Crazy Ball Game

# Overview

[Video](https://youtu.be/xZSkOg_WKy4)

We want to write a function changeBall that moves a ball to a random location on the screen and changes its color.

Starter Code:

var ball;

var RADIUS = 20;

var DELAY = 50;

function start(){

ball = new Circle(RADIUS);

ball.setPosition(getWidth()/2, getHeight()/2);

ball.setColor(Color.red);

add(ball);

setTimer(changeBall, DELAY);

}

function changeBall(){

//move ball to a random location

//YOUR CODE HERE

//change the ball color

var choice = Randomizer.nextInt(0, 2);

if(choice == 0){

ball.setColor(Color.red);

} else if (choice == 1){

ball.setColor(Color.yellow);

} else {

ball.setColor(Color.green);

}

}

Which instructions can we insert at the //YOUR CODE HERE comment to change the position of ball to a random location, while still keeping the entire ball on screen?

|  |  |
| --- | --- |
| **A** | ball.setPosition(0, getWidth(), 0, getHeight()); |
| **B** | var x = Randomizer.nextInt(0, getWidth());  var y = Randomizer.nextInt(0, getHeight());  ball.setPosition(x, y); |
| **C** | ball.setPosition(Randomizer.nextPosition()); |
| **D** | var x = Randomizer.nextInt(ball.getRadius(),  getWidth() - ball.getRadius());  var y = Randomizer.nextInt(ball.getRadius(),  getHeight() - ball.getRadius());  ball.setPosition(x, y); |

* Create the first version of this game using the video as a guide

# Version 2

[video](https://youtu.be/wDBQxkkaFo4)

1.Which of the following are good examples of things that should be stored as global variables?

I – A ball for a game that is used in multiple functions

II – A counter that keeps track of how many times the user has clicked the mouse

III – A for loop counter variable

IV – The color of a rectangle that is only used in one function

2. In the following code

function start(){

mouseClickMethod(clickHandler);

}

function clickHandler(e){

//your code here

}

How can we get the graphical element at the location of the user click?

|  |  |
| --- | --- |
| **A** | var elem = e.getElement(); |
| **B** | var elem = getElementAt(e); |
| **C** | var elem = getElementAt(e.getX(), e.getY()); |
| **D** | var elem = e.getElementAtClick(); |

* Create the second version of this game and test it using the video as a guide.

# Version 3

* Make it your own. Currently you should have a working version 2 of the crazy ball game. The large ball should randomly jump around the canvas and the user should be able to interact with it. The counter should work by update when the player clicks the ball. Modify the game to in any way you want, but it needs to be a complete game; meaning a player can win or lose.
  + You can change the style of the game but changing the shape, colors or having multiple shapes jumping around the screen.
  + You can make the ball's motion more fluid rather then randomly jumping around
  + You can add in additional obstacles or challenges.
  + YOU HAVE TO CHANGE THE BASE GAME.

# Reflection

These should be answer in complete sentences. You should attempt to answer these questions to the best of your ability. If you have a hard time writing answer out; you may record or use a speech to text tool to anwser the questions.

1. What did you add to the crazy ball game? Why?
2. What was the most difficult bit of code you added?
3. Did you add anymore functions? What did you add, how did it work?
4. If no to the previous question, why didn’t you add any?

Rubric

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** | **4** |
| **10. Discuss and apply fundamental concepts of programming language. (i.e.: Data types, memory models, data structures, etc.)** | Students can recognize the fundamental concepts of programming languages | Student can identify and categorize the fundamental concepts of programming languages | Student can compare fundamental concepts and explain the differences with evidence to support them. | Student can identify the fundamental concepts of programming and justify how and why someone would use them with specific examples |
| **11. Demonstrate and use a variety of software development tools for program implementation** | Student can recognize and identify different software development tools | Student can explain the difference between two or more software development tools and use different software development tools to solve routine problems | Student analyze and select an appropriate software development tool and can use different software development tools to solve non routine problems | Students can evaluate a problem and justify which software development tools they would use to solve the problem with evidence to support their argument |
| **12. Write computer programs utilizing the structured programming paradigm.** | Student can identify the structured programming paradigm and how it functions | Student can use the structured programming paradigm to solve a routine problem | Student can use the structured programming paradigm to solve a non routine problem | Student can analyze a series of complex problems and modify them with justification of the structure in the new designs |
| **14. Write programs using modularization techniques to reduce program complexity and improve program maintainability** | Student can identify modularization techniques | Student can explain why modularization is used and how it can be useful and use it to solve routine problems | Student can formulate a modularized program for a non routine problem | Student can critique the use of modularization in a program with an explanation and evidence to support their argument |
| **19. Write programs that use events to cause program execution to react to the event by writing the appropriate event handler code** | Student can identify what events and event handlers | Student can explain the difference between an event and an event handler and solve routine problems with events | Student can explain the difference between an event and an event handler with evidence and solve non routine problems with events | Student can create a program that uses events and critique the use or justify use of those events |
| Target Grade: 12 | | TOTAL | |  |