.NET Conf 2022 x Seoul

풀 스택과 <mark>사랑</mark>에 빠질 준비, 되셨나요?

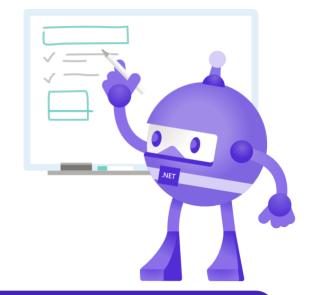


Blazor를 활용한 그래픽 웹채팅

박상만

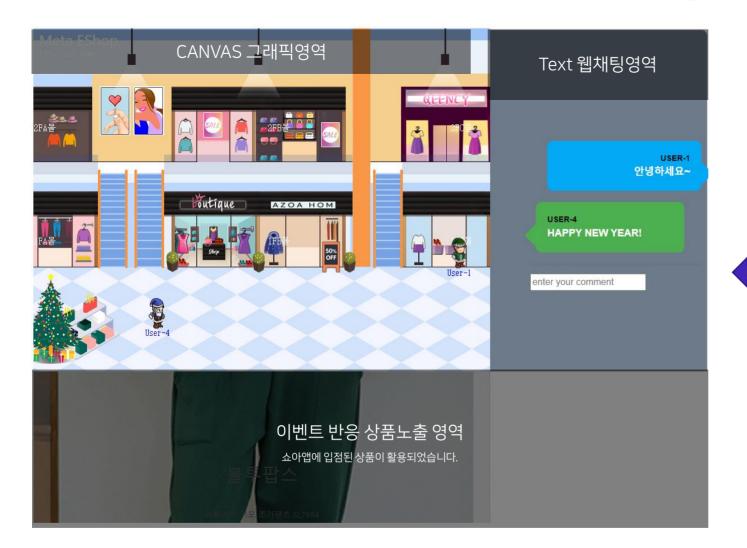


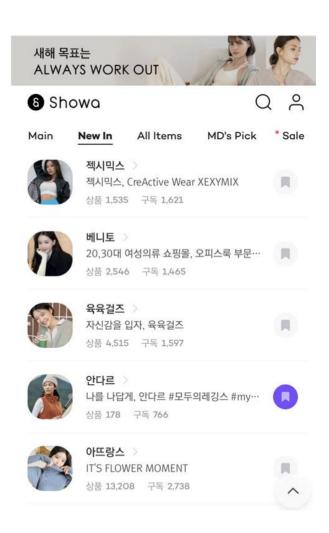
소개내용



Blazor WebAssembly UI(웹) Canvas/Html(CSS) 네트워크 - 실시간 웹소켓통신 SignalR + Akka.net

DEMO 소개 - Meta Eshop





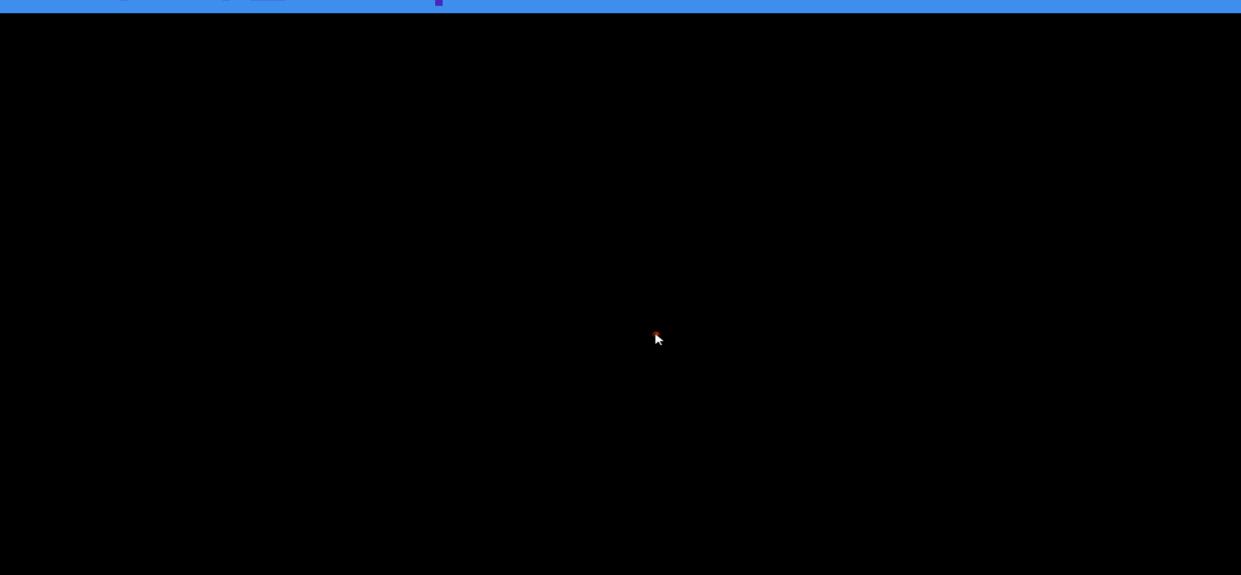
미구현 아이디어 - 매장(던전)





