

# Tekken DSL - Fighter Game Domain Specific Language

A C++ header-only DSL for creating turn-based fighting games inspired by Tekken.

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## Build Instructions

### Requirements

- C++11 compatible compiler (g++, clang++, MSVC)
- UTF-8 source file support (for Greek character)

### Linux / macOS

*# Simple build*

```
g++ -std=c++11 -o game examples/main.cpp
g++ -std=c++11 -o example2 examples/example2.cpp
```

*# Or with clang*

```
clang++ -std=c++11 -o game examples/main.cpp
```

*# Run*

```
./game
./example2
```

### Windows (Command Prompt with MinGW/g++)

```
g++ -std=c++11 -o game.exe examples/main.cpp
g++ -std=c++11 -o example2.exe examples/example2.cpp
```

```
game.exe
example2.exe
```

### Windows (PowerShell with MinGW/g++)

```
g++ -std=c++11 -o game.exe examples/main.cpp
.\game.exe
```

### Windows (Visual Studio Developer Command Prompt)

```
cl /EHsc /std:c++14 /I include examples\main.cpp /Fe:game.exe
game.exe
```

## CMake (All Platforms)

```
mkdir build && cd build
cmake ..
cmake --build .

# Run (Linux/macOS)
./tekken_example

# Run (Windows)
.\Debug\tekken_example.exe
```

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## How to Play

### Starting the Game

1. Run the compiled executable
2. The game displays available fighters
3. Player 1 selects a fighter by typing the exact name
4. Player 2 selects a fighter by typing the exact name
5. Both players can select the same fighter

### During Battle

Each round: 1. Player 1 sees their available abilities and selects one 2. After ability executes, both fighters' status is displayed 3. Player 2 sees their available abilities and selects one 4. After ability executes, both fighters' status is displayed 5. If a fighter's HP reaches 0, the other wins

### Important Notes

- **Abilities are NOT global** - each fighter can only use abilities they learned via DEAR...LEARN
- **Out of ring fighters cannot act** - if tagged out, a message is shown instead
- **Out of ring fighters cannot receive damage** - damage is blocked while out

### Sample Gameplay

```
-----FIGHTER THE GAME-----

Player1 select fighter:
-----
Lee
```

```

Jack-6
-----
Jack-6

Player2 select fighter:
-----
Lee
Jack-6
-----
Lee

~~~~~
Round 1
~~~~~

Jack-6(Player1) select ability:
-----
Head_Smash
Catch_A_Break
Bleeding_Bite
-----
Head_Smash

#####
Name: Lee
HP: 78
fighter enters the ring
#####

#####
Name: Jack-6
HP: 90
fighter enters the ring
#####

```

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## DSL Syntax Guide

### Program Structure

```
#include "Tekken.h"
```

```
BEGIN_GAME
```

```
// Define abilities, fighters, and learn commands here
```

DUEL

END\_GAME

**Important:** No semicolons after CREATE statements!

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## Creating Fighters

### Single Fighter

```
CREATE FIGHTER {  
    NAME: "FighterName",  
    TYPE: "Rushdown",  
    HP: 100  
}
```

### Multiple Fighters

```
CREATE FIGHTERS [  
    FIGHTER {  
        NAME: "Fighter1",  
        TYPE: "Heavy",  
        HP: 120  
    },  
    FIGHTER {  
        NAME: "Fighter2",  
        TYPE: "Evasive",  
        HP: 90  
    }  
]
```

## Fighter Types and Modifiers

Type	Outgoing Damage	Incoming Damage	Special
<b>Rushdown</b>	+15% to all, +20% vs Grappler	Normal	-
<b>Heavy</b>	Normal	-20% from all, -30% from Evasive	-
<b>Evasive</b>	+7% to all	-7% from all	-
<b>Grappler</b>	+7% on odd rounds	Normal	+5% max HP heal on even rounds

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## Creating Abilities

### Single Ability

```
CREATE ABILITY {  
    NAME: "AbilityName",  
    ACTION: START  
        // Commands here  
    END  
}
```

### Multiple Abilities

```
CREATE ABILITIES [  
    ABILITY {  
        NAME: "Ability1",  
        ACTION: START  
            DAMAGE DEFENDER 20  
        END  
    },  
    ABILITY {  
        NAME: "Ability2",  
        ACTION: START  
            HEAL ATTACKER 15  
        END  
    }  
]
```

