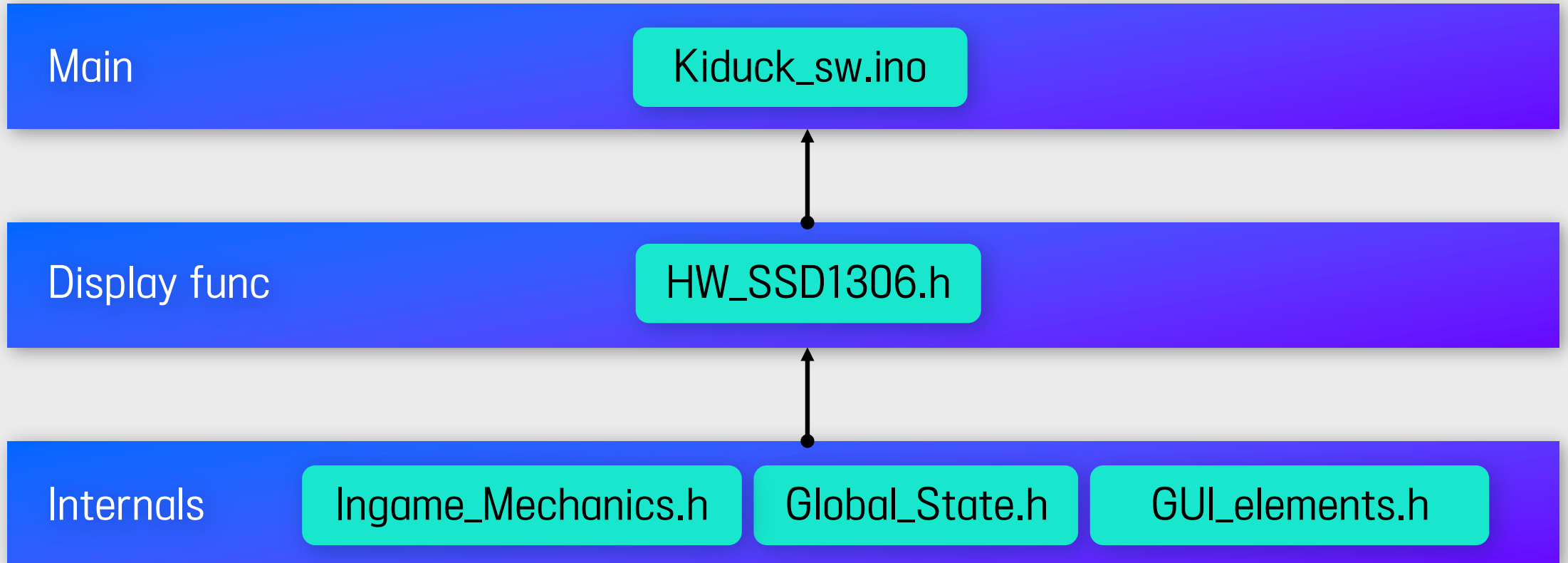
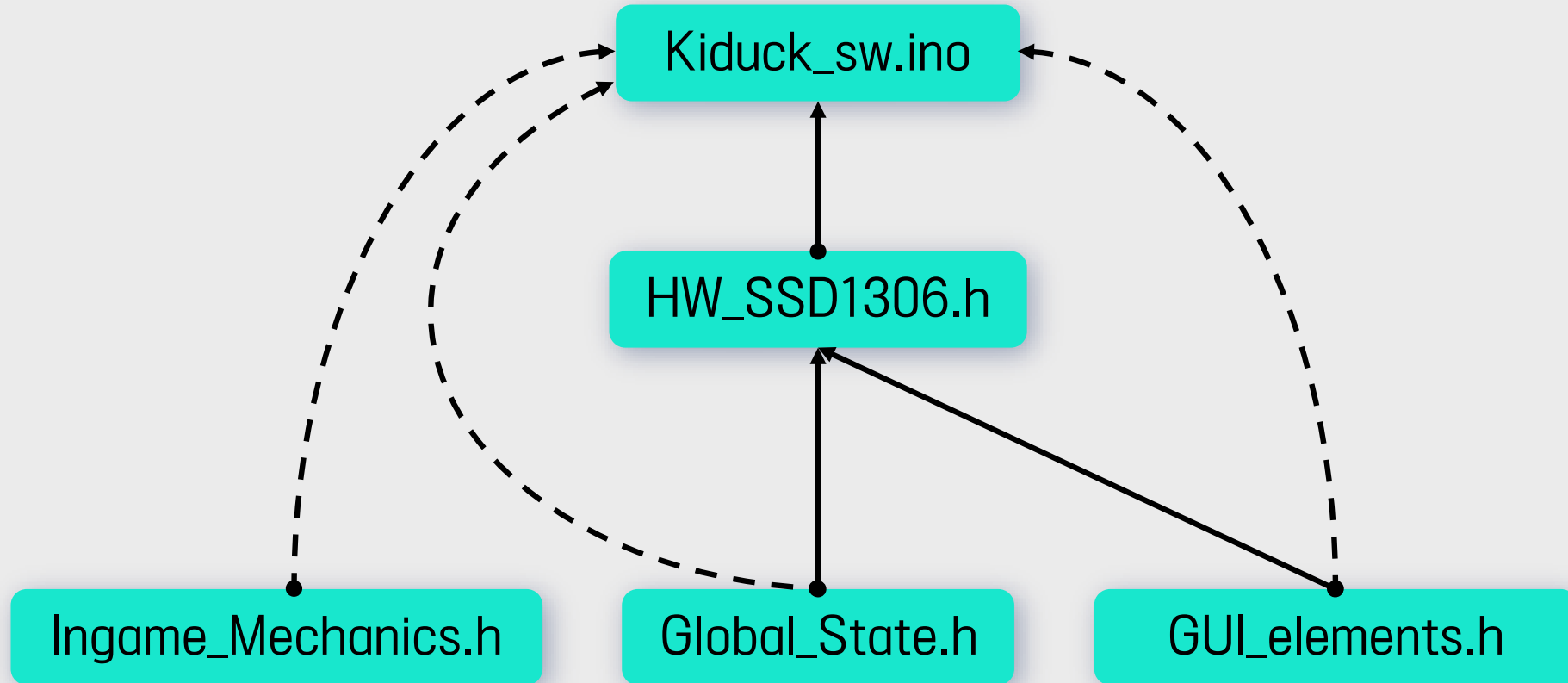


