Introduction to Information and Communication Technologies

Scratch Animations

Activities

Activity # 0: Creating an account on Scratch and login using your account At http://scratch.mit.edu/

Activity # 1: Creating a Rotating Sprite
Description: In this activity we are going to create a program for the default sprite that will make it rotate forever at the center of the screen.

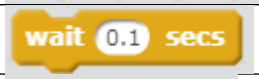
The overall program will have the following steps to make the sprite move at the center of screen

1. Position the sprite at the center of the screen

2. Set the direction of sprite such that it is looking towards left

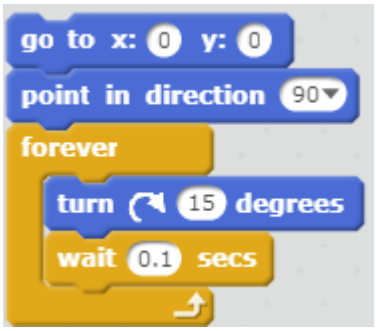
3. Rotate, clockwise, the sprite by a small angle

4. Wait for a small fraction of time



5. Repeat steps 3 and 4 forever

The overall program will look as follows



Now run this program by double clicking anywhere on the script
Try different values for the initial positions, turning angles, and time to wait

Activity # 2: Making the Sprite move along the boundary of screen

Description: In this activity we are going to make the default Sprite take one round of the screen along it's

This program will have the following steps to make the sprite move at the boundary of screen

1. Position it at Left-Top corner of the screen
2. Set the direction of sprite such that it is looking towards right

3. Move the Sprite by a small step towards right
4. Repeat step 3 a fixed number of times so that it reaches near the right boundary of screen
5. Turn the sprite clockwise by 90°

6. Move the Sprite by a small step downwards
7. Repeat step 6 a fixed number of times so that it reaches the lower boundary of the screen
8. Turn the sprite clockwise by 90°

9. Move the Sprite by a small step towards left
10. Repeat step 9 a fixed number of times so that it reaches the upper boundary of the screen
11. Turn the sprite clockwise by 90°

12. Move the Sprite by a small step towards left
13. Repeat step 12 a fixed number of times so that it reaches the upper boundary of the screen
14. Turn the sprite clockwise by 90°

The overall program might look as shown on the next page
Now run this program by double clicking anywhere on the script

Program No 2

Activity # 3: Making the Sprite hit the boundary and then slide back

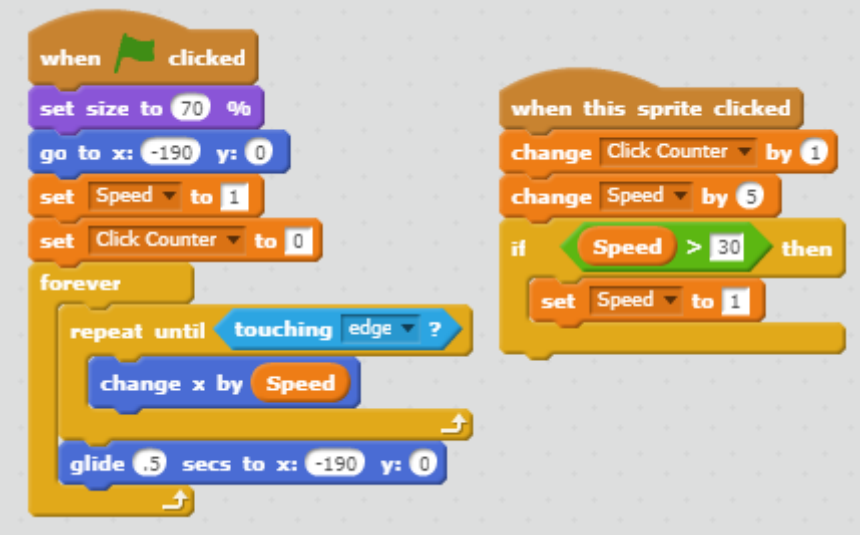
Description: In this activity we are going to make the default Sprite move and hit the boundary and then bounce back to its original position. The program will also keep track of the number of times the sprite has been clicked and will increase the movement speed of the sprite.

This program will have the following steps to make the sprite move at the center of screen

1. Position it at center of the screen
2. Set the direction of sprite such that it is looking towards left
3. Move the Sprite towards right by a small step specified in a variable named **speed**
4. Repeat step 3 until it touches the boundary of screen
5. Make the sprite slide back to center of screen
6. Repeat step 3 and 4 forever
Parallel to the above activity the following must also happen
1. Create a variable named counter and set it to 0
2. Whenever the Sprite is clicked increment the **counter** by one and also increase the value of **speed**

The overall program might look as shown below

Program No 3



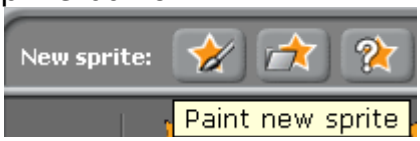
Now run this program by double clicking anywhere on the script

Activity # 4: An Interesting Sprite

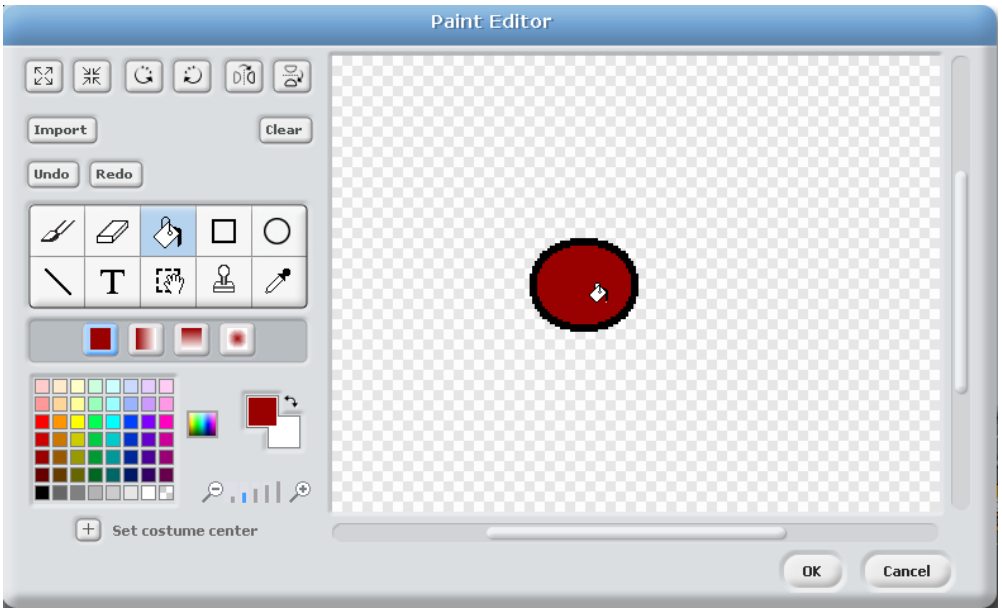
Description: In this activity we are going to create an animation consisting of two sprites, a cat and a ball, with the cat playing with the ball.
In this animation the ball will keep on moving and the cat will follow it. When the cat touches the ball the speed of ball will increase for a short period of time and then it will gradually slow down to its normal speed

Follow the steps given below to create this animation and on completion get it graded from your Lab instructor

Step 1: Creating a new Sprite:
Click on the paint a new sprite button



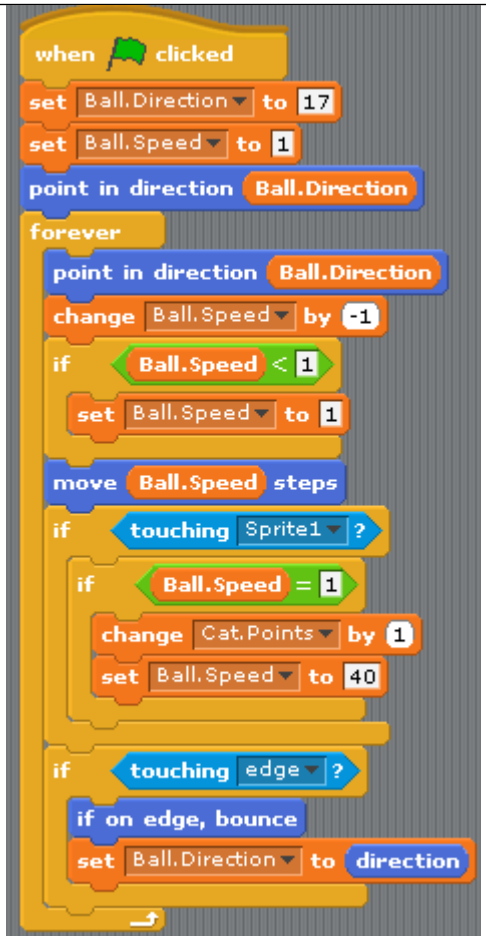
In the paint editor window create a circle and fill it with a color and press OK button



Now you will have two sprits in your system.

