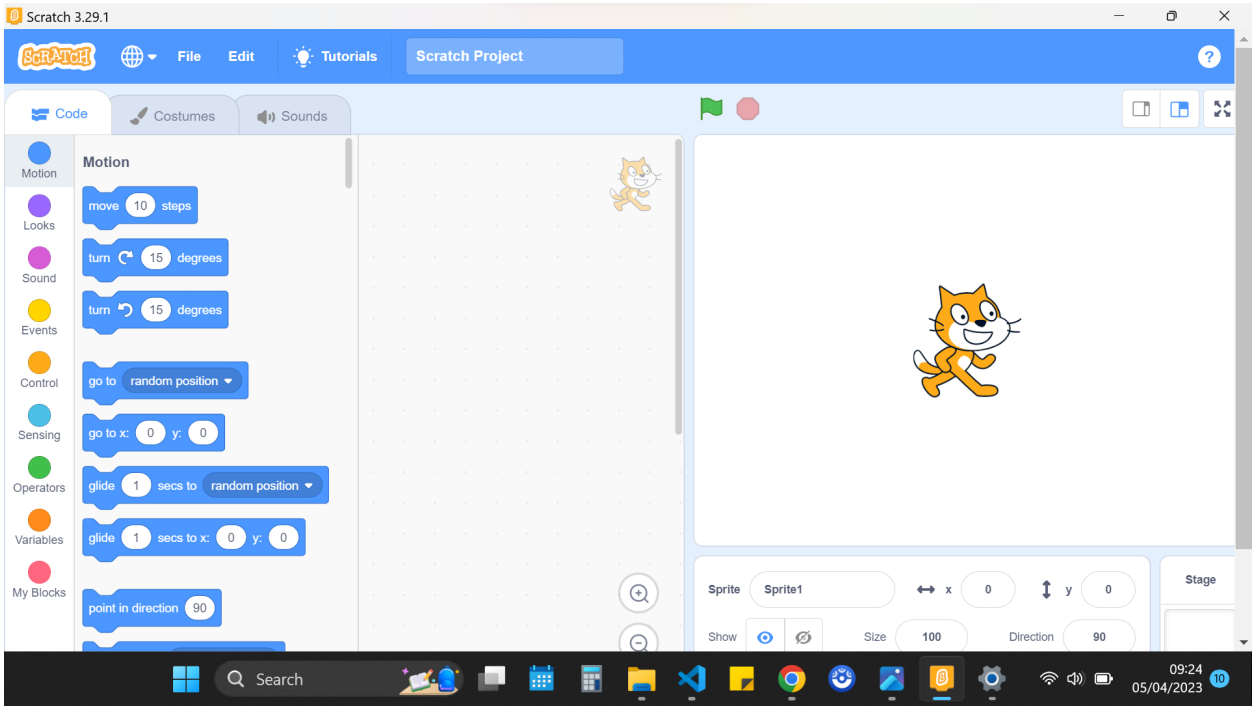
Beetle and Butterfly
Step-by-Step Instructions

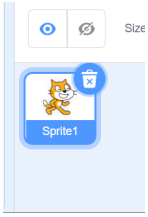
We enjoy playing games, and it would be fun for you to create your own game. Below are instructions for making a project in Scratch 3. They explain how to remove a sprite, choose a backdrop, add sprites, and write code for each sprite. The first sprite is a beetle, and you will be shown how to change its direction using the keyboard keys w, s, a, and d and how to change its colour while moving. The second sprite is a butterfly, and you will be instructed on how to change its direction using the arrow keys and how to change its colour while moving. Lastly, you will learn how to add an apple sprite, create two variables to keep track of the scores of the beetle and butterfly and write code that moves the apple to random locations when it touches either the beetle or butterfly.

Setting the Interface

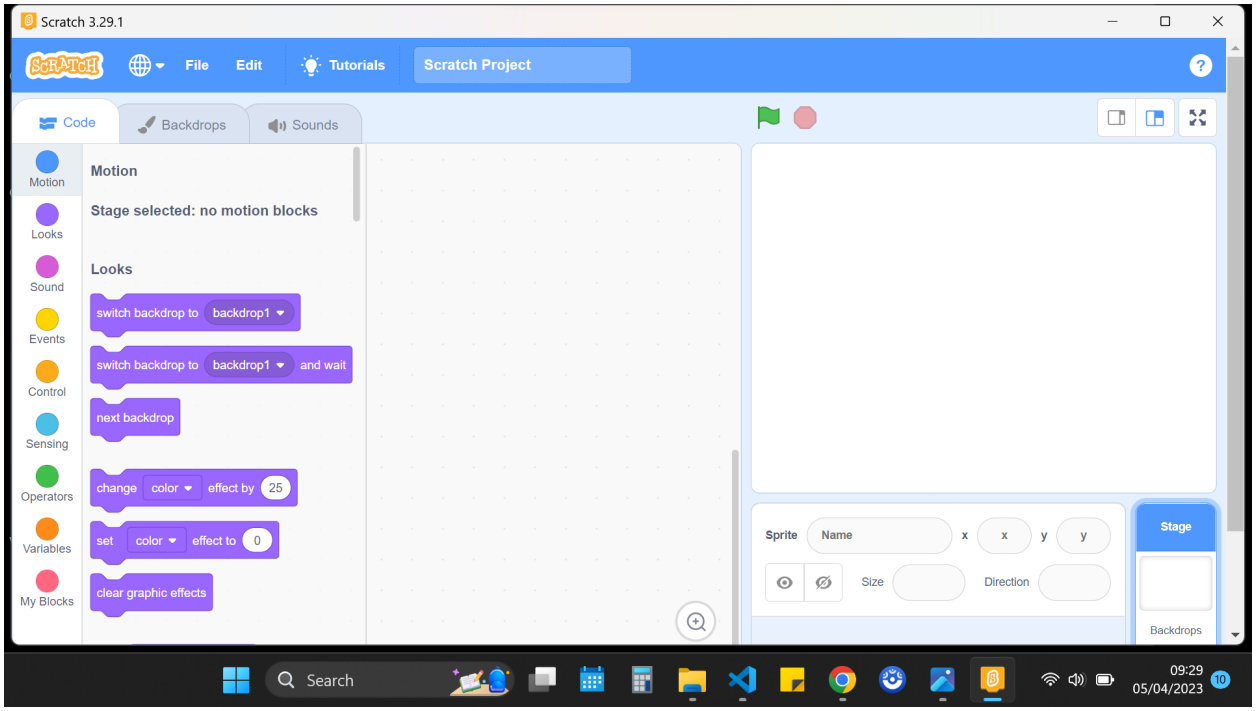
When you open a new project on Scratch 3, you will see a workspace where you can create animations and games.



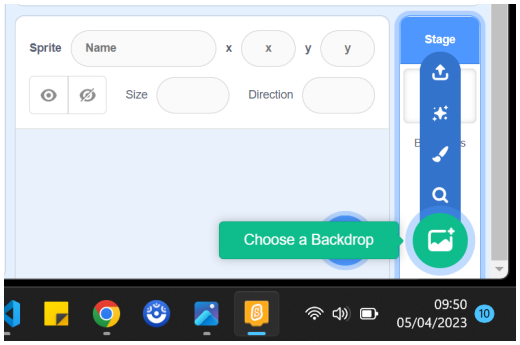
Can you see the cat picture in the corner on the right side? To get rid of it, you need to click on the trash can icon.



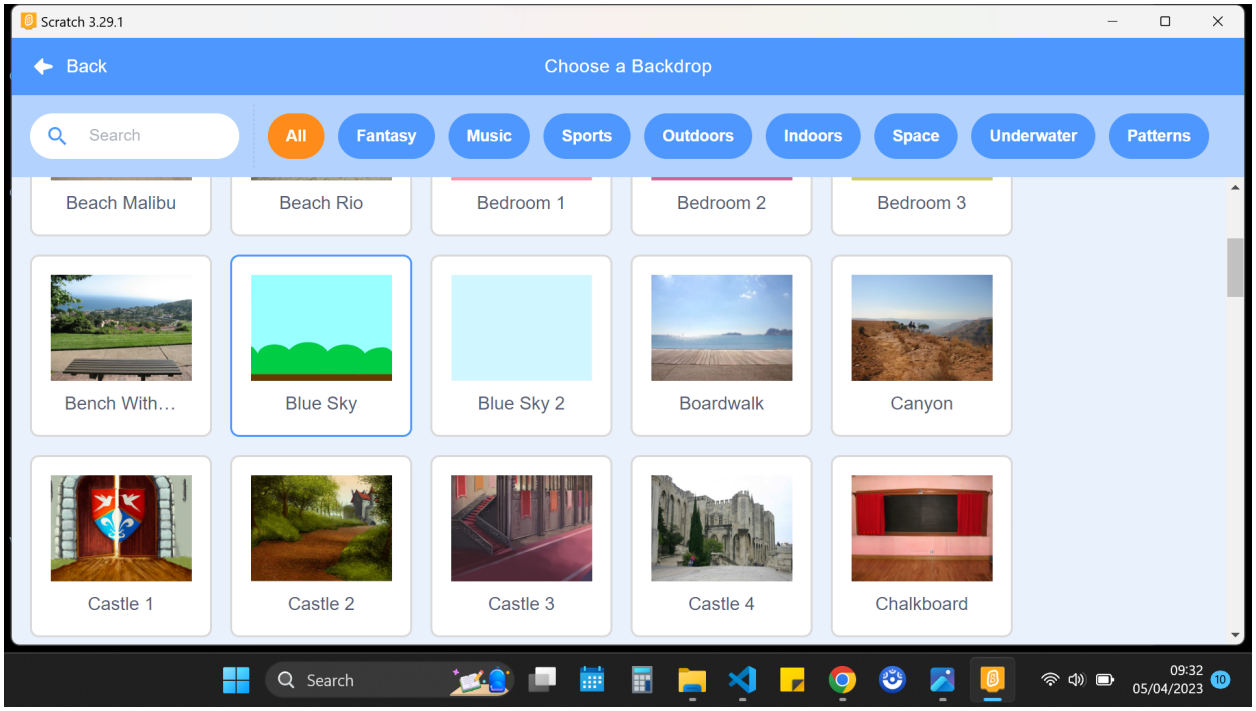
Your background will be blank without any characters (sprites) on it.



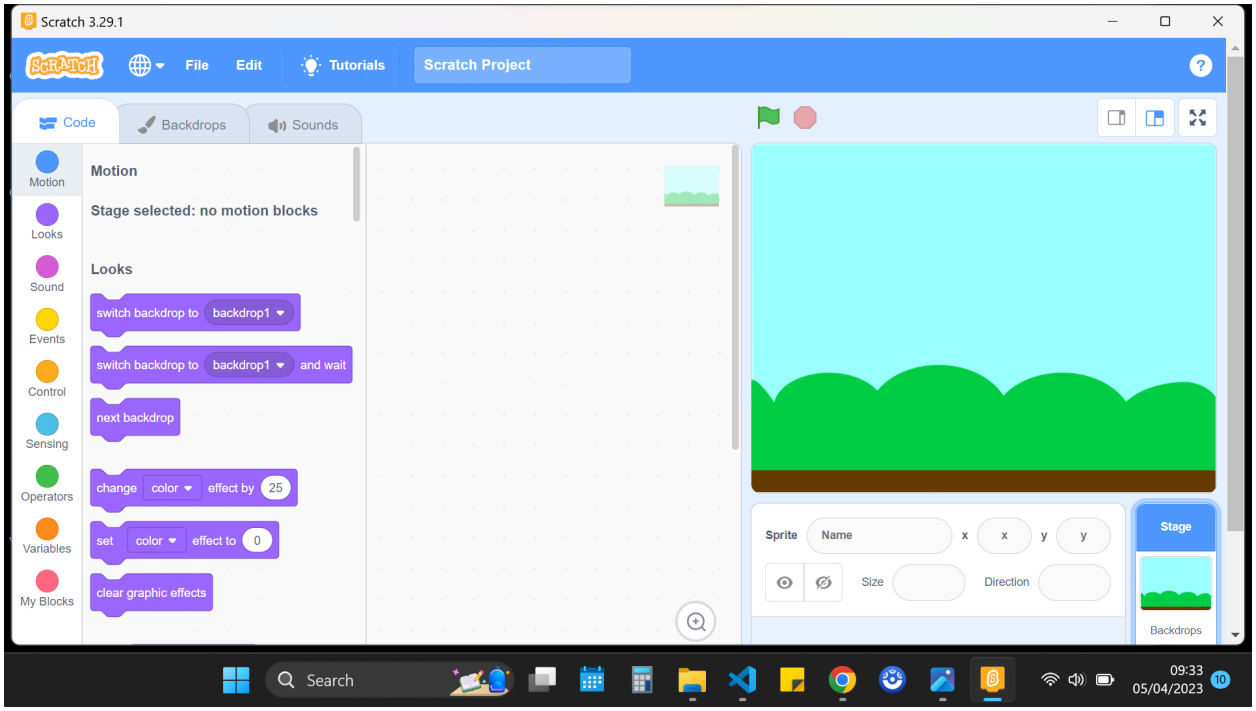
Let's choose a new background. Look for the "Stage" section in the bottom left corner and click on "Choose a Backdrop".



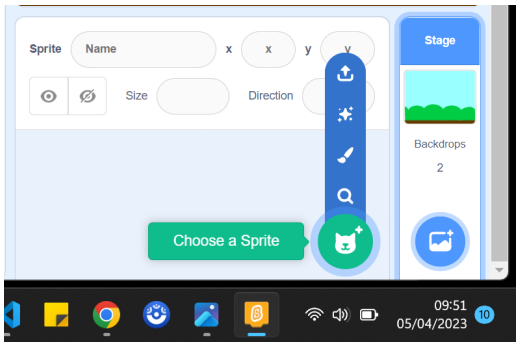
How about we pick the Blue Sky backdrop for the moment?



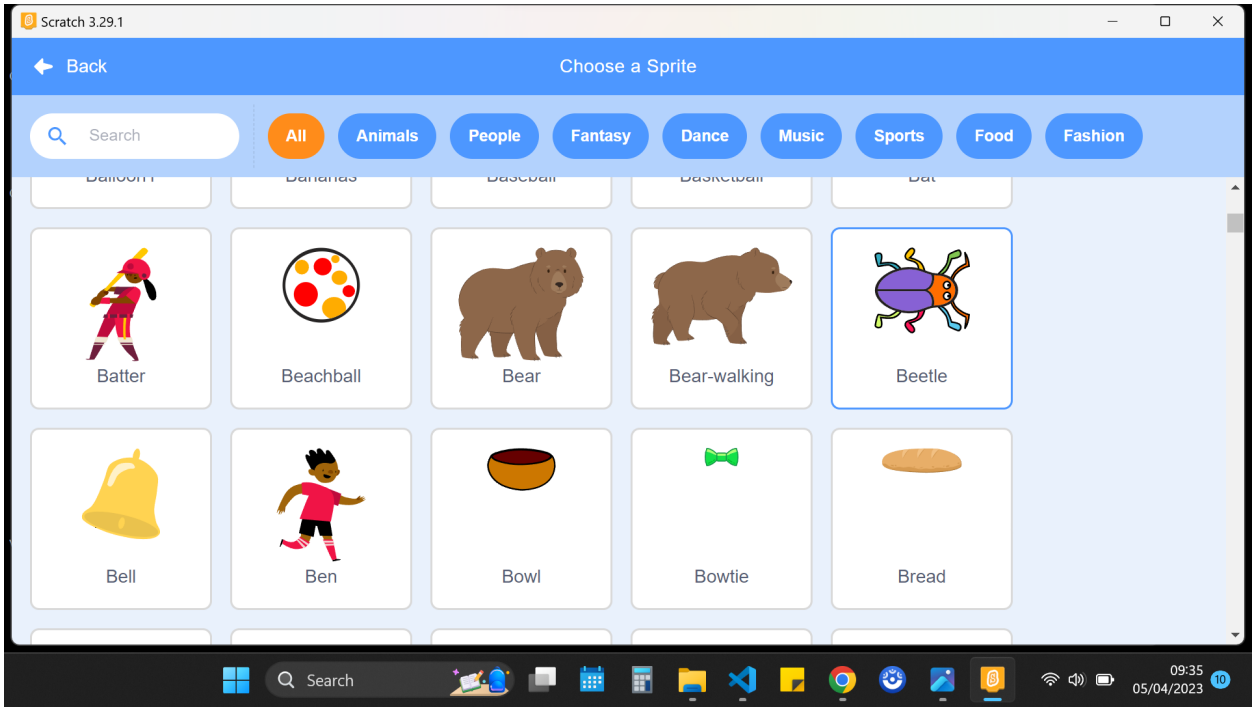
Now your background looks like this!



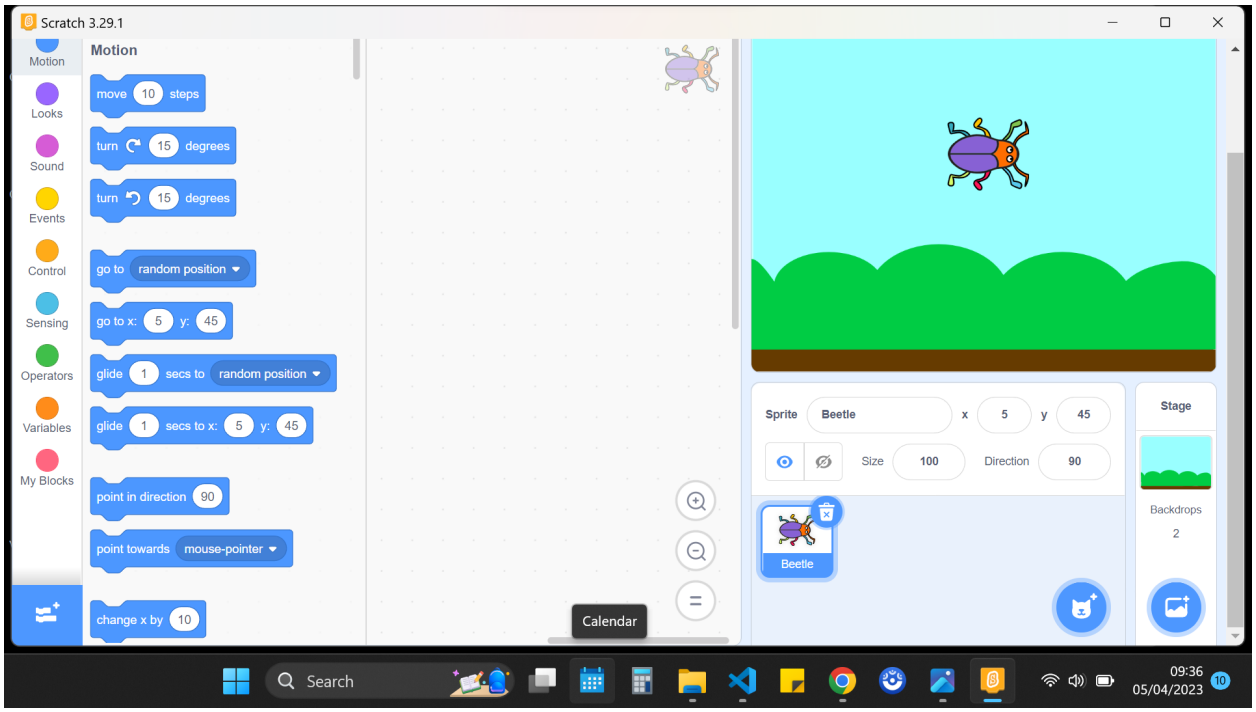
Okay, let's pick three Sprites in this order: beetle, butterfly, and apple. To do this, first, locate the blue cat icon and click on it. Once you click on it, it will turn green. Then, we can proceed to choose the Sprites we want.



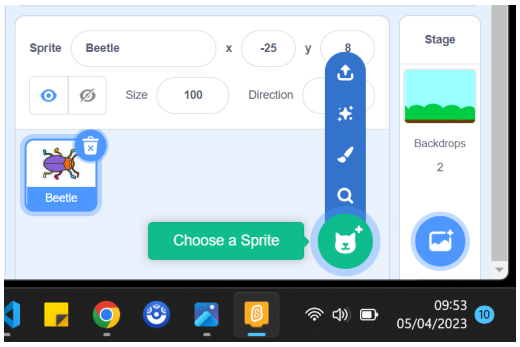
Please locate the beetle icon among the sprites and click on it to add it to the stage.



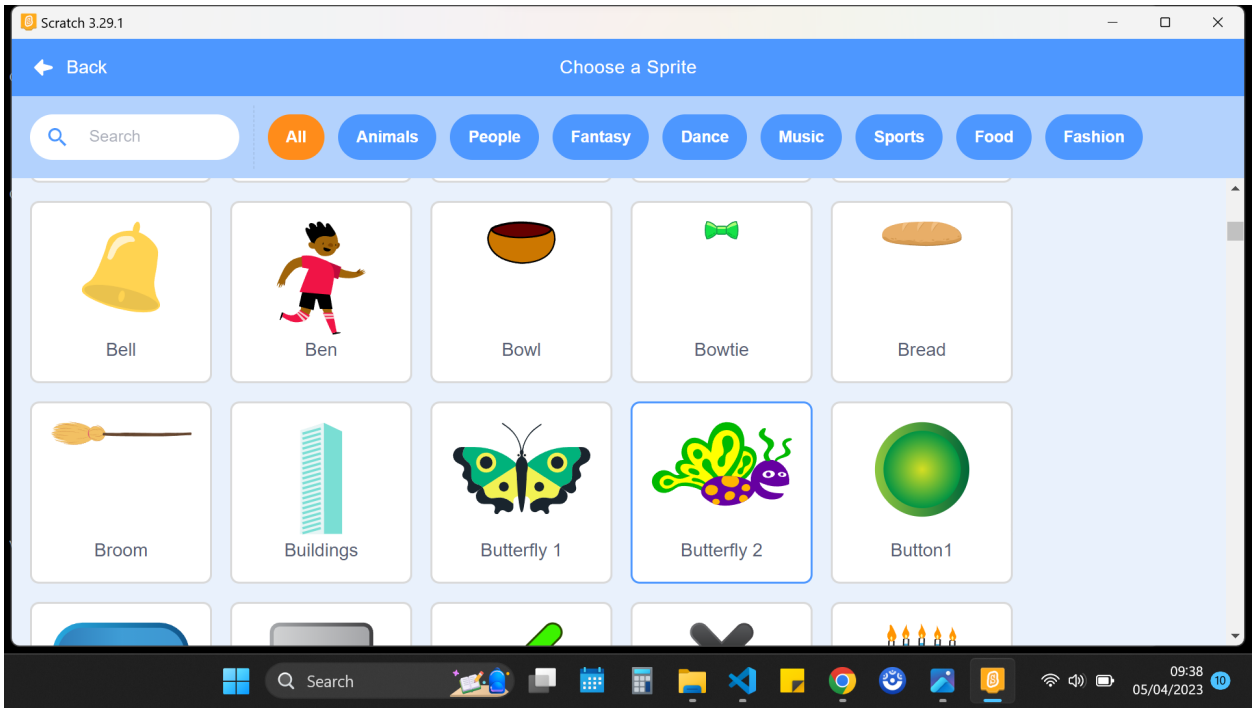
Great, you have successfully added the beetle to the stage!