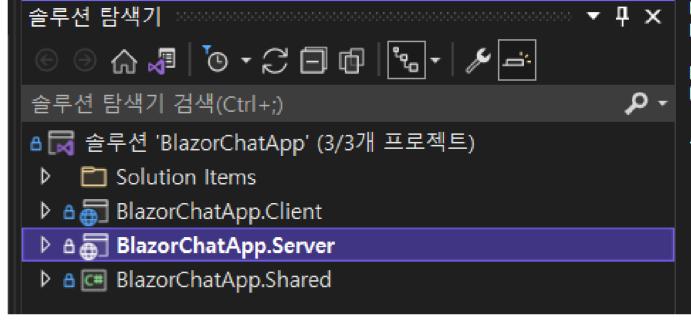
루나톡 기능소개중 일부 - 루나소프트

데모타임 - http://sam.webnori.com

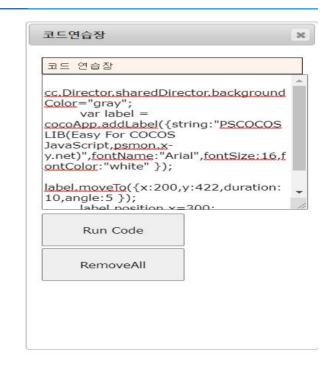


Application LayOut







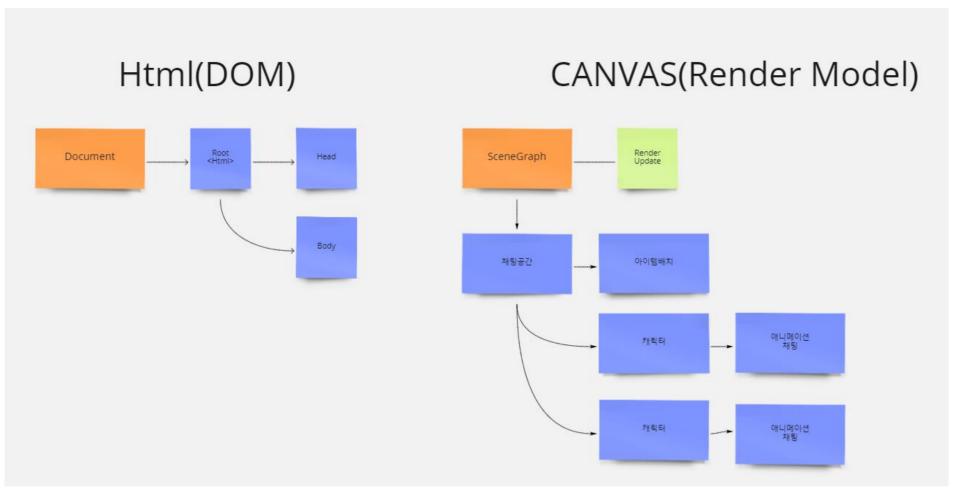


CANVAS 데모

HTML5에서 활용되는 Canvas 애니메이션에 대해 먼저 알아보겠습니다.

링크: http://psmon.x-y.net/pscoco/sample.html

DOM(CSS) VS Canvas





Blazor에 Canvas 탑재

Install-Package Blazor. Extensions. Canvas

```
<script src=" framework/blazor.webassemblv.is"></script>
<script src=" content/Blazor.Extensions.Canvas/blazor.extensions.canvas.is"></script>
<script>
   const FRAMES PER SECOND = 60; // Valid values are 60,30,20,15,10...
   // set the mim time to render the next frame
   const FRAME MIN TIME = (1000 / 60) * (60 / FRAMES PER SECOND) - (1000 / 60) * 0.5;
   var lastFrameTime = 0; // the last frame time
   function gameLoop(timeStamp) {
      if (timeStamp - lastFrameTime < FRAME MIN TIME) { //skip the frame if the call is too early
          window.requestAnimationFrame(gameLoop);
          return: // return as there is nothing to do
      lastFrameTime = timeStamp; // remember the time of the rendered frame
       // render the frame
      window.requestAnimationFrame(gameLoop);
      game.instance.invokeMethodAsync('GameLoop', timeStamp);
```