Step 2: Create a program for the second Sprite (Ball) so that it can keep on moving on screen:
Create Two Variables for the Ball sprite and name these as **Ball.Speed** and **Ball.Direction**

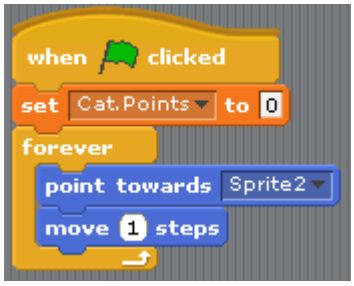
Create the following program for the Ball sprite



Run the program and see its effect

Step 3: Create a program for the cat so that it will always follow the ball

Create the following program for the cat sprite so that it will always point towards the ball and move towards it



Now run this program and see what happens

Show the completed program to your Lab instructor and get it marked

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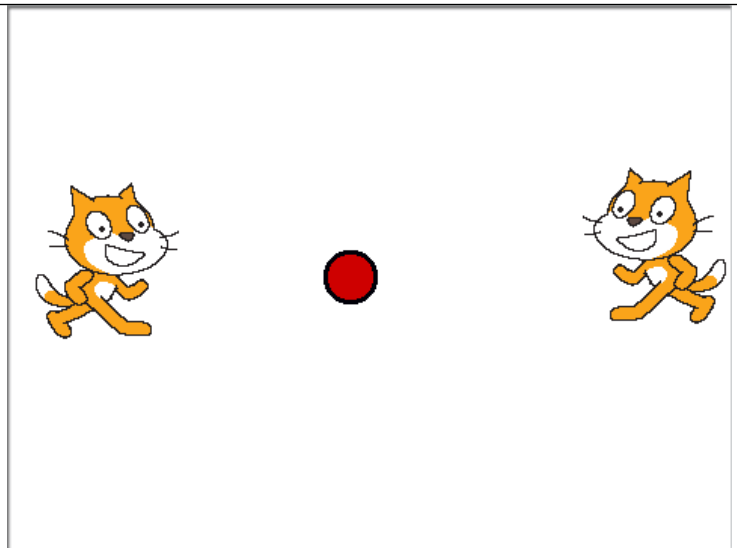
Activity # 5: Friendly Play

Description: In this activity we are going to create an animation consisting of three sprites, two cats and a ball. In this animation the cats will play a friendly match with each other.

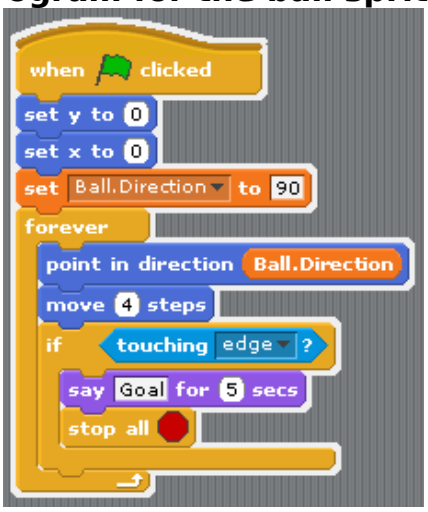
Follow the steps given below to create this animation and on completion get it graded from your Lab instructor

Step 1:

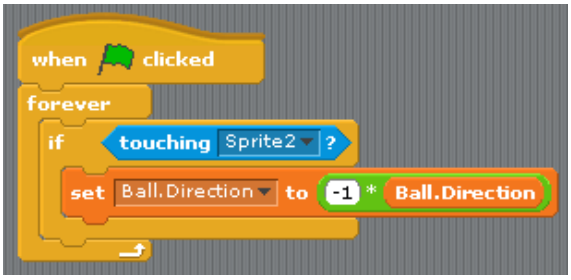
Create a ball sprite as done in the previous activity. Create a duplicate of cat sprite and make it face towards right Place the ball and cats as shown below



Create the following program for the ball sprite



Now Create the following program for the two cat Sprites



Run the program.

