

Namespace ECS

Namespaces

[ECS.Components](#)

[ECS.Core](#)

[ECS.Events](#)

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[ECS.Systems](#)

Classes

[Game1](#)

[Program](#)

Namespace ECS.Components

Namespaces

[ECS.Components.AI](#)

[ECS.Components.Animation](#)

[ECS.Components.Characters](#)

[ECS.Components.Collision](#)

[ECS.Components.Input](#)

[ECS.Components.Items](#)

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[ECS.Components.Random](#)

[ECS.Components.State](#)

[ECS.Components.Tags](#)

[ECS.Components.Timer](#)

[ECS.Components.UI](#)

Namespace ECS.Components.AI

Structs

[CurrentAction](#)

[ExistedTooLong](#)

[ShotProjectile](#)

Struct CurrentAction

Namespace: [ECS.Components.AI](#)

Assembly: ECS.dll

```
public struct CurrentAction
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public string Value
```

Field Value

[string](#)

Struct ExistedTooLong

Namespace: [ECS.Components.AI](#)

Assembly: ECS.dll

```
public struct ExistedTooLong
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public bool Value
```

Field Value

[bool](#)

Struct ShotProjectile

Namespace: [ECS.Components.AI](#)

Assembly: ECS.dll

```
public struct ShotProjectile
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public bool Value
```

Field Value

[bool](#)

Namespace ECS.Components.Animation

Structs

[AnimationConfig](#)

[AnimationFrameConfig](#)

[AnimationState](#)

[FacingDirection](#)

[Rotation](#)

[Scale](#)

[SpriteConfig](#)

Enums

[DrawLayer](#)

Struct AnimationConfig

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct AnimationConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

States

```
public Dictionary<string, AnimationFrameConfig[]> States
```

Field Value

[Dictionary](#)<[string](#), [AnimationFrameConfig](#)[]>

Struct AnimationFrameConfig

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct AnimationFrameConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Duration

```
public float Duration
```

Field Value

[float](#)

SourceRect

```
public Rectangle SourceRect
```

Field Value

Rectangle

Struct AnimationState

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct AnimationState
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

CurrentState

```
public string CurrentState
```

Field Value

[string](#)

FrameIndex

```
public int FrameIndex
```

Field Value

[int](#)

IsPlaying

```
public bool IsPlaying
```

Field Value

[bool](#) ↗

TimeInFrame

`public float TimeInFrame`

Field Value

[float](#) ↗

Enum DrawLayer

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public enum DrawLayer
```

Fields

Background = 0

Platform = 2

Player = 3

Projectile = 4

Terrain = 1

UI = 5

Struct FacingDirection

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct FacingDirection
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

IsFacingLeft

```
public bool IsFacingLeft
```

Field Value

[bool](#)

Struct Rotation

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct Rotation
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct Scale

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct Scale
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct SpriteConfig

Namespace: [ECS.Components.Animation](#)

Assembly: ECS.dll

```
public struct SpriteConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Color

```
public Color Color
```

Field Value

Color

Layer

```
public DrawLayer Layer
```

Field Value

[DrawLayer](#)

Origin

```
public Vector2 Origin
```

Field Value

Vector2

SourceRect

```
public Rectangle SourceRect
```

Field Value

Rectangle

Texture

```
public Texture2D Texture
```

Field Value

Texture2D

Namespace ECS.Components.Characters

Structs

[CharacterConfig](#)

Struct CharacterConfig

Namespace: [ECS.Components.Characters](#)

Assembly: ECS.dll

```
public struct CharacterConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public string Value
```

Field Value

[string](#)

Namespace ECS.Components.Collision

Structs

[CollisionShape](#)

[CollisionState](#)

[WorldBounds](#)

Enums

[CollisionFlags](#)

[ShapeType](#)

Enum CollisionFlags

Namespace: [ECS.Components.Collision](#)

Assembly: ECS.dll

```
[Flags]
public enum CollisionFlags
```

Fields

Bottom = 2

Left = 4

None = 0

Right = 8

Top = 1

Struct CollisionShape

Namespace: [ECS.Components.Collision](#)

Assembly: ECS.dll

```
public struct CollisionShape
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

IsOneWay

```
public bool IsOneWay
```

Field Value

[bool](#)

IsPhysical

```
public bool IsPhysical
```

Field Value

[bool](#)

Offset

```
public Vector2 Offset
```

Field Value

Vector2

Size

```
public Vector2 Size
```

Field Value

Vector2

Type

```
public ShapeType Type
```

Field Value

[ShapeType](#)

Struct CollisionState

Namespace: [ECS.Components.Collision](#)

Assembly: ECS.dll

```
public struct CollisionState
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

CollidingWith

```
public HashSet<Entity> CollidingWith
```

Field Value

[HashSet](#)<[Entity](#)>

Sides

```
public CollisionFlags Sides
```

Field Value

[CollisionFlags](#)

Enum ShapeType

Namespace: [ECS.Components.Collision](#)

Assembly: ECS.dll

```
public enum ShapeType
```

Fields

Line = 1

Rectangle = 0

Struct WorldBounds

Namespace: [ECS.Components.Collision](#)

Assembly: ECS.dll

```
public struct WorldBounds
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Bounds

```
public Rectangle Bounds
```

Field Value

Rectangle

Namespace ECS.Components.Input

Structs

[InputAction](#)

[InputConfig](#)

Struct InputAction

Namespace: [ECS.Components.Input](#)

Assembly: ECS.dll

```
public struct InputAction
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Keys

```
public Keys[] Keys
```

Field Value

Keys[]

Struct InputConfig

Namespace: [ECS.Components.Input](#)

Assembly: ECS.dll

```
public struct InputConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Actions

```
public Dictionary<string, InputAction> Actions
```

Field Value

[Dictionary](#)<[string](#), [InputAction](#)>

Namespace ECS.Components.Items

Structs

[Item](#)

Struct Item

Namespace: [ECS.Components.Items](#)

Assembly: ECS.dll

```
public struct Item
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public string Value
```

Field Value

[string](#)

Namespace ECS.Components.Objects

Structs

[MapObject](#)

Struct MapObject

Namespace: [ECS.Components.Objects](#)

Assembly: ECS.dll

```
public struct MapObject
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public string Value
```

Field Value

[string](#)

Namespace ECS.Components.Physics

Structs

[Acceleration](#)

[AirControlForce](#)

[AirResistance](#)

[Direction](#)

[Force](#)

[Friction](#)

[GravitySpeed](#)

[IsGrounded](#)

[JumpForce](#)

[Mass](#)

[MaxVelocity](#)

[MovementForce](#)

[Percent](#)

[Position](#)

[RunSpeed](#)

[Velocity](#)

[WalkForce](#)

Struct Acceleration

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Acceleration
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct AirControlForce

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct AirControlForce
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct AirResistance

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct AirResistance
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct Direction

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Direction
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct Force

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Force
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct Friction

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Friction
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct GravitySpeed

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct GravitySpeed
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct IsGrounded

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct IsGrounded
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public bool Value
```

Field Value

[bool](#)

WasGrounded

```
public bool WasGrounded
```

Field Value

[bool](#)

Struct JumpForce

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct JumpForce
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct Mass

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Mass
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct MaxVelocity

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct MaxVelocity
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct MovementForce

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct MovementForce
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Magnitude

```
public float Magnitude
```

Field Value

[float](#)

Struct Percent

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Percent
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct Position

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Position
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct RunSpeed

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct RunSpeed
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Scalar

```
public float Scalar
```

Field Value

[float](#)

Struct Velocity

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct Velocity
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public Vector2 Value
```

Field Value

Vector2

Struct WalkForce

Namespace: [ECS.Components.Physics](#)

Assembly: ECS.dll

```
public struct WalkForce
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Namespace ECS.Components.Random

Structs

[RandomRange](#)

[RandomlyGeneratedFloat](#)

[RandomlyGeneratedInteger](#)

Struct RandomRange

Namespace: [ECS.Components.Random](#)

Assembly: ECS.dll

```
public struct RandomRange
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Maximum

```
public int Maximum
```

Field Value

[int](#)

Minimum

```
public int Minimum
```

Field Value

[int](#)

Struct RandomlyGeneratedFloat

Namespace: [ECS.Components.Random](#)

Assembly: ECS.dll

```
public struct RandomlyGeneratedFloat
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public float Value
```

Field Value

[float](#)

Struct RandomlyGeneratedInteger

Namespace: [ECS.Components.Random](#)

Assembly: ECS.dll

```
public struct RandomlyGeneratedInteger
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Value

```
public int Value
```

Field Value

[int](#)

Namespace ECS.Components.State

Structs

[GameStateComponent](#)

[PlayerStateComponent](#)

Enums

[GameState](#)

[PlayerState](#)

Enum GameState

Namespace: [ECS.Components.State](#)

Assembly: ECS.dll

```
public enum GameState
```

Fields

Exit = 3

Paused = 1

Reset = 2

Running = 0

Struct GameStateComponent

Namespace: [ECS.Components.State](#)

Assembly: ECS.dll

```
public struct GameStateComponent
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

CurrentState

```
public GameState CurrentState
```

Field Value

[GameState](#)

Enum PlayerState

Namespace: [ECS.Components.State](#)

Assembly: ECS.dll

```
public enum PlayerState
```

Fields

Attack = 100

Block = 90

Fall = 20

Idle = 0

Jump = 80

Run = 60

Walk = 50

Struct PlayerStateComponent

Namespace: [ECS.Components.State](#)

Assembly: ECS.dll

```
public struct PlayerStateComponent
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

CurrentState

```
public PlayerState CurrentState
```

Field Value

[PlayerState](#)