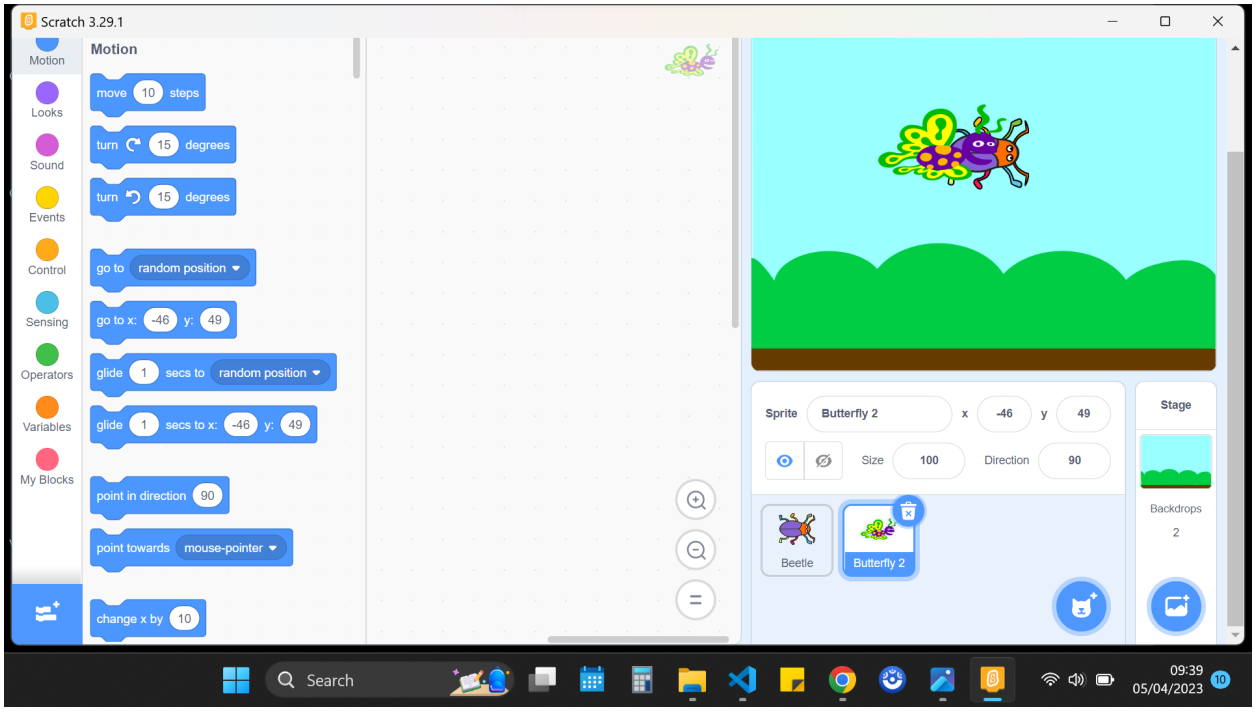
Click on the blue cat icon one more time to add a butterfly sprite.



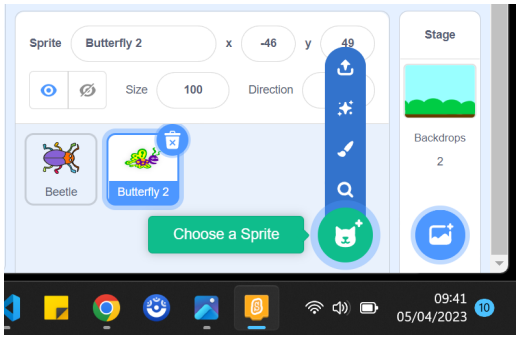
Great job! Now, let's add the Butterfly 2 sprite to the stage. Look for the picture of the Butterfly 2 and click on it to add it to the screen.



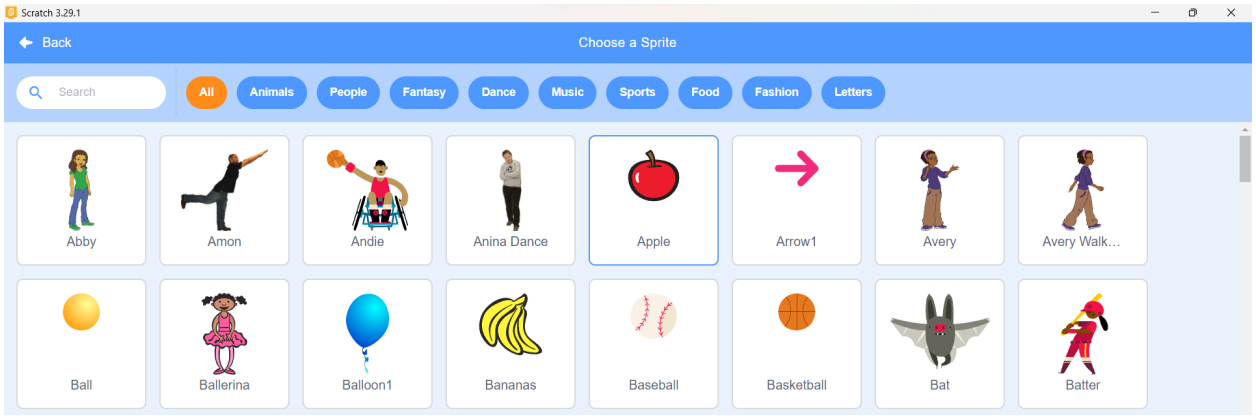
This is what your screen will look like.



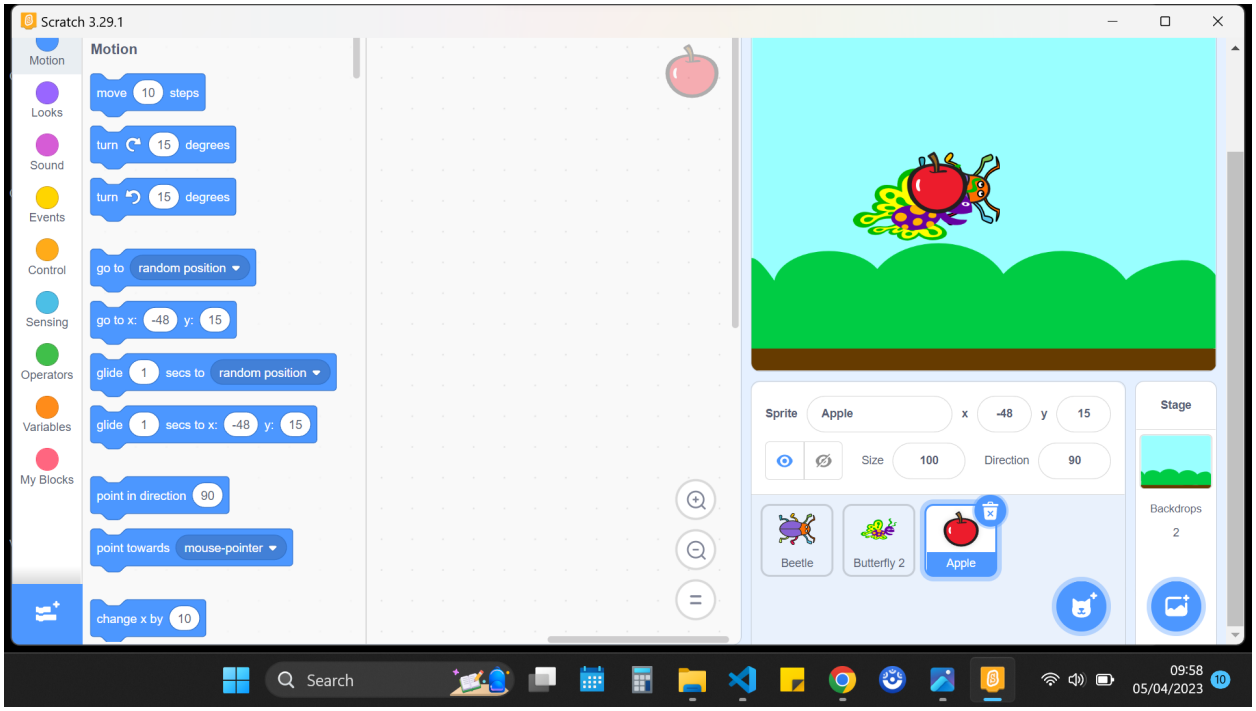
Now, let's add the apple by following similar steps. Click on the "Choose a Sprite" button.



The following screen will appear. Let's click on the icon of the apple there.



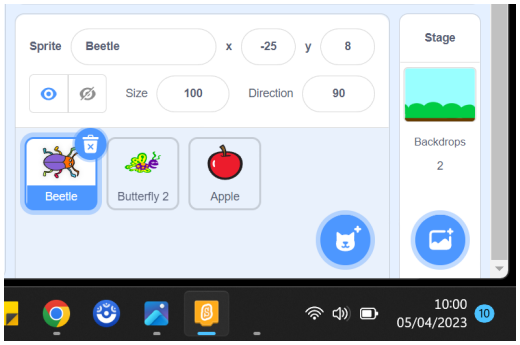
Now, you can see all three sprites on the stage as shown in the following interface.



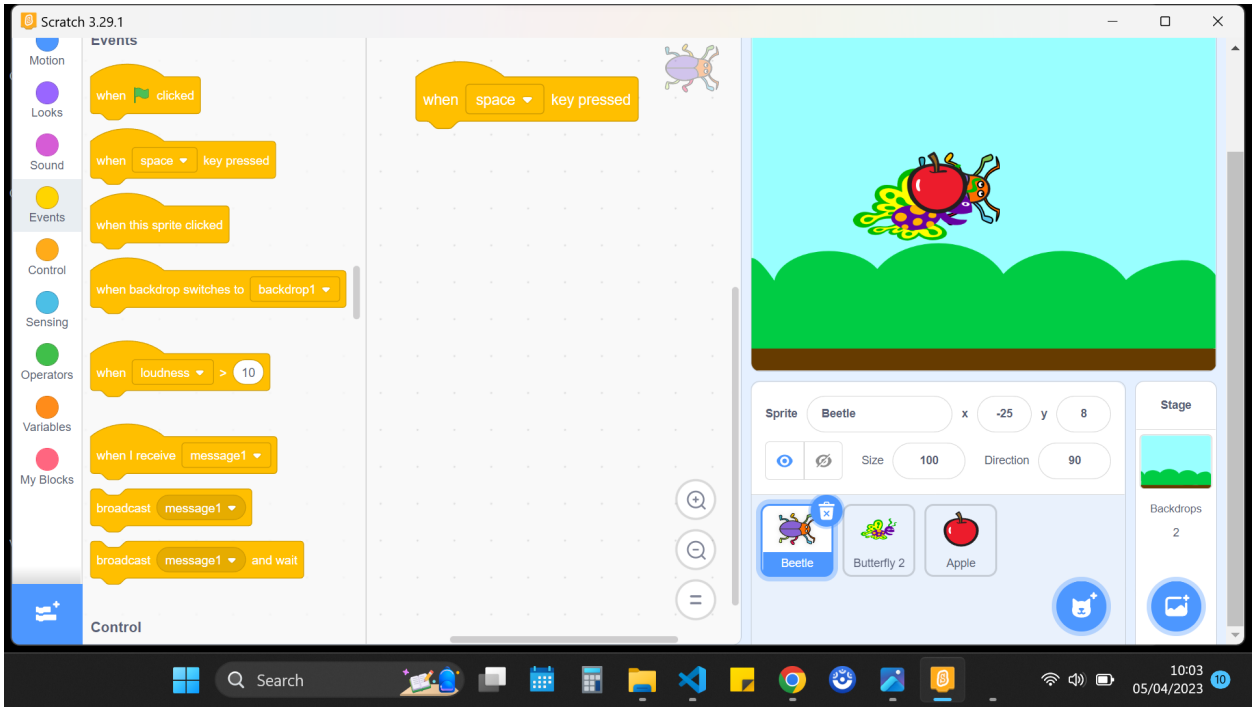
Great job on creating your sprites and arranging your backdrop! It's time to start writing code for our three sprites!

Code for the Beetle

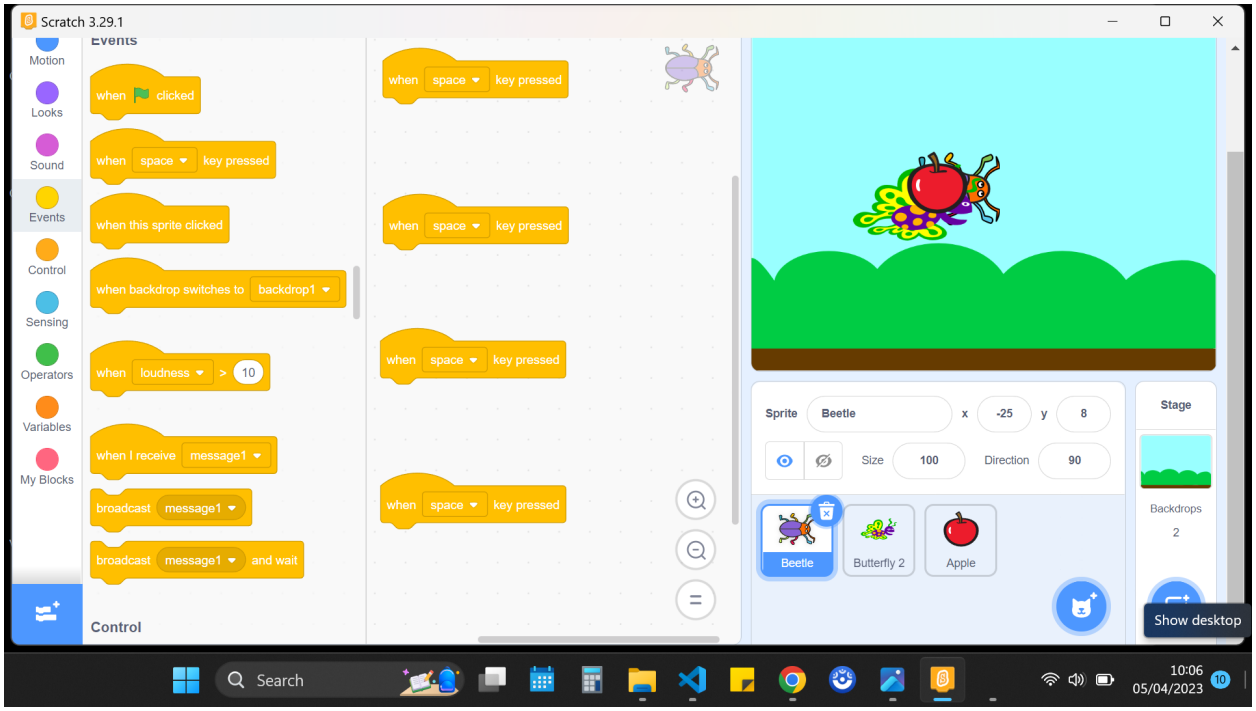
Let's start by writing code for the beetle. First, click on the beetle icon to make it active.



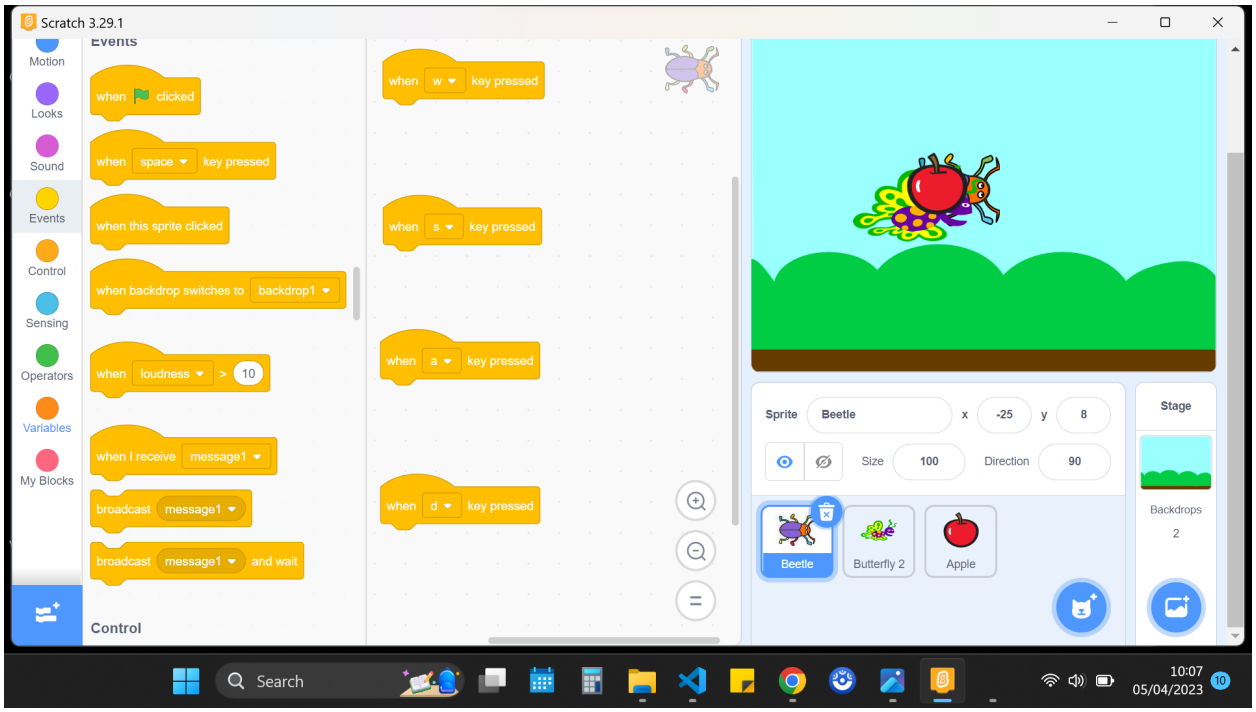
In the "Events" block, choose "when space key pressed" and drag it onto the stage.



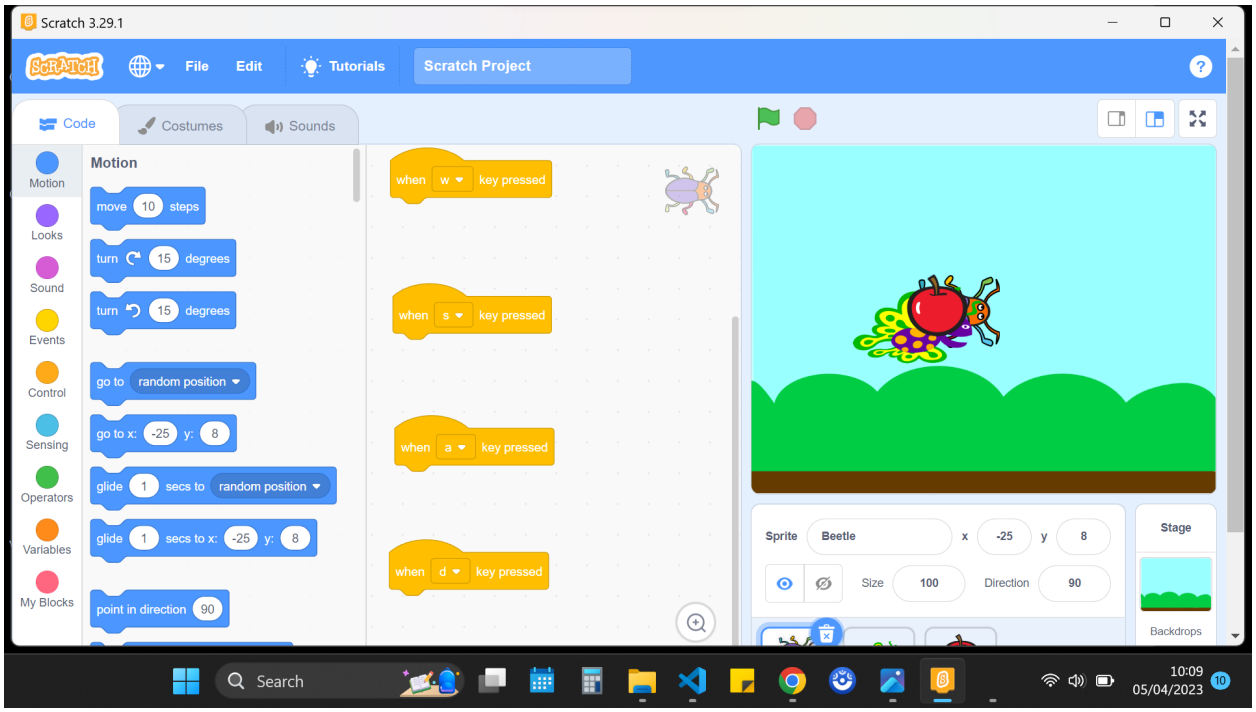
Do the previous step three more times.



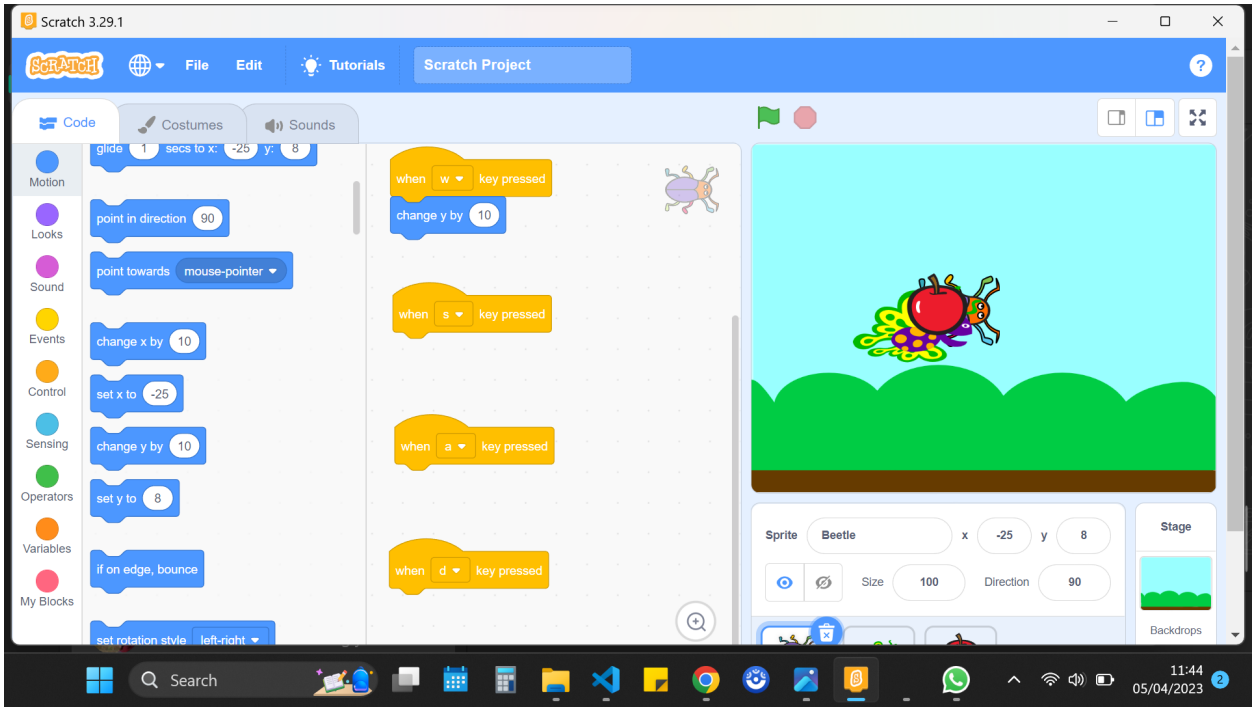
Replace "space" with "w", "s", "a", and "d" in the code block.