Activity 6: Two Player Game

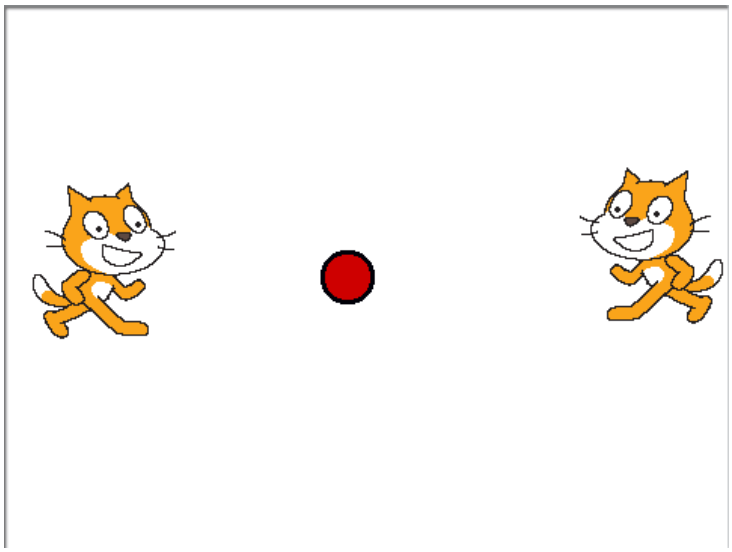
In this activity we are going to modify the animation in the previous activity so that two human players can play a game with the ball.

One player will control the right cat sprite using the up and down arrow keys while the other player will control the left cat sprite using the A and Z keys. The ball will bounce in different directions after touching the boundary or the cats.

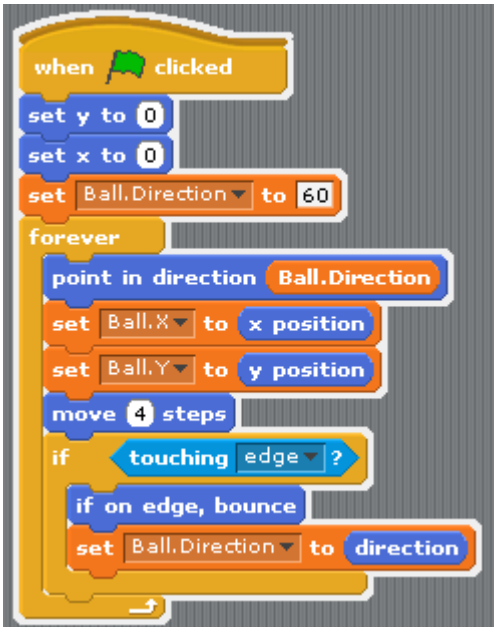
To complete this activity do the following steps.

Step 1:

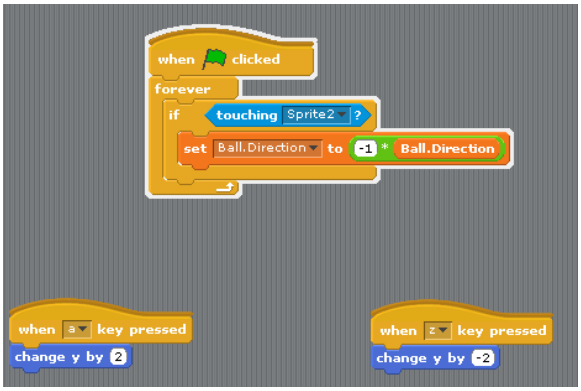
Create Two Cats and a Ball as shown in the figure below

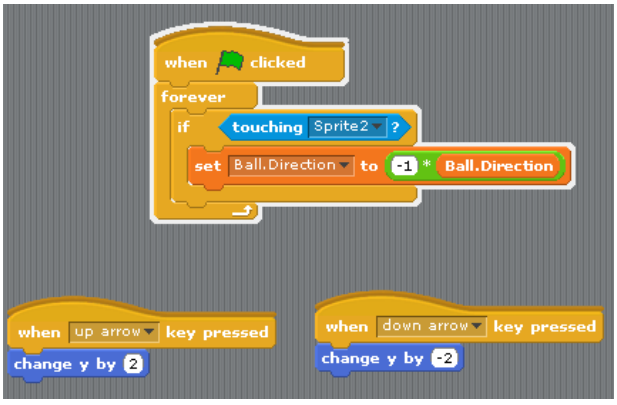


Create the following programs for the Ball



Create the following programs for the two cats





Run and experience the game