Namespace ECS.Components.Tags

Structs

[AI Tag](#)

[Item Tag](#)

[Object Tag](#)

[Player Tag](#)

[Projectile Tag](#)

[Singleton Tag](#)

Struct AITag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct AITag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Struct ItemTag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct ItemTag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Struct ObjectTag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct ObjectTag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Struct PlayerTag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct PlayerTag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Struct ProjectileTag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct ProjectileTag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Struct SingletonTag

Namespace: [ECS.Components.Tags](#)

Assembly: ECS.dll

```
public struct SingletonTag
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Namespace ECS.Components.Timer

Structs

[Timer](#)

[Timers](#)

Enums

[TimerType](#)

Struct Timer

Namespace: [ECS.Components.Timer](#)

Assembly: ECS.dll

```
public struct Timer
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Duration

```
public float Duration
```

Field Value

[float](#)

Elapsed

```
public float Elapsed
```

Field Value

[float](#)

OneShot

```
public bool OneShot
```

Field Value

[bool](#) ↗

Type

`public TimerType Type`

Field Value

[TimerType](#)

Enum TimerType

Namespace: [ECS.Components.Timer](#)

Assembly: ECS.dll

```
public enum TimerType
```

Fields

AITimer = 1

None = 0

ProjectileTimer = 3

StateTimer = 2

Struct Timers

Namespace: [ECS.Components.Timer](#)

Assembly: ECS.dll

```
public struct Timers
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

TimerMap

```
public Dictionary<TimerType, Timer> TimerMap
```

Field Value

[Dictionary](#)<[TimerType](#), [Timer](#)>

Namespace ECS.Components.UI

Structs

[UIConfig](#)

Struct UIConfig

Namespace: [ECS.Components.UI](#)

Assembly: ECS.dll

```
public struct UIConfig
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Color

```
public Color Color
```

Field Value

Color

Font

```
public string Font
```

Field Value

[string](#)

Text

```
public string Text
```

Field Value

[string](#) ↗

Namespace ECS.Core

Namespaces

[ECS.Core.Utilities](#)

Classes

[AssetLoader](#)

[AssetManager](#)

[CharacterAssetKeys](#)

[CharacterRegistry](#)

[ComponentPool<T>](#)

[EntityFactory](#)

[EventBus](#)

The event bus, a central system for managing event publication and subscription. Any subscriber to the type `T` will receive the published event. Each [Action](#) handles an event of type [IEvent](#).

[GameAssets](#)

[GameInitializer](#)

[GameStateManager](#)

[SystemBase](#)

[SystemBuilder](#)

[SystemInfo](#)

[SystemManager](#)

[World](#)

Structs

[Entity](#)

Interfaces

[IComponentPool](#)

[ISystem](#)

Enums

[SystemExecutionPhase](#)

Namespace ECS.Core.Utilities

Classes

[EntityUtils](#)

[GameStateHelper](#)

Class EntityUtils

Namespace: [ECS.Core.Utilities](#)

Assembly: ECS.dll

```
public static class EntityUtils
```

Inheritance

[object](#) ← EntityUtils

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

setterCache

```
private static readonly Dictionary<Type, Action<World, Entity, object>> setterCache
```

Field Value

[Dictionary](#)<[Type](#), [Action](#)<[World](#), [Entity](#), [object](#)>>

Methods

ApplyComponents(World, Entity, EntityConfig)

```
public static void ApplyComponents(World world, Entity entity, EntityConfig config)
```

Parameters

world [World](#)

entity [Entity](#)

config [EntityConfig](#)

ApplyInputConfig(World, Entity, InputConfig)

```
public static void ApplyInputConfig(World world, Entity entity,  
InputConfig inputConfig)
```

Parameters

world [World](#)

entity [Entity](#)

inputConfig [InputConfig](#)

ApplySpriteAndAnimation(World, Entity, Texture2D, AnimationConfig)

```
public static void ApplySpriteAndAnimation(World world, Entity entity, Texture2D  
spriteSheet, AnimationConfig animationConfig)
```

Parameters

world [World](#)

entity [Entity](#)

spriteSheet [Texture2D](#)

animationConfig [AnimationConfig](#)

CreateSetter(Type)

```
private static Action<World, Entity, object> CreateSetter(Type componentType)
```

Parameters

componentType [Type](#)

Returns

[Action](#)<[World](#), [Entity](#), [object](#)>

InitializeCharacterConfig(World, Entity)

```
public static void InitializeCharacterConfig(World world, Entity entity)
```

Parameters

world [World](#)

entity [Entity](#)

Class GameStateHelper

Namespace: [ECS.Core.Utilities](#)

Assembly: ECS.dll

```
public static class GameStateHelper
```

Inheritance

[object](#) ← GameStateHelper

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

IsPaused(World)

```
public static bool IsPaused(World world)
```

Parameters

world [World](#)

Returns

[bool](#)

Class AssetLoader

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public static class AssetLoader
```

Inheritance

[object](#) ← AssetLoader

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

LoadAssets(ContentManager)

```
public static GameAssets LoadAssets(ContentManager content)
```

Parameters

content ContentManager

Returns

[GameAssets](#)

LoadConfigs(GameAssets)

```
private static void LoadConfigs(GameAssets assets)
```

Parameters

assets [GameAssets](#)

LoadSprites(ContentManager, GameAssets)

```
private static void LoadSprites(ContentManager content, GameAssets assets)
```

Parameters

content ContentManager

assets [GameAssets](#)

RegisterCharacters()

```
private static void RegisterCharacters()
```

Class AssetManager

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public static class AssetManager
```

Inheritance

[object](#) ← AssetManager

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

entityConfigLoader

```
private static readonly EntityConfigLoader entityConfigLoader
```

Field Value

[EntityConfigLoader](#)

inputConfigLoader

```
private static readonly InputConfigLoader inputConfigLoader
```

Field Value

[InputConfigLoader](#)

spriteSheetLoader

```
private static readonly SpriteSheetLoader spriteSheetLoader
```

Field Value

[SpriteSheetLoader](#)

Methods

LoadEntityConfig(GameAssets, string, string)

```
public static void LoadEntityConfig(GameAssets assets, string key, string path)
```

Parameters

assets [GameAssets](#)

key [string](#)

path [string](#)

LoadFont(GameAssets, ContentManager, string, string)

```
public static void LoadFont(GameAssets assets, ContentManager content, string key,
string path)
```

Parameters

assets [GameAssets](#)

content [ContentManager](#)

key [string](#)

path [string](#)

LoadInputConfig(GameAssets, string, string)

```
public static void LoadInputConfig(GameAssets assets, string key, string path)
```

Parameters

assets [GameAssets](#)

key [string](#)

path [string](#)

LoadSpriteSheet(GameAssets, string, string)

```
public static void LoadSpriteSheet(GameAssets assets, string key, string path)
```

Parameters

assets [GameAssets](#)

key [string](#)

path [string](#)

LoadTexture(GameAssets, ContentManager, string, string)

```
public static void LoadTexture(GameAssets assets, ContentManager content, string key, string path)
```

Parameters

assets [GameAssets](#)

content [ContentManager](#)

key [string](#)

path [string](#)

Class CharacterAssetKeys

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public record CharacterAssetKeys : IEquatable<CharacterAssetKeys>
```

Inheritance

[object](#) ← CharacterAssetKeys

Implements

[IEquatable](#)<[CharacterAssetKeys](#)>

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

CharacterAssetKeys(string, string, string)

```
public CharacterAssetKeys(string SpriteKey, string AnimationKey, string ConfigKey)
```

Parameters

SpriteKey [string](#)

AnimationKey [string](#)

ConfigKey [string](#)

Properties

AnimationKey

```
public string AnimationKey { get; init; }
```

Property Value

[string](#) ↗

ConfigKey

```
public string ConfigKey { get; init; }
```

Property Value

[string](#) ↗

SpriteKey

```
public string SpriteKey { get; init; }
```

Property Value

[string](#) ↗

Class CharacterRegistry

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
internal static class CharacterRegistry
```

Inheritance

[object](#) ← CharacterRegistry

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

Characters

```
private static readonly Dictionary<string, CharacterAssetKeys> Characters
```

Field Value

[Dictionary](#)<[string](#) , [CharacterAssetKeys](#)>

Methods

Clear()

```
internal static void Clear()
```

GetCharacters()

```
internal static IEnumerable<KeyValuePair<string, CharacterAssetKeys>>
GetCharacters()
```

Returns

[IEnumerable](#)<[KeyValuePair](#)<[string](#), [CharacterAssetKeys](#)>>

RegisterCharacter(string, string, string, string)

```
internal static void RegisterCharacter(string characterName, string spriteKey,
string animationKey, string configKey)
```

Parameters

characterName [string](#)

spriteKey [string](#)

animationKey [string](#)

configKey [string](#)

Class ComponentPool<T>

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public sealed class ComponentPool<T> : IComponentPool where T : struct
```

Type Parameters

T

Inheritance

[object](#) ← ComponentPool<T>

Implements

[IComponentPool](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

capacity

```
private int capacity
```

Field Value

[int](#)

components

```
private T[] components
```

Field Value

T[]

entityToIndex

```
private Dictionary<int, int> entityToIndex
```

Field Value

[Dictionary](#)<[int](#), [int](#)>

freeIndices

```
private Stack<int> freeIndices
```

Field Value

[Stack](#)<[int](#)>

Properties

Count

```
public int Count { get; }
```

Property Value

[int](#)

Methods

EnsureCapacity(int)

```
public void EnsureCapacity(int newCapacity)
```

Parameters

newCapacity [int](#)

Get(Entity)

```
public ref T Get(Entity entity)
```

Parameters

entity [Entity](#)

Returns

T

Has(Entity)

```
public bool Has(Entity entity)
```

Parameters

entity [Entity](#)

Returns

[bool](#)

Remove(Entity)

```
public void Remove(Entity entity)
```

Parameters

entity [Entity](#)

Set(Entity, T)

```
public void Set(Entity entity, T component)
```

Parameters

entity [Entity](#)

component T

Struct Entity

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public readonly struct Entity
```

Inherited Members

[ValueType.ToString\(\)](#) , [object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

Entity(int)

```
public Entity(int id)
```

Parameters

id [int](#)

Fields

Id

```
public readonly int Id
```

Field Value

[int](#)

Methods

Equals(object)

Indicates whether this instance and a specified object are equal.

```
public override bool Equals(object obj)
```

Parameters

obj [object](#)

The object to compare with the current instance.