Software Hierarchy

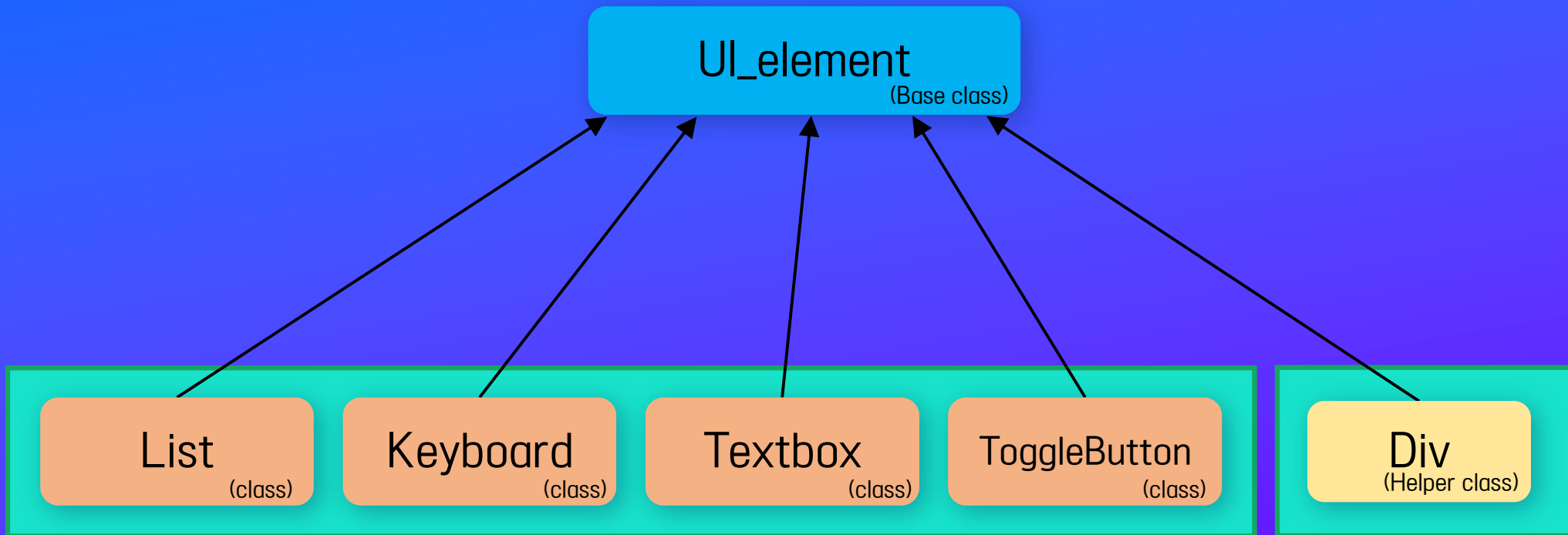


File Include Relation Graph



GUI_elements.h

Implement Internal Mechanics for GUI Elements



Global_State.h

1. User Info (Global Variable)

user_name

user_age

user_weight

character

growth

2. Kiduck Image Array and Image Selector function

duck_img

(function)

3. Basic Hardware Utility Function

Set Pin Mode to input

(function)

Falling edge Detection

(function)

Elapsed time checker

(class)

Ingame_Mechanics.h

1. Step Count

| | | |
|------|------|-------------|
| Data | int | today_steps |
| | vect | step_counts |

| | |
|------------------------|-----------------|
| Daily Goal & reward | WALK_DAILY_CRIT |
| | WALK_PT_CRIT |
| | WALK_PT |

~~LSM9DS1_setup~~ (function)

calibrate (function)

step_count (function)

:
+ add when complete

2. Friend meet

| | | |
|------|------|----------------------------|
| Data | int | today_meet_count |
| | vect | today_friend meet_count |

| | |
|------------------------|-----------------|
| Daily Goal & reward | MEET_DAILY_CRIT |
| | MEET_PT |

meet_reset (function)

is_not_in (function)

meet_add (function)

:
+ add when complete

3. Water Dinking

| | | |
|------|-------|------------------|
| Data | float | prev_water_level |
| | int | today_water |
| | vect | water_drink |

| | |
|------------------------|------------------|
| Daily Goal & reward | WATER_DAILY_CRIT |
| | WATER_PT |

water_reset (function)

Water_update (function)

:
+ add when complete

4. Points

points

update_points
(function)

5. Event func.

change_event
(function)

HW_SSD1306.h

Display GUI Elements to SSD1306 OLED module using
<Adafruit_GFX.h>, <Adafruit_SSD1306.h>

1. Display Setup

SSD1306_Setup
(function)

startupDisplay
(function)

2. GUI Constrctor

listConstruct

textboxConstruct

keyboardConstruct

3. Display Function

rectButtonSetDisplay

navigationBarDisplay

listDisplay

keyboardTextboxDisplay

duckDisplay

Kiduck_sw.ino

Initialization

(Global Variable)

```
int screen = 7; long[] smap = {...}
```

Display & GUI objects

| Screen id | description | variables | |
|----------------------------------|-----------------------------|---------------------|----------------------------------|
| User Data Initialization Display | | | |
| 7 | name initialize | keyboard textbox | name_init_7 name_text_7 |
| 8 | age initialize | keyboard textbox | age_init_8 age_text_8 |
| 10 | weight initialize | keyboard textbox | weight_init_10 weight_text_10 |
| 0 | Duck Display (Main Display) | | |
| Settings Display | | | |
| 1 | Settings | textbox | weight_text_10 |
| 2 | Alarm Settings | textbox | weight_text_10 |
| 3 | Audio Settings | textbox | weight_text_10 |
| 4 | name reset | keyboard textbox | name_init_7 name_text_7 |
| 5 | age reset | keyboard textbox | age_init_8 age_text_8 |
| 9 | weight reset | keyboard textbox | weight_init_10 weight_text_10 |
| 6 | Comm. settings | textbox | weight_text_10 |

setup()

Screen Setup

SSD1306_Setup()

startupDisplay()

showScreen()

Button input Setup

setButtonPinMode()

loop()

actionMap()

```
if fall_edge(3)
    switch(screen): [].moveBackwards()
    showScreen()
```

```
elif fall_edge(2)
    switch(screen): [].moveForwards()
    showScreen()
```

```
elif fall_edge(1)
    switch(screen):
        [].enter() or screenSwitchMap()
    showScreen()
```

```
elif fall_edge(0)
    switch(screen): screenSwitchMap()
    showScreen()
```

```
elif(change_event()) showScreen()
```

showScreen()

switch(screen):

Call Display function for corresponding screen

screenSwitchMap(n)

$screen = smap [screen] \% 100^{n+1} / 100^n$

screenSwitchHook()

Any action that needs to be executed before screenSwitch

+ Other real-time functions (Bluetooth, step...)