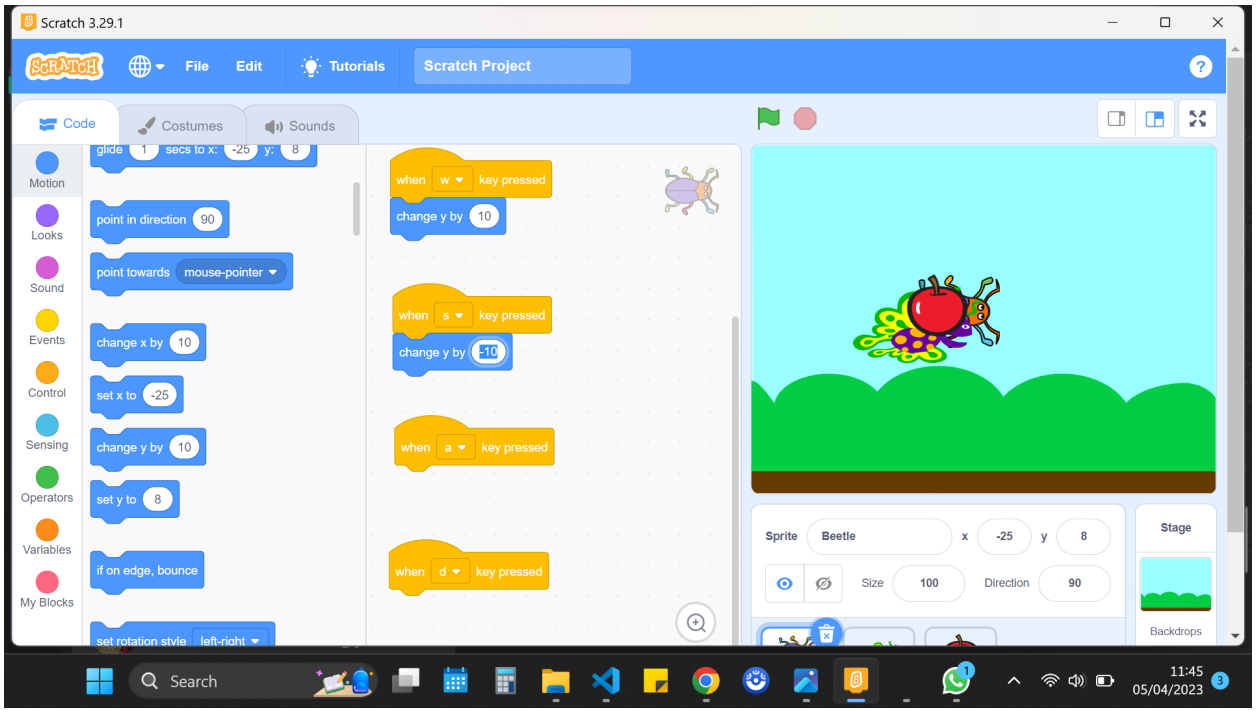
Let's move to the Motion Block now.



Under the "when w key pressed" block in the code, drag the "change y by 10" block from the Motion block.

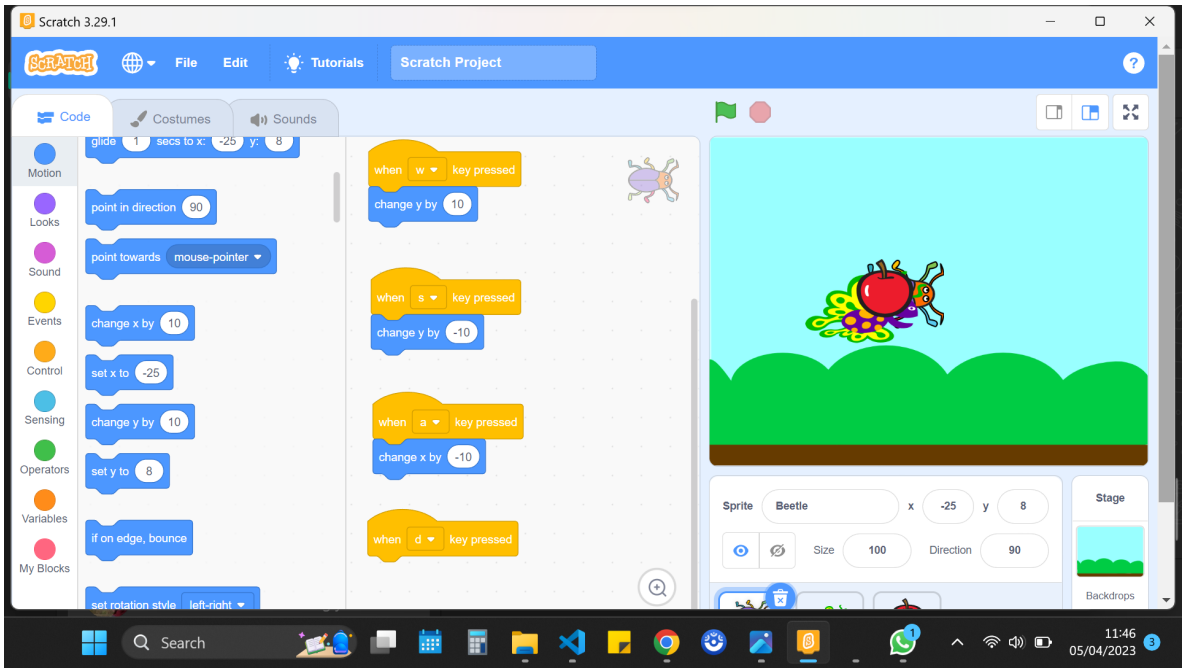


Drag the "change y by 10" block under the "when s key pressed" event block. Change 10 with -10. Why did we change 10 with -10?

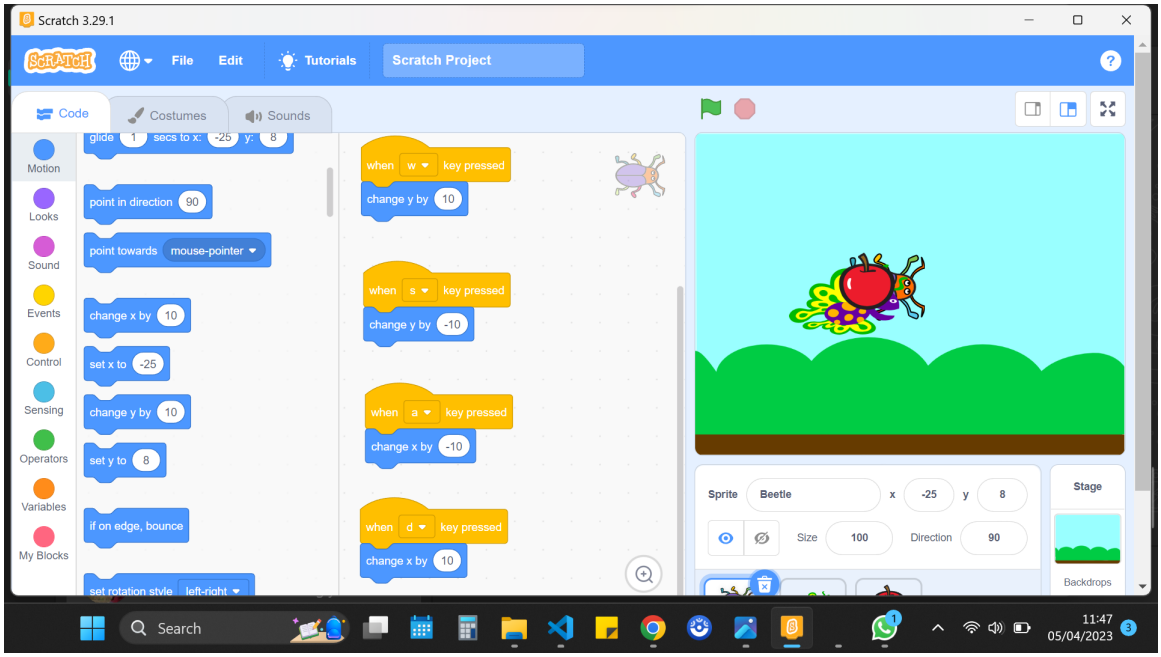


Great job! That's correct. When the sprite moves downwards, it needs to move in the negative y direction, which is represented by a negative value.

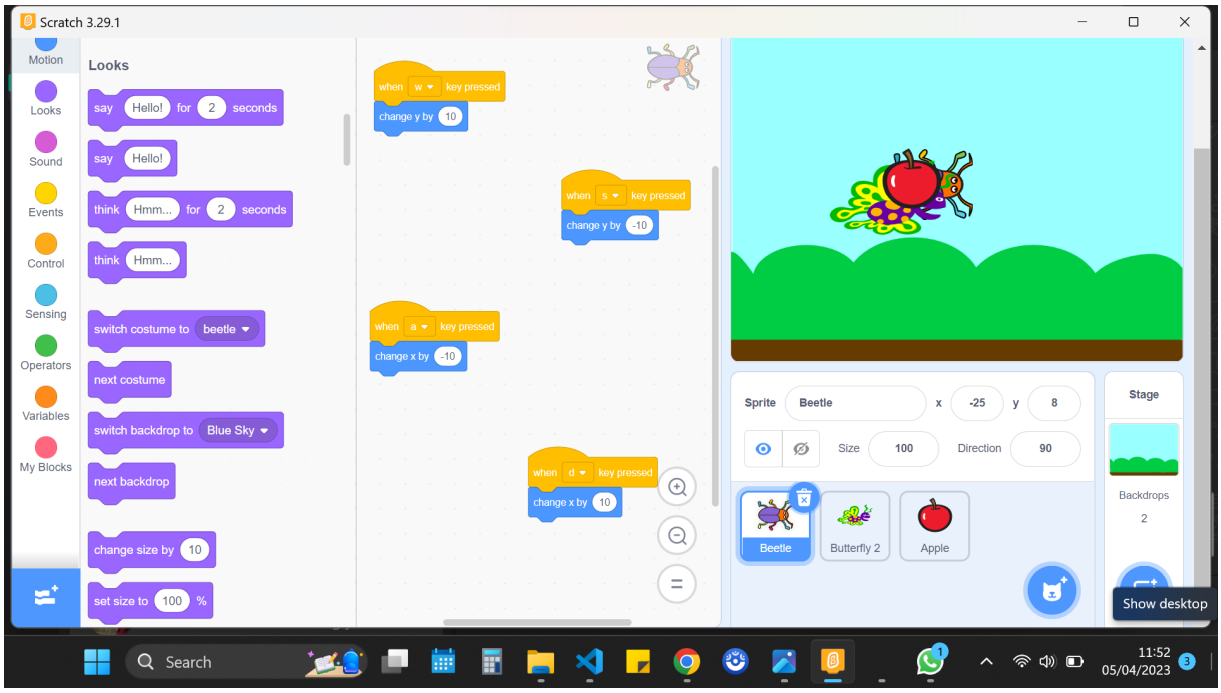
When you press the "a" key, the Beetle sprite should move to the left. So, we need to go to the Motion block and drag the "change x by 10" block under the "when a key pressed" event. However, since the Beetle needs to move towards the left direction, we need to change the number 10 to -10.



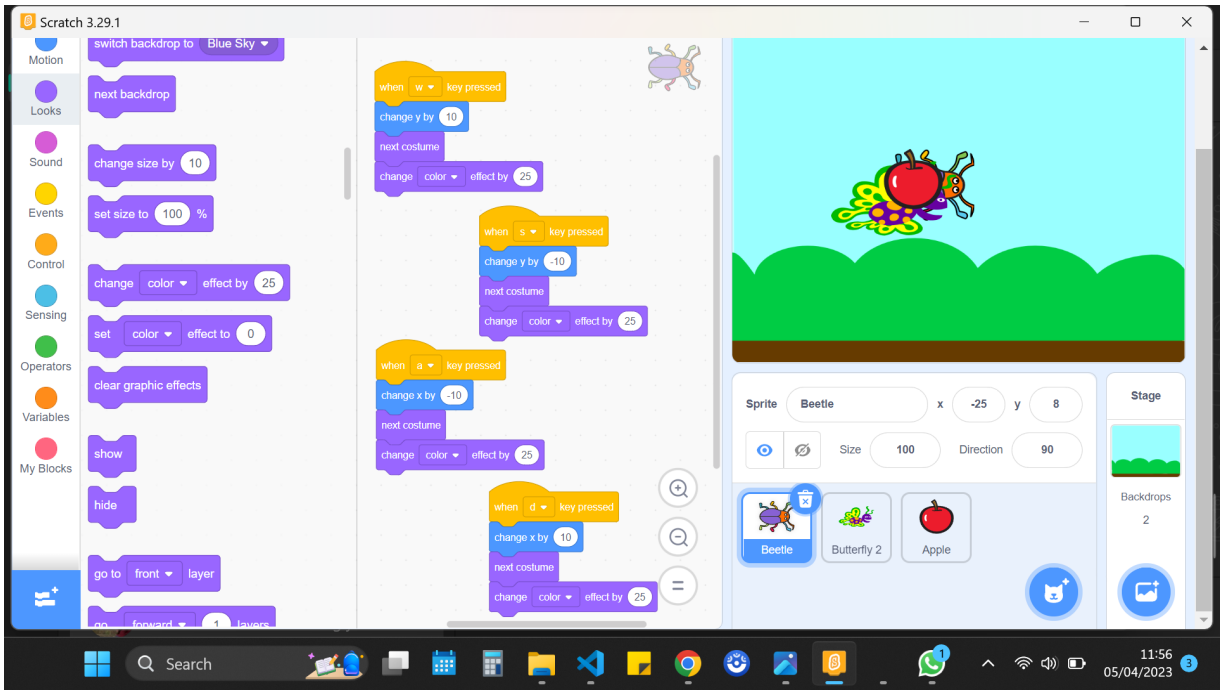
Drag the "change x by 10" block to the script area. Place it under the "when d key pressed" block.



When our beetle moves, we want to make it change its costume and color. To do this, we need to find the Look block on the left side of the screen.

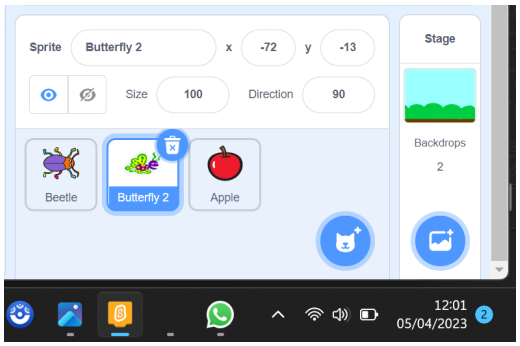


Let’s add two blocks for every key press event we created earlier. Drag "next costume" and "change color effect by 25" under each of the key press event blocks in the code area.

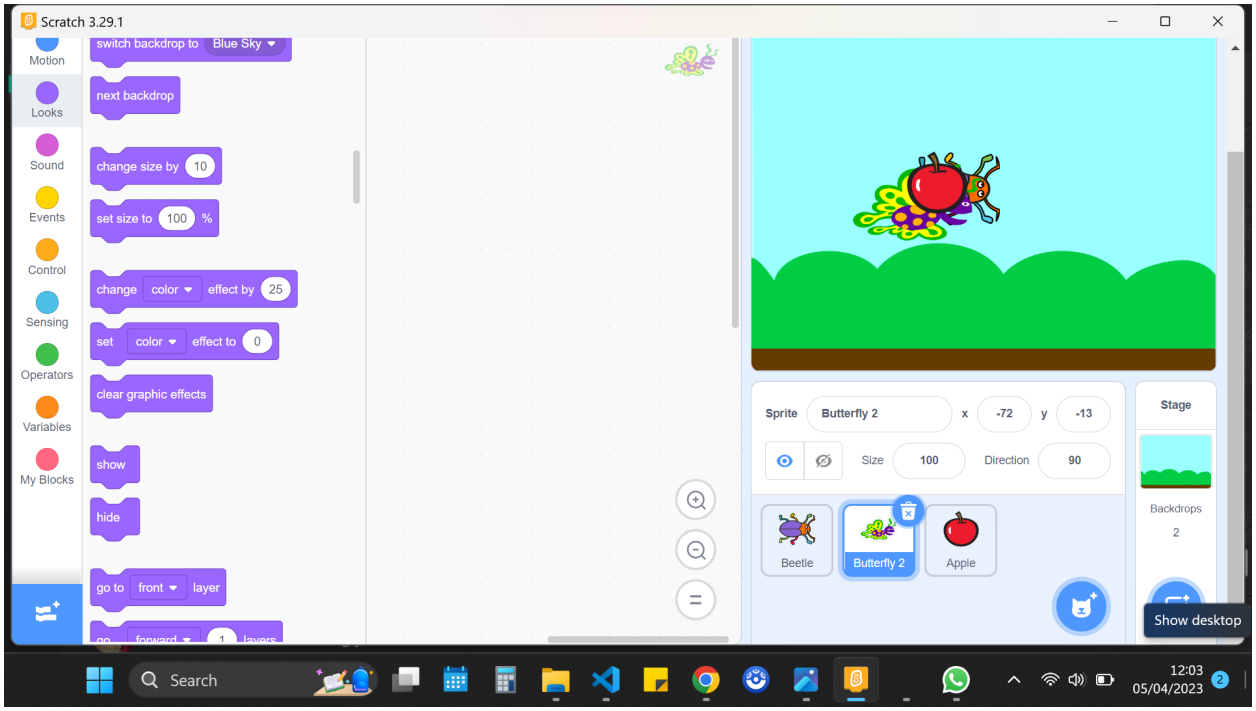


Code for Butterfly 2

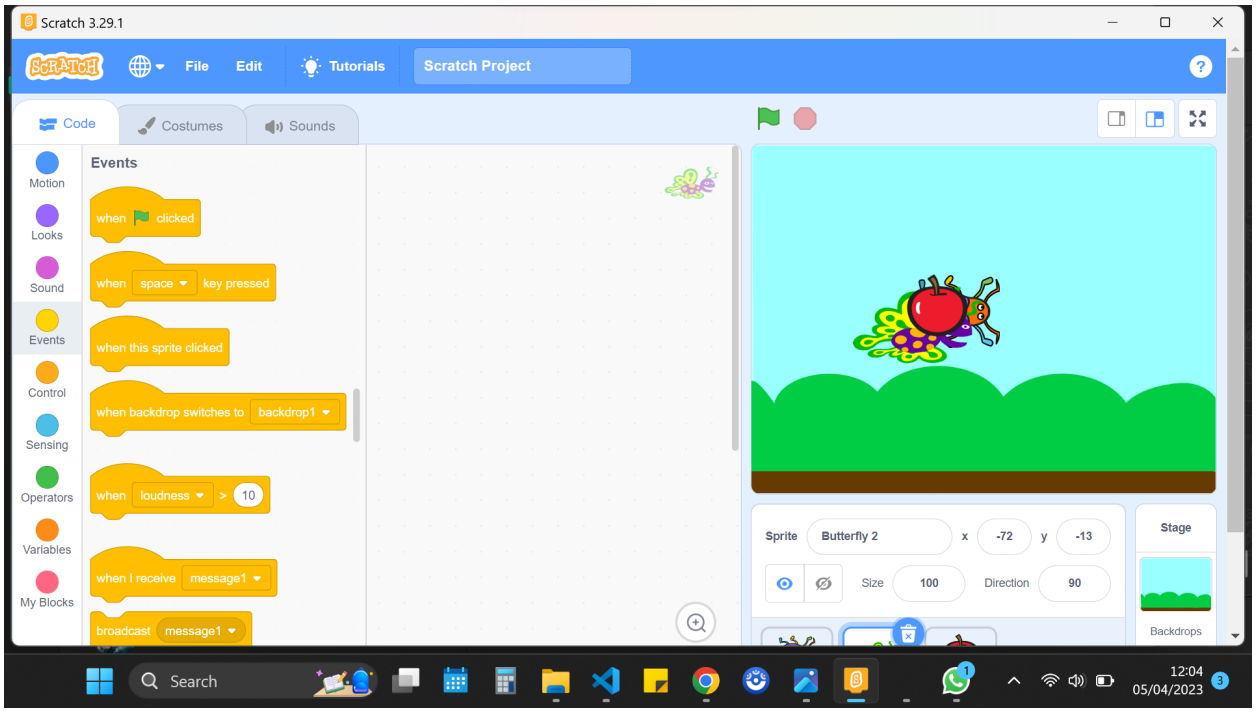
Now it's time to write some code for the Butterfly 2 sprite. Let's select the Butterfly 2 sprite.



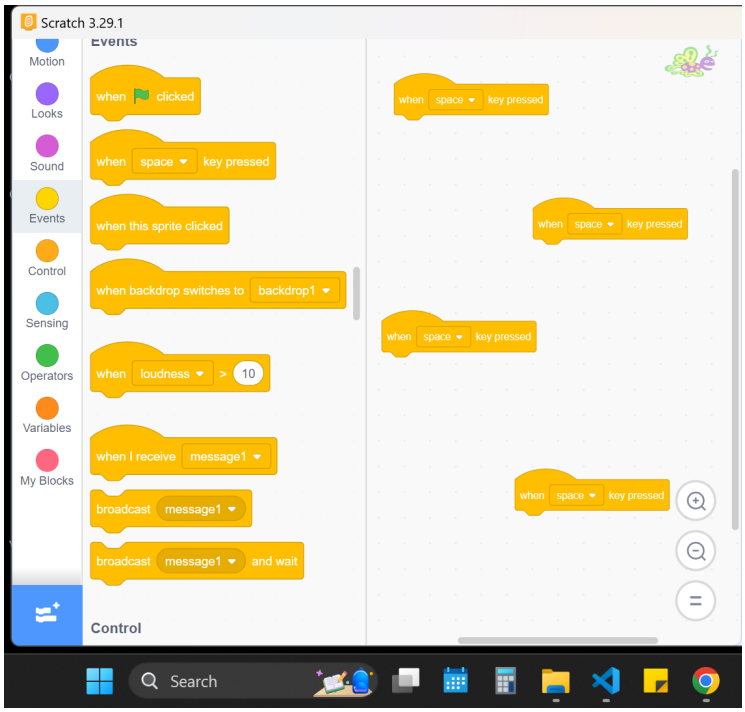
When you select the Butterfly 2, your interface will display the blocks and code area specific to that sprite, similar to the interface shown below:



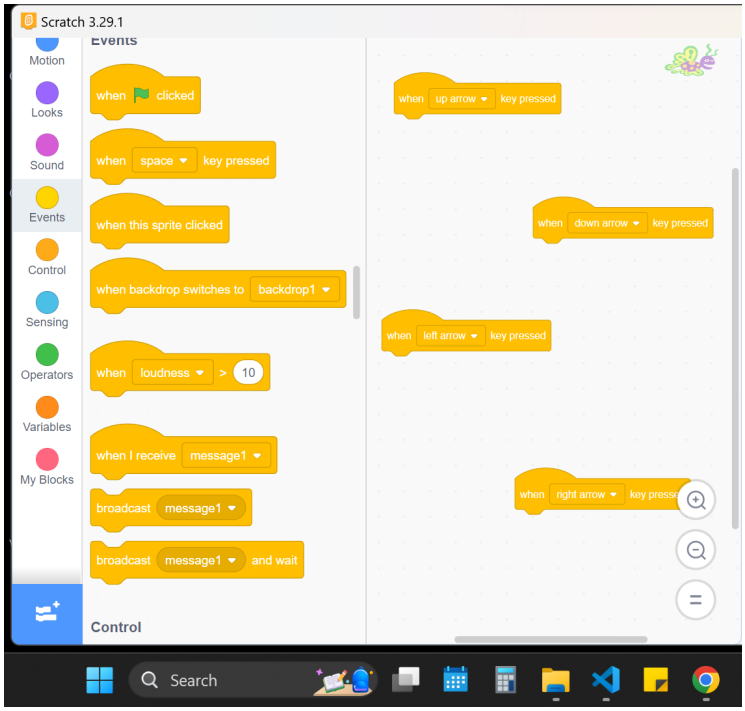
Find the Events block located in the Code tab.



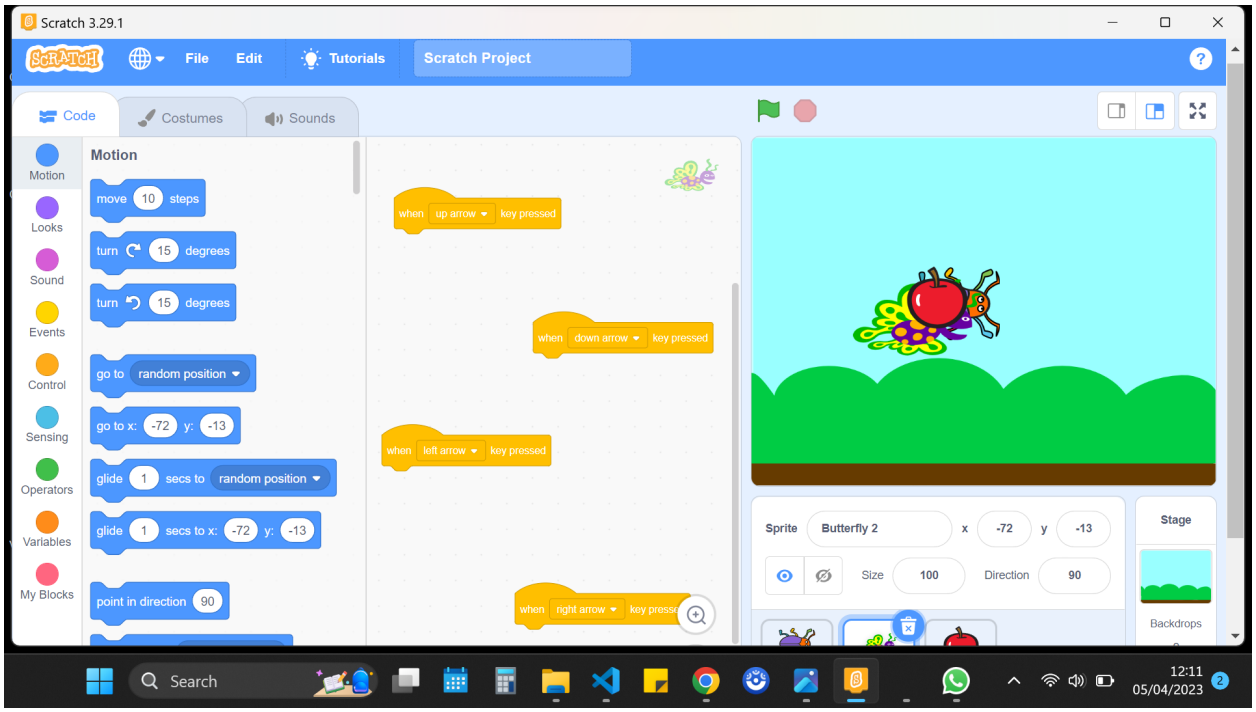
Drag "when space key pressed" block four times to the coding area for the Butterfly 2 sprite.



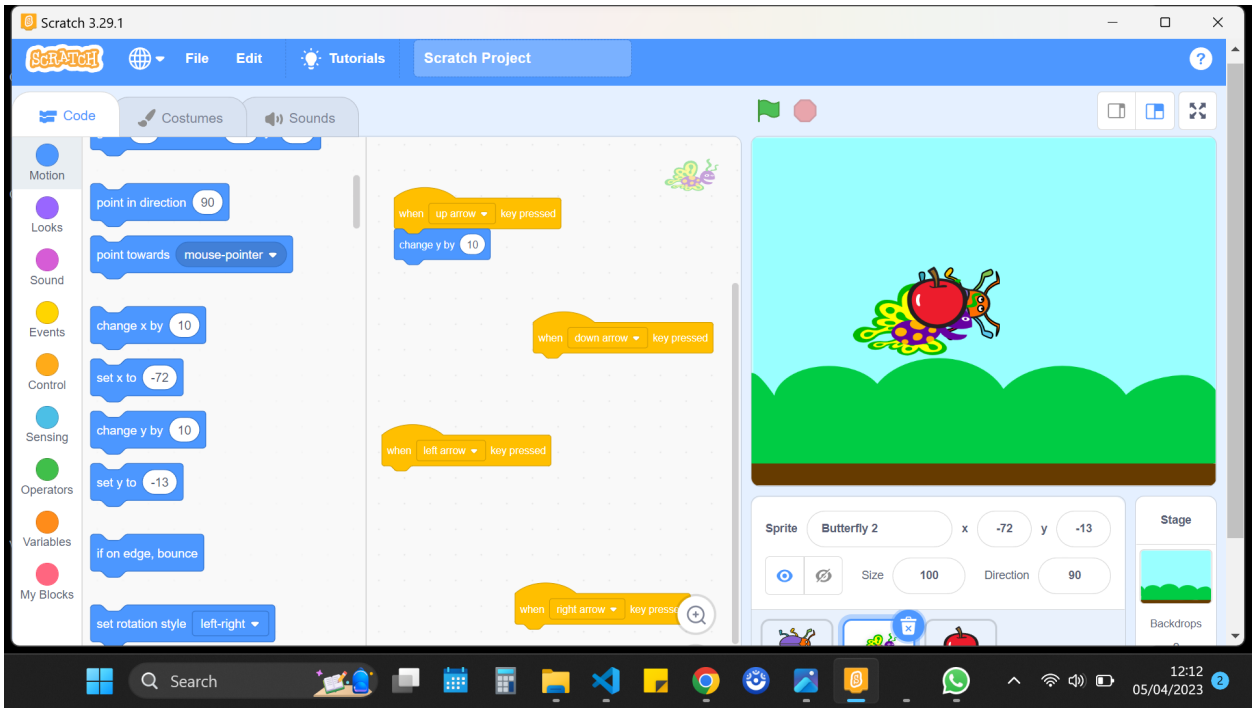
Change the text "space" to "up arrow", "down arrow", "left arrow" and "right arrow" respectively in the four "when spce key pressed" blocks.



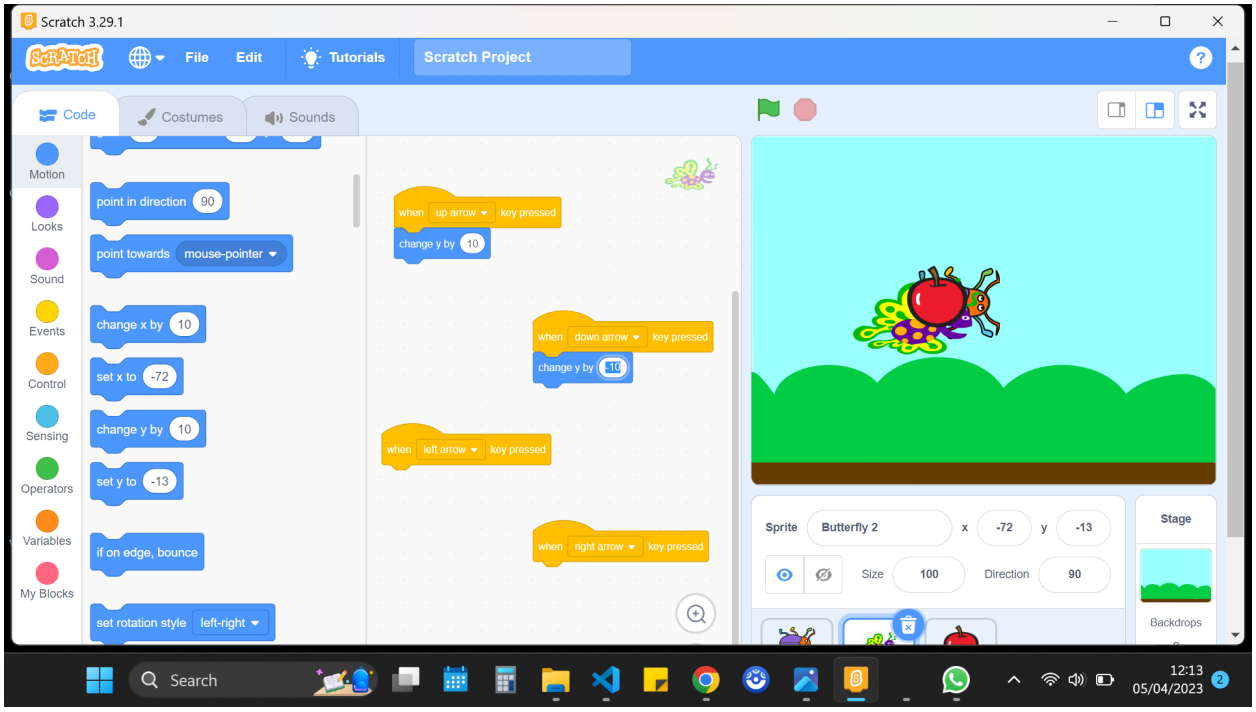
Your Scratch interface looks like the one below. Find the Motion block.



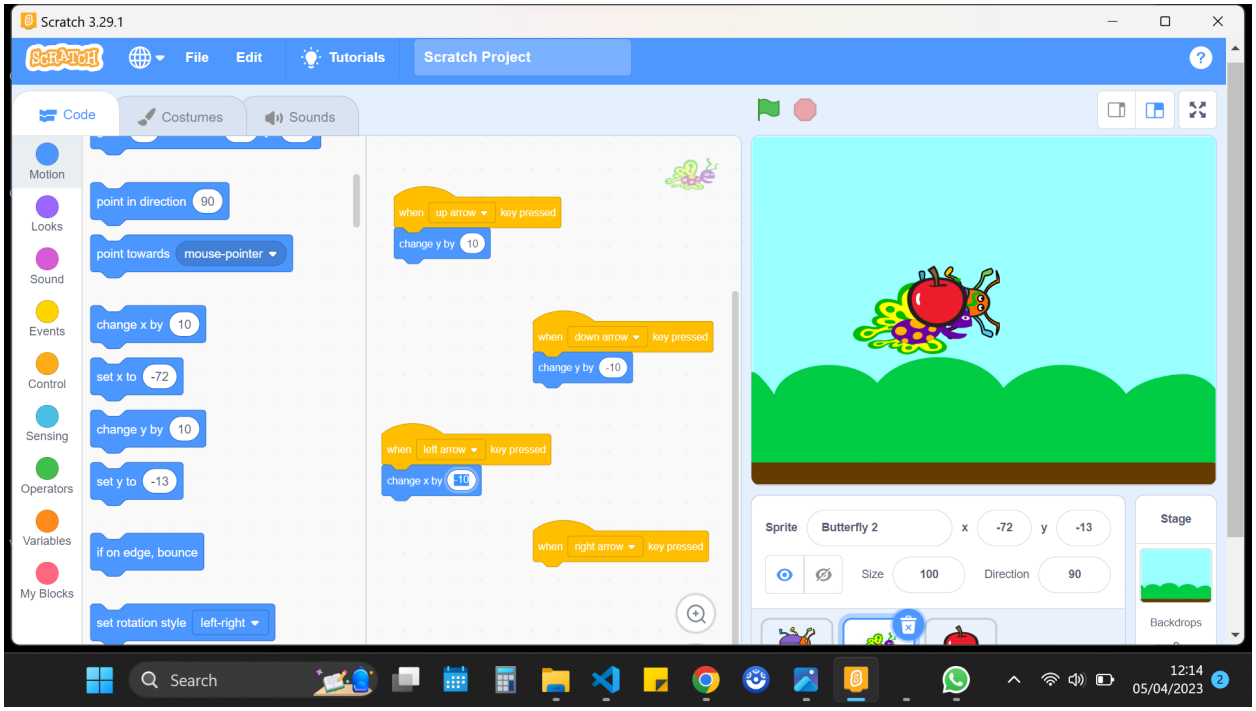
Under "when up arrow key pressed", drag "change y by 10".



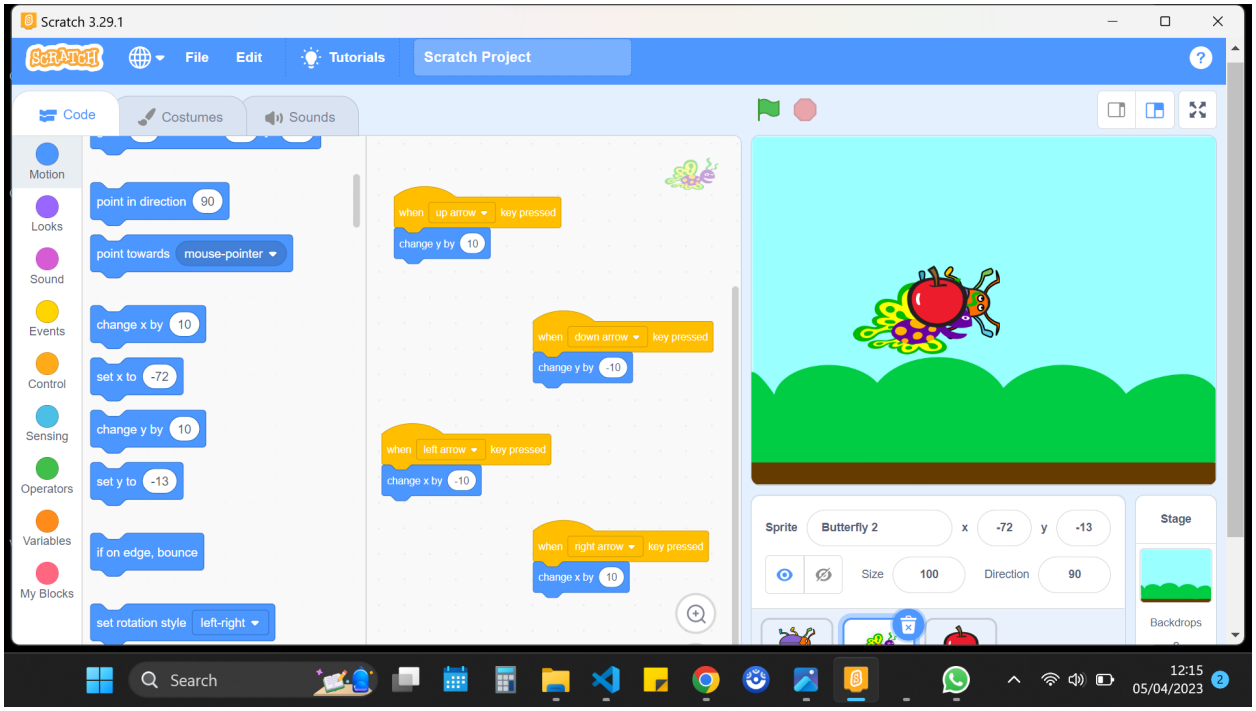
Under "when down arrow key pressed", drag "change y by 10". Change 10 with -10 since it will move downwards in this case.



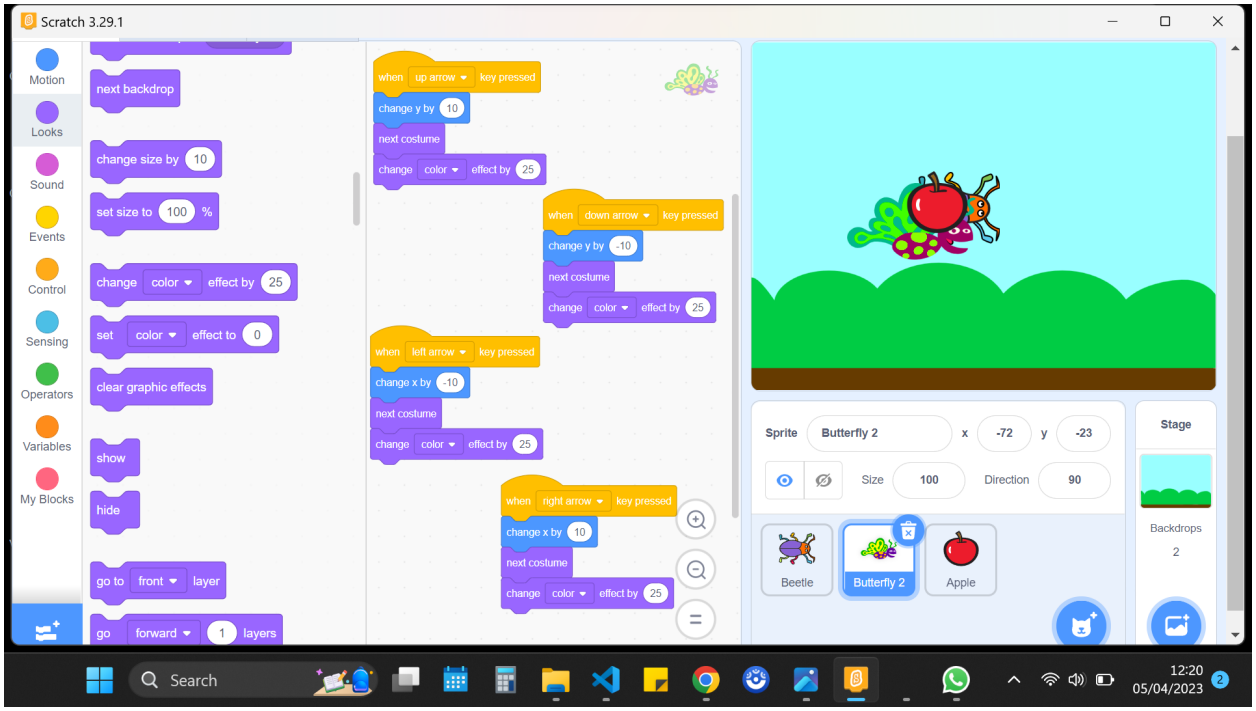
Under "when left arrow key pressed", drag "change x by 10". Change 10 with -10 since it will move left in this case (in negative x direction).



Under "when right arrow key pressed" drag "change x by 10".



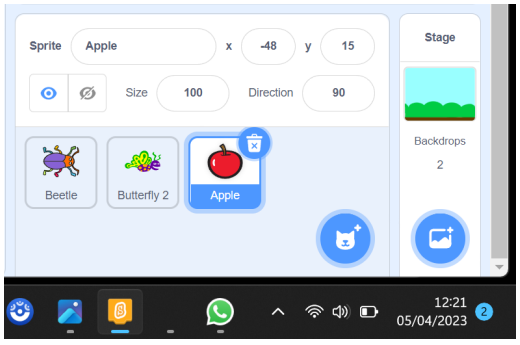
Let’s drag two blocks, namely "next costume" and "change color effect by 25" under every block in our code area. This code will change the costume and color of the butterfly when it moves in any direction.



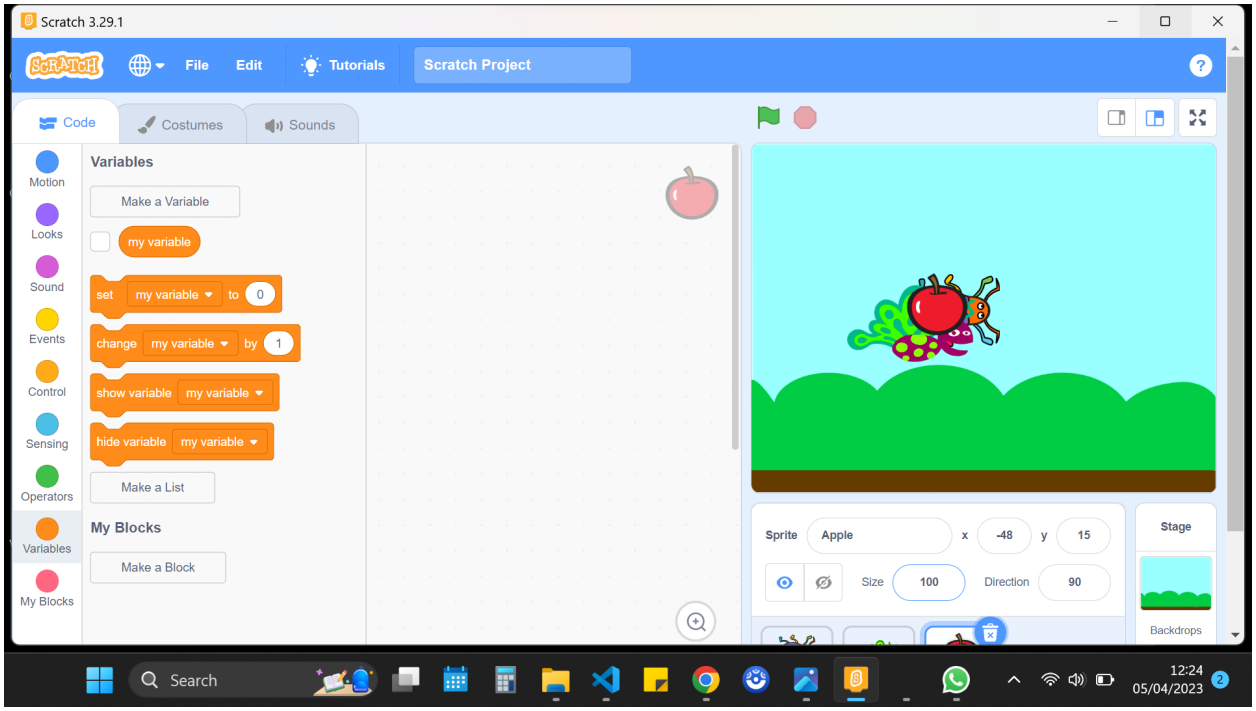
Code for Apple

Let's start writing some code for the Apple. Our aim is to check if any other sprites touch the Apple. If so, the apple will change its location, and the score of the sprite that touches the Apple will increase.

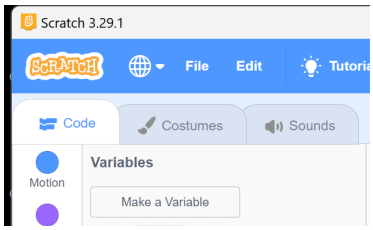
To begin, click on the Apple Sprite and make it active (highlighted).



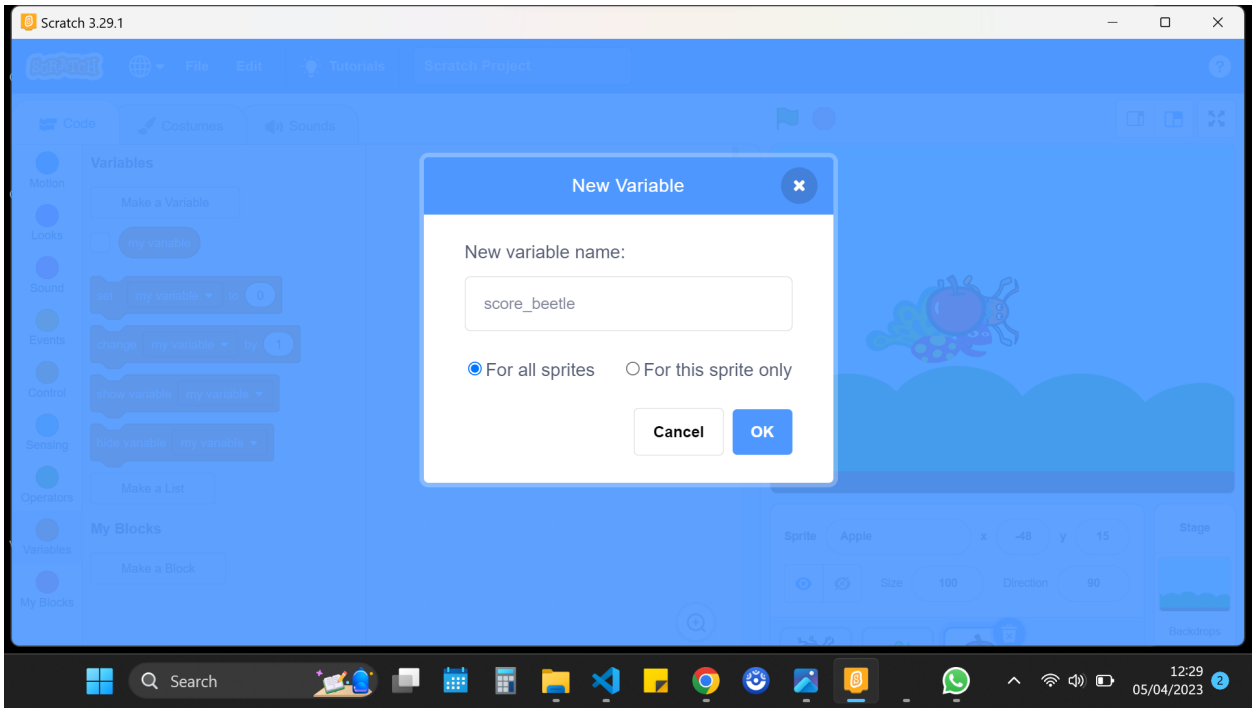
Let's create variables to keep score of the Butterfly and the Beetle. For that purpose, let's find Variables block under the Code.



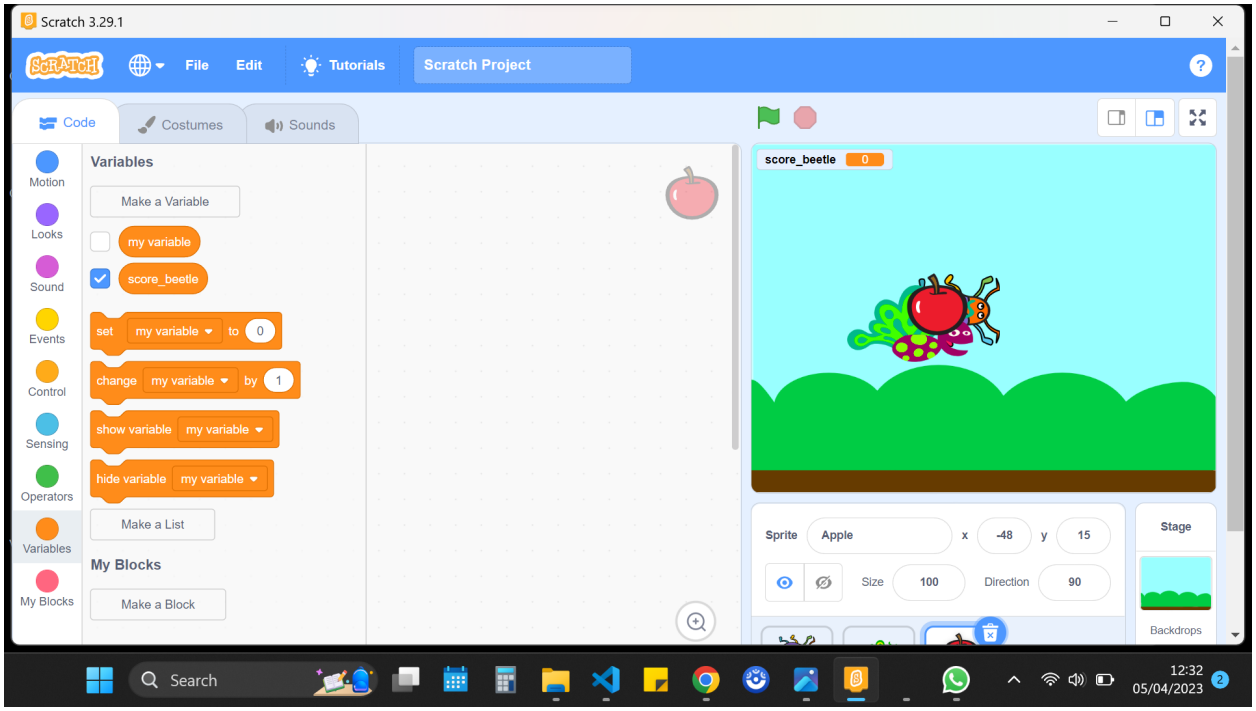
Click on "Make a Variable".



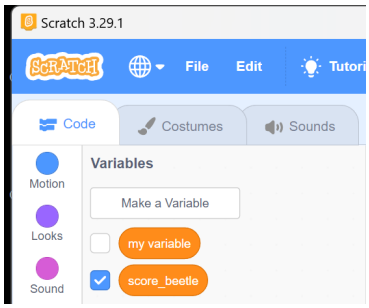
In the dialog box that appears, type "score_beetle" in the text field for the variable name. Click "OK" to create the variable.



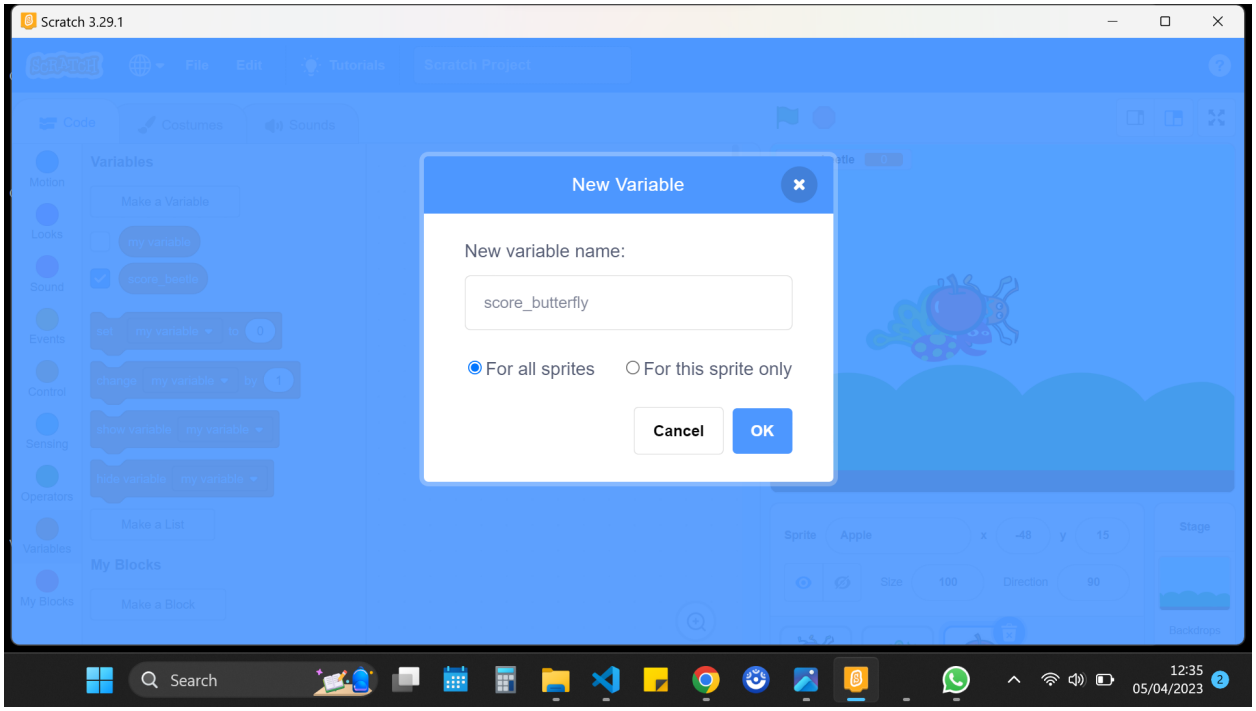
Here is the interface you will see after creating the "score_beetle" variable:



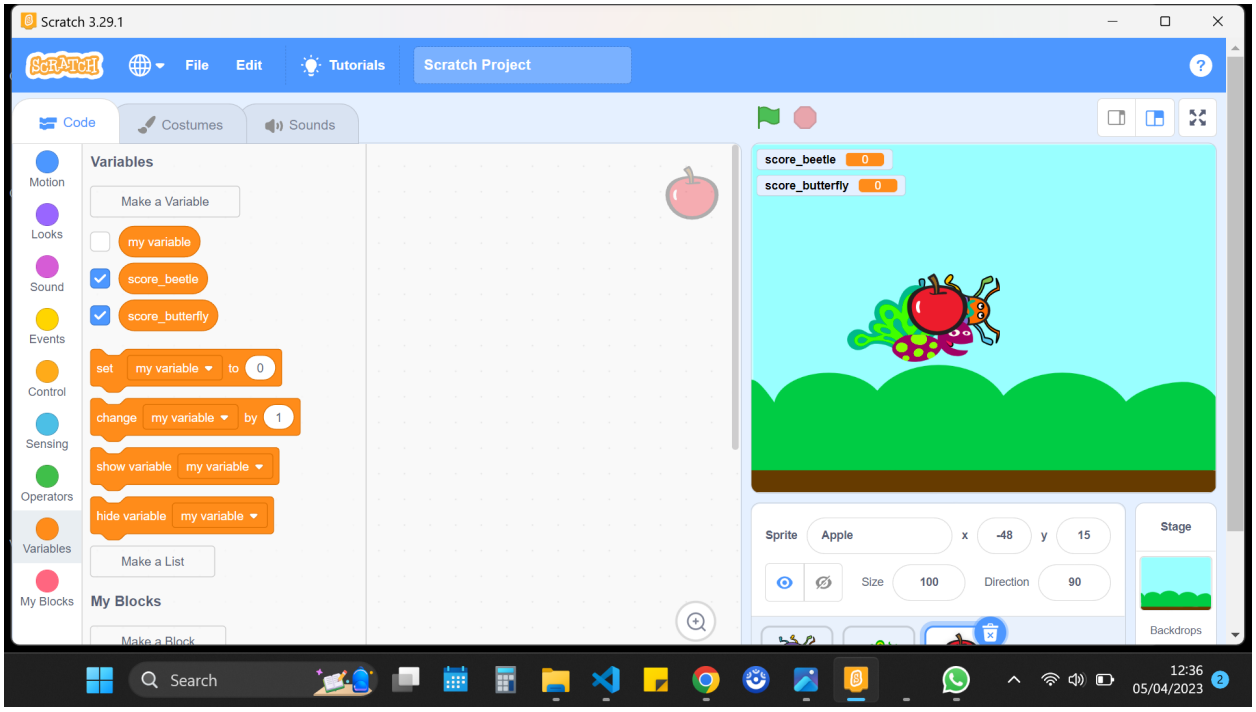
Next, to keep the score of the butterfly let's create another variable and name it as score_butterfly. To do this, click on "Make a Variable" under the Variables block in the Code section.



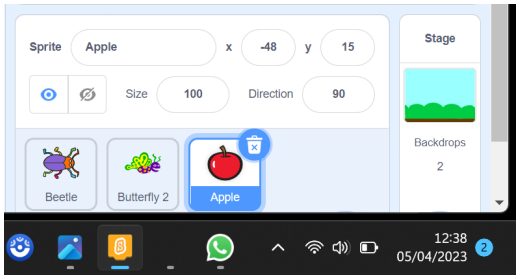
In the pop-up window that appears, type "score_butterfly" as the variable name. Click "OK" to create the variable.



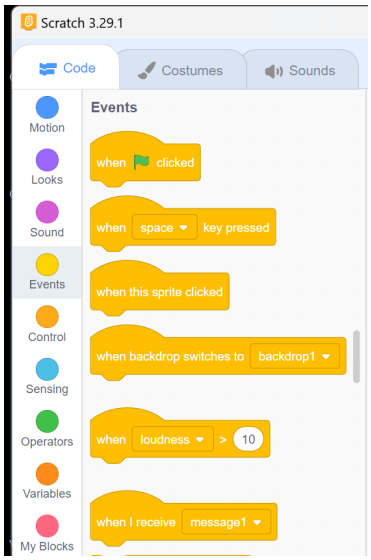
After creating the variable "score_butterfly" and clicking "OK", you will have the following interface.



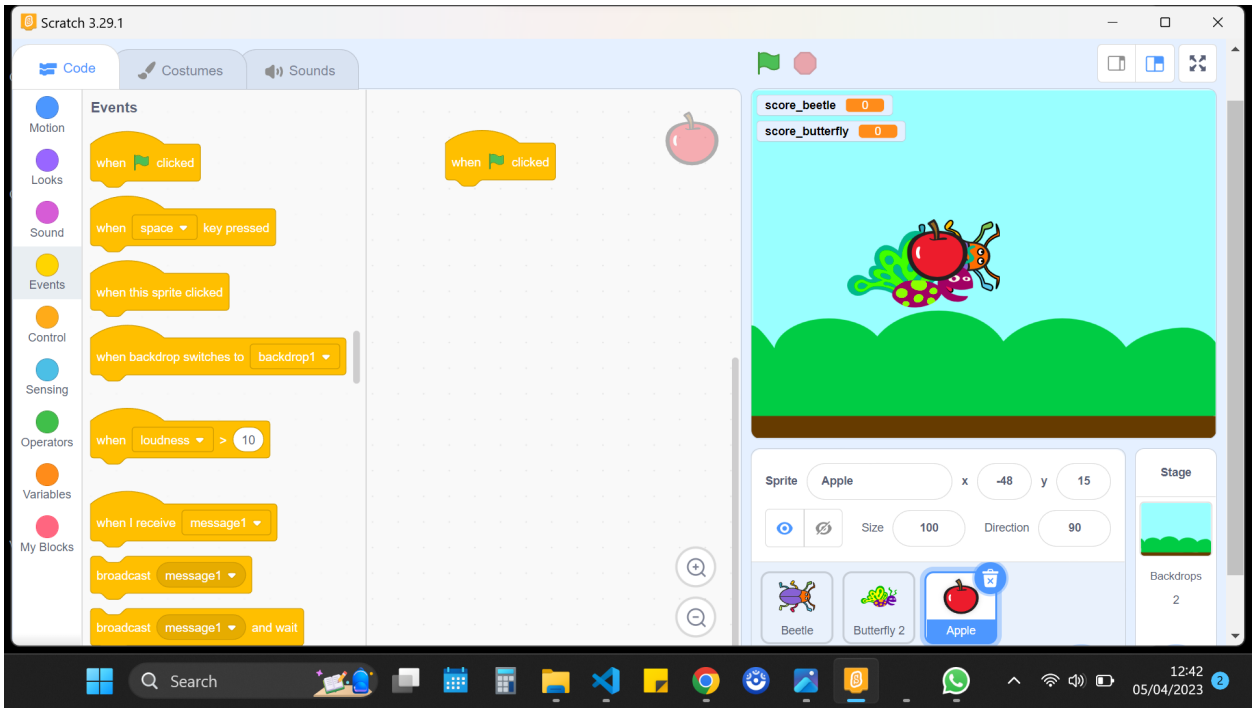
After creating our two variables, we can start writing the code for the Apple. Let's ensure that the Apple sprite is selected before we start with the coding.



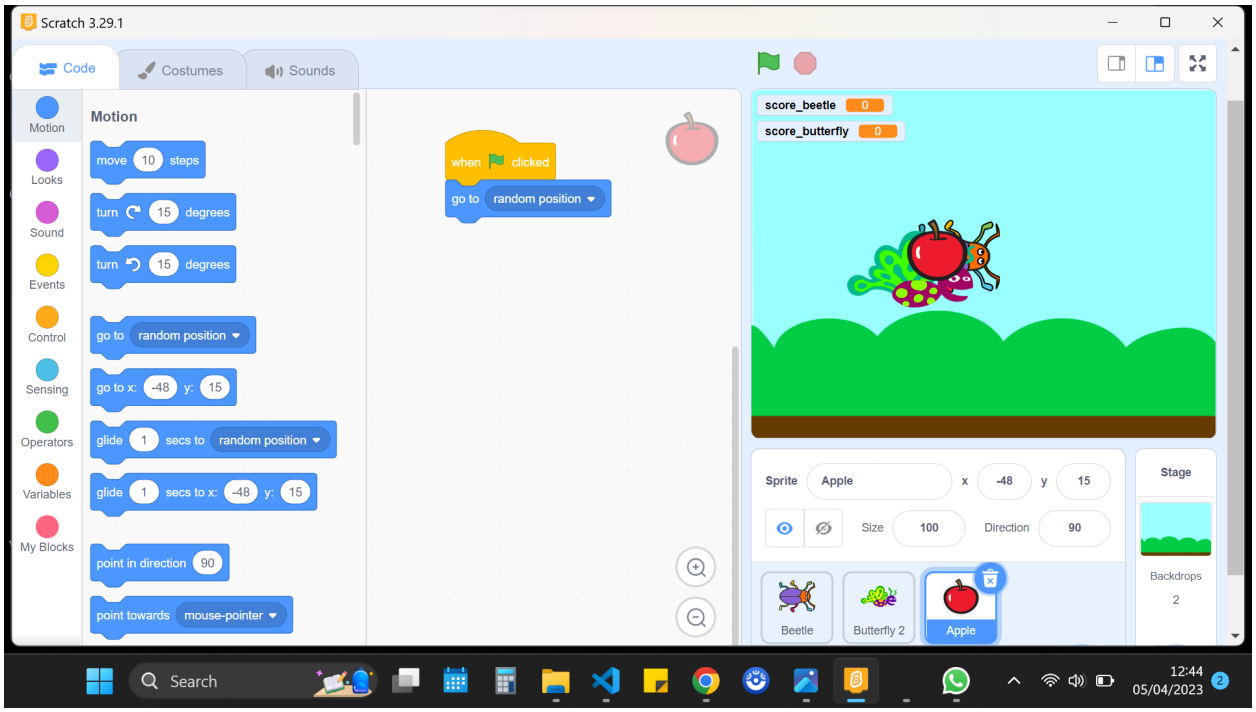
Let's start by finding the "Events" block in the "Code" section.



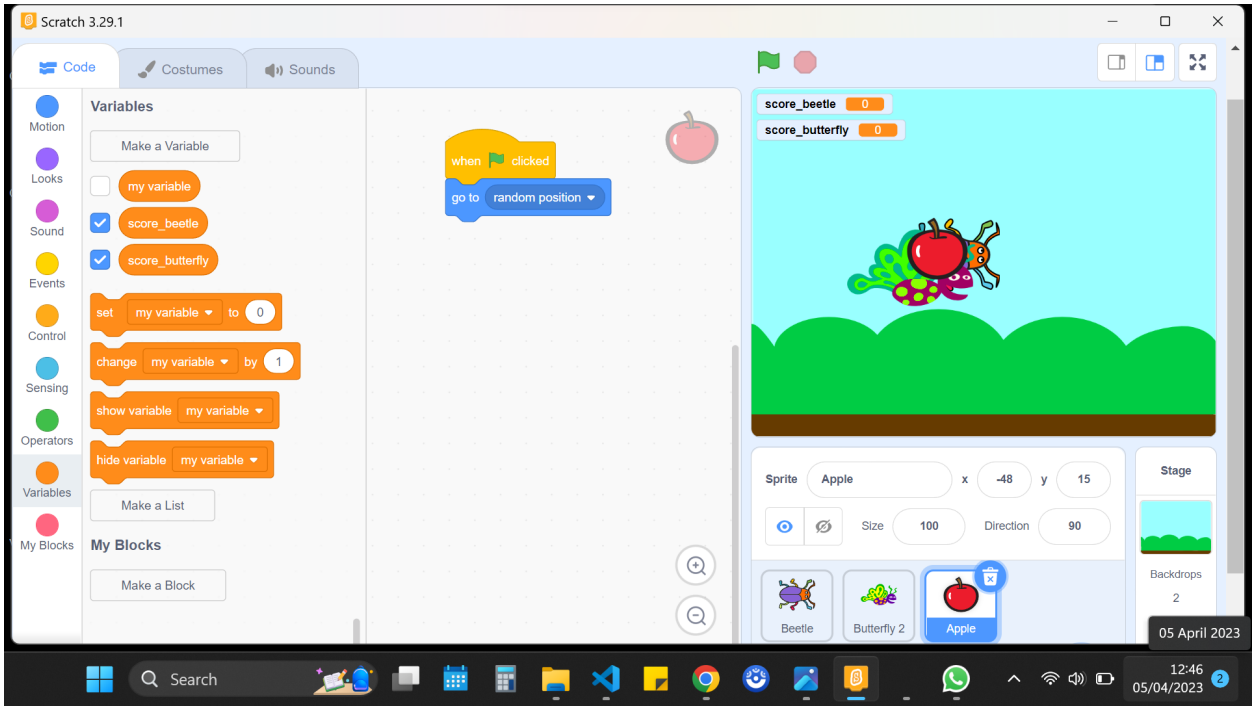
Then, drag the "when the green flag clicked" block from the "Events" block.



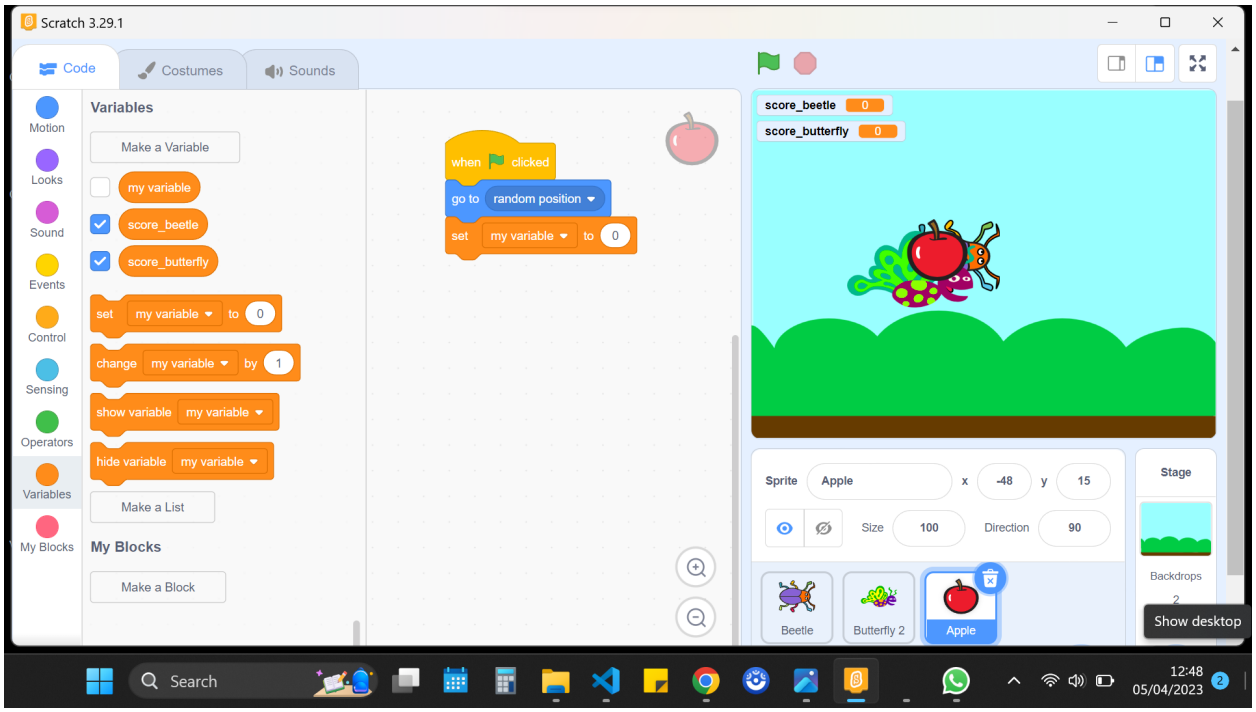
Next, drag the "go to a random position" block from the "Motion" block right after "when the green flag clicked".



