Basic charting

The coordinate system

The coordinate system used is a 2 dimensional vector space Cartesian Coordinate System.
In simpler words, the top left corner is (0, 0) and the bottom right corner is (640, 480).
In order to reference a point in this coordinate system, you should use “new Vector2(x, y)”.

Chart variables

There are some variables in “UndyneFight_Ex.Fight.Functions” that are very useful.

AutoEnd

Whether the chart automatically switches to the result screen after ending

CurrentDifficulty

The current difficulty of the chart

Heart

The player you are currently controlling, see below for more information

Gametime

Frames elapsed in integers (Not recommended to use)
Note that if you use `if (Gametime == xxx)`, it is likely that the if statement will run twice, causing some known bugs in Bad Apple EX and Eternal Spring Dream EX.

GametimeDelta

Gametime displacement of the chart

GametimeF

Frames elapsed in float (Recommended)

Loader

The content loader, you can use this to load dynamic assets

PlayerInstance

The player you are currently controlling

PlayOffset

When the song will begin playing (If the value is negative, SongInformation.MusicOptimized MUST be false)

SongIllustration

The cover of the chart

Heart variables

There are two classes for you to set variables related to the soul “Heart” and “HeartAttribute”, some variables in the two overlap each other, such as “PurpleLineCount”, they do the same thing.

HeartAttribute

These are the variables in “HeartAttribute”, the descriptions are copies of the summaries in the engine, you don’t have to look up this table every time.

ArrowFixed	Determine whether the arrows rotate along the soul
BuffedLevel	Level of HP drain of the player
DamageTaken	Damage taken by the player per hit
Gravity	Gravity of the blue soul (Default 9.8f)
HP	The current HP of the player
IsFullHP	Is the player at full HP
InvincibleToPhysics	Whether the player is immune to physical damage
JumpSpeed	Initial jump speed of blue soul (Default 6)
JumpTimeLimit	Amount of times a player can jump (Default 2)
KR	Whether to enable KR
KRDamage	The damage the KR deals (Default 4)
MaxHP	The max HP of the player (Also automatically sets the current HP of the player)

PurpleLineCount	The amount of purple lines in purple soul mode
SoftFalling	Sets whether the blue soul will have a softer falling (Smoother but longer)
Speed	Speed of the player (Default 2.5f)
UmbrellaAvailable	Whether the blue soul can descend slower by holding spacebar (Default false)
UmbrellaSpeed	The falling speed of the player when descending using umbrella (Default 2/3f)

Heart

These are the variables in “Heart”, the descriptions are copies of the summaries in the engine, you don’t have to look up this table every time.

Alpha	The alpha of the soul
EnabledRedShield	Whether the enable the red shield for non-green soul types
ID	The ID of the player
IsOranged	Whether the soul is oranged (Forced to move constantly)
IsSoulSplit	Whether the soul is split into several souls

Heart Functions

There are also functions in “Heart” that allow you to create basic effects.
The format of this section will be like this

FunctionName(ParameterType ParameterName) (-> Return type)
Usage:
Parameter: Description
(Returns: Description)

SetPlayerMission(int/Player.Heart heart)

Sets which player you are currently controlling
Heart: The ID of the heart or the Heart itself

SetBoxMission(int/FightBox box)

Sets the box you are currently controlling
Heart: The ID of the box or the Box itself

SetPlayerBoxMission(int/Player.Heart val)

Sets which player and box you are currently controlling
Value: The ID of the heart or the Heart itself

TP(Vector2 pos) / TP(float x, float y)

Moves the player to the target position
Pos: The Vector2 position to move to
x/y: The x/y coordinate to move to

InstantTP(Vector2 pos) / InstantTP(float x, float y)

Instantly moves the player to the target position
Pos: The Vector2 position to move to
x/y: The x/y coordinate to move to

Regenerate([int HP])

Recovers HP (Default full hp)
HP: The amount of HP to recover

LoseHP(Player.Heart heart)

Reduces HP from the given heart
Heart: The heart to reduce HP from

RotateTo(float rot)

Rotates the soul to the given rotation
Rot: The target angle

InstantSetRotation(float rot)

Instantly rotates the soul to the given rotation

Rot: The target angle

GiveForce(float rotation, float speed)

Applies force to the soul and changes the gravity of the soul to that direction
Rotation: The direction to set the gravity to (Must be a multiple of 90)
Speed: The magnitude of gravity

GiveInstantForce(float rotation, float speed)

Applies force to the soul and changes the gravity of the soul to that direction and instantly rotates the soul to that direction
Rotation: The direction to set the gravity to (Must be a multiple of 90)
Speed: The magnitude of gravity

FollowScreen(float duration)

Sets the angle of the soul as the angle of the screen for the specified duration
Duration: The duration to set the angle of the soul for

Merge(Heart another)

Merge the current soul with the target soul
Another: The soul to merge to

MergeAll()

Merge all souls

Split() -> Heart

Splits the current soul
Returns: The new soul that was split

InstantSplit(CollideRect area) -> Heart

Instantly splits the soul
Area: The rectangle of the box of the new soul
Returns: The new soul that was split

Box functions

(Instant)SetBox(float x1, float x2, float y1, float y2)

(Instantly sets)Lerps the position of the box to the given location
X1: x-coordinate of the left side of the box
X2: x-coordinate of the right side of the box
Y1: y-coordinate of the top side of the box
Y2: y-coordinate of the bottom side of the box

(Instant)SetBox(Vector2 centre, float width, float height)

(Instantly sets)Lerps the position of the box to the given location
Centre: The centre of the box to move to
Width: The width of the box
Height: The height of the box

(Instant)SetBox(float YCentre, float width, float height)

(Instantly sets)Lerps the position of the box to the given location
YCentre: The y-coordinate of the box to move to
Width The width of the box
Height: The height of the box

(Instant)SetGreenBox()

(Instantly sets)Lerps the box to the position and size for green soul

BoxState variables

Here are a list of variables related to the box

CurrentBox	The current box you are controlling
Up/Down/Left/Right	The x/y coordinate of the respective side of the box
Centre	The center of the box
Width	The width of the box
Height	The height of the box
BoxMovingScale	Lerp value of box movement, range is [0, 1]