Returns

[bool](#)

[true](#) if **obj** and this instance are the same type and represent the same value; otherwise, [false](#).

GetHashCode()

Returns the hash code for this instance.

```
public override int GetHashCode()
```

Returns

[int](#)

A 32-bit signed integer that is the hash code for this instance.

Class EntityFactory

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class EntityFactory
```

Inheritance

[object](#) ← EntityFactory

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

EntityFactory(World)

```
public EntityFactory(World world)
```

Parameters

world [World](#)

Fields

world

```
private readonly World world
```

Field Value

[World](#)

Methods

CreateAIFromConfig(EntityConfig, Texture2D, AnimationConfig)

```
public Entity CreateAIFromConfig(EntityConfig config, Texture2D spriteSheet = null,  
AnimationConfig animationConfig = default)
```

Parameters

config [EntityConfig](#)

spriteSheet Texture2D

animationConfig [AnimationConfig](#)

Returns

[Entity](#)

CreateEntityFromConfig(EntityConfig, Texture2D, AnimationConfig, InputConfig)

```
public Entity CreateEntityFromConfig(EntityConfig config, Texture2D spriteSheet =  
null, AnimationConfig animationConfig = default, InputConfig inputConfig = default)
```

Parameters

config [EntityConfig](#)

spriteSheet Texture2D

animationConfig [AnimationConfig](#)

inputConfig [InputConfig](#)

Returns

[Entity](#)

CreateGameStateEntity()

```
public Entity CreateGameStateEntity()
```

Returns

[Entity](#)

CreateLine(Vector2, Vector2)

```
public Entity CreateLine(Vector2 start, Vector2 end)
```

Parameters

start Vector2

end Vector2

Returns

[Entity](#)

CreatePlayerFromConfig(EntityConfig, Texture2D, AnimationConfig, InputConfig)

```
public Entity CreatePlayerFromConfig(EntityConfig config, Texture2D spriteSheet =  
null, AnimationConfig animationConfig = default, InputConfig inputConfig = default)
```

Parameters

config [EntityConfig](#)

spriteSheet Texture2D

animationConfig [AnimationConfig](#)

inputConfig [InputConfig](#)

Returns

[Entity](#)

CreateProjectile(Texture2D, AnimationConfig, Vector2, bool)

```
public Entity CreateProjectile(Texture2D spriteSheet, AnimationConfig animConfig,  
Vector2 pos, bool isFacingLeft)
```

Parameters

spriteSheet Texture2D

animConfig [AnimationConfig](#)

pos Vector2

isFacingLeft [bool](#)

Returns

[Entity](#)

CreateProjectileFromConfig(EntityConfig, Texture2D, AnimationConfig, Vector2, bool)

```
public Entity CreateProjectileFromConfig(EntityConfig config, Texture2D spriteSheet  
= null, AnimationConfig animationConfig = default, Vector2 position = default, bool  
isFacingLeft = false)
```

Parameters

config [EntityConfig](#)

spriteSheet Texture2D

animationConfig [AnimationConfig](#)

`position` `Vector2`

`isFacingLeft` `bool`

Returns

[Entity](#)

CreateWorldBoundaries(EntityFactory, int, int)

```
public void CreateWorldBoundaries(EntityFactory entityFactory, int screenWidth,  
int screenHeight)
```

Parameters

`entityFactory` [EntityFactory](#)

`screenWidth` `int`

`screenHeight` `int`

Class EventBus

Namespace: [ECS.Core](#)

Assembly: ECS.dll

The event bus, a central system for managing event publication and subscription. Any subscriber to the type `T` will receive the published event. Each [Action](#) handles an event of type [IEvent](#).

```
public class EventBus
```

Inheritance

[object](#) ← EventBus

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

subscribers

Dictionary to store all subscriber delegates for each type `T`.

```
private Dictionary<Type, List<Action<IEvent>>> subscribers
```

Field Value

[Dictionary](#)<[Type](#), [List](#)<[Action](#)<[IEvent](#)>>>

Methods

Publish<T>(T)

Publishes an [IEvent](#) to all subscribers of that event type `T`. Iterates over the list of subscribers for the event type and invokes each handler with the event data.

```
public void Publish<T>(T eventData) where T : IEvent
```

Parameters

eventData **T**

The data associated with the event being published.

Type Parameters

T

The type of the event being published.

Subscribe<T>(Action<IEvent>)

Subscribes a handler to a specific event type **T**.

```
public void Subscribe<T>(Action<IEvent> handler) where T : IEvent
```

Parameters

handler [Action](#)<[IEvent](#)>

The delegate to be executed when the event is published.

Type Parameters

T

The type of the event being subscribed to.

Class GameAssets

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class GameAssets
```

Inheritance

[object](#) ← GameAssets

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

assets

```
private readonly Dictionary<string, object> assets
```

Field Value

[Dictionary](#)<[string](#), [object](#)>

Methods

AddAsset<T>(string, T)

```
public void AddAsset<T>(string key, T asset)
```

Parameters

key [string](#)

asset T

Type Parameters

T

GetAnimation(string)

public AnimationConfig GetAnimation(string path)

Parameters

path [string](#)

Returns

[AnimationConfig](#)

GetAsset<T>(string)

public T GetAsset<T>(string key)

Parameters

key [string](#)

Returns

T

Type Parameters

T

GetEntityConfig(string)

```
public EntityConfig GetEntityConfig(string path)
```

Parameters

path [string](#)

Returns

[EntityConfig](#)

GetFont(string)

```
public SpriteFont GetFont(string path)
```

Parameters

path [string](#)

Returns

[SpriteFont](#)

GetInputConfig(string)

```
public InputConfig GetInputConfig(string path)
```

Parameters

path [string](#)

Returns

[InputConfig](#)

GetTexture(string)

```
public Texture2D GetTexture(string path)
```

Parameters

path [string](#)

Returns

Texture2D

HasAsset<T>(string)

```
public bool HasAsset<T>(string key)
```

Parameters

key [string](#)

Returns

[bool](#)

Type Parameters

T

Class GameInitializer

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class GameInitializer
```

Inheritance

[object](#) ← GameInitializer

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

GameInitializer(World, EntityFactory)

```
public GameInitializer(World world, EntityFactory entityFactory)
```

Parameters

world [World](#)

entityFactory [EntityFactory](#)

Fields

entityFactory

```
private readonly EntityFactory entityFactory
```

Field Value

[EntityFactory](#)

world

```
private readonly World world
```

Field Value

[World](#)

Methods

CreateAI(GameAssets)

```
private void CreateAI(GameAssets assets)
```

Parameters

assets [GameAssets](#)

CreateGameState()

```
private void CreateGameState()
```

CreateObjects(GameAssets)

```
private void CreateObjects(GameAssets assets)
```

Parameters

assets [GameAssets](#)

CreatePlayers(GameAssets)

```
private void CreatePlayers(GameAssets assets)
```

Parameters

assets [GameAssets](#)

CreateUI(GameAssets)

```
private void CreateUI(GameAssets assets)
```

Parameters

assets [GameAssets](#)

CreateWorldBoundaries(int, int)

```
private void CreateWorldBoundaries(int screenWidth, int screenHeight)
```

Parameters

screenWidth [int](#)

screenHeight [int](#)

InitializeGame(GameAssets, int, int)

```
public void InitializeGame(GameAssets assets, int screenWidth, int screenHeight)
```

Parameters

assets [GameAssets](#)

screenWidth [int](#)

screenHeight [int](#)

Class GameStateManager

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class GameStateManager
```

Inheritance

[object](#) ← GameStateManager

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

GameStateManager(World, GameAssets, EntityFactory, Game, int, int)

```
public GameStateManager(World world, GameAssets assets, EntityFactory entityFactory,  
Game game, int screenWidth, int screenHeight)
```

Parameters

world [World](#)

assets [GameAssets](#)

entityFactory [EntityFactory](#)

game Game

screenWidth [int](#)

screenHeight [int](#)

Fields

assets

```
private readonly GameAssets assets
```

Field Value

[GameAssets](#)

entityFactory

```
private readonly EntityFactory entityFactory
```

Field Value

[EntityFactory](#)

game

```
private readonly Game game
```

Field Value

Game

gameInitializer

```
private readonly GameInitializer gameInitializer
```

Field Value

[GameInitializer](#)

pendingReset

```
private bool pendingReset
```

Field Value

[bool](#)

screenHeight

```
private readonly int screenHeight
```

Field Value

[int](#)

screenWidth

```
private readonly int screenWidth
```

Field Value

[int](#)

world

```
private readonly World world
```

Field Value

[World](#)

Methods

Exit()

```
public void Exit()
```

Initialize()

```
public void Initialize()
```

Reset()

```
public void Reset()
```

TearDown()

```
public void TearDown()
```

TogglePause()

```
public void TogglePause()
```

Update()

```
public void Update()
```

Interface IComponentPool

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public interface IComponentPool
```

Methods

Remove(Entity)