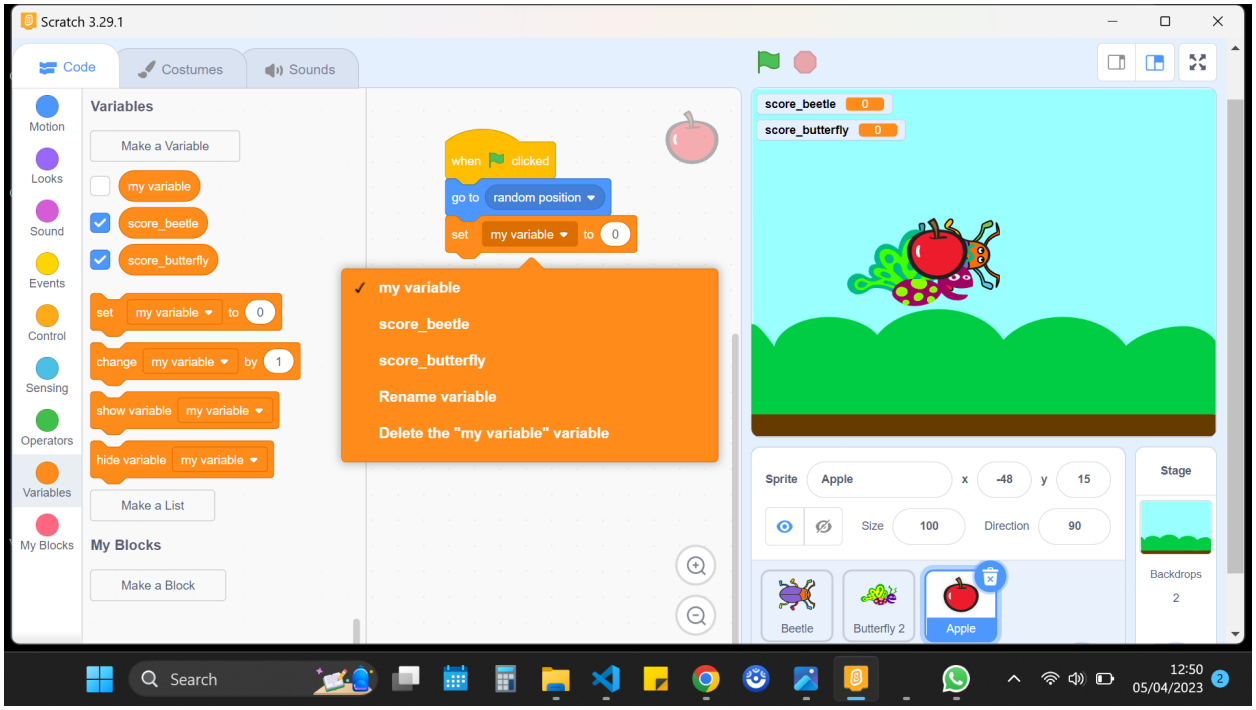
Now, let's set the score of the beetle to 0 at the beginning. To do this, go to the "Variables" block.

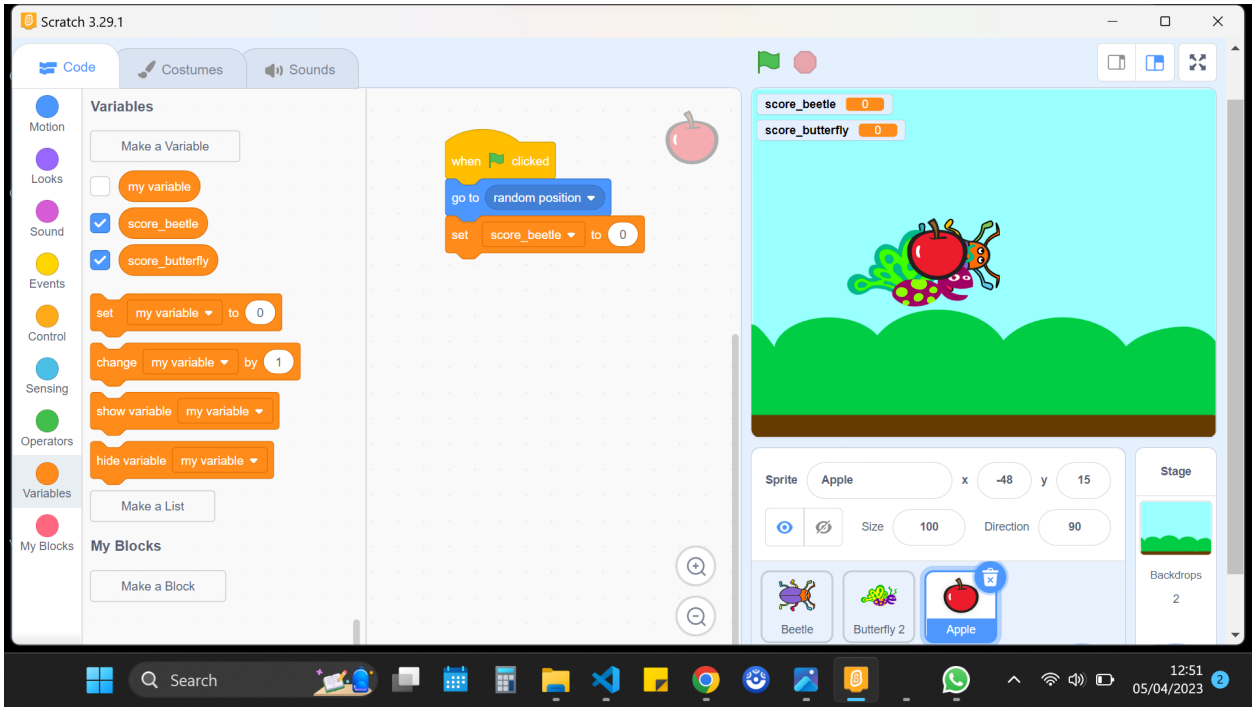


Drag the "set my variable to 0" block after "go to random position".

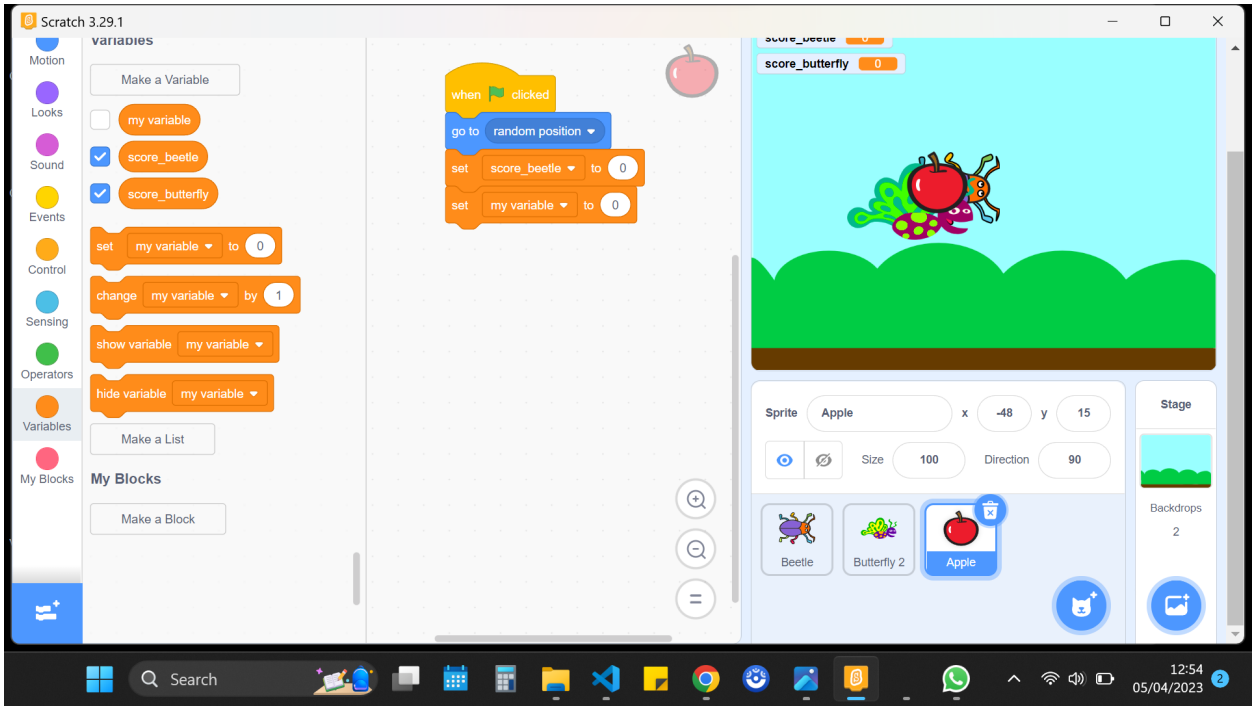


Click on the arrow in "set my variable" and change it to "score_beetle".

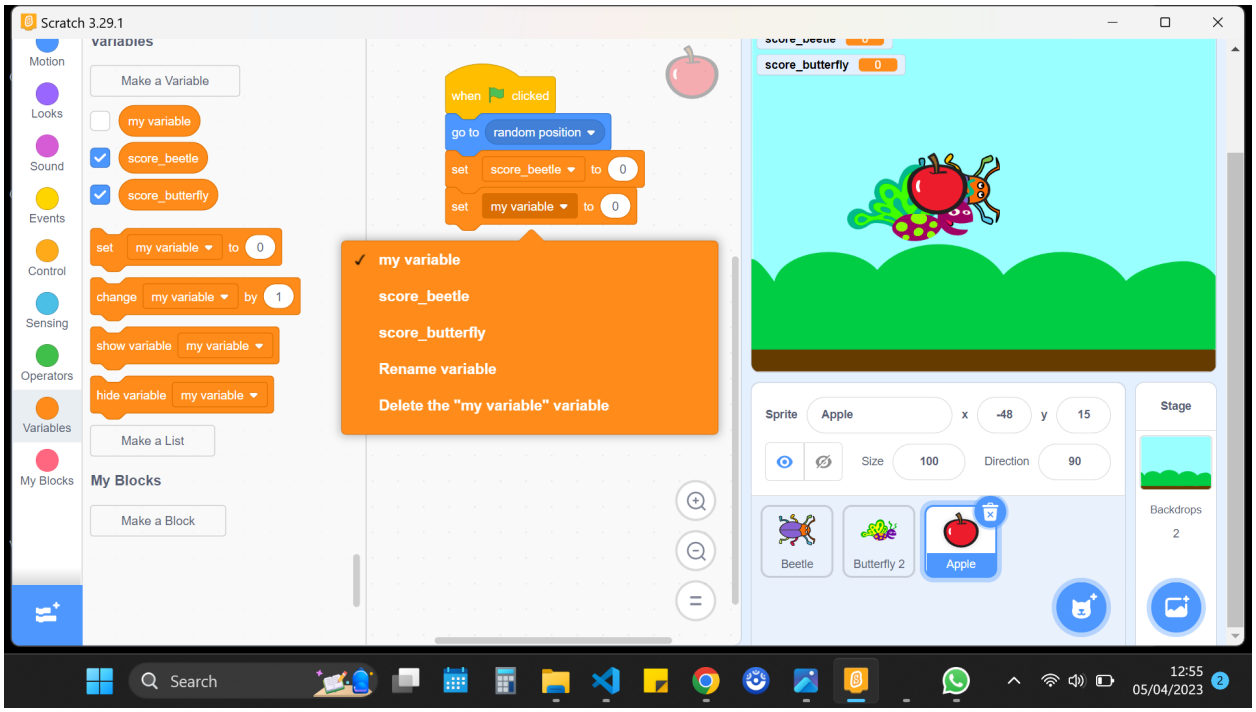


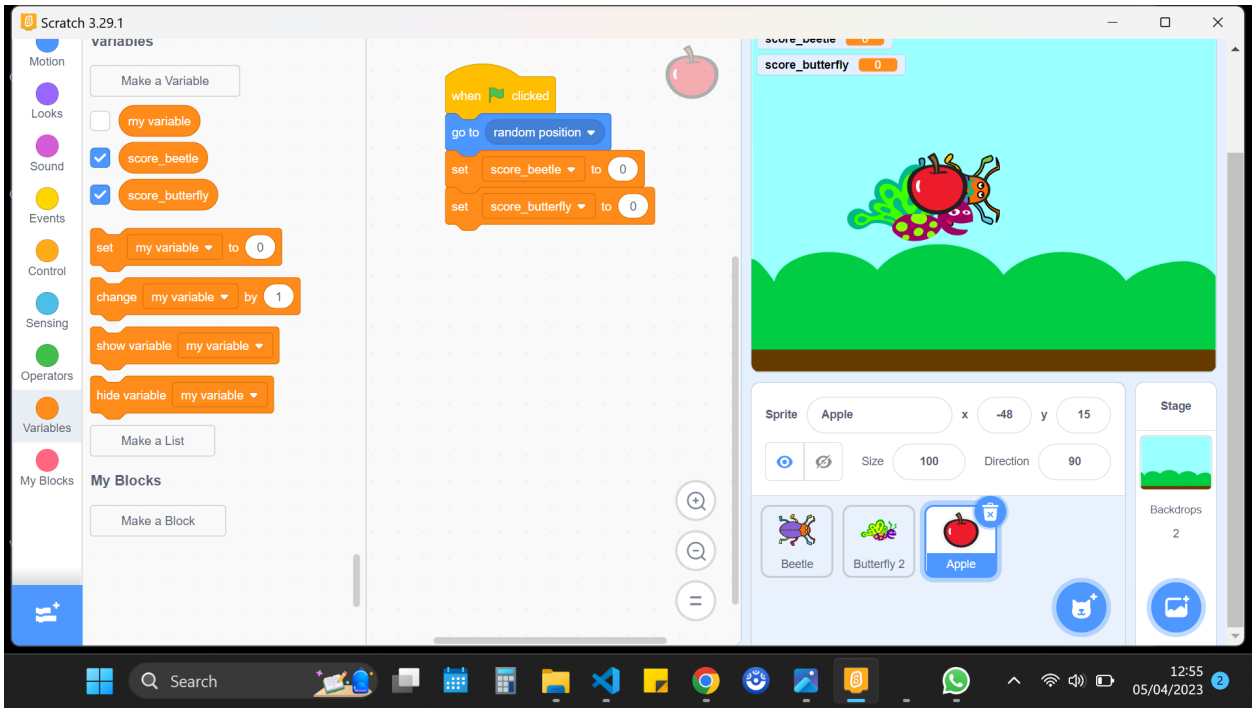


Let's do the same thing for the score of the butterfly. First, drag "set my variable to 0" after "set score_beetle to 0".

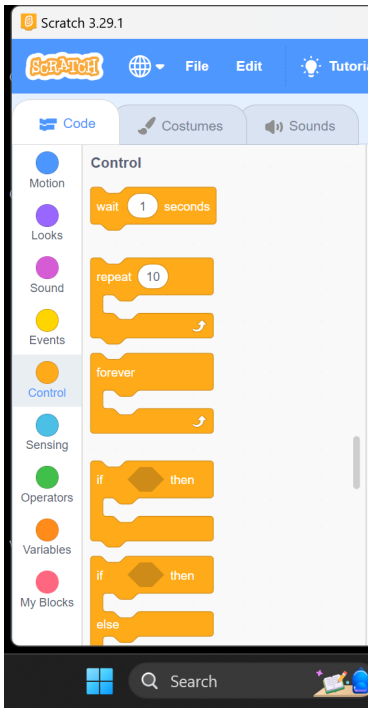

Scratch 3.29.1
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Make a Variable
my variable
score_beetle
score_butterfly
set my variable to 0
change my variable by 1
show variable my variable
hide variable my variable
Make a List
My Blocks
Make a Block
when clicked
go to random position
set score_beetle to 0
set my variable to 0
score_butterfly 0
Sprite Apple x -48 y 15
Size 100 Direction 90
Beetle
Butterfly 2
Apple
Stage
Backdrops 2
Search
12:54
05/04/2023

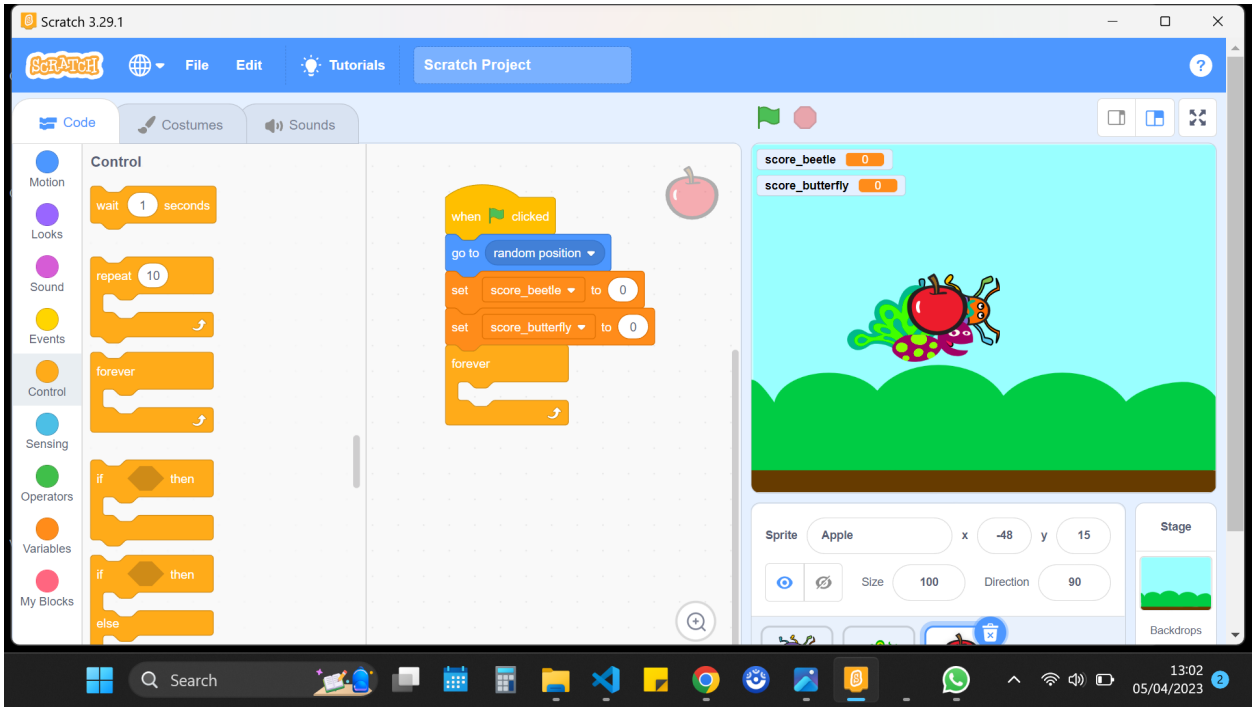
Click on the arrow in "set my variable" and change it to "score_butterfly".



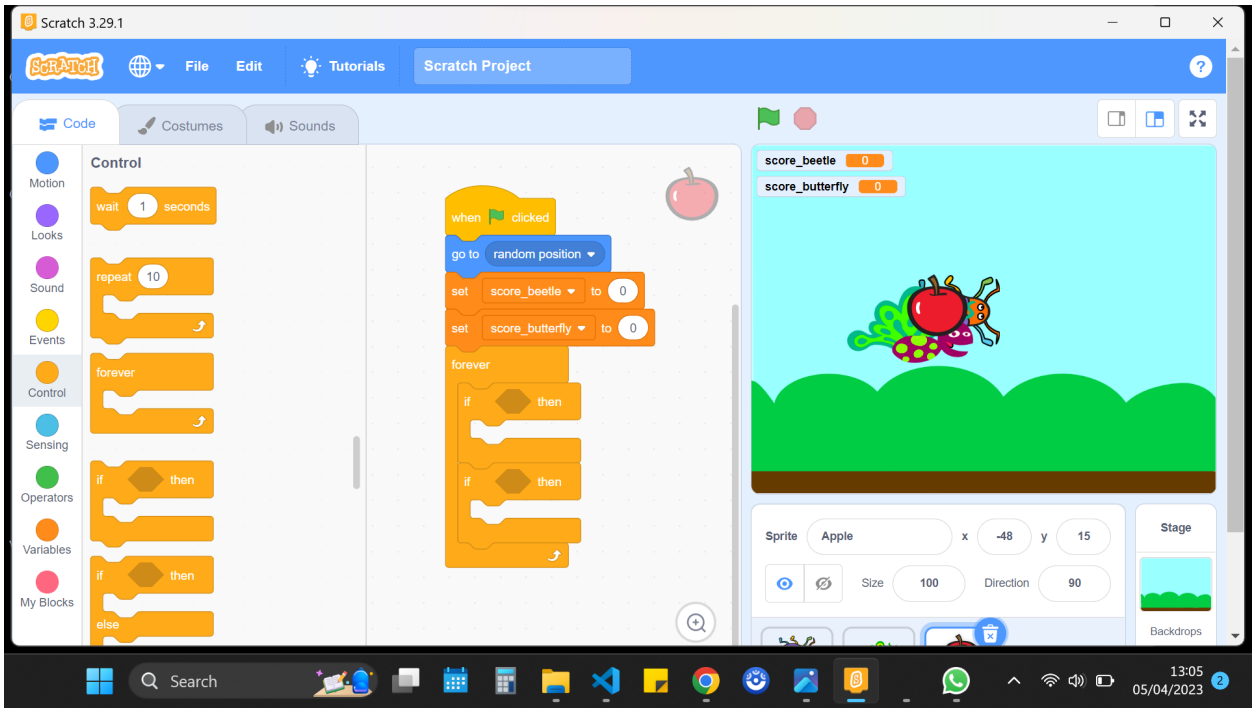


We want to check if the apple is touching either the beetle or the butterfly, so we need to add a forever loop. To do this, find the "Control" block under the "Code" section and drag the "forever" loop to the end of the previous code.