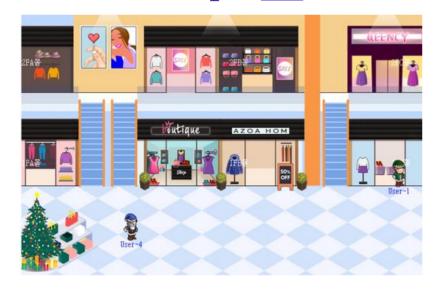
```
[JSInvokable]
public async ValueTask GameLoop(float timeStamp)
{
    if (null == chatLand)
        return;
    await _chatLand.Step();
}

[JSInvokable]
public async ValueTask OnMouseMove(int mouseX, int mouseY)
{
    InputSystem.Instance.MouseCoords.X = mouseX;
    InputSystem.Instance.MouseCoords.Y = mouseY;
}
```

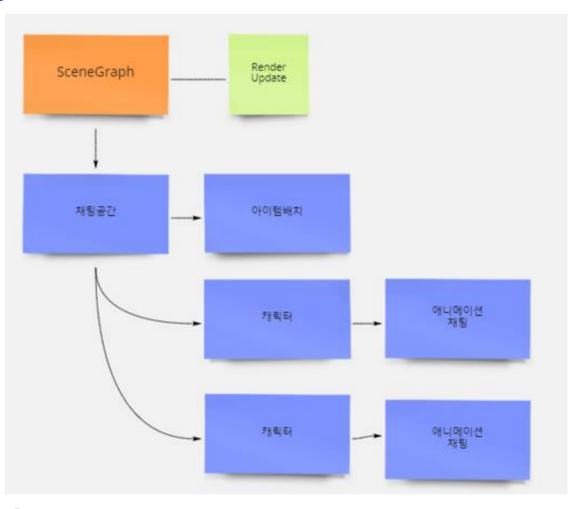
Blazor 프론트

```
@implements IAsyncDisposable
 @inject IJSRuntime JsRuntime
 <link href="css/site.css" rel="stylesheet">
 <MultiSpritesheet @ref=" spritesheet" Source="assets/warrior.ison,assets/santa1.ison,assets/santa2.ison,assets/elf1.ison,assets/elf2.ison" OnModelLoaded="@InitGame"</pre>
Finding id="canvasContainer" style="width: 800px; height: 600px; position: absolute;">
     <img @ref=" img back" hidden id="spritesheet" src="/img/shop1.jpg" />
     <img @ref=" img char1" hidden id="spritesheet" src="/img/char-1.png" />
     <BECanvas Width=800 Height=600 @ref=" canvas"></BECanvas>
 </div
e<div style="width:100%; height:600px; overflow:auto">...
 @if (dataSource.Count > 0)
⊡{
     <Carousel DataSource=@dataSource Style="width:800px;height:600px;"></carousel>
⊫@code {
     private bool opened = false;
     //Game
     MultiSpritesheet _spritesheet;
     private string Name { get; set; }
     private string RoomName { get; set; }
     public HubConnection hubConnection { get; set; }
```

Canvas - 구현 그래픽요소



- SceneGraph
- Sprite Animation
- 충돌체크
- 캐릭터애니메이션(유한상태머신)
- 2D맵엔진 (https://www.mapeditor.org/)



채팅공간 - 렌더링

```
ChatHub.cs
  ChatRoom.razor
                 index.html
                                                   ChatLand.cs
                            Character.cs
                                        Startup.cs
              BlazorChatApp.Client.ChatLand.ChatField
                                                     → © Collision Check(aouble x, double v)
public asvnc ValueTask Render(SceneContext game, Canvas2DContext context)
    double fps = 1.0 / (DateTime.Now - LastRender).TotalSeconds;
    LastRender = DateTime.Now:
    await context.SetFillStyleAsync("#003366");
    await context.FillRectAsvnc(0, 0, Width, Height);
    await context.DrawImageAsync(resource["img-back"], 0, 0, Width, Height);
    await context.SetFontAsync("26px Segoe UI");
    await context.SetFillStyleAsync("#FFFFFF");
    await context.FillTextAsync("Meta EShop", 10, 30);
    await context.SetFontAsync("16px consolas");
    await context.FillTextAsync($"FPS: {fps:0.000}", 10, 50);
    await context.SetStrokeStyleAsync("#FFFFFF");
    await context.SetFontAsync("16px 바탕체");
    await context.SetFillStyleAsync("White");
    await context.SetStrokeStyleAsync("#DF0101");
    foreach(var store in storeLinks)
        await context.FillTextAsync($"{store.Name}", store.PosX, store.PosY);
```