```
void Remove(Entity entity)
```

Parameters

entity [Entity](#)

Interface ISystem

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public interface ISystem
```

Properties

Pausible

```
bool Pausible { get; }
```

Property Value

[bool](#)

Methods

Initialize(World)

```
void Initialize(World world)
```

Parameters

[world](#) [World](#)

Update(World, GameTime)

```
void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` `GameTime`

Class SystemBase

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public abstract class SystemBase : ISystem
```

Inheritance

[object](#) ← SystemBase

Implements

[ISystem](#)

Derived

[AISystem](#), [AnimationSystem](#), [FacingSystem](#), [RenderSystem](#), [CharacterSwitchSystem](#), [CollisionDetectionSystem](#), [CollisionResponseSystem](#), [ActionDebugSystem](#), [ActionEventDebugSystem](#), [DebugGroundedSystem](#), [DebugRenderSystem](#), [RawInputDebugSystem](#), [InputMappingSystem](#), [RawInputSystem](#), [ItemSwitchSystem](#), [ObjectSwitchSystem](#), [AirControlSystem](#), [AirResistanceSystem](#), [AttackSystem](#), [BlockSystem](#), [ForceSystem](#), [FrictionSystem](#), [GravitySystem](#), [JumpSystem](#), [PositionSystem](#), [VelocitySystem](#), [DespawnSystem](#), [ProjectileShootingSystem](#), [ProjectileSpawningSystem](#), [ProjectileSystem](#), [GameStateSystem](#), [PlayerStateSystem](#), [DamageSystem](#), [UIRenderSystem](#), [RandomSystem](#), [TimerSystem](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Properties

Pausible

```
public virtual bool Pausible { get; }
```

Property Value

[bool](#)

World

```
protected World World { get; private set; }
```

Property Value

[World](#)

Methods

GetComponent<T>(Entity)

```
protected ref T GetComponent<T>(Entity entity) where T : struct
```

Parameters

entity [Entity](#)

Returns

T

Type Parameters

T

GetEntitiesWith<T>(Entity)

```
protected IEnumerable<Entity> GetEntitiesWith<T>(Entity entity) where T : struct
```

Parameters

entity [Entity](#)

Returns

[IEnumerable](#)<[Entity](#)>

Type Parameters

T

HasComponents<T>(Entity)

```
protected bool HasComponents<T>(Entity entity) where T : struct
```

Parameters

entity [Entity](#)

Returns

[bool](#)

Type Parameters

T

Initialize(World)

```
public virtual void Initialize(World world)
```

Parameters

world [World](#)

Publish<T>(T)

```
protected void Publish<T>(T evt) where T : IEvent
```

Parameters

evt T

Type Parameters

T

Subscribe<T>(Action<IEvent>)

```
protected void Subscribe<T>(Action<IEvent> handler) where T : IEvent
```

Parameters

handler Action<IEvent>

Type Parameters

T

Update(World, GameTime)

```
public abstract void Update(World world, GameTime gameTime)
```

Parameters

world World

gameTime GameTime

Class SystemBuilder

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public static class SystemBuilder
```

Inheritance

[object](#) ← SystemBuilder

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

AddInputSystems(World)

```
private static void AddInputSystems(World world)
```

Parameters

world [World](#)

AddPostUpdateSystems(World, EntityFactory, GameAssets)

```
private static void AddPostUpdateSystems(World world, EntityFactory entityFactory,  
GameAssets assets)
```

Parameters

world [World](#)

entityFactory [EntityFactory](#)

assets [GameAssets](#)

AddPreUpdateSystems(World, GameStateManager, GameAssets)

```
private static void AddPreUpdateSystems(World world, GameStateManager  
gameStateManager, GameAssets assets)
```

Parameters

world [World](#)

gameStateManager [GameManager](#)

assets [GameAssets](#)

AddRenderSystems(World, SpriteBatch, GraphicsDevice, GameAssets)

```
private static void AddRenderSystems(World world, SpriteBatch spriteBatch,  
GraphicsDevice graphicsDevice, GameAssets assets)
```

Parameters

world [World](#)

spriteBatch SpriteBatch

graphicsDevice GraphicsDevice

assets [GameAssets](#)

AddUpdateSystems(World)

```
private static void AddUpdateSystems(World world)
```

Parameters

`world` [World](#)

BuildSystems(World, EntityFactory, GameStateManager, GameAssets, SpriteBatch, GraphicsDevice)

```
public static void BuildSystems(World world, EntityFactory entityFactory,
GameStateManager gameStateManager, GameAssets assets, SpriteBatch spriteBatch,
GraphicsDevice graphicsDevice)
```

Parameters

`world` [World](#)

`entityFactory` [EntityFactory](#)

`gameStateManager` [GameManager](#)

`assets` [GameAssets](#)

`spriteBatch` [SpriteBatch](#)

`graphicsDevice` [GraphicsDevice](#)

Enum SystemExecutionPhase

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public enum SystemExecutionPhase
```

Fields

Input = 0

PostUpdate = 3

PreUpdate = 1

Render = 4

Update = 2

Class SystemInfo

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class SystemInfo
```

Inheritance

[object](#) ← SystemInfo

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

SystemInfo(ISystem, SystemExecutionPhase, int)

```
public SystemInfo(ISystem system, SystemExecutionPhase phase, int priority = 0)
```

Parameters

system [ISystem](#)

phase [SystemExecutionPhase](#)

priority [int](#)

Properties

Phase

```
public SystemExecutionPhase Phase { get; }
```

Property Value

[SystemExecutionPhase](#)

Priority

```
public int Priority { get; }
```

Property Value

[int](#)

System

```
public ISystem System { get; }
```

Property Value

[ISystem](#)

Class SystemManager

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class SystemManager
```

Inheritance

[object](#) ← SystemManager

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

SystemManager(World)

```
public SystemManager(World world)
```

Parameters

world [World](#)

Fields

LogInterval

```
private const int LogInterval = 1000
```

Field Value

[int](#)

executionTimeHistory

```
private readonly Dictionary<string, (double TotalTime, int Count)> executionTimeHistory
```

Field Value

[Dictionary](#)<[string](#), ([double](#) [TotalTime](#), [int](#) [Count](#))>

loopCount

```
private int loopCount
```

Field Value

[int](#)

needsSort

```
private bool needsSort
```

Field Value

[bool](#)

systemsByPhase

```
private readonly Dictionary<SystemExecutionPhase, List<SystemInfo>> systemsByPhase
```

Field Value

[Dictionary](#)<[SystemExecutionPhase](#), [List](#)<[SystemInfo](#)>>

world

```
private readonly World world
```

Field Value

[World](#)

Properties

ProfilingEnabled

```
public bool ProfilingEnabled { get; set; }
```

Property Value

[bool](#)

Methods

AddSystem(ISystem, SystemExecutionPhase, int)

```
public void AddSystem(ISystem system, SystemExecutionPhase phase, int priority = 0)
```

Parameters

system [ISystem](#)

phase [SystemExecutionPhase](#)

priority [int](#)

GetAllSystems()

```
public IEnumerable<ISystem> GetAllSystems()
```

Returns

[IEnumerable](#)<[ISystem](#)>

LogExecutionTimes()

`private void LogExecutionTimes()`

RemoveSystem(ISystem)

`public void RemoveSystem(ISystem system)`

Parameters

`system` [ISystem](#)

SortSystems()

`private void SortSystems()`

UpdatePhase(SystemExecutionPhase, GameTime)

`public void UpdatePhase(SystemExecutionPhase phase, GameTime gameTime)`

Parameters

`phase` [SystemExecutionPhase](#)

`gameTime` GameTime

Class World

Namespace: [ECS.Core](#)

Assembly: ECS.dll

```
public class World
```

Inheritance

[object](#) ← World

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

World()

```
public World()
```

Fields

componentPools

```
private readonly Dictionary<Type, IComponentPool> componentPools
```

Field Value

[Dictionary](#)<[Type](#) , [IComponentPool](#)>

entities

```
private readonly HashSet<Entity> entities
```

Field Value

[HashSet](#)<Entity>

entitiesToDestroy

```
private readonly HashSet<Entity> entitiesToDestroy
```

Field Value

[HashSet](#)<Entity>

nextEntityId

```
private int nextEntityId
```

Field Value

[int](#)

recycledEntityIds

```
private readonly Stack<int> recycledEntityIds
```

Field Value

[Stack](#)<[int](#)>

systemManager

```
private readonly SystemManager systemManager
```

Field Value

[SystemManager](#)

Properties

EventBus

```
public EventBus EventBus { get; }
```

Property Value

[EventBus](#)

Methods

AddSystem(ISystem, SystemExecutionPhase, int)

```
public void AddSystem(ISystem system, SystemExecutionPhase phase, int priority = 0)
```

Parameters

system [ISystem](#)

phase [SystemExecutionPhase](#)

priority [int](#)

CreateEntity()

```
public Entity CreateEntity()
```

Returns

[Entity](#)

DestroyEntity(Entity)

```
public void DestroyEntity(Entity entity)
```

Parameters

entity [Entity](#)

Draw(GameTime, SpriteBatch)

```
public void Draw(GameTime gameTime, SpriteBatch spriteBatch)
```

Parameters

gameTime GameTime

spriteBatch SpriteBatch

GetEntities()

```
public HashSet<Entity> GetEntities()
```

Returns

[HashSet](#)<[Entity](#)>

GetPool<T>()

```
public ComponentPool<T> GetPool<T>() where T : struct
```

Returns

[ComponentPool<T>](#)

Type Parameters

T

ProcessEntityDestructs()

`private void ProcessEntityDestructs()`

Update(GameTime)

