

## Game Camera and Display Size



### What is our GOAL for this MODULE?

The goal of this module is to learn to adjust the game camera to focus on the current player.

### What did we ACHIEVE in the class TODAY?

- We used the data from the database to design the car racing game when the game is in play state.
- We used Game Camera to focus the game on the active player in the game.
- We were able to adjust the game canvas to the size of the display device.

### Which CONCEPTS/CODING BLOCKS did we cover today?

- Camera positions
- Adjusting the camera size

### How did we DO the activities?

Used the data from the database and sprites to design the racing game in action.

Designed the game in a given display size using `displayWidth` and `displayHeight`. In P5, using '`displayWidth`' and '`displayHeight`' will automatically capture the device size on the device in which the program is running.

Used '`displayWidth`' and '`displayHeight`' in the code to create the canvas to fill the browser.

```
13 |
14 | function setup(){
15 |   canvas = createCanvas(displayWidth - 20, displayHeight-30);
16 |   database = firebase.database();
17 |   game = new Game();
18 |   game.getState();
19 |   game.start();
20 | }
21 |
22 |
23 | function draw(){
24 |   if(playerCount === 4){
25 |     game.update(1);
26 |   }
27 |   if(gameState === 1){
28 |     clear();
29 |     game.play();
30 |   }
31 | }
32 |
```

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There is

The positions of the form elements also needed to be adjusted so that the buttons, input box etc. were visible in the correct places.

```
3  constructor() {
4    this.input = createInput("Name");
5    this.button = createButton('Play');
6    this.greeting = createElement('h2');
7    this.title = createElement('h2');
8  }
9  hide(){
10   this.greeting.hide();
11   this.button.hide();
12   this.input.hide();
13   this.title.hide();
14 }
15
16 display(){
17   this.title.html("Car Racing Game");
18   this.title.position(displayWidth/2 - 50, 0);
19
20   this.input.position(displayWidth/2 - 40 , displayHeight/2 - 80);
21   this.button.position(displayWidth/2 + 30, displayHeight/2);
22
23   this.button.mousePressed(()=>{
24     this.input.hide();
25     this.button.hide();
26     player.name = this.input.value();
27     playerCount++;
28     player.index = playerCount;
29     player.update();
30     player.updateCount(playerCount);
31     this.greeting.html("Hello " + player.name);
32     this.greeting.position(displayWidth/2 - 70, displayHeight/4);
33   });
34 }
35 }
36 }
```

- Used data from the database to design the car racing game.
- Used Game Camera to focus on the player.

To create a simple car racing game inside the play() function in Game.js:

```
js sketch.js ▶ draw
1  var canvas, backgroundImage;
2
3  var gameState = 0;
4  var playerCount;
5  var allPlayers;
6  var distance = 0;
7  var database;
8
9  var form, player, game;
10
11  var cars, car1, car2, car3, car4;
12
13
14  function setup(){
15    canvas = createCanvas(displayWidth - 20, displayHeight-30);
16    database = firebase.database();
17    game = new Game();
18    game.getState();
19    game.start();
20  }
21
22
23  function draw(){
24    if(playerCount === 4){
25      game.update(1);
26    }
27    if(gameState === 1){
28      clear();
29      game.play();
30    }
31  }
32
```

```
10 //
11
12 }
13
14 update(state){
15   database.ref('/').update({
16     gameState: state
17   });
18 }
19
20 async start(){
21   if(gameState === 0){
22     player = new Player();
23     var playerCountRef = await database.ref('playerCount').once(
24       if(playerCountRef.exists()){
25         playerCount = playerCountRef.val();
26         player.getCount();
27       }
28     form = new Form()
29     form.display();
30   }
31
32   car1 = createSprite(100,200);
33   car2 = createSprite(300,200);
34   car3 = createSprite(500,200);
35   car4 = createSprite(700,200);
36   cars = [car1, car2, car3, car4];
37
38
39 play(){
40   form.hide();
41
42   Player.getPlayerInfo();
43 }
```

The code to draw the 4 rectangular car sprites at the bottom of the screen:

```
36 | cars = [car1, car2, car3, car4];
37 | }
38 |
39 | play(){
40 |   form.hide();
41 |
42 |   Player.getPlayerInfo():
43 |
44 |   if(allPlayers !== undefined){
45 |     //var display_position = 100;
46 |
47 |     //index of the array
48 |     var index = 0;
49 |
50 |     //x and y position of the cars
51 |     var x = 0;
52 |     var y;
53 |
54 |     for(var plr in allPlayers){
55 |       //add 1 to the index for every loop
56 |       index = index + 1 ;
57 |
58 |       //position the cars a little away from each other in x direction
59 |       x = x + 200;
60 |       //use data from the database to display the cars in y direction
61 |       y = displayHeight - allPlayers[plr].distance;
62 |       cars[index-1].x = x;
63 |       cars[index-1].y = y;
64 |
65 |       if (index === player.index){
66 |         cars[index - 1].shapeColor = red;
67 |
68 |       }
```

To give different color to the player active in the browser:

```
36   cars = [car1, car2, car3, car4];
37   }
38
39   play(){
40     form.hide();
41
42     Player.getPlayerInfo():
43
44     if(allPlayers !== undefined){
45       //var display_position = 100;
46
47       //index of the array
48       var index = 0;
49
50       //x and y position of the cars
51       var x = 0;
52       var y;
53
54       for(var plr in allPlayers){
55         //add 1 to the index for every loop
56         index = index + 1 ;
57
58         //position the cars a little away from each other in x direction
59         x = x + 200;
60         //use data from the database to display the cars in y direction
61         y = displayHeight - allPlayers[plr].distance;
62         cars[index-1].x = x;
63         cars[index-1].y = y;
64
65         if (index === player.index){
66           cars[index - 1].shapeColor = red;
67         }
68       }
```

To set camera position for each player in the game:

```
38
39
40   form.hide();
41
42   Player.getPlayerInfo();
43
44   if(allPlayers !== undefined){
45       //var display_position = 100;
46
47       //index of the array
48       var index = 0;
49
50       //x and y position of the cars
51       var x = 0;
52       var y;
53
54       for(var plr in allPlayers){
55           //add 1 to the index for every loop
56           index = index + 1 ;
57
58           //position the cars a little away from each other in x direction
59           x = x + 200;
60           //use data from the database to display the cars in y direction
61           y = displayHeight - allPlayers[plr].distance;
62           cars[index-1].x = x;
63           cars[index-1].y = y;
64
65           if (index === player.index){
66               cars[index - 1].shapeColor = red;
67               camera.position.x = displayWidth/2;
68               camera.position.y = cars[index-1].y
69           }
```

### What's NEXT?

In the next class, you will be learning about replacing the sprites with real cars of their choice.

### EXTEND YOUR KNOWLEDGE:

You can try changing the positions to know the difference between the camera angles in a game.