Canvas - 씬그래프 구성

```
public class SceneObject
                                                                            솔루션 탐색기 검색(Ctrl+:)
                                                                            â 🚮 솔루션 'BlazorChatApp' (3/3개 프로젝트)
    private static int lastId = 0;
                                                                             Solution Items
                                                                             ■ BlazorChatApp.Client
    private readonly IList<SceneObject> children;
                                                                                  Connected Services
                                                                               ▶ a 📆 Properties
    참조 3개
                                                                               ▶ a  wwwroot
    public string HashId { get;set; }
                                                                               > 종속성
                                                                               ▶ a   ChatLand
    참조 3개

▲ a  Core

    public SceneObject()
                                                                                  ▶ a  Assets
                                                                                 ▶ a  Components
    찬조 5개
                                                                                 ▶ a  Exceptions
    public int Id { get; }
                                                                                  ▶ a ■ Utils
                                                                                 ▶ a c# Display.cs
                                                                                  ▶ a c# GameTime.cs
    참조 2개
    public async ValueTask Update(SceneContext game)...
                                                                                  ▶ a c= InputSystem.cs
                                                                                  ▶ a c# IRenderable.cs
                                                                                  ▶ a c# SceneContext.cs
    참조 17개
    public ComponentsCollection Components { get; }
                                                                                 ▶ a c# SceneGraph.cs
                                                                                 ▶ ✓ C SceneObject.cs
                                                                               ▶ a  Pages
    참조 1개
                                                                               ▶ a  Shared
    public IEnumerable<SceneObject> Children => children;
                                                                                 참조 5개
                                                                                 a App.razor
    public SceneObject Parent { get; private set; }
                                                                                 a Dockerfile
                                                                                 a nginx.conf
    참조 2개
                                                                               ▶ a c* Program.cs
    public void AddChild(SceneObject child)...
                                                                             ▶ a a BlazorChatApp.Server
                                                                             ▶ a C= BlazorChatApp.Shared
    참조 2개
    public T FindById<T>(string id) ...
```

Blazor, Extensions, Canvas





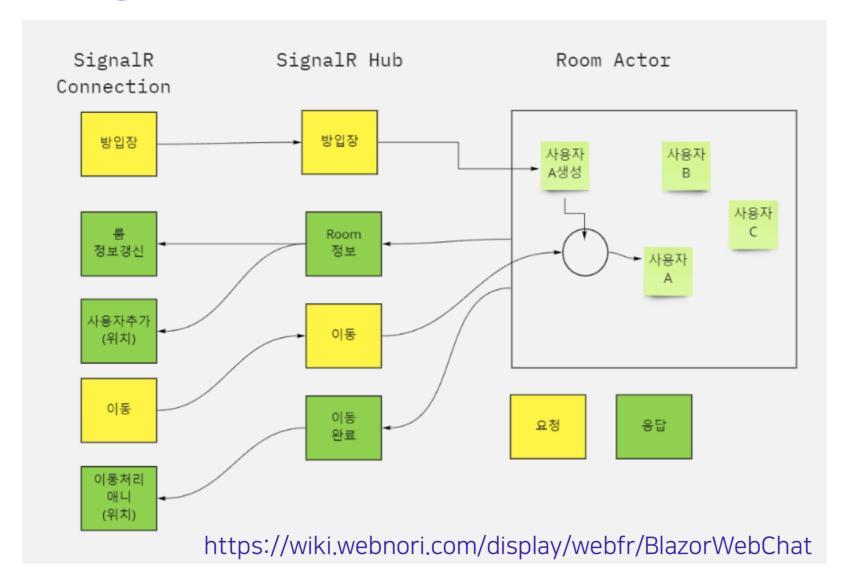
```
[JSInvokable]
public async ValueTask RenderInBlazor(float timeStamp)
{
    if (BallField.Balls.Count == 0)
        BallField.AddRandomBalls(50);
    BallField.StepForward();

    double fps = 1.0 / (DateTime.Now - LastRender).TotalSeconds;
    LastRender = DateTime.Now;

    await this.ctx.BeginBatchAsync();
    await this.ctx.GlearRectAsync(0, 0, BallField.Width, BallField.Height);
    await this.ctx.SetFillStyleAsync("#003366");
    await this.ctx.FillRectAsync(0, 0, BallField.Width, BallField.Height);
```

링크 - https://swharden.com/blog/2021-01-07-blazor-canvas-animated-graphics/ - https://www.davidguida.net/blazor-and-2d-game-development-part-1-intro/

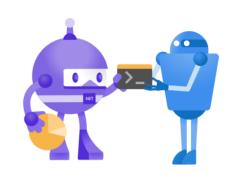
SignalR + Akka.net 통신메시지



성능분리전략

웹소켓 : StateLess 서버로직 : StateFul

웹소켓은 최소한의 인증상태만 유지



코드리뷰

- SignalR 웹소켓연동
- Akka.net을 통한 서버로직 확장



RELEASED

마무리

• 게임진영과 웹진영에서의 사용기술의 경계

• 복합적인(실시간,그래픽) 웹요소 손쉬운 통합 - Blazor

https://github.com/psmon/BlazorChatApp

https://wiki.webnori.com/display/webfr/BlazorWebChat