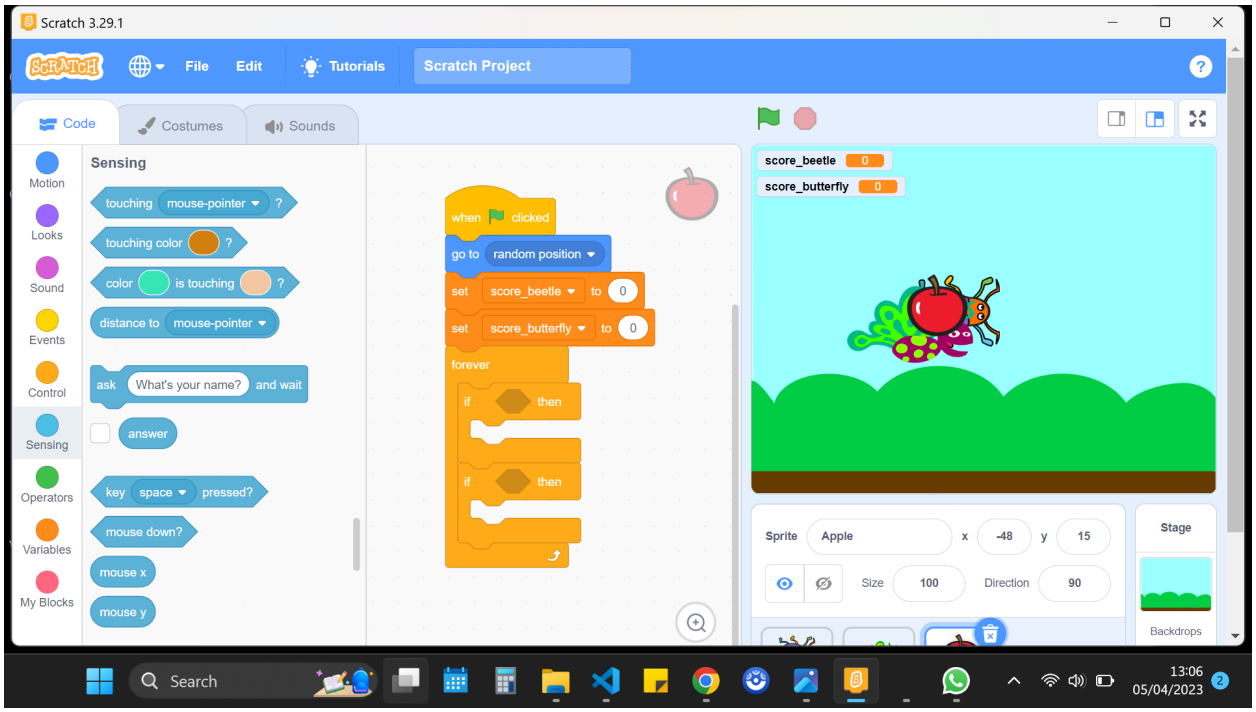




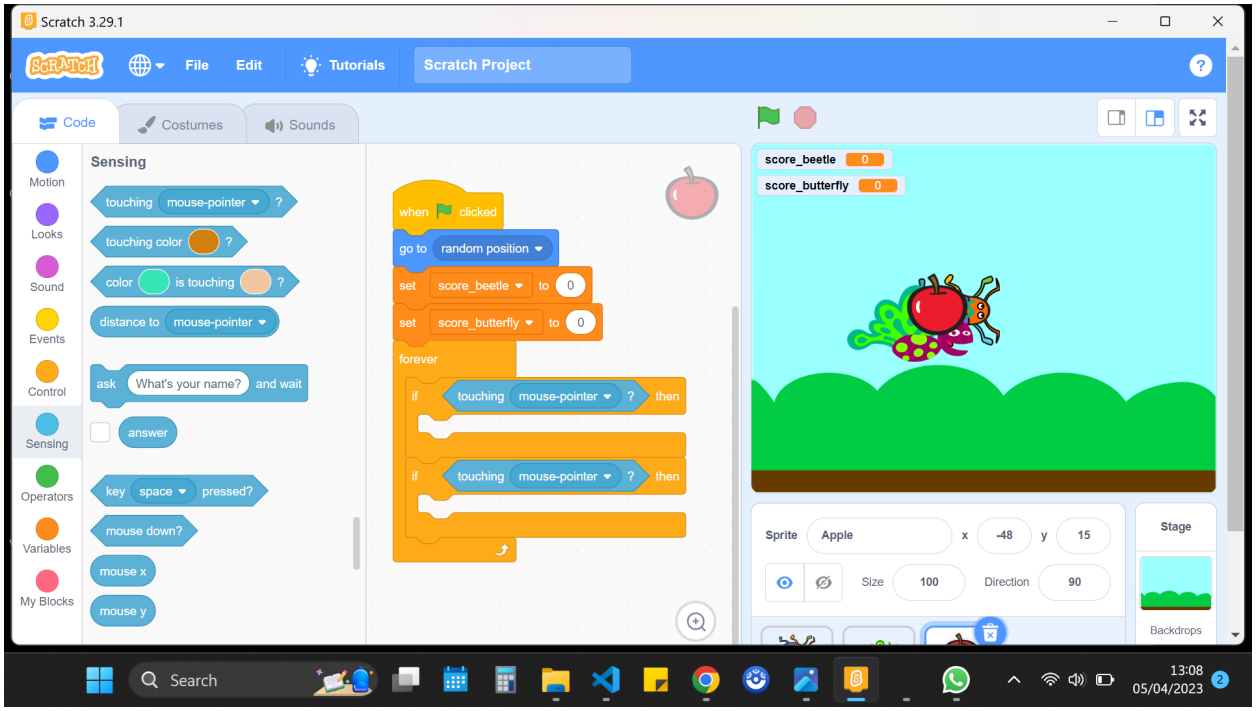
Let's add two "if...then" statements since there are two conditions: touching the beetle or touching the butterfly.



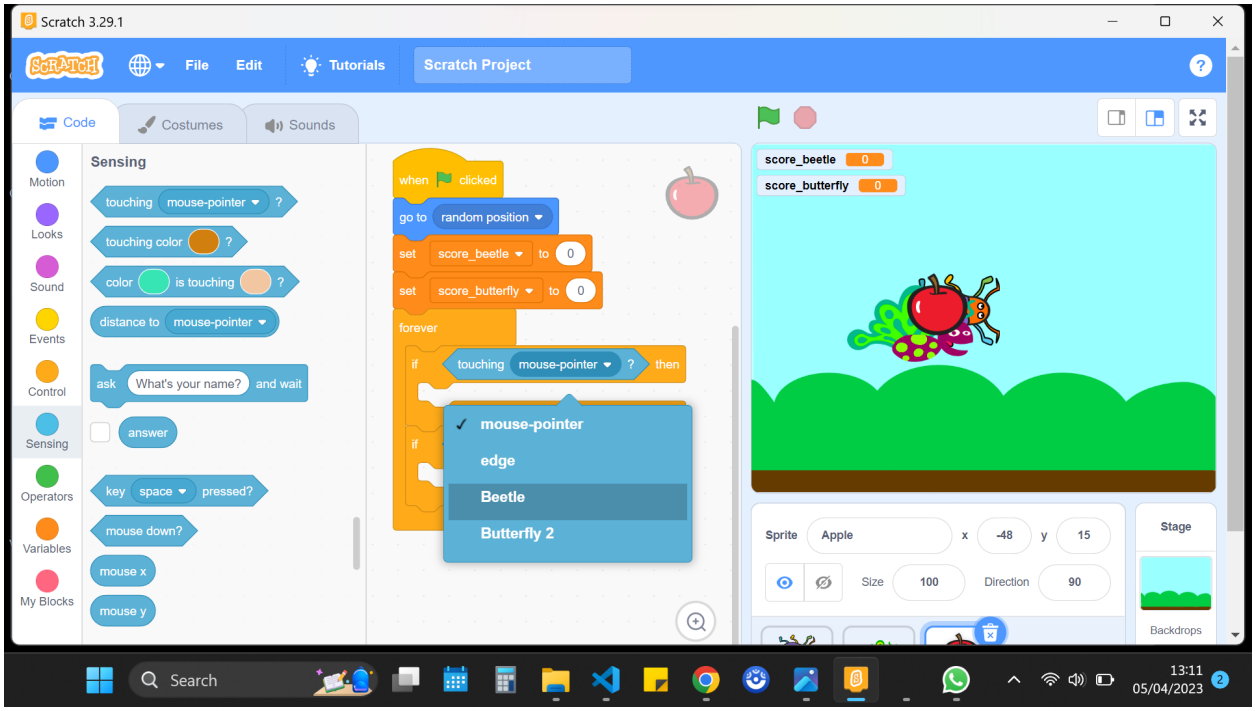
Since "touching" triggers scoring and changing, we need to go to the "Sensing" block.

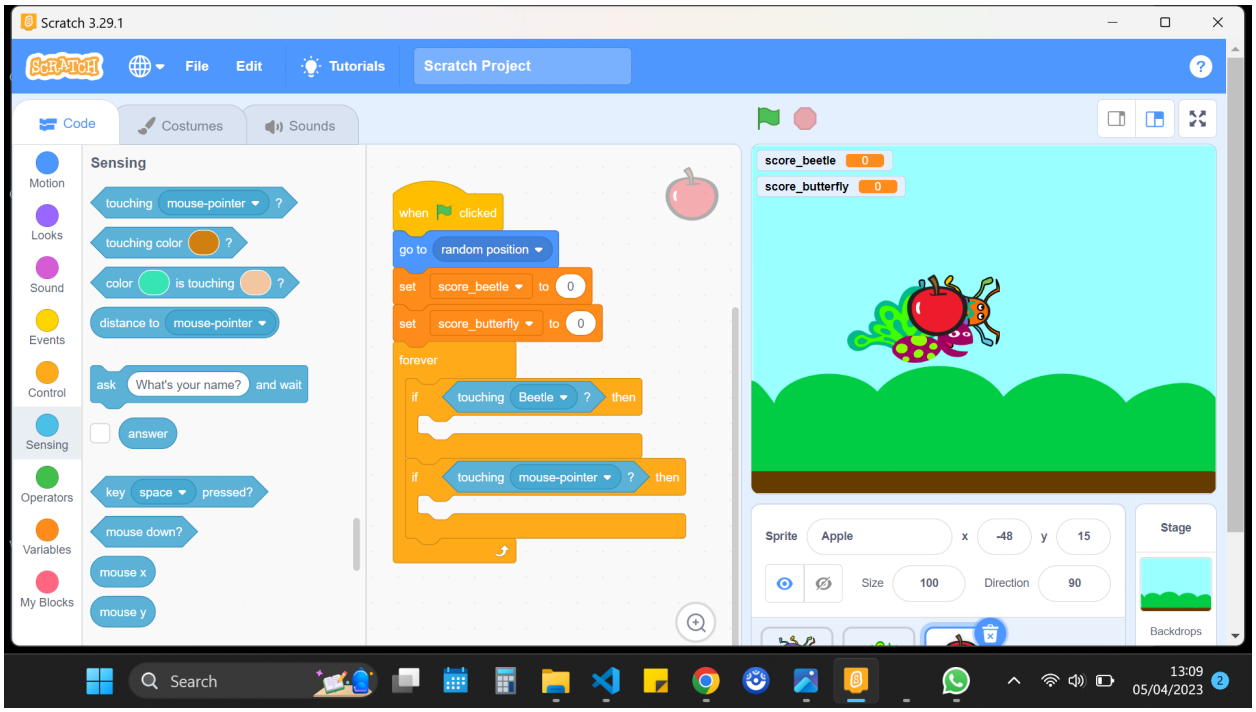


We will drag "touching mouse-pointer" in between "if" and "then" for both spaces.

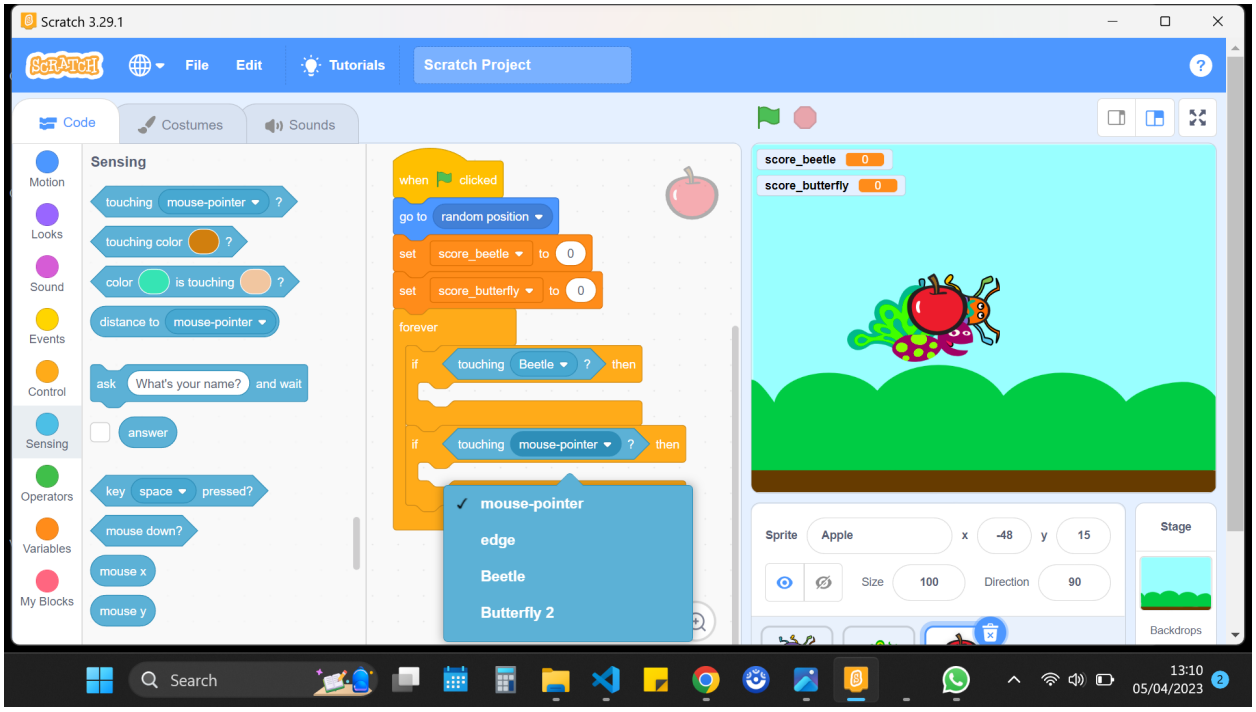


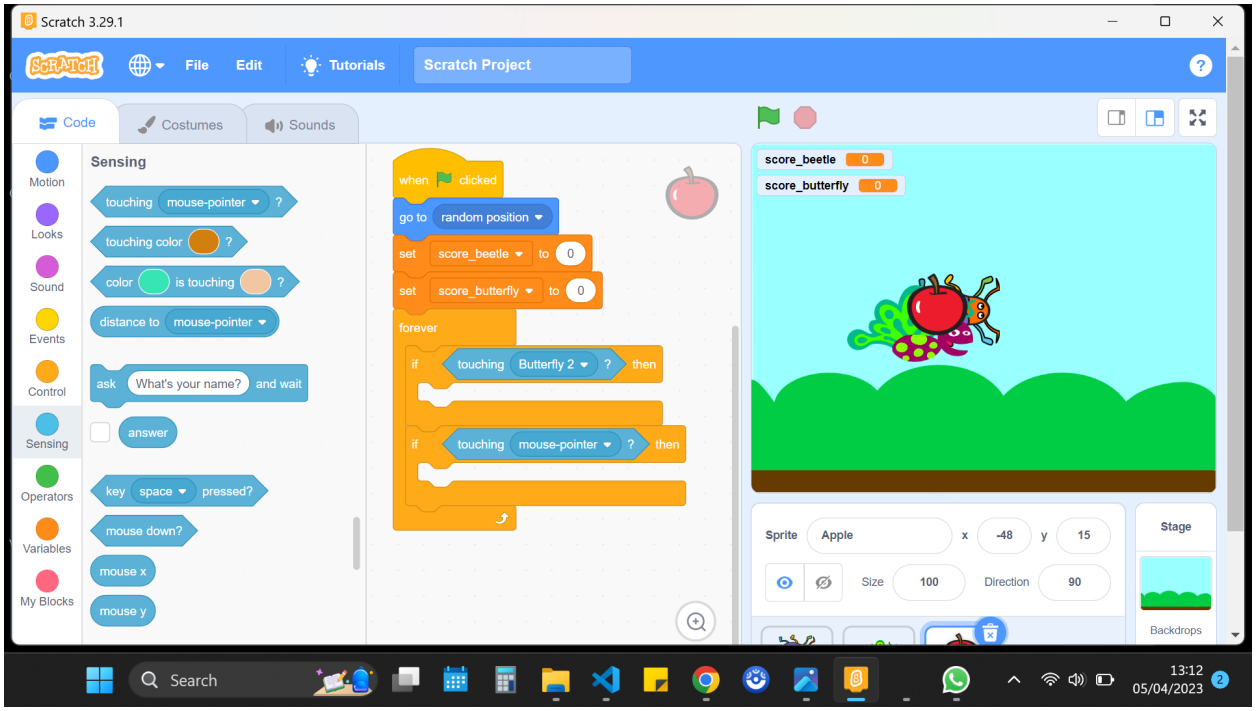
Let's change the first "touching mouse-pointer" with "Beetle".





Let's change the second "touching mouse-pointer" with "Butterfly".





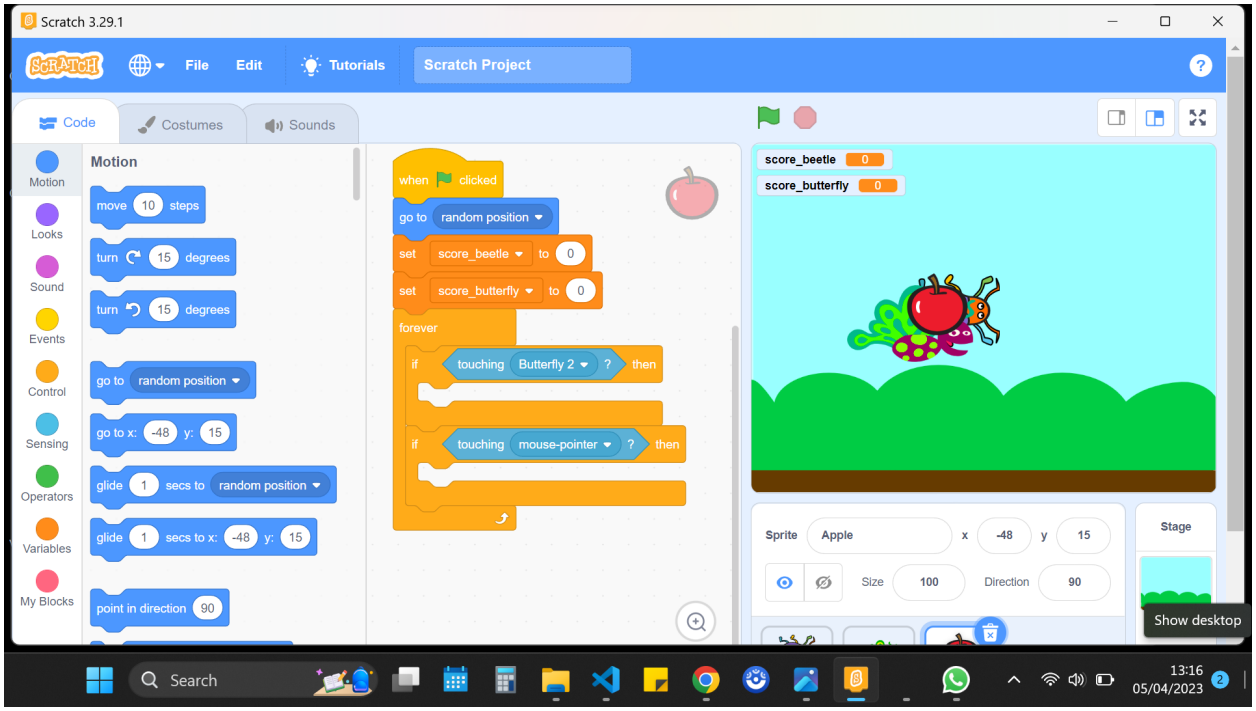
What will happen if the beetle touches the apple?

1. The apple will move to a random location.

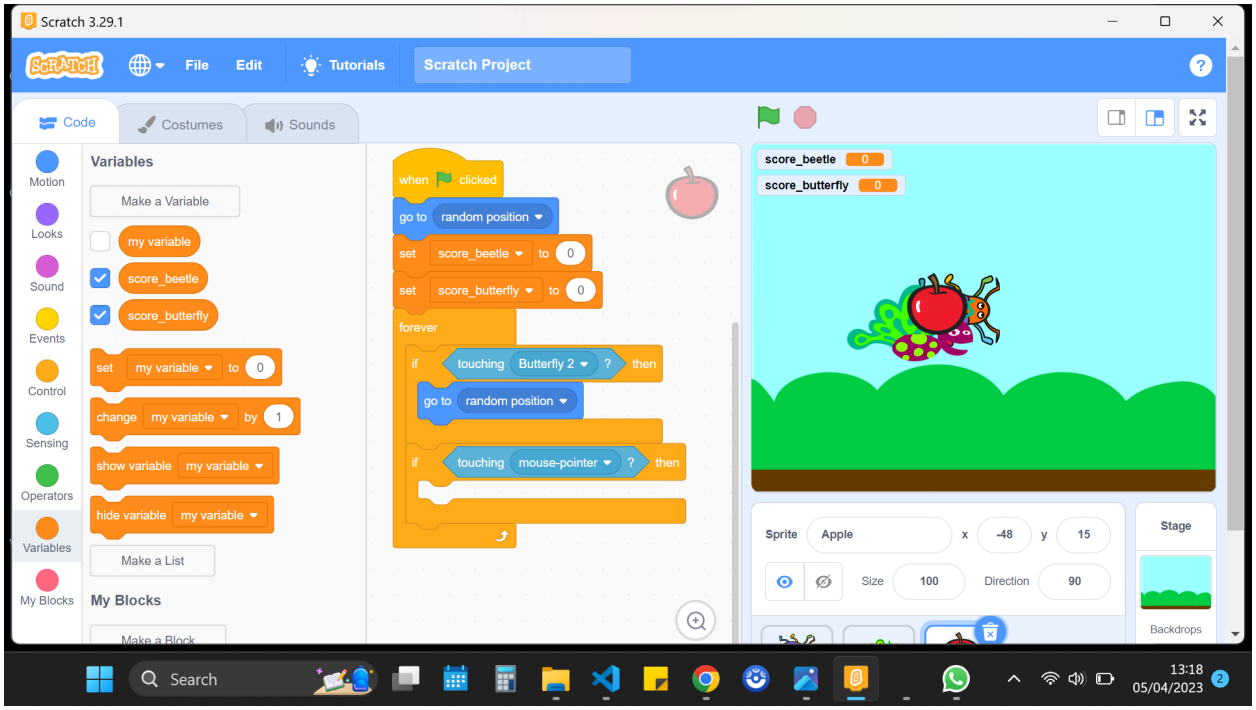
2. The score of the beetle will increase by one.

Let's do them.

