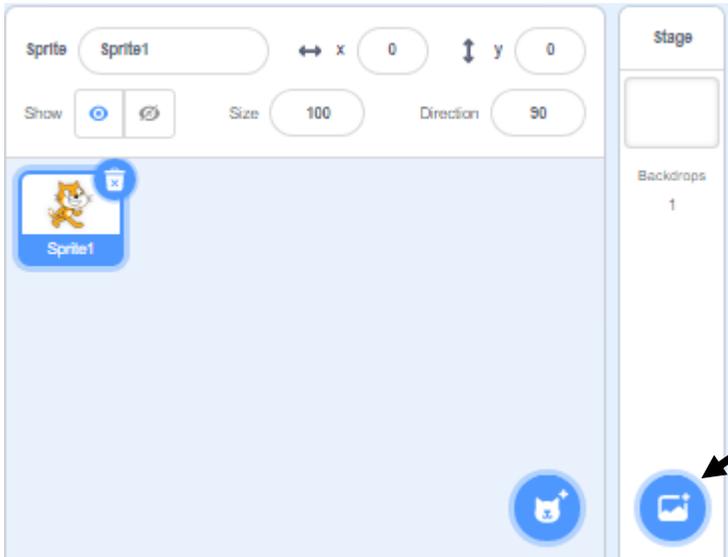
E) Show Mr. Desmond.

F) Add a second sprite and have both of them go up and down repeatedly.

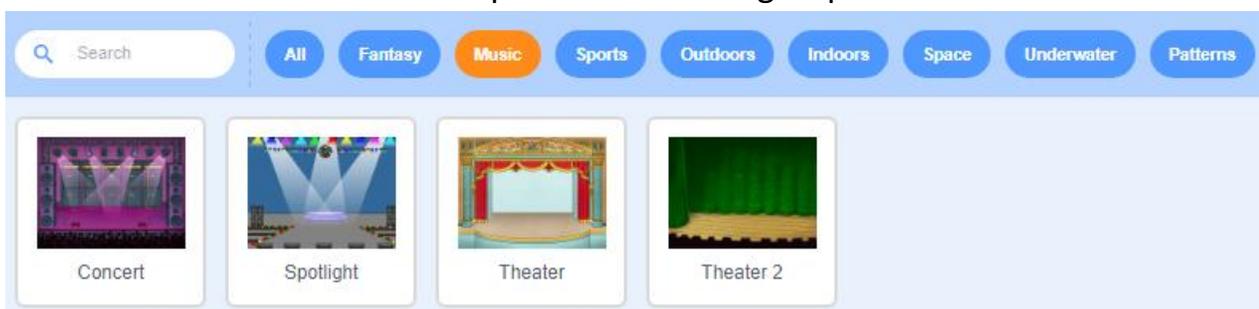
G) Show Mr. Desmond.

5) In this lesson you will review your understanding of start-up blocks, move blocks and repeat blocks to create a program to make a sprite move repeatedly on the stage.
A) Choose a new sprite. Choose a sprite from the People group.

B) Click on the add a backdrop icon.



Choose a backdrop. There are many different groups of backgrounds to choose from. For this lesson choose a backdrop from the Music group.



C) Click the Events blocks menu. Add Event block *when green flag clicked*.

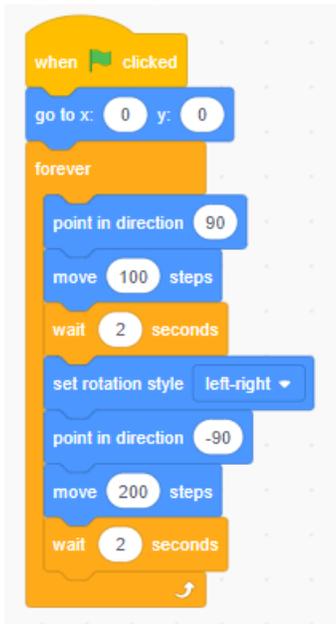


Click the Control blocks menu.

Add Control block repeat *forever*.



D) Use the code blocks below to create a program to have your sprite move left/right repeatedly.



E) Click the **green flag** above the stage to test the program.

Click the **stop** icon next to the green flag to stop your program from running.

What happened to your sprite?

F) Show Mr. Desmond what you have done.

G) Add a second sprite. Have it go up and down forever.

6) In this lesson you will review your understanding of coding blocks to create a program to make three sprites jump up and down on the stage.

A) Choose three new sprites.

B) Choose a new background. [Don't take too long to select a background.]

C) Your challenge is to create a program so that all three of your sprites move up and down as if they were jumping.

- Have each sprite start at a different position on the stage.

[Spread your sprites out left to right across the stage.]

- Have each sprite jump to a different height.

- Have each sprite start jumping at a different time.

D) Test your program.

Are all of your sprites jumping from the same X Y position?

Are all of your sprites jumping to the same height?

Are all of your sprites jumping at the same time?

If you answered yes to any of these questions you need to fix your code.

E) Show Mr. Desmond what you have done.