`public void Update(GameTime gameTime)`

Parameters

`gameTime` GameTime

Namespace ECS.Events

Structs

[ActionEvent](#)

[AnimationStateEvent](#)

[CollisionEvent](#)

[DespawnEvent](#)

[GameExitEvent](#)

[PlayerStateEvent](#)

[RawInputEvent](#)

[SpawnEvent](#)

[TimerEvent](#)

Interfaces

[IEvent](#)

Struct ActionEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct ActionEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

ActionName

```
public string ActionName
```

Field Value

[string](#)

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

IsEnded

```
public bool IsEnded
```

Field Value

[bool](#) ↗

IsHeld

```
public bool IsHeld
```

Field Value

[bool](#) ↗

IsStarted

```
public bool IsStarted
```

Field Value

[bool](#) ↗

Struct AnimationStateEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct AnimationStateEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

NewState

```
public string NewState
```

Field Value

[string](#)

Struct CollisionEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct CollisionEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

EntityA

```
public Entity EntityA
```

Field Value

[Entity](#)

EntityB

```
public Entity EntityB
```

Field Value

[Entity](#)

Normal

```
public Vector2 Normal
```

Field Value

Vector2

Penetration

```
public float Penetration
```

Field Value

[float](#)

Sides

```
public CollisionFlags Sides
```

Field Value

[CollisionFlags](#)

Struct DespawnEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct DespawnEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

Struct GameExitEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct GameExitEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

Interface IEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public interface IEvent
```

Struct PlayerStateEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct PlayerStateEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Duration

```
public float? Duration
```

Field Value

[float](#)?

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

Force

```
public bool Force
```

Field Value

[bool](#) ↗

RequestedState

```
public PlayerState RequestedState
```

Field Value

[PlayerState](#)

Struct RawInputEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct RawInputEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

IsPressed

```
public bool IsPressed
```

Field Value

[bool](#)

RawKey

```
public Keys RawKey
```

Field Value

Keys

Struct SpawnEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct SpawnEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

World

```
public World World
```

Field Value

[World](#)

typeSpawned

```
public string typeSpawned
```

Field Value

[string](#) ↗

Struct TimerEvent

Namespace: [ECS.Events](#)

Assembly: ECS.dll

```
public struct TimerEvent : IEvent
```

Implements

[IEvent](#)

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Fields

Entity

```
public Entity Entity
```

Field Value

[Entity](#)

TimerType

```
public TimerType TimerType
```

Field Value

[TimerType](#)

Namespace ECS.Resources

Classes

[ColorJsonConverter](#)

[EntityConfig](#)

[EntityConfigLoader](#)

[InputConfigLoader](#)

[InputConfigLoader.InputActionJson](#)

[InputConfigLoader.InputConfigJson](#)

[JsonLoaderBase<T>](#)

[SpriteSheetLoader](#)

[SpriteSheetLoader.FrameJson](#)

[SpriteSheetLoader.SpriteSheetJson](#)

[SpriteSheetLoader.StateJson](#)

[Vector2JsonConverter](#)

Interfaces

[IJsonLoader<T>](#)

Class ColorJsonConverter

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class ColorJsonConverter : JsonConverter<Color>
```

Inheritance

[object](#) ← [JsonConverter](#) ← [JsonConverter](#)<Color> ← ColorJsonConverter

Inherited Members

[JsonConverter<Color>.CanConvert\(Type\)](#) ,
[JsonConverter<Color>.ReadAsPropertyName\(ref Utf8JsonReader, Type, JsonSerializerOptions\)](#) ,
[JsonConverter<Color>.WriteAsPropertyName\(Utf8JsonWriter, Color, JsonSerializerOptions\)](#) ,

[JsonConverter<Color>.HandleNull](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Read(ref Utf8JsonReader, Type, JsonSerializerOptions)

Reads and converts the JSON to type Microsoft.Xna.Framework.Color.

```
public override Color Read(ref Utf8JsonReader reader, Type typeToConvert,  
JsonSerializerOptions options)
```

Parameters

reader [Utf8JsonReader](#)

The reader.

typeToConvert [Type](#)

The type to convert.

`options` [JsonSerializerOptions](#)

An object that specifies serialization options to use.

Returns

Color

The converted value.

`Write(Utf8JsonWriter, Color, JsonSerializerOptions)`

Writes a specified value as JSON.

```
public override void Write(Utf8JsonWriter writer, Color value,  
JsonSerializerOptions options)
```

Parameters

`writer` [Utf8JsonWriter](#)

The writer to write to.

`value` Color

The value to convert to JSON.

`options` [JsonSerializerOptions](#)

An object that specifies serialization options to use.

Class EntityConfig

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class EntityConfig
```

Inheritance

[object](#) ← EntityConfig

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

Assets

```
public Dictionary<string, string> Assets { get; set; }
```

Property Value

[Dictionary](#)<[string](#), [string](#)>

Components

```
public Dictionary<Type, object> Components { get; }
```

Property Value

[Dictionary](#)<[Type](#), [object](#)>

Class EntityConfigLoader

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class EntityConfigLoader : JsonLoaderBase<EntityConfig>,  
IJsonLoader<EntityConfig>
```

Inheritance

[object](#) ← [JsonLoaderBase<EntityConfig>](#) ← EntityConfigLoader

Implements

[IJsonLoader<EntityConfig>](#)

Inherited Members

[JsonLoaderBase<EntityConfig>.DefaultOptions](#) ,
[JsonLoaderBase<EntityConfig>.LoadFromJson\(string\)](#) ,
[JsonLoaderBase<EntityConfig>.LoadFromFile\(string\)](#) ,
[JsonLoaderBase<EntityConfig>.GetRequiredValue< TValue >\(JsonElement, string\)](#) ,
[JsonLoaderBase<EntityConfig>.GetOptionalValue< TValue >\(JsonElement, string, TValue\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

ComponentTypes

```
private static readonly Dictionary<string, Type> ComponentTypes
```

Field Value

[Dictionary<string, Type>](#)

Methods

ParseJson(string)

```
protected override EntityConfig ParseJson(string jsonContent)
```

Parameters

jsonContent [string](#)

Returns

[EntityConfig](#)

Interface IJsonLoader<T>

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public interface IJsonLoader<T>
```

Type Parameters

T

Methods

LoadFromFile(string)

```
T LoadFromFile(string filePath)
```

Parameters

filePath [string](#) ↗

Returns

T

LoadFromJson(string)

```
T LoadFromJson(string jsonContent)
```

Parameters

jsonContent [string](#) ↗

Returns

Class InputConfigLoader

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class InputConfigLoader : JsonLoaderBase<InputConfig>,
IJsonLoader<InputConfig>
```

Inheritance

[object](#) ← [JsonLoaderBase<InputConfig>](#) ← [InputConfigLoader](#)

Implements

[IJsonLoader<InputConfig>](#)

Inherited Members

[JsonLoaderBase<InputConfig>.DefaultOptions](#) ,
[JsonLoaderBase<InputConfig>.LoadFromJson\(string\)](#) ,
[JsonLoaderBase<InputConfig>.LoadFromFile\(string\)](#) ,
[JsonLoaderBase<InputConfig>.GetRequiredValue< TValue >\(JsonElement, string\)](#) ,
[JsonLoaderBase<InputConfig>.GetOptionalValue< TValue >\(JsonElement, string, TValue\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

ParseJson(string)

```
protected override InputConfig ParseJson(string jsonContent)
```

Parameters

jsonContent [string](#)

Returns

[InputConfig](#)

Class InputConfigLoader.InputActionJson

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
private class InputConfigLoader.InputActionJson
```

Inheritance

[object](#) ← InputConfigLoader.InputActionJson

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

Keys

```
public List<string> Keys { get; set; }
```

Property Value

[List](#) <[string](#)>

Class InputConfigLoader.InputConfigJson

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
private class InputConfigLoader.InputConfigJson
```

Inheritance

[object](#) ← InputConfigLoader.InputConfigJson

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

Actions

```
public Dictionary<string, InputConfigLoader.InputActionJson> Actions { get; set; }
```

Property Value

[Dictionary](#)<[string](#) , [InputConfigLoader.InputActionJson](#)>

Class JsonLoaderBase<T>

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public abstract class JsonLoaderBase<T> : IJsonLoader<T>
```

Type Parameters

T

Inheritance

[object](#) ← JsonLoaderBase<T>

Implements

[IJsonLoader](#)<T>

Derived

[EntityConfigLoader](#), [InputConfigLoader](#), [SpriteSheetLoader](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

DefaultOptions

```
protected static readonly JsonSerializerOptions DefaultOptions
```

Field Value

[JsonSerializerOptions](#)

Methods

GetOptionalValue<TValue>(JsonElement, string, TValue)

```
protected TValue GetOptionalValue<TValue>(JsonElement element, string propertyName,  
TValue defaultValue)
```

Parameters

element [JsonElement](#)

propertyName [string](#)

defaultValue [TValue](#)

Returns

[TValue](#)

Type Parameters

[TValue](#)

GetRequiredValue<TValue>(JsonElement, string)

```
protected TValue GetRequiredValue<TValue>(JsonElement element, string propertyName)
```

Parameters

element [JsonElement](#)

propertyName [string](#)

Returns

[TValue](#)

Type Parameters

[TValue](#)

LoadFromFile(string)

```
public T LoadFromFile(string filePath)
```

Parameters

filePath [string](#)

Returns

T

LoadFromJson(string)

```
public T LoadFromJson(string jsonContent)
```

Parameters

jsonContent [string](#)

Returns

T

ParseJson(string)

