Tutorial – Managing Game States

The tutorial for this week is not so in-depth. This will give you a chance to go back over the other tutorials and add anything you might be missing to your game. You will want to make sure you ask your teacher about anything we've covered so far that you don't understand, so that you can hand in a complete assignment.

This week we'll be splitting our game up into 3 different game states – the splash screen, the game, and the game over screen.

Adding the Game States:

1. Add the following variable definitions somewhere near the top of your main.js file

```
// define some constant values for the game states
var STATE_SPLASH = 0;
var STATE_GAME = 1;
var STATE_GAMEOVER = 2;

var gameState = STATE_SPLASH;
```

2. Now we need to add the switch statement to our run() function, but before we do that we'll create 3 new functions.

We'll create 3 functions runSplash(), runGame(), and runGameOver() function. Most of the code from the existing run() function will be moved to the runGame() function.

By splitting our game into these 3 functions we won't need to put everything inside the run() function, and our code will be easier to write and maintain.

Create these 3 functions now:

```
function runSplash(deltaTime)
{
}

function runGame(deltaTime)
{
}

function runGameOver(deltaTime)
{
}
```

We pass in the deltaTime as a parameter so that we only need to calculate the delta time once during the run() function.

3. Update the run() function so that it contains a switch statement controlling which game state is currently executing.

Move the existing functionality from the run() function to the runGame() function.

```
function run()
{
    context.fillStyle = "#ccc";
    context.fillRect(0, 0, canvas.width, canvas.height);

    var deltaTime = getDeltaTime();

    switch(gameState)
    {
        case STATE_SPLASH:
            runSplash(deltaTime);
            break;
        case STATE_GAME:
            runGame(deltaTime);
            break;
        case STATE_GAMEOVER:
            runGameOver(deltaTime);
            break;
    }
}
```

4. Finally, we'll throw in a quick implementation for our splash screen state.

    We'll keep this simple and just wait a few seconds before switching to the game state. You are free to extend on this in any way you like.

```
var splashTimer = 3;
function runSplash(deltaTime)
{
    splashTimer -= deltaTime;
    if(splashTimer <= 0)
    {
        gameState = STATE_GAME;
        return;
    }

    context.fillStyle = "#000";
    context.font="24px Arial";
    context.fillText("SPLASH SCREEN", 200, 240);
}
```

Exercises:

1. The splash screen state we made is pretty simple. Change this so it draws some nice graphics instead.

2. Implement the Game Over state. When the player dies, switch to this state.

    It could show a simple 'Game Over' message, or you may want to add something more exciting, like displaying the best score.

3. Break your code up into smaller, reusable functions. You could make an updatePlayer and a drawPlayer function, a drawBackground function, and so on.

4. Double-check the assignment sheet and make sure your assignment includes everything that is needed. Add anything that is missing.