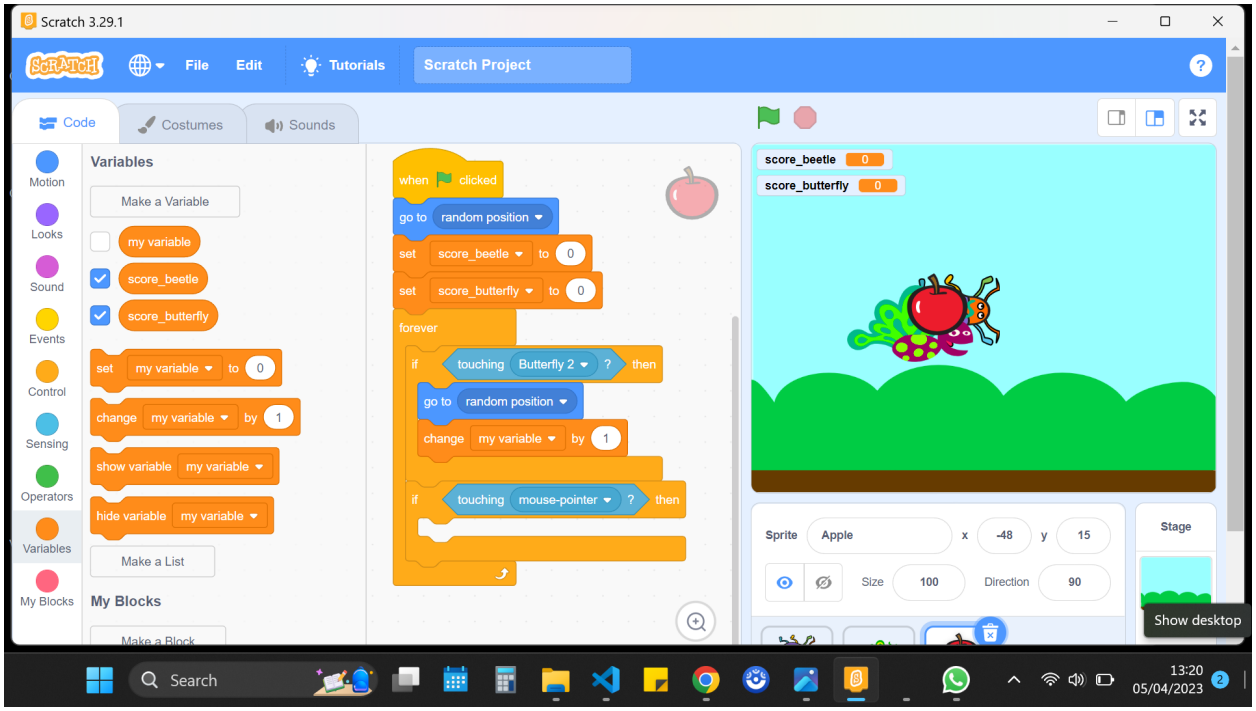
To send the apple to a random location, let's go to the "Motion" block.



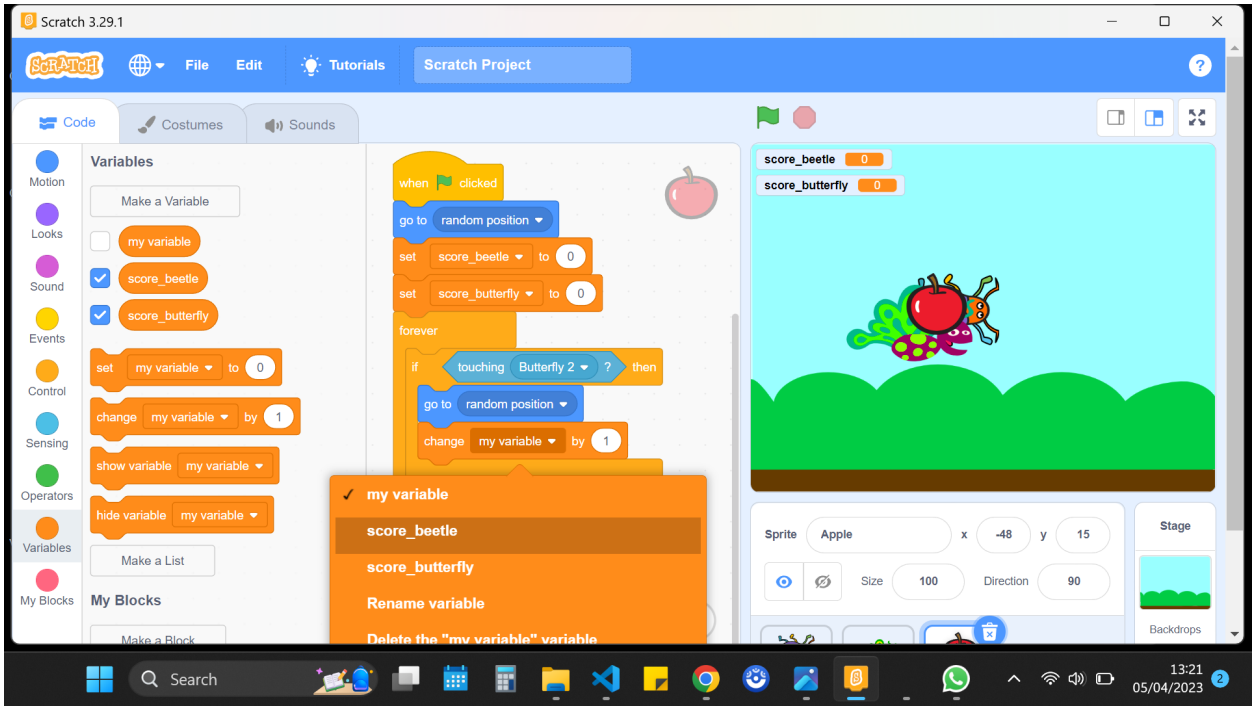
Inside the "if touching Butterfly then" block, let's drag "go to random position".

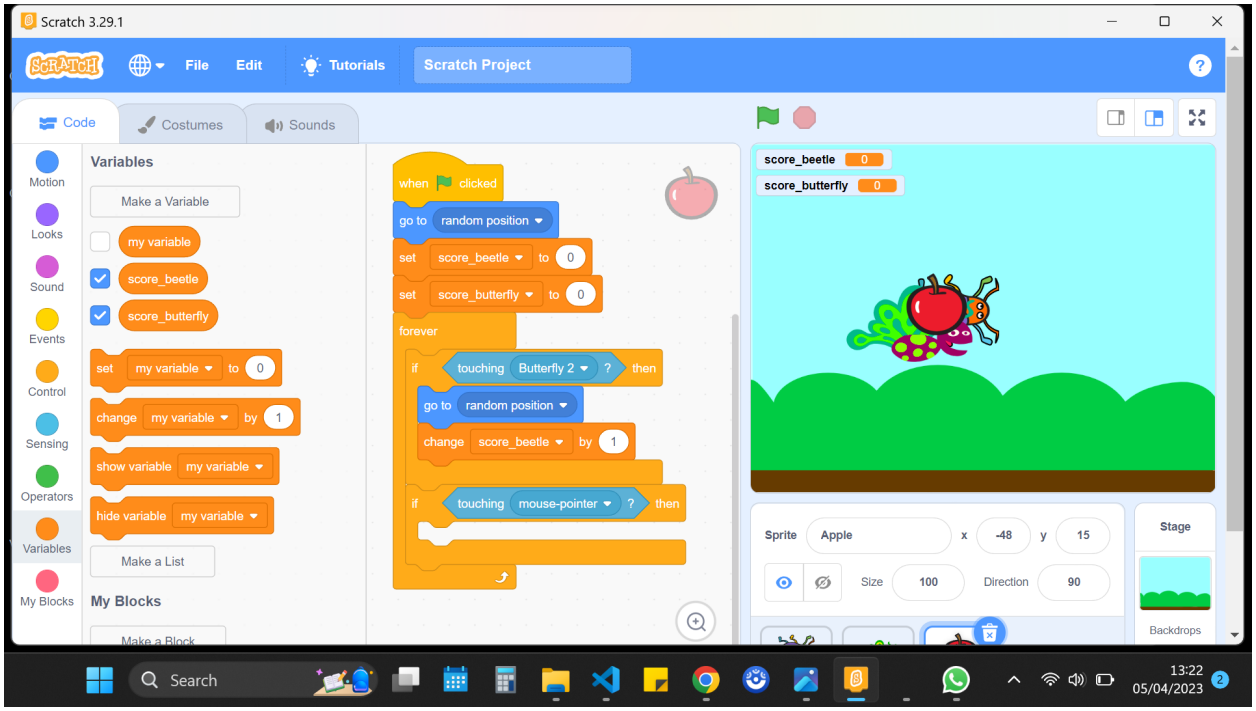


If the apple touches the beetle, "score_beetle" will increase by 1. To do this, let's find the "Variables" block and drag "change my variable by 1" after "go to random position".



Change "my variable" with "beetle_score".

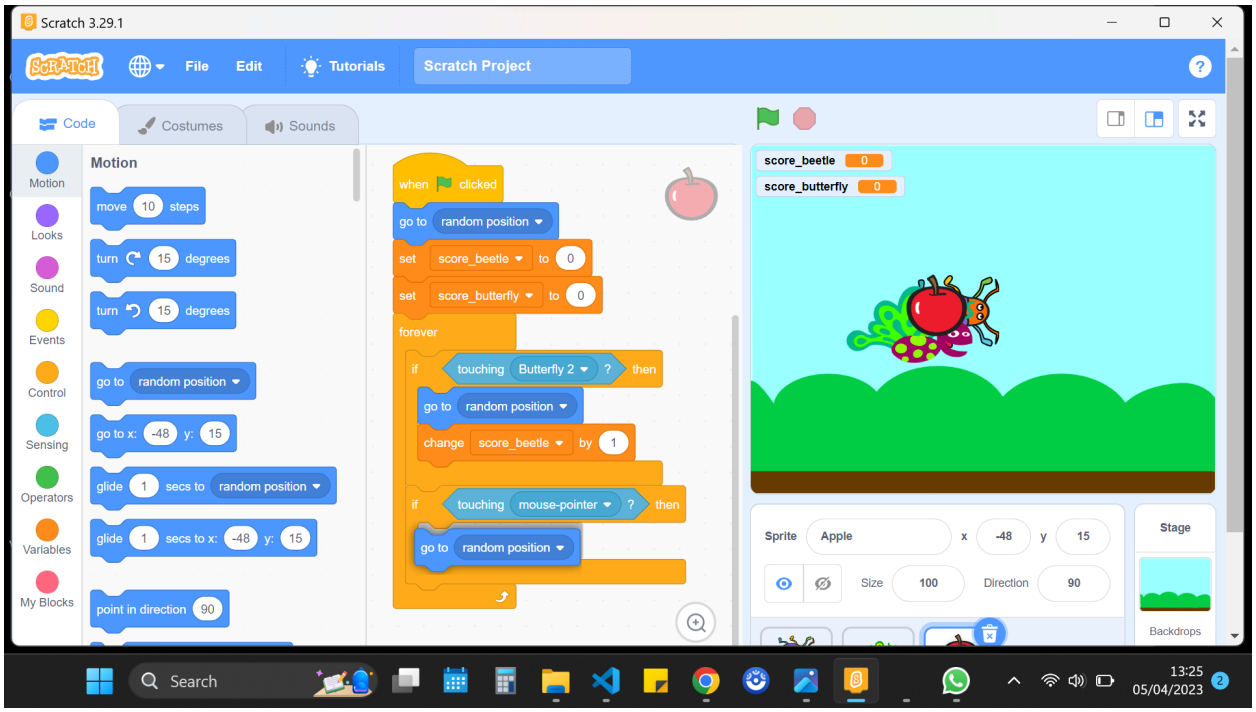




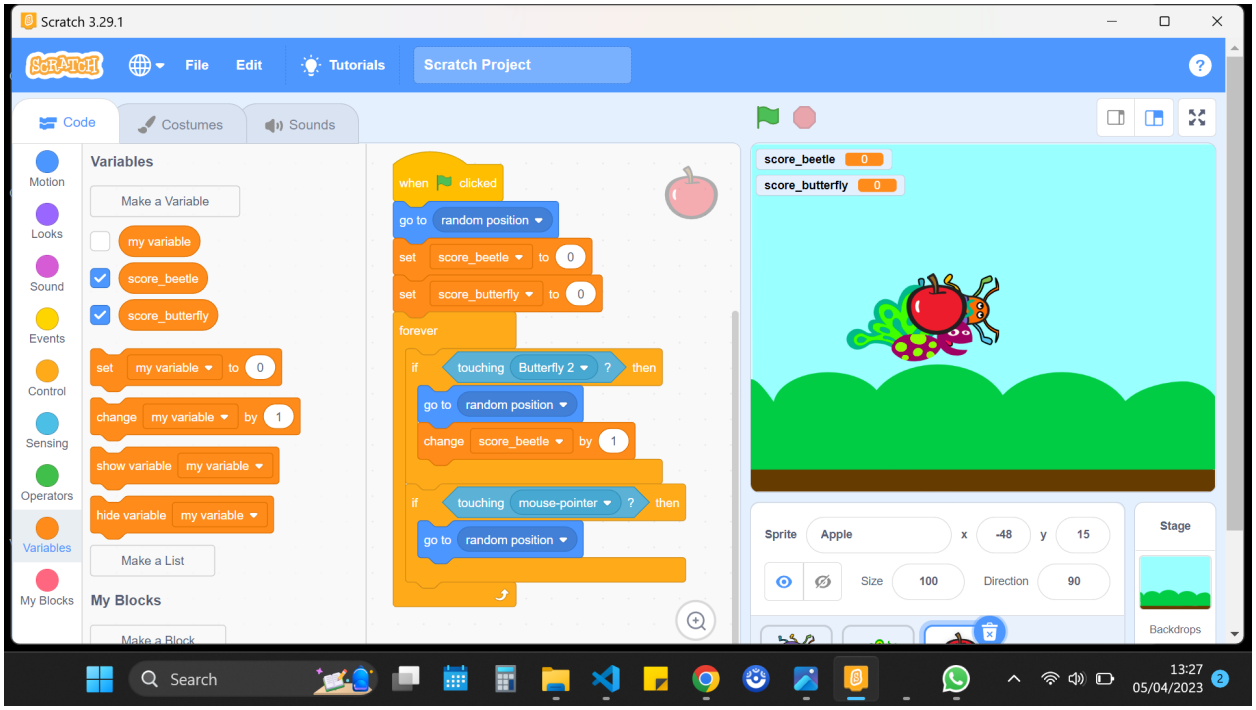
Now, the last steps in our game.

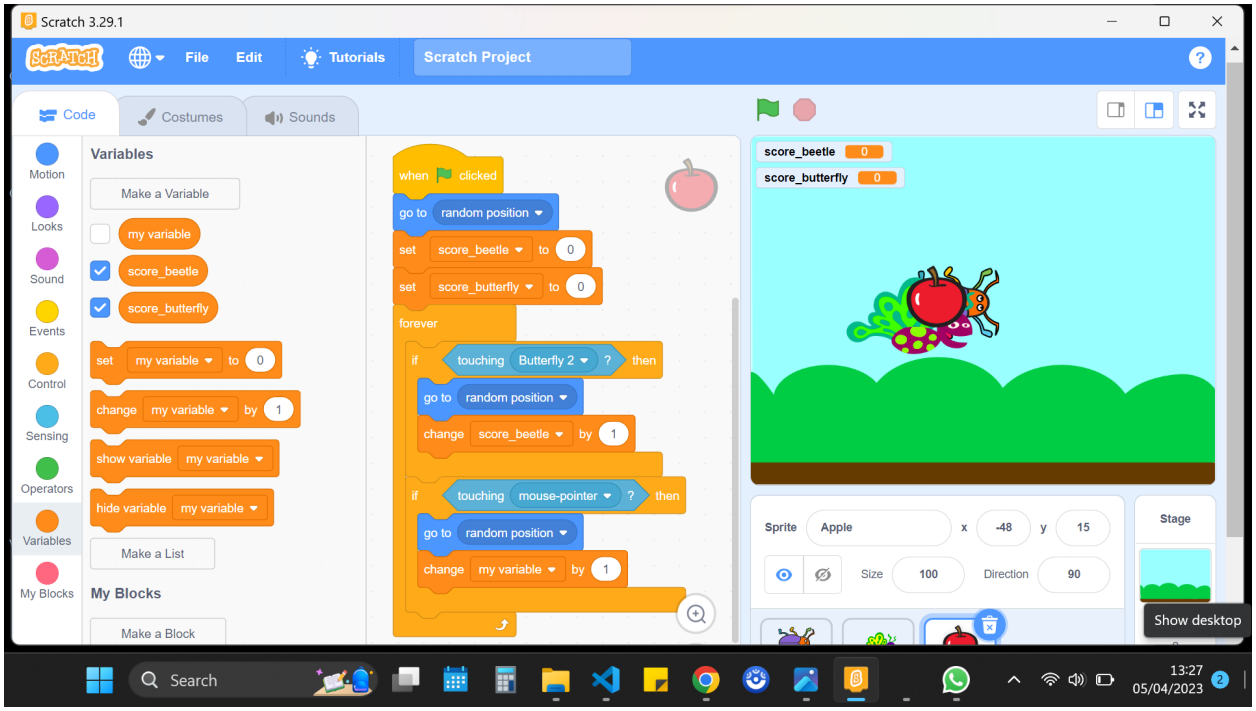
If the apple touches the butterfly, the apple will go to a random location. Let's do this.

Find the "Motion" block and drag "go to random position" block inside the second "if...then" block.

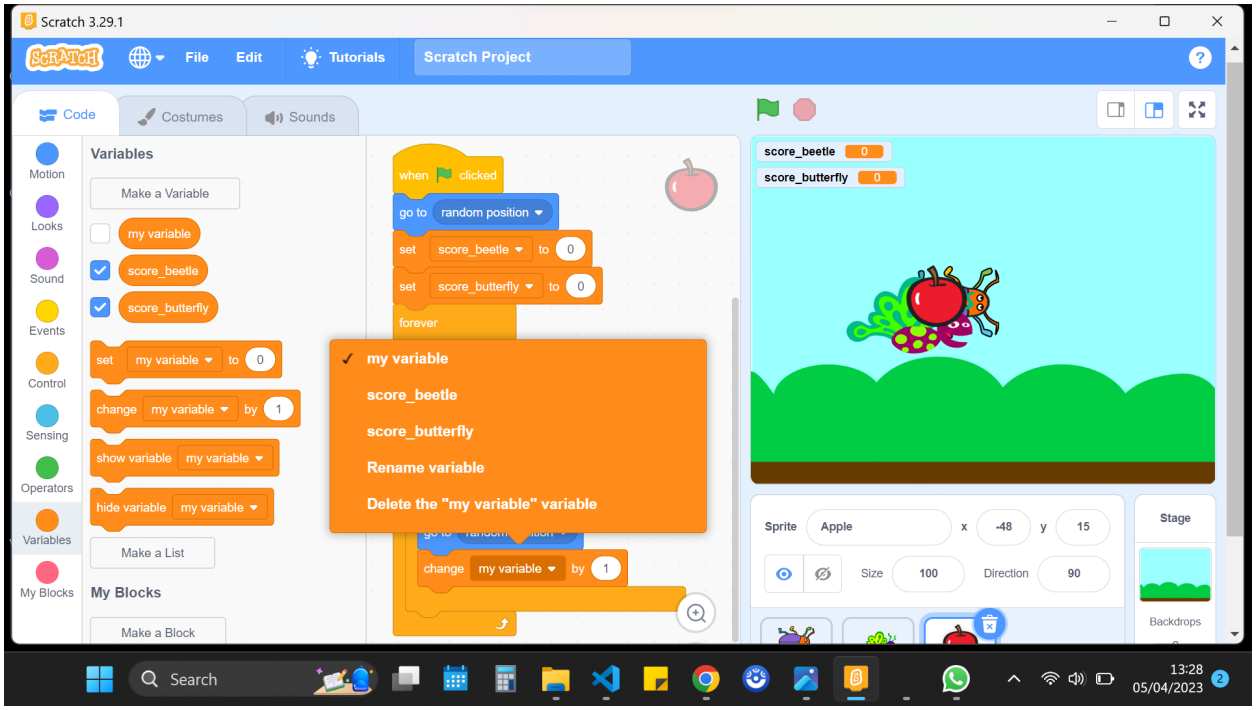


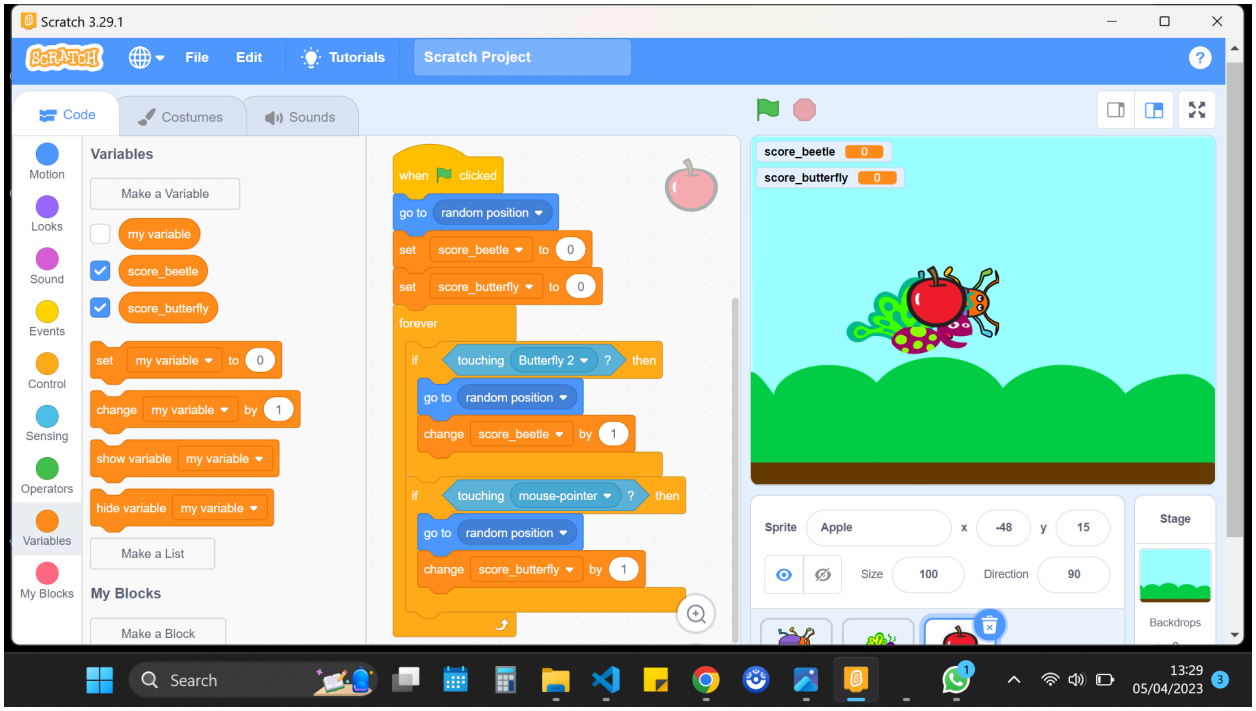
If the apple touches the butterfly, "score_butterfly" will increase by 1. To do this, let's find the "Variables" block and drag "change my variable by 1" after "go to random position".





Change "my variable" with "score_butterfly".





Congratulations on completing your own game! We hope you had fun creating it and now enjoy playing it. Well done!