```
protected abstract T ParseJson(string jsonContent)
```

Parameters

jsonContent [string](#)

Returns

T

Class SpriteSheetLoader

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class SpriteSheetLoader : JsonLoaderBase<AnimationConfig>,
IJsonLoader<AnimationConfig>
```

Inheritance

[object](#) ← [JsonLoaderBase<AnimationConfig>](#) ← [SpriteSheetLoader](#)

Implements

[IJsonLoader<AnimationConfig>](#)

Inherited Members

[JsonLoaderBase<AnimationConfig>.DefaultOptions](#) ,
[JsonLoaderBase<AnimationConfig>.LoadFromJson\(string\)](#) ,
[JsonLoaderBase<AnimationConfig>.LoadFromFile\(string\)](#) ,
[JsonLoaderBase<AnimationConfig>.GetRequiredValue< TValue >\(JsonElement, string\)](#) ,
[JsonLoaderBase<AnimationConfig>.GetOptionalValue< TValue >\(JsonElement, string, TValue\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

GetSourceRect(AnimationConfig, string)

```
public static Rectangle GetSourceRect(AnimationConfig config, string stateName)
```

Parameters

config [AnimationConfig](#)

stateName [string](#)

Returns

Rectangle

ParseJson(string)

```
protected override AnimationConfig ParseJson(string jsonContent)
```

Parameters

jsonContent [string](#)

Returns

[AnimationConfig](#)

Class SpriteSheetLoader.FrameJson

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
private class SpriteSheetLoader.FrameJson
```

Inheritance

[object](#) ← SpriteSheetLoader.FrameJson

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

Duration

```
public float Duration { get; set; }
```

Property Value

[float](#)

Height

```
public int Height { get; set; }
```

Property Value

[int](#)

Width

```
public int width { get; set; }
```

Property Value

[int ↗](#)

X

```
public int X { get; set; }
```

Property Value

[int ↗](#)

Y

```
public int Y { get; set; }
```

Property Value

[int ↗](#)

Class SpriteSheetLoader.SpriteSheetJson

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
private class SpriteSheetLoader.SpriteSheetJson
```

Inheritance

[object](#) ← SpriteSheetLoader.SpriteSheetJson

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

States

```
public Dictionary<string, SpriteSheetLoader.StateJson> States { get; set; }
```

Property Value

[Dictionary](#)<[string](#) , [SpriteSheetLoader.StateJson](#)>

Class SpriteSheetLoader.StateJson

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
private class SpriteSheetLoader.StateJson
```

Inheritance

[object](#) ← SpriteSheetLoader.StateJson

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Properties

Duration

```
public float Duration { get; set; }
```

Property Value

[float](#)

Frames

```
public List<SpriteSheetLoader.FrameJson> Frames { get; set; }
```

Property Value

[List](#)<[SpriteSheetLoader.FrameJson](#)>

Class Vector2JsonConverter

Namespace: [ECS.Resources](#)

Assembly: ECS.dll

```
public class Vector2JsonConverter : JsonConverter<Vector2>
```

Inheritance

[object](#) ← [JsonConverter](#) ← [JsonConverter](#)<Vector2> ← Vector2JsonConverter

Inherited Members

[JsonConverter<Vector2>.CanConvert\(Type\)](#) ,
[JsonConverter<Vector2>.ReadAsPropertyName\(ref Utf8JsonReader, Type,](#)
[JsonSerializerOptions\)](#) ,
[JsonConverter<Vector2>.WriteAsPropertyName\(Utf8JsonWriter, Vector2,](#)
[JsonSerializerOptions\)](#) ,
[JsonConverter<Vector2>.HandleNull](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Read(ref Utf8JsonReader, Type, JsonSerializerOptions)

Reads and converts the JSON to type Microsoft.Xna.Framework.Vector2.

```
public override Vector2 Read(ref Utf8JsonReader reader, Type typeToConvert,  
JsonSerializerOptions options)
```

Parameters

reader [Utf8JsonReader](#)

The reader.

typeToConvert [Type](#)

The type to convert.

`options` [JsonSerializerOptions](#)

An object that specifies serialization options to use.

Returns

`Vector2`

The converted value.

Write(Utf8JsonWriter, Vector2, JsonSerializerOptions)

Writes a specified value as JSON.

```
public override void Write(Utf8JsonWriter writer, Vector2 value,  
JsonSerializerOptions options)
```

Parameters

`writer` [Utf8JsonWriter](#)

The writer to write to.

`value` `Vector2`

The value to convert to JSON.

`options` [JsonSerializerOptions](#)

An object that specifies serialization options to use.

Namespace ECS.Systems

Namespaces

[ECS.Systems.AI](#)

[ECS.Systems.Animation](#)

[ECS.Systems.Characters](#)

[ECS.Systems.Collision](#)

[ECS.Systems.Debug](#)

[ECS.Systems.Input](#)

[ECS.Systems.Items](#)

[ECS.Systems.Objects](#)

[ECS.Systems.Physics](#)

[ECS.Systems.Projectile](#)

[ECS.Systems.State](#)

[ECS.Systems.UI](#)

[ECS.Systems.Utilities](#)

Namespace ECS.Systems.AI

Classes

[AISystem](#)

Class AISystem

Namespace: [ECS.Systems.AI](#)

Assembly: ECS.dll

```
public class AISystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← AISystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

DEFAULT_AI_TIMER_DURATION

```
private const float DEFAULT_AI_TIMER_DURATION = 1
```

Field Value

[float](#)

actions

```
private Dictionary<int, string> actions
```

Field Value

[Dictionary](#)<[int](#), [string](#)>

Methods

HandleTimerUp(IEvent)

```
private void HandleTimerUp(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

MappingSetter()

```
private void MappingSetter()
```

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Namespace ECS.Systems.Animation

Classes

[AnimationSystem](#)

[FacingSystem](#)

[RenderSystem](#)

Class AnimationSystem

Namespace: [ECS.Systems.Animation](#)

Assembly: ECS.dll

```
public class AnimationSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← AnimationSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleAnimationStateChange(IEvent)

```
private void HandleAnimationStateChange(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class FacingSystem

Namespace: [ECS.Systems.Animation](#)

Assembly: ECS.dll

```
public class FacingSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← FacingSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

isWalkingLeft

```
private Dictionary<Entity, bool> isWalkingLeft
```

Field Value

[Dictionary](#)<[Entity](#), [bool](#)>

isWalkingRight

```
private Dictionary<Entity, bool> isWalkingRight
```

Field Value

[Dictionary](#)<[Entity](#), [bool](#)>

Methods

HandleWalkAction(IEvent)

```
private void HandleWalkAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime [GameTime](#)

Class RenderSystem

Namespace: [ECS.Systems.Animation](#)

Assembly: ECS.dll

```
public class RenderSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← RenderSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

RenderSystem(SpriteBatch)

```
public RenderSystem(SpriteBatch spriteBatch)
```

Parameters

spriteBatch SpriteBatch

Fields

renderQueue

```
private List<Entity> renderQueue
```

Field Value

[List](#) ↴ <[Entity](#)>

spriteBatch

```
private readonly SpriteBatch spriteBatch
```

Field Value

SpriteBatch

Properties

Pausible

```
public override bool Pausible { get; }
```

Property Value

[bool](#) ↴

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

[world](#) [World](#)

gameTime GameTime

Namespace ECS.Systems.Characters

Classes

[CharacterSwitchSystem](#)

Class CharacterSwitchSystem

Namespace: [ECS.Systems.Characters](#)

Assembly: ECS.dll

```
public class CharacterSwitchSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← CharacterSwitchSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

CharacterSwitchSystem(GameAssets, EntityFactory)

```
public CharacterSwitchSystem(GameAssets assets, EntityFactory factory)
```

Parameters

assets [GameAssets](#)

factory [EntityFactory](#)

Fields

actionDirections

```
private readonly Dictionary<string, int> actionDirections
```

Field Value

[Dictionary](#)<[string](#), [int](#)>

assets

```
private readonly GameAssets assets
```

Field Value

[GameAssets](#)

factory

```
private readonly EntityFactory factory
```

Field Value

[EntityFactory](#)

lastDirection

```
private int lastDirection
```

Field Value

[int](#)

playableCharacters

```
private HashSet<string> playableCharacters
```

Field Value

[HashSet](#)<[string](#)>

switchQueue

```
private readonly Queue<Entity> switchQueue
```

Field Value

[Queue](#)<[Entity](#)>

Methods

HandleCharacterSwitchAction(IEvent)

```
private void HandleCharacterSwitchAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

InitializePlayableCharacters()

```
private void InitializePlayableCharacters()
```

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Namespace ECS.Systems.Collision

Classes

[CollisionDetectionSystem](#)

[CollisionResponseSystem](#)

Class CollisionDetectionSystem

Namespace: [ECS.Systems.Collision](#)

Assembly: ECS.dll

```
public class CollisionDetectionSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← CollisionDetectionSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

CheckCollision(Entity, Entity)

```
private void CheckCollision(Entity a, Entity b)
```

Parameters

a [Entity](#)

b [Entity](#)

CheckRectangleLine(Vector2, Vector2, Vector2, Vector2, out Vector2, out float)

```
private bool CheckRectangleLine(Vector2 rectPos, Vector2 rectSize, Vector2  
lineStart, Vector2 lineEnd, out Vector2 normal, out float penetration)
```

Parameters

rectPos Vector2

rectSize Vector2

lineStart Vector2

lineEnd Vector2

normal Vector2

penetration [float](#)

Returns

[bool](#)

CheckRectangleRectangle(Vector2, Vector2, Vector2, Vector2, out Vector2, out float)

