# Connect4 - Report

## Technical Specifications

### Program Goals

The goal of this program is to create a digital Connect4 game that can either be played by two players or by one player against a bot. The player can choose from multiple bots with various skill levels to play against. The game is combined with a GUI to enhance the visual game experience.

### Limitations (out of scope)

This program covers the basic Connect4 rules as well as visual board experience. It expands the game’s original capabilities from 2 players required to 1 player required. Yet, possible functionality expansion options are:

* 3D Connect4 board to make the game more challenging
* Customizable timer to limit the time each player has to make a move

### Features

#### Classes

Main class = “Connect4” provides all the functionalities to play the game. To have just one class is needed to combine the game with the GUI from pygame. At instantiation it comes with following attributes: player (= shows which player is currently playing), column (= column number where to place the next coin)

#### Functions

All functionalities are inside the class “Connect4” to simplify the user interactions:

* create\_board():
  + creates empty Connect 4 matrix
* draw\_board():
  + visualizes empty board
* print\_current\_board():
  + prints current status of the board
* \_\_check\_move\_allowed():
  + This hidden function checks if the desired move is allowed/ possible
* place\_coin():
  + places the coin in the desired column, after the desired move is checked regarding feasibility
* check\_win():
  + checks the winning conditions
* event\_handler():
  + inputs users interactions into the place\_coin() function for each player and checks for winning condition via the check\_win() function
* draw\_coin():
  + creates a new coin at the beginning of each player's turn
* gameloop():
  + loops through event\_handler() until winning condition is met

### Verifying program behavior

ARE WE GOING TO USE ASSERTIONS??

Assertions help identifying unintended behavior and consequently help controlling it in a customized way preventing a full program stop (e.g. XXX). Assertions are used in XXX

### Terminal Execution

XXX

## Architecture Model

## Code on GitHub

## Terminal Screenshot

Interactions if input values are as required:

Interactions if input values are not as required: