

Learning to Program with F#
Exercises
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October 21, 2022

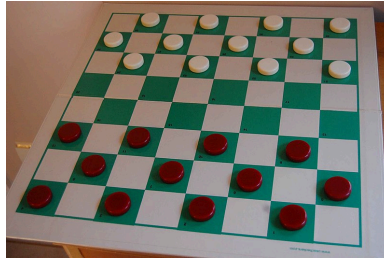


Figure 1: The starting position in Checkers [<https://commons.wikimedia.org/wiki/File:CheckersStandard.jpg>]

0.1 Object-oriented design

0.1.1 Teacher's guide

Emne Object oriented design

Sværhedsgrad Medium

0.1.2 Introduction

0.1.3 Exercise(s)

0.1.3.1: A calendar is a system for organizing meetings and events in time. A description of a calendar is as follows:

The gregorian calendar consists of dates (day/month/year), with 12 months per year, and with months consisting of 28, 29, 30 or 31 days. The years are counted numerically with Jesus Christus' first year being called 1 AD, followed by 2 AD, etc., and the year prior is called 1 BC, preceded by 2 BC, etc. Thus, this calendar has no year 0, and the traditional time line is ..., 2 BC, 1 BC, 1 AD, 2 AD,

A user can enter items such as a meeting or an event into a calendar. An item consists of a start date and time, end date and time, and a text-piece. Items can also be whole-day items.

Use the nouns-and-verbs method to identify possible classes and their interactions and write 1-2 lines of description for each.

0.1.3.2: Checkers also known as draughts is a ancient board game. A simplified version can be described as follows:

Checkers is a turn-based strategy game for two players. The game is (typically) played on an 8×8 checkerboard of alternating dark- and light-colored squares. Each player starts with 12 pieces, where player one's pieces are light, and player two's pieces are dark in color, and the initial position of the pieces is shown in Figure 1. Players take turns moving one of their pieces. A player must move a piece if possible, and when one player has no more pieces, then that player has lost the game.

A piece may only move diagonally into an unoccupied adjacent square. If the adjacent square contains an opponent's piece and the square immediately beyond is vacant, then the piece jumps over the opponent's piece and the opponent's piece is removed from the board.

Use the nouns-and-verbs method to identify possible classes and their interactions and write 1-2 lines of description for each.

0.1.3.3: War is a card game for two players. A simplified version can be described as follows:

War is a card game for two players using the so-called French-suited deck of cards. The deck is initially divided equally between the two players, which is organized as a stack of cards. A turn is played by each player showing the top of their stack. The player with the highest card wins the hand. Aces are the highest. The won cards are placed at the bottom of the winner's stack. When one player has all the cards, then that player wins the game.

Use the nouns-and-verbs method to identify possible classes and their interactions and write 1-2 lines of description for each.