```
private bool CheckRectangleRectangle(Vector2 posA, Vector2 sizeA, Vector2 posB,  
Vector2 sizeB, out Vector2 normal, out float penetration)
```

Parameters

posA Vector2

sizeA Vector2

posB Vector2

sizeB Vector2

normal Vector2

penetration [float](#)

Returns

[bool](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

[world](#) [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

[world](#) [World](#)

[gameTime](#) [GameTime](#)

UpdateCollisionStates(ref CollisionState, ref CollisionState, Vector2)

```
private void UpdateCollisionStates(ref CollisionState stateA, ref CollisionState stateB, Vector2 normal)
```

Parameters

[stateA](#) [CollisionState](#)

[stateB](#) [CollisionState](#)

[normal](#) [Vector2](#)

Class CollisionResponseSystem

Namespace: [ECS.Systems.Collision](#)

Assembly: ECS.dll

```
public class CollisionResponseSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← CollisionResponseSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleCollision(IEvent)

```
public void HandleCollision(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Namespace ECS.Systems.Debug

Classes

[ActionDebugSystem](#)

[ActionEventDebugSystem](#)

[DebugGroundedSystem](#)

[DebugRenderSystem](#)

[RawInputDebugSystem](#)

Class ActionDebugSystem

Namespace: [ECS.Systems.Debug](#)

Assembly: ECS.dll

```
public class ActionDebugSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ActionDebugSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleAction(IEvent)

```
private void HandleAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class ActionEventDebugSystem

Namespace: [ECS.Systems.Debug](#)

Assembly: ECS.dll

```
public class ActionEventDebugSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ActionEventDebugSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausable](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class DebugGroundedSystem

Namespace: [ECS.Systems.Debug](#)

Assembly: ECS.dll

```
public class DebugGroundedSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← DebugGroundedSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausible](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class DebugRenderSystem

Namespace: [ECS.Systems.Debug](#)

Assembly: ECS.dll

```
public class DebugRenderSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← DebugRenderSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

DebugRenderSystem(SpriteBatch, GraphicsDevice, GameAssets)

```
public DebugRenderSystem(SpriteBatch spriteBatch, GraphicsDevice graphicsDevice,  
GameAssets assets)
```

Parameters

spriteBatch SpriteBatch

graphicsDevice GraphicsDevice

assets [GameAssets](#)

Fields

debugFont

```
private SpriteFont debugFont
```

Field Value

SpriteFont

elapsedTime

```
private TimeSpan elapsedTime
```

Field Value

[TimeSpan](#)

frameCounter

```
private int frameCounter
```

Field Value

[int](#)

frameRate

```
private int frameRate
```

Field Value

[int](#)

pixel

```
private Texture2D pixel
```

Field Value

Texture2D

showDebug

```
private bool showDebug
```

Field Value

[bool](#)

showEntityIDs

```
private bool showEntityIDs
```

Field Value

[bool](#)

showHitboxes

```
private bool showHitboxes
```

Field Value

[bool](#)

spriteBatch

```
private readonly SpriteBatch spriteBatch
```

Field Value

SpriteBatch

Properties

Pausible

```
public override bool Pausible { get; }
```

Property Value

[bool](#) ↗

Methods

CalculateFPS(GameTime)

```
private void CalculateFPS(GameTime gameTime)
```

Parameters

gameTime GameTime

DrawAccelerationVectors(SpriteBatch)

```
private void DrawAccelerationVectors(SpriteBatch spriteBatch)
```

Parameters

spriteBatch SpriteBatch

DrawEntityIDs(SpriteBatch)

```
private void DrawEntityIDs(SpriteBatch spriteBatch)
```

Parameters

spriteBatch SpriteBatch

DrawFPSCounter(SpriteBatch)

```
private void DrawFPSCounter(SpriteBatch spriteBatch)
```

Parameters

spriteBatch SpriteBatch

DrawHitboxes(SpriteBatch)

```
private void DrawHitboxes(SpriteBatch spriteBatch)
```

Parameters

spriteBatch SpriteBatch

DrawLine(SpriteBatch, Vector2, Vector2, Color, float)

```
private void DrawLine(SpriteBatch spriteBatch, Vector2 start, Vector2 end, Color color, float thickness)
```

Parameters

spriteBatch SpriteBatch

start Vector2

```
end Vector2  
  
color Color  
  
thickness float ↴
```

DrawOutlinedText(SpriteBatch, string, Vector2)

```
private void DrawOutlinedText(SpriteBatch spriteBatch, string text,  
Vector2 position)
```

Parameters

```
spriteBatch SpriteBatch  
  
text string ↴  
  
position Vector2
```

DrawPlayerStateText(SpriteBatch)

```
private void DrawPlayerStateText(SpriteBatch spriteBatch)
```

Parameters

```
spriteBatch SpriteBatch
```

DrawRectangle(SpriteBatch, Vector2, Vector2, Color)

```
private void DrawRectangle(SpriteBatch spriteBatch, Vector2 position, Vector2 size,  
Color color)
```

Parameters

```
spriteBatch SpriteBatch  
  
position Vector2
```

`size` Vector2

`color` Color

DrawVector(SpriteBatch, Vector2, Vector2, Color, float)

```
private void DrawVector(SpriteBatch spriteBatch, Vector2 origin, Vector2
vectorValue, Color color, float scaleFactor)
```

Parameters

`spriteBatch` SpriteBatch

`origin` Vector2

`vectorValue` Vector2

`color` Color

`scaleFactor` [float](#)

DrawVelocityVectors(SpriteBatch)

```
private void DrawVelocityVectors(SpriteBatch spriteBatch)
```

Parameters

`spriteBatch` SpriteBatch

HandleAction(IEvent)

```
private void HandleAction(IEvent evt)
```

Parameters

`evt` [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class RawInputDebugSystem

Namespace: [ECS.Systems.Debug](#)

Assembly: ECS.dll

```
public class RawInputDebugSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← RawInputDebugSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleRawInput(IEvent)

```
private void HandleRawInput(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Namespace ECS.Systems.Input

Classes

[InputMappingSystem](#)

[RawInputSystem](#)

Class InputMappingSystem

Namespace: [ECS.Systems.Input](#)

Assembly: ECS.dll

```
public class InputMappingSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← InputMappingSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Fields

activeActions

```
private Dictionary<Entity, Dictionary<string, bool>> activeActions
```

Field Value

[Dictionary](#)<[Entity](#), [Dictionary](#)<[string](#), [bool](#)>>

Properties

Pausable

```
public override bool Pausible { get; }
```

Property Value

[bool](#)

Methods

HandleRawInput(IEvent)

```
private void HandleRawInput(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class RawInputSystem

Namespace: [ECS.Systems.Input](#)

Assembly: ECS.dll

```
public class RawInputSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← RawInputSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

pressedKeys

```
private Dictionary<Entity, HashSet<Keys>> pressedKeys
```

Field Value

[Dictionary](#)<[Entity](#), [HashSet](#)<[Keys](#)>>

Properties

Pausible

```
public override bool Pausible { get; }
```

Property Value

[bool](#) ↗

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

[world](#) [World](#)

[gameTime](#) GameTime

Namespace ECS.Systems.Items

Classes

[ItemSwitchSystem](#)

Class ItemSwitchSystem

Namespace: [ECS.Systems.Items](#)

Assembly: ECS.dll

```
public class ItemSwitchSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ItemSwitchSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

actionDirections

```
private readonly Dictionary<string, int> actionDirections
```

Field Value

[Dictionary](#)<[string](#), [int](#)>

Methods

HandleItemSwitchAction(IEvent)

```
private void HandleItemSwitchAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Namespace ECS.Systems.Objects

Classes

[ObjectSwitchSystem](#)

Class ObjectSwitchSystem

Namespace: [ECS.Systems.Objects](#)

Assembly: ECS.dll

```
public class ObjectSwitchSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ObjectSwitchSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

actionDirections

```
private readonly Dictionary<string, int> actionDirections
```

Field Value

[Dictionary](#)<[string](#), [int](#)>

Methods

HandleObjectSwitchAction(IEvent)

```
private void HandleObjectSwitchAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Namespace ECS.Systems.Physics

Classes

[AirControlSystem](#)

[AirResistanceSystem](#)

[AttackSystem](#)

[BlockSystem](#)

[ForceSystem](#)

[FrictionSystem](#)

[GravitySystem](#)

[JumpSystem](#)

[PositionSystem](#)

[VelocitySystem](#)

Class AirControlSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class AirControlSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← AirControlSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

isWalkingLeft

```
private Dictionary<Entity, bool> isWalkingLeft
```

Field Value

[Dictionary](#)<[Entity](#), [bool](#)>

isWalkingRight

```
private Dictionary<Entity, bool> isWalkingRight
```

Field Value

[Dictionary](#)<[Entity](#), [bool](#)>

Methods

HandleAirMoveAction(IEvent)

```
private void HandleAirMoveAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime [GameTime](#)

Class AirResistanceSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class AirResistanceSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← AirResistanceSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausible](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class AttackSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class AttackSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← AttackSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleAttackAction(IEvent)

```
private void HandleAttackAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class BlockSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class BlockSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← BlockSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleBlockAction(IEvent)

```
private void HandleBlockAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class ForceSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class ForceSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ForceSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausable](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class FrictionSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class FrictionSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← FrictionSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausable](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class GravitySystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class GravitySystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← GravitySystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausible](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

GRAVITY_ACCELERATION

```
private const float GRAVITY_ACCELERATION = 1000
```

Field Value

[float](#)

gravity

```
private readonly Vector2 gravity
```

Field Value

Vector2

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class JumpSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class JumpSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← JumpSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleJump(IEvent)

```
private void HandleJump(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class PositionSystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class PositionSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← PositionSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausible](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class VelocitySystem

Namespace: [ECS.Systems.Physics](#)

Assembly: ECS.dll