**Note:** Ability names cannot contain spaces.

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## Teaching Abilities to Fighters

```
DEAR "FighterName" LEARN [  
    ABILITY_NAME(Ability1)  
    ABILITY_NAME(Ability2)  
    ABILITY_NAME(Ability3)  
]
```

**Important:** - Fighter name is in quotes - Ability names are NOT in quotes  
- NO commas between ABILITY\_NAME entries - Fighters can ONLY use abilities they have learned

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## Action Commands

Command	Description
DAMAGE DEFENDER n	Deal n damage to opponent
DAMAGE ATTACKER n	Deal n damage to self
HEAL DEFENDER n	Heal opponent by n
HEAL ATTACKER n	Heal self by n
TAG DEFENDER ---	Remove opponent from ring
TAG DEFENDER _	Return opponent to ring
TAG ATTACKER ---	Remove self from ring
TAG ATTACKER _	Return self to ring
SHOW expression	Print to console

### Getter Functions

Function	Returns
GET_HP(DEFENDER/ATTACKER)	Current HP
GET_TYPE(DEFENDER/ATTACKER)	Fighter type string
GET_NAME(DEFENDER/ATTACKER)	Fighter name
IS_OUT_OF_RING(DEFENDER/ATTACKER)	Boolean

### Comparisons

```
GET_HP(DEFENDER) > 50
GET_TYPE(ATTACKER) == "Rushdown"
GET_HP(DEFENDER) <= 20
```

### Logical Operators

```
AND(condition1, condition2, ...) // All must be true (2+ args)
OR(condition1, condition2, ...) // At least one true (2+ args)
NOT(condition) // Negation
```

### Control Flow

#### IF/ELSE

```
IF GET_HP(DEFENDER) < 50 DO
    DAMAGE DEFENDER 35
ELSE_IF GET_HP(DEFENDER) < 80 DO
    DAMAGE DEFENDER 25
ELSE
    DAMAGE DEFENDER 15
END
```

**FOR Loop (executes for N future rounds)**

```
FOR 5 ROUNDS DO
    DAMAGE DEFENDER 8
END
```

**AFTER (executes once after N rounds)**

```
AFTER 2 ROUNDS DO
    TAG DEFENDER _
END
```

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## Complete Example

```
#include "Tekken.h"

BEGIN_GAME

CREATE ABILITY {
    NAME: "Power_Strike",
    ACTION: START
        IF GET_HP(DEFENDER) > 50 DO
            DAMAGE DEFENDER 20
        ELSE
            DAMAGE DEFENDER 35
        END
    END
}

CREATE ABILITY {
    NAME: "Healing_Wave",
    ACTION: START
        HEAL ATTACKER 25
    END
}

CREATE FIGHTER {
    NAME: "Warrior",
    TYPE: "Rushdown",
    HP: 100
}

CREATE FIGHTER {
    NAME: "Tank",
    TYPE: "Heavy",
```

```

        HP: 120
    }

    DEAR "Warrior" LEARN [
        ABILITY_NAME(Power_Strike)
        ABILITY_NAME(Healing_Wave)
    ]

    DEAR "Tank" LEARN [
        ABILITY_NAME(Power_Strike)
    ]

    DUEL

    END_GAME

```

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## Project Structure

```

include/
    Tekken.h          # DSL implementation (header-only)
examples/
    main.cpp          # PDF example (Lee vs Jack-6)
    main_output.txt   # Expected output
    example2.cpp       # Custom example (Ryu vs Zangief)
    example2_output.txt # Expected output
CMakeLists.txt        # CMake build configuration
README.md             # This file
TECHNICAL.md          # Technical implementation details

```

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## Troubleshooting

### Greek character not compiling

Ensure your source file is saved as UTF-8. In most editors: - VS Code: Bottom right → UTF-8 - Notepad++: Encoding → UTF-8

### Abilities not working

- Check that the fighter has learned the ability with `DEAR...LEARN`
- Abilities are NOT global - each fighter needs their own `LEARN` statement
- Verify ability name spelling matches exactly

**Fighter not taking damage**

- Check if fighter is out of ring (TAG --- )
- Out of ring fighters cannot receive damage