# 实验4 canvas应用

## 实验任务1 canvas绘图

1. 考核知识点

canvas标签的运用

1. 练习目标

* 熟悉canvas标签在js中绘图规则和方法。

1. 需求分析

用canvas标签在网页中绘制一幅图画，运用moveTO、lineTo、save等API 接口函数。

1. 实验任务分析

效果如图4-1所示。

图4-1 用户登陆界面效果

1. 实验任务实现

新建HTML页面，代码如下：

*<!DOCTYPE* html*>  
<*html lang="zh"*>  
<*head*>  
 <*meta http-equiv="Content-Type" content="text/html; charset=UTF-8"*>  
 <*title*>*海底世界*</*title*>  
</*head*>  
<*body onload="draw*()*"*>  
 <*canvas id="canvas"*></*canvas*>  
</*body*>  
</*html*>*

JS脚本代码如下：

function draw*() {* const canvas = document.getElementById*(*"canvas"*)*;  
 canvas.width = 800;  
 canvas.height = 600;  
 const context = canvas.getContext*(*"2d"*)*;  
  
 drawBg*(*context*)*;  
  
 for *(*let x = 40; x < canvas.width - 80; x += 80*) {* for *(*let y = 50; y < canvas.height - 100; y += 100*) {* let xOffset = randomOffset*(*0, 20*)*;  
 let yOffset = randomOffset*(*0, 20*)*;  
 let scale = randomOffset*(*1, 0.2*)*;  
 drawFish*(*context, x + xOffset, y + yOffset, scale*)*;  
 *}  
 }* for *(*let x = 30; x < canvas.width; x += 60*) {* let xOffset = randomOffset*(*0, 10*)*;  
 let scaleX = randomOffset*(*1, 0.2*)*;  
 let scaleY = randomOffset*(*1, 0.6*)*;  
 drawSeaweed*(*context, x + xOffset, 600, scaleX, scaleY*)*;  
 *}  
  
}*function drawBg*(*context*) {* const linearGrad = context.createLinearGradient*(*0, 0, 0, 800*)*;  
 linearGrad.addColorStop*(*0.0, '#abd5ff'*)*;  
 linearGrad.addColorStop*(*0.5, "#33609e"*)*;  
 linearGrad.addColorStop*(*0.8, '#475ce5'*)*;  
  
 context.fillStyle = linearGrad;  
 context.fillRect*(*0, 0, 800, 600*)*;  
*}*function drawSeaweed*(*context, x, y, scaleX, scaleY*) {* context.beginPath*()*;  
 context.lineTo*(*x, y*)*;  
  
 context.lineTo*(*x - 5 \* scaleX, y - 30 \* scaleY*)*;  
 context.lineTo*(*x + 5 \* scaleX, y - 50 \* scaleY*)*;  
 context.lineTo*(*x - 5 \* scaleX, y - 70 \* scaleY*)*;  
  
 context.lineTo*(*x, y - 100 \* scaleY*)*;  
 context.lineTo*(*x + 25 \* scaleX, y - 100 \* scaleY*)*;  
  
 context.lineTo*(*x + *(*25 - 5*)* \* scaleX, y - 70 \* scaleY*)*;  
 context.lineTo*(*x + *(*25 + 5*)* \* scaleX, y - 50 \* scaleY*)*;  
 context.lineTo*(*x + *(*25 - 5*)* \* scaleX, y - 30 \* scaleY*)*;  
  
 context.lineTo*(*x + 25 \* scaleX, y*)*;  
 context.lineTo*(*x, y*)*;  
 context.closePath*()*;  
  
 context.strokeStyle = "#26944a";  
 context.fillStyle = "#28aa58";  
 context.stroke*()*;  
 context.fill*()*;  
*}*function drawFish*(*context, x, y, scale*) {* context.beginPath*()*;  
  
 //绘制鱼头  
 context.moveTo*(*x, y*)*;  
 context.lineTo*(*x + 30 \* scale, y - 25 \* scale*)*;  
 context.lineTo*(*x + 30 \* scale, y + 25 \* scale*)*;  
 context.lineTo*(*x, y*)*;  
  
 //绘制鱼尾  
 x = x + 30 \* scale;  
  
 context.moveTo*(*x, y*)*;  
 context.lineTo*(*x + 20 \* scale, y - 15 \* scale*)*;  
 context.lineTo*(*x + 15 \* scale, y*)*;  
 context.lineTo*(*x + 20 \* scale, y + 15 \* scale*)*;  
 context.lineTo*(*x, y*)*;  
  
 context.closePath*()*;  
  
 //填充和描边  
 context.lineWidth = 3;  
 context.strokeStyle = "#ba2e00";  
 context.fillStyle = "#eaa89d";  
 context.stroke*()*;  
 context.fill*()*;  
  
 x = x - 15 \* scale;  
 drawCircle*(*context, x, y, 3*)*;  
*}*function drawCircle*(*context, x, y, radius*) {* context.beginPath*()*;  
 context.arc*(*x, y, radius, 0, Math.PI \* 2, false*)*;  
 context.closePath*()*;  
  
 context.strokeStyle = "#ba2e00";  
 context.fillStyle = "#7e7975";  
 context.stroke*()*;  
 context.fill*()*;  
*}*function randomOffset*(*num, offset*) {* return Math.random*()* \* offset \* 2 + num - offset;  
*}*

在谷歌浏览器中预览，效果如图4-2所示。

图4-2用户登陆界面