```
public class VelocitySystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← VelocitySystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausable](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Namespace ECS.Systems.Projectile

Classes

[DespawnSystem](#)

[ProjectileShootingSystem](#)

[ProjectileSpawningSystem](#)

[ProjectileSystem](#)

Class DespawnSystem

Namespace: [ECS.Systems.Projectile](#)

Assembly: ECS.dll

```
public class DespawnSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← DespawnSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

despawners

```
private Stack<Entity> despawners
```

Field Value

[Stack](#)<[Entity](#)>

Methods

HandleDespawn(IEvent)

```
private void HandleDespawn(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class ProjectileShootingSystem

Namespace: [ECS.Systems.Projectile](#)

Assembly: ECS.dll

```
public class ProjectileShootingSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ProjectileShootingSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleShootAction(IEvent)

```
private void HandleShootAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class ProjectileSpawningSystem

Namespace: [ECS.Systems.Projectile](#)

Assembly: ECS.dll

```
public class ProjectileSpawningSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ProjectileSpawningSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

ProjectileSpawningSystem(GameAssets, EntityFactory)

```
public ProjectileSpawningSystem(GameAssets assets, EntityFactory entityFactory)
```

Parameters

assets [GameAssets](#)

entityFactory [EntityFactory](#)

Fields

assets

```
private GameAssets assets
```

Field Value

[GameAssets](#)

entityFactory

```
private EntityFactory entityFactory
```

Field Value

[EntityFactory](#)

spawners

```
private Stack<Entity> spawners
```

Field Value

[Stack](#) <[Entity](#)>

Methods

HandleSpawnAction(IEvent)

```
private void HandleSpawnAction(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class ProjectileSystem

Namespace: [ECS.Systems.Projectile](#)

Assembly: ECS.dll

```
public class ProjectileSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← ProjectileSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandleTimerUp(IEvent)

```
private void HandleTimerUp(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Namespace ECS.Systems.State

Classes

[GameStateSystem](#)

[PlayerStateSystem](#)

Class GameStateSystem

Namespace: [ECS.Systems.State](#)

Assembly: ECS.dll

```
public class GameStateSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← GameStateSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

GameStateSystem(GameStateManager)

```
public GameStateSystem(GameStateManager gameStateManager)
```

Parameters

gameStateManager [GameManager](#)

Fields

gameStateManager

```
private readonly GameStateManager gameStateManager
```

Field Value

[GameStateManager](#)

stateHandlers

```
private readonly Dictionary<string, Action> stateHandlers
```

Field Value

[Dictionary](#)<[string](#), [Action](#)>

Properties

Pausible

```
public override bool Pausible { get; }
```

Property Value

[bool](#)

Methods

HandleActionEvent(IEvent)

```
private void HandleActionEvent(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class PlayerStateSystem

Namespace: [ECS.Systems.State](#)

Assembly: ECS.dll

```
public class PlayerStateSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← PlayerStateSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

VELOCITY_THRESHOLD

```
private const float VELOCITY_THRESHOLD = 100
```

Field Value

[float](#)

previousStates

```
private Dictionary<Entity, PlayerState> previousStates
```

Field Value

[Dictionary](#) <[Entity](#), [PlayerState](#)>

Methods

DetermineNextState(Entity)

```
private PlayerState DetermineNextState(Entity entity)
```

Parameters

entity [Entity](#)

Returns

[PlayerState](#)

HandleStateChangeRequest(IEvent)

```
private void HandleStateChangeRequest(IEvent evt)
```

Parameters

evt [IEvent](#)

HandleStateTimer(IEvent)

```
private void HandleStateTimer(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

world [World](#)

IsInPriorityState(PlayerState)

```
private bool IsInPriorityState(PlayerState state)
```

Parameters

state [PlayerState](#)

Returns

[bool](#)

SetState(Entity, PlayerState, bool)

```
private void SetState(Entity entity, PlayerState newState, bool force)
```

Parameters

entity [Entity](#)

newState [PlayerState](#)

force [bool](#)

ShouldOverrideState(PlayerState, PlayerState, bool)

```
private bool ShouldOverrideState(PlayerState currentState, PlayerState newState,
```

```
bool force)
```

Parameters

currentState [PlayerState](#)

newState [PlayerState](#)

force [bool](#)

Returns

[bool](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime [GameTime](#)

Namespace ECS.Systems.UI

Classes

[DamageSystem](#)

[UIRenderSystem](#)

Class DamageSystem

Namespace: [ECS.Systems.UI](#)

Assembly: ECS.dll

```
public class DamageSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← DamageSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.HasComponents<T>\(Entity\)](#) ,
[SystemBase.GetEntitiesWith<T>\(Entity\)](#) , [SystemBase.GetComponent<T>\(Entity\)](#) ,
[SystemBase.Subscribe<T>\(Action<IEvent>\)](#) , [SystemBase.Publish<T>\(T\)](#) ,
[SystemBase.Pausable](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

HandlePercentChange(IEvent)

```
private void HandlePercentChange(IEvent evt)
```

Parameters

evt [IEvent](#)

Initialize(World)

```
public override void Initialize(World world)
```

Parameters

`world` [World](#)

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

`gameTime` GameTime

Class UIRenderSystem

Namespace: [ECS.Systems.UI](#)

Assembly: ECS.dll

```
public class UIRenderSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← UIRenderSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

UIRenderSystem(GameAssets, SpriteBatch)

```
public UIRenderSystem(GameAssets assets, SpriteBatch spriteBatch)
```

Parameters

assets [GameAssets](#)

spriteBatch SpriteBatch

Fields

assets

```
private readonly GameAssets assets
```

Field Value

[GameAssets](#)

spriteBatch

```
private readonly SpriteBatch spriteBatch
```

Field Value

SpriteBatch

Properties

Pausible

```
public override bool Pausible { get; }
```

Property Value

[bool](#) ↗

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

`world` [World](#)

gameTime GameTime

Namespace ECS.Systems.Utilities

Classes

[RandomSystem](#)

[TimerSystem](#)

Class RandomSystem

Namespace: [ECS.Systems.Utilities](#)

Assembly: ECS.dll

```
public class RandomSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← RandomSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausible](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

Class TimerSystem

Namespace: [ECS.Systems.Utilities](#)

Assembly: ECS.dll

```
public class TimerSystem : SystemBase, ISystem
```

Inheritance

[object](#) ← [SystemBase](#) ← TimerSystem

Implements

[ISystem](#)

Inherited Members

[SystemBase.World](#) , [SystemBase.Initialize\(World\)](#) ,
[SystemBase.HasComponents<T>\(Entity\)](#) , [SystemBase.GetEntitiesWith<T>\(Entity\)](#) ,
[SystemBase.GetComponent<T>\(Entity\)](#) , [SystemBase.Subscribe<T>\(Action<IEvent>\)](#) ,
[SystemBase.Publish<T>\(T\)](#) , [SystemBase.Pausable](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Update(World, GameTime)

```
public override void Update(World world, GameTime gameTime)
```

Parameters

world [World](#)

gameTime GameTime

UpdateTimers(Entity, ref Timers, float)

```
private void UpdateTimers(Entity entity, ref Timers timersComponent,  
float deltaTime)
```

Parameters

entity [Entity](#)

timersComponent [Timers](#)

deltaTime [float](#)

Class Game1

Namespace: [ECS](#)

Assembly: ECS.dll

```
public class Game1 : Game, IDisposable
```

Inheritance

[object](#) ← Game ← Game1

Implements

[IDisposable](#)

Inherited Members

Game.Dispose() , [Game.Dispose\(bool\)](#) , Game.Exit() , Game.ResetElapsedTime() ,
Game.SuppressDraw() , Game.RunOneFrame() , Game.Run() ,
Game.Run(GameRunBehavior) , Game.Tick() , Game.BeginDraw() , Game.EndDraw() ,
Game.BeginRun() , Game.EndRun() , Game.UnloadContent() ,
[Game.OnExiting\(object, EventArgs\)](#) , [Game.OnActivated\(object, EventArgs\)](#) ,
[Game.OnDeactivated\(object, EventArgs\)](#) , Game.LaunchParameters , Game.Components ,
Game.InactiveSleepTime , Game.MaxValueElapsed , Game.IsActive , Game.IsMouseVisible ,
Game.TargetElapsedTime , Game.IsFixedTimeStep , Game.Services , Game.Content ,
Game.GraphicsDevice , Game.Window , Game.Activated , Game.Deactivated ,
Game.Disposed , Game.Exiting , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

Game1()

```
public Game1()
```

Fields

assets

```
private GameAssets assets
```

Field Value

[GameAssets](#)

entityFactory

```
private EntityFactory entityFactory
```

Field Value

[EntityFactory](#)

gameStateManager

```
private GameStateManager gameStateManager
```

Field Value

[GameStateManager](#)

graphics

```
private GraphicsDeviceManager graphics
```

Field Value

GraphicsDeviceManager

spriteBatch

```
private SpriteBatch spriteBatch
```

Field Value

SpriteBatch

world

```
private World world
```

Field Value

[World](#)

Methods

Draw(GameTime)

```
protected override void Draw(GameTime gameTime)
```

Parameters

gameTime GameTime

Initialize()

```
protected override void Initialize()
```

LoadContent()

```
protected override void LoadContent()
```

Update(GameTime)

```
protected override void Update(GameTime gameTime)
```

Parameters

gameTime GameTime

Class Program

Namespace: [ECS](#)

Assembly: ECS.dll

```
public static class Program
```

Inheritance

[object](#) ← Program

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Methods

Main(string[])

```
public static void Main(string[] args)
```

Parameters